





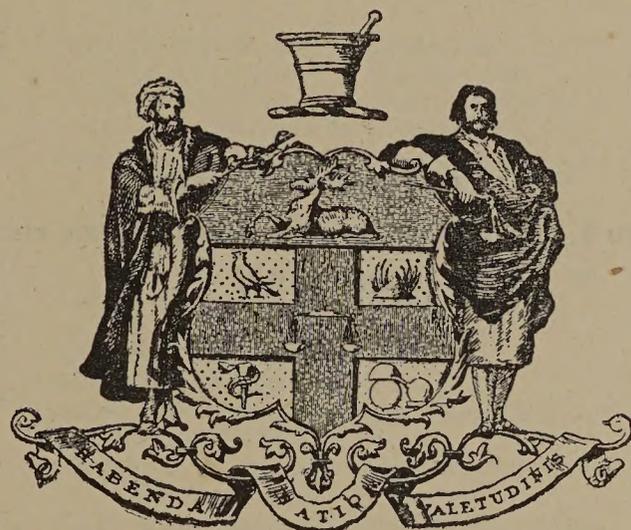
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CONTRACTIONS OF TITLES.

The following is a list of the contractions and the corresponding full titles of Journals most frequently used in "The Month," and elsewhere in the "Pharmaceutical Journal." The titles prefixed by an asterisk (*) are those of official Journals.

- Amer. Journ. Pharm.* = American Journal of Pharmacy Philadelphia. Monthly.
- Annalen* = Justus Liebig's Annalen der Chemie. Leipzig. Monthly.
- * *Apot.-Zeit.* = Apotheker-Zeitung. Organ of the Deutsche Apotheker-Verein. Berlin. Twice a week.
- * *Apot. Zeit. Rep.* = Repertorium der Pharmacie. Supplement to the Apotheker-Zeitung.
- * *Archiv* = Archiv der Pharmacie. Berlin: J. Greiss. Monthly.
- * *Berichte* = Berichte der deutschen chemischen Gesellschaft. Berlin. Once or twice a month.
- * *Brit. Med. Journ.* = British Medical Journal, London. Weekly.
- Bull. com.* = Bulletin commercial. Supplement to L'union pharmaceutique. Paris: Pharmacie centrale de France. Monthly.
- * *Can. Pharm. Journ.* = Canadian Pharmaceutical Journal. Toronto. Monthly.
- Chem. News* = Chemical News. London. Weekly.
- Chem. Zeit.* = Chemiker Zeitung. Cöthen. Twice a week.
- Chem. Zeit., Rep.* = Chemisches Repertorium. Supplement to the Chemiker Zeitung.
- * *Comp. rend.* = Comptes rendus des séances de l'Académie des Sciences. Paris: Gauthier-Villars. Weekly.
- * *Journ. Chem. Ind.* = Journal of the Society of Chemical Industry. Monthly.
- * *Journ. de pharm.* = Journal de pharmacie et de chimie. Paris: G. Masson. Twice a month.
- Med. Press* = Medical Press and Circular. London: A. A. Tindall. Weekly.
- Mon. scient.* = Moniteur scientifique. Paris. Monthly.
- Münch. med. Woch.* = Münchener medicinische Wochenschrift. Munich. Weekly.
- Nouv. rem.* = Les nouveaux remèdes. Paris. Twice a month.
- Pharm. Centralh.* = Pharmaceutische Centralhalle Dresden. Weekly.
- Pharm. Post* = Pharmaceutische Post. Vienna. Weekly.
- Pharm. Zeit.* = Pharmaceutische Zeitung. Berlin: J. Springer. Twice a week.
- * *Proc. Chem. Soc.* = Proceedings of the Chemical Society. London. About twice a month.
- Répertoire* = Répertoire de pharmacie, archives de pharmacie et journal de chimie médicale réunis. Paris. Monthly.
- Scient. Amer.* = Scientific American. New York. Weekly.
- Union pharm.* = L'union pharmaceutique. Paris: Pharmacie centrale de France. Monthly.

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1895.

ALTHOUGH the events of the past year have not been particularly remarkable, indications have been afforded of an important development of opinion in regard to the representative function of the Pharmaceutical Society. The special attention that has been directed to the subject of organisation has led to a very general recognition of the principle that membership of the Society requires to be synonymous with registration under the Pharmacy Act of 1868, in order that the influence which has been acquired by the Society as an administrative and qualifying body may be proportionately exercised in conserving and promoting the interests of the craft. The weakness at present existing in this respect does not affect the Society as a public body, but it materially lessens its capability of protective or defensive action, for which power must be supplied from within. Compulsory membership has been suggested as a means of effecting adequate pharmaceutical organisation, and thus supplementing for internal purposes the partial organisation that has been effected solely from the outside point of view of general public interest, by the establishment of a Register of persons authorised to use the title of chemist and druggist, and to carry on business in that capacity. In any case further legislation will be requisite for effecting the object in view, and provision for it will probably form an important part of next year's work.

The Work of the Council.

The constitution of the Society's Council has not undergone much alteration. At the January meeting the vacancy which had been created by the resignation of Mr. A. C. ABRAHAM was filled up by the election of Mr. WARREN. The subsequent retirement of Mr. GREENISH and Mr. RICHARDSON at the annual election made two other vacancies, which were filled by the election of Mr. CORDER and Mr. A. L. SAVORY. Various matters have been dealt with besides routine business.

At the Council meeting in January, the PRESIDENT announced the receipt of a communication on the subject of the Pharmacopœia from the President of the General Medical Council, inviting assistance from the Society in obtaining statistics as to non-official remedies in demand and official remedies that have fallen into disuse. In accordance with a recommendation of the Pharmacopœia Committee of the General Medical Council, the Council was also invited to nominate members of a Pharmaceutical Committee to report to the General Medical Council through its Pharmacopœia Committee on the general subject of revision of the British Pharmacopœia. This was referred to the General Purposes

Committee and, at the next meeting of the Council, the members of the Committee which had been engaged in the preparation of the addendum to the Pharmacopœia in 1890 were nominated, with the addition of Mr. WALTER HILLS in the place of the late Mr. GALE. Mr. P. W. SQUIRE had been asked to serve on this Committee, but was unable to accept the invitation. Among the other proceedings of the Council in January a resolution was passed to support a Bill for amendment of the Weights and Measures Act, in order to allow metric weights and measures to be used in export trade. This was done in accordance with a request received from Mr. UMNEY on behalf of a special committee of the London Chamber of Commerce. At the same meeting a resolution was passed, on the motion of the PRESIDENT, seconded by Mr. HARRISON, that the Parliamentary Committee should consider the expediency of applying to Parliament for further powers in reference to company trading and other matters.

At the meeting in February, directions were given to forward to the Privy Council copies of regulations affecting the sale of drugs in the United Kingdom, information on the subject having been asked for, through the Foreign Office, by the Austro-Hungarian Government. A letter from the Deputy Coroner for North Derbyshire informed the Council that he had sent to the Privy Council a recommendation that carbolic acid should be added to the list of scheduled poisons.

At the meeting in March, the President and Mr. MARTINDALE were appointed to give evidence before a Select Committee of the House of Commons, to which the Bill relating to amendment of the Weights and Measures Act had been referred. The report of the Parliamentary Committee on amendment of the Pharmacy Act recommended that no Bill should be introduced during the current session. Regret was expressed that this decision was inevitable, and Messrs. HARRISON, MARTIN, and SOUTHALL advocated the drafting of a Bill embodying provisions in regard to consolidation, a curriculum, and company trading, so that members of the trade might consider these subjects and come to an agreement upon them.

At the April meeting, a resolution, passed at a meeting of members and associates of the Society held in Birmingham, was received from the local secretary, thanking the Council for enforcing the Pharmacy Act, and calling upon it to take immediate steps to remedy the evil of company trading. On the presentation of the report on the examinations at this meeting, Mr. ATKINS remarked that the proportion of failures in the Preliminary appeared to be increasing. Referring to the recommendation made years ago as to this examination being passed before apprenticeship, he, as well as Mr. ALLEN, Mr. GROSE, and the Vice-President, expressed the opinion that while many entered the business thoroughly unprepared,

the higher scientific teaching now provided is not accompanied by equally good practical training.

At the first meeting of the Council in May, the resignation of Mr. RICHARDSON was announced, and a resolution was passed expressing regret that continued ill-health rendered that step necessary. The report of the Executive of the North British Branch presented at this meeting, showed that the several departments connected with the Branch continued in a satisfactory state and that the extension of the Society's premises in Edinburgh had been productive of great convenience in all respects. After the adoption of the report Mr. STORRAR referred to the services rendered during the last two years by the Chairman of the Executive and the Assistant-Secretary as having been especially useful, and on behalf of the North British Branch he thanked the Council for the complete and handsome equipment of the new premises. The annual report to the Privy Council by the Government visitor of examinations in England and Wales was brought before the Council at this meeting. The results of the Preliminary examination continued to give evidence of very defective education. In the Minor examination there had been a slight increase in the proportion of passes, but the failures were still upwards of 63 per cent. The appointment of examiners engaged in teaching was spoken of with approval as being likely to work well and to the advantage of the candidates. In the Major examination some improvement indicated better scientific training, but the percentage of failures was still above 50 per cent. The report of the Research Committee stated that the applications for admission to the laboratory had increased, and that the benches were fully occupied. The continuation of the aconite investigation by synthetical experiments had not furnished very conclusive results, but a number of new compounds had been obtained having considerable chemical and physiological interest. Other inquiries had also been conducted, part of the expense having been defrayed by the Chemical Society. The great assistance rendered for three years by the Royal Society through a grant from the Government Fund, was referred to as having rendered the continuance of this costly investigation possible. Prior to the passing of the resolution that the report should be received and entered on the minutes, Mr. MARSH and Mr. GOSTLING expressed regret that the work of the Research department had so little bearing on medicine and that, after seven years, it would probably contribute little to the new Pharmacopœia. Mr. BOTTLE and Mr. STORRAR spoke of the financial statement as being insufficiently clear. After consideration of the subject of the Research Laboratory in Committee it was resolved, on the motion of Mr. HARRISON, seconded by Mr. STORRAR, that further consideration should be left to the incoming Council. In a communication from the Privy Council, attention was directed to a fatal case of poisoning reported to the Home Office by the Coroner for Worcester, in which Winslow's soothing syrup had been given to a boy thirteen months old, and at the inquest a verdict was given that death was caused by morphine poisoning. A letter from the chemists' association of the Plymouth district, enclosing a resolution in reference to the early closing Bill was referred to the Parliamentary Committee, but a protest against legislation interfering with the conduct of business was entered by Mr. HAMPSON. An application from the Registrar of the Pharmaceutical Society of Ireland, asking the Council to accept the Preliminary examination of that

Society was referred to the Board of Examiners. The annual report was agreed to and ordered to be published.

At the second meeting of the Council in May, Prof. H. G. GREENISH, as Secretary to the Pharmacopœia Committee, submitted lists of the articles proposed to be omitted and added in the new edition of the British Pharmacopœia and it was resolved that these recommendations should be communicated to the Pharmacopœia Committee of the General Medical Council, in accordance with the terms of Sir RICHARD QUAIN's letters of December 12, 1894.

At the June meeting Mr. CARTEIGHE introduced Mr. CORDER and Mr. SAVORY, the two newly-elected members of Council, with some references to their previous connection with the Society. Mr. CARTEIGHE was again elected President and Mr. HARRISON was elected Vice-President. The office of Treasurer was filled by the re-election of Mr. HAMPSON and Mr. RICHARD BREMRIDGE was re-appointed Secretary and Registrar. On the motion of Mr. HAMPSON, a resolution was passed expressing regret at the retirement of Mr. T. GREENISH, after serving for twenty-four years as a member of Council, as well as Treasurer and President of the Society. A special committee was appointed to consider questions relating to the Research Laboratory, and report as to its conduct for the future.

At the July meeting, Mr. HILLS called attention to the report of the Committee on Weights and Measures, showing that the information given by the President had contributed to the suggested legalisation of the metric system. In a communication from the Pharmacopœia Committee of the General Medical Council, Sir RICHARD QUAIN forwarded a statement of the points on which the assistance of the Society was invited and he requested that some report should be sent in before the 25th of that month. The members of the Society's Committee were, therefore, re-appointed, together with Mr. CROSS and Mr. JOSEPH INCE. Attention was directed by the PRESIDENT to a memorandum of the Local Government Board, relating to the qualification of persons acting as dispensers in workhouses, which appeared to indicate disregard of the principle that the sick poor should be treated with every consideration and have the benefit of the highest skill and knowledge. After some discussion of the matter it was decided that the President should be requested to communicate either with the Secretary of the Board or with Sir WALTER FOSTER, and point out the desirability of having properly qualified persons to perform the duties of dispensers in public institutions. The Special Committee appointed to inquire into the subject of the Research Laboratory presented its report, stating the opinion that the completed work which had emanated from the laboratories was, on the whole, satisfactory, and reflected credit on the Society. In regard to the future, several suggestions were made as to the kind of work desirable and as to the conduct of the Laboratory. A resolution passed by the Western Chemists' Association—to the effect that while supporting the Council's administration of the Pharmacy Act, the opinion was held that future legislation should be directed to improved registration of the owners and managers of pharmacies, to restricting the dispensing of medicine to registered pharmacists and to raising the standard of the Preliminary examination—was referred to the Law and Parliamentary Committee.

At the meeting in August, Mr. HAROLD BROWN was elected Redwood Scholar, and the award of the Hanbury medal to

Professor VOGL was announced; the President and other delegates to the Conference reported on the proceedings at Bournemouth, and the recommendations of the General Purposes Committee as to the award of prizes, medals, and scholarships, etc., were agreed to. On the reading of the report of examinations in July showing failures in the Minor examination amounting to over 76 per cent., Mr. CORDER asked whether any reason could be assigned for that large proportion of failures.

At the meeting in October, the Law and Parliamentary Committee reported that the consideration of the question as to drafting a Pharmacy Bill had been deferred, but the Committee recommended that steps should be taken, in co-operation with other public bodies, to urge the necessity of such amendment of the law relating to companies, as had been suggested by the Departmental Committee of the Board of Trade.

At the meeting in November, a resolution was passed conferring upon Dr. C. M. LUXMOORE the Research Fellowship. The PRESIDENT and Mr. ALLEN reported on the proceedings of the conference at Plymouth. In reference to the judgments in the Scotch appeals, mention was made of the circumstance that neither judges nor sheriffs in Scotland appeared to understand the position of the Pharmaceutical Society in carrying out the Pharmacy Act, but were, on the contrary, disposed to regard the Society as acting unfairly and in a trade union spirit rather than as discharging a public duty imposed upon it by the Legislature.

At the meeting in December, attention was directed to a peculiar technicality of Scottish law, by which prosecutions of offenders under Section 17 of the Pharmacy Act must apparently be undertaken by the Procurator Fiscal. In a case of that kind the Sheriff held that the REGISTRAR has no authority to prosecute in Scotland under Section 17 of the Act. At the same meeting a grant of twenty pounds was made for the purchase of a collection of materia medica specimens to be placed in the museum of the Technical College at Exeter, in order to facilitate the instruction of pharmaceutical students, for which arrangements have been made by the College authorities with the aid of the Town Council.

The Annual Meeting.

The report presented by the Council at the Society's anniversary meeting dealt with several matters relating to the work of the past official year, among which the most important were the changes in the Boards of Examiners, the additions to the Society's premises in Edinburgh, the successful issue of the appeals in cases of prosecutions under the Pharmacy Act in England and Scotland, and the revision of the Pharmacopœia. In regard to a Pharmacy Acts Amendment Bill, Mr. CAMPKIN suggested the desirability of taking steps to increase the representative character of the Society, and make it inclusive of the entire trade, with the object of providing protection of the interests of registered chemists in a manner analogous to that afforded to members of the legal profession by the Incorporated Law Society. Mr. MACKENZIE (Edinburgh) and Mr. TAPLIN (Hampstead) spoke to the same effect, and the PRESIDENT, in replying, pointed out that there is not much protection afforded now to any form of occupation by legislative measures, but that indirect means of obtaining it are much more effectual. That is the case with different branches of the legal profession, and the protection they enjoy is the result of internal organisation. Chemists and druggists have in the Pharmacy Act and the Pharmaceutical Society, more than ordinary

facilities for such organisation, but they have not yet turned those facilities to practical account for their own benefit.

North British Branch of the Society.

At the regular meetings of the Executive, in addition to the ordinary routine proceedings, various matters of general and local interest were considered, viz., the metric system, the sale of methylated spirit, the Preliminary examination, etc. At the meeting held in June for the selection of members of the Executive, votes were given in favour of MESSRS. BOWMAN, COULL, and MOIR, as the new members replacing MESSRS. KINNINMONT, NOBLE, and SUTHERLAND, who retired from office.

Administration of the Pharmacy Acts.

The judicial decision of several disputed points of pharmacy law within the last few years has furnished opportunity for more effective administration of the Statute by which the practice of pharmacy is to some extent regulated, and that opportunity has been utilised by the Council of the Pharmaceutical Society in a large number of instances during the past year. The endeavour to prevent evasion of the Act of 1868 by the patenting of medicines containing scheduled poisons has been partially successful, but it has not yet been consummated by an authoritative judicial decision on this point, since the proceedings taken for the revocation of patents relating to such preparations have in all instances led to judgments given by consent of the persons proceeded against. But although, for that reason, no legal precedent has yet been established, the principle contended for has been sufficiently well supported to leave little doubt as to the ultimate decision that, by reason of the special proviso contained in all Letters Patent, a patent granted for a preparation containing a scheduled poison must be invalid because it would otherwise sanction a proceeding contrary to the statute law relating to the sale of poisons, and, therefore, inconsistent with the above-mentioned proviso. The cases brought before the Court of Chancery during the past year were those of WALLACE, SIMMONS, and INGRAM. In the first two the patents were revoked. In the last case notice of opposition was given by the defendants, and it stands over for future hearing. Still more decisive results have been obtained in establishing the principle that in connection with retail trade, the use of the title chemist or any equivalent qualification of that title is unlawful for any but persons legally qualified under the Pharmacy Act, 1868.

Action has been taken against a large number of unregistered persons unlawfully selling poisons, keeping open shop for their sale, and using the title of chemist and druggist. In the majority of instances the penalty incurred has been paid upon application in accordance with the provisions of the Statute. In the cases tried at Oldham, Carnarvon, Newcastle, Greenwich, Stonehouse, London, Edinburgh, Greenock, Ayr, Glasgow, Paisley, Salford, Bootle, Dundee, Forfar, Nottingham, and Dumbarton, decisions were given in favour of the Society, and penalties were inflicted on the offenders. Unqualified assistants have also been prosecuted in several instances. Several prosecutions were instituted for the sale of arsenical preparations employed for killing weeds, ants, etc. In one of them the defendants were MESSRS. SPIERS AND POND, Limited, who appeared, from the statement of their counsel, not to have been previously aware that the article sold came within the Statute, and to have given up its sale on ascertaining that

it did. They were, however, fined in the full penalty, the Lord Mayor remarking that the respectable position of the company made the offence more serious. A seedsman at Helensburgh was fined for selling a similar preparation, and in another prosecution of a firm of seedsmen in Glasgow, under the 17th Section of the Act, an objection was raised that the Procurator Fiscal was the only person competent to take action under that section. An assistant of the firm, who sold a similar arsenical preparation, was, however, convicted of an offence under the 15th Section, but the Sheriff, in giving judgment, expressed himself as having no sympathy with the prosecution of employé's. The mode of procedure peculiar to Scotland would appear, therefore, to offer some considerable obstacle to the administration of the Statute.

Pharmaceutical Examinations. During the past twelve months the examinations have been conducted under the altered conditions decided upon in the previous year. It is interesting therefore to compare the results with those for 1894, when the new system was partially introduced, and also with those for 1893, when the older system prevailed. In the qualifying examination, which is the most important and the one chiefly affected by the alterations, the total number of candidates during 1895 was 1304, as against 1410 in 1894, and 1189 in 1893. The percentage of rejections in 1895 was 65·72, in 1894 it was 62·83, and in 1893 it was 60·55. It may therefore be inferred that the gradual elevation of the examination standard has not been accompanied by corresponding improvement in the training and acquirements of candidates generally. The rise in the percentage of rejections is still most marked in the figures for England and Wales, as the following table shows:—

Minor Examination.

	1893.		1894.		1895.	
	Lond.	Edin.	Lond.	Edin.	Lond.	Edin.
Number of candidates	817	372	970	440	819	485
" " rejections	532	188	626	260	574	283
Percentage of failures	65·11	50·54	64·53	59·09	70·08	58·35

The figures for October last were especially remarkable. The candidates presenting themselves for examination in London usually constitute two-thirds of the total number, but on that occasion the numbers were almost identical in London (116) and in Edinburgh (113), whilst the percentage of rejections was 59·48 in London as compared with 65·48 in Edinburgh. This unusual result may have been due to the existence of a fancy on the part of weak candidates that the tests imposed at the northern centre were likely to be more favourable to them than the London ones. Assuming that to have been the case, there would have been a preponderance of the weak element in Edinburgh, but the result proved that the Scottish examiners are quite capable of dealing with such emergencies, and that the examination standard is not likely to degenerate in their hands.

The statistics of the Major examination during the same period are as follow:—

	1893.		1894.		1895.	
	Lond.	Edin.	Lond.	Edin.	Lond.	Edin.
Number of candidates	140	12	136	11	130	16
" " rejections	78	5	68	5	70	8
Percentage of failures	55·71	41·66	50·00	45·45	53·84	50·00

It will be noticed that both the number of candidates presenting themselves and the number of passes are less in 1895 than during the two preceding years, whilst the pharmaceutical chemists registered during 1895 amount to little more than 15 per cent. of the chemists and druggists registered during the same period. Additional evidence is thus afforded that the legal qualification is regarded as sufficient by an overwhelming majority of those becoming entitled to practise pharmacy on their own account.

With regard to the First examination, which, being purely scholastic, has no title to be considered a pharmaceutical examination, its inadequacy as a test of general education is sufficiently established. The statistics for the past three years are as follow:—

	1893.	1894.	1895.
Number of candidates...	1489	1541	1430
" " rejections ...	750	788	753
Percentage of failures...	50·37	51·13	52·65

Schoolboys unable to satisfy the requirements of this examination—the lowest of all professional preliminaries—would not be fitted for admission as pupils in pharmacy. But the worst feature of this examination is that it is not made a test of fitness to be admitted as an apprentice. Many of the rejected candidates have already been engaged in the business as apprentices, though it would have been to the advantage of all concerned if they had been compelled to seek employment in some other direction at an earlier period. The pharmacy of to-day requires its recruits to be of the best material available, not modest mediocrities or scholastic failures.

The report on the examinations presented to the Privy Council by Dr. THOMAS STEVENSON, the Government visitor, dealt with the twelve months ending March 31, 1895. It included only one of the examinations held during the past year, and therefore the figures given by him, which have been already referred to on page 2, are not quite the same as those given above. In regard to recent changes in connection with the qualifying examination, Dr. STEVENSON expressed his belief that "since there is no one so well fitted to examine and to gauge the knowledge of students as he who is engaged in teaching a science," the introduction of examiners engaged in teaching chemistry, physics, and botany is likely to work well and to the advantage of candidates. Dr. STEVENSON showed that the failures in the Minor examination were chiefly in chemistry (28·2 per cent.), pharmacy coming second (22·1 per cent.), practical pharmacy and dispensing third (16·9 per cent.), whilst in materia medica there were only 4·9 per cent. of rejections. In speaking of the Major examination, Dr. STEVENSON inferred that the scientific training of the candidates had undergone improvement, but he expressed regret that so few chemists and druggists present themselves for this examination. Dr. STEVENSON pointed out that the failures in the Preliminary examination were due more especially to weakness in arithmetic. The report confirms the opinion that this examination, as now carried out, is totally inadequate as a test. Candidates too frequently present themselves after becoming engaged in business, and he suggests that the examination should be confined to the admission of apprentices.

Pharmaceutical Meetings.

The evening meetings of the Society, both in London and Edinburgh, have furnished opportunity for the discussion of several important subjects, such as the histology and chemistry of ipecacuanha; and the standardisation of galenical preparations—infusions, decoctions, etc. Papers were read on buchu, false chiretta, Chinese opium, and calumba. A demonstration was given of SIR GEORGE JOHNSON'S method of determining sugar in urine, and several interesting contributions to the Museum were shown and described by the Curator. In Edinburgh papers were read on magnesium ricinoleate, chloroform, aloin, linseed and linseed meal, ferrous phosphate, continuous percolation, etc., while several evenings were devoted to the discussion of subjects connected with the revision of the British Pharmacopœia, metric weights and measures, etc. A very interesting historical notice of the Society of Druggist Apothecaries in Edinburgh was contributed by Mr. JAMES MACKENZIE.

In London the meetings of the Western Chemists' Association, held under the presidency of Mr. R. H. PARKER, have been made useful by the discussion of subjects connected with the British Pharmacopœia and pharmaceutical politics, and at the first meeting of the present session, Mr. HYSLOP, his successor in the chair, delivered an opening address, in which he showed that notwithstanding much improvement effected within the last fifty years there is still great want of provision for the adequate education and practical training of persons taking up pharmacy as an occupation. To that deficiency Mr. HYSLOP traced many of the evils of which pharmacists have reason to complain, and he suggested that the remedy for them should be sought for by more thorough co-operation for mutual advantage.

The meetings of provincial associations during the year have been rendered exceptionally interesting by the reading of papers on subjects connected with pharmaceutical practice and politics.

At Manchester, in addition to various papers read, Mr. CARTEIGHE delivered an address on the possibilities of future legislation in the interests of pharmacy. At the annual meeting the subject of company trading was discussed, and the action taken in regard to that mode of evading the Pharmacy Act was heartily approved of. At the opening of the present session Mr. W. KIRKBY read a paper on "Pharmaceutical Education," in which he insisted upon the necessity of extending the scope of the Preliminary examination. In the discussion Mr. RYMER YOUNG drew attention to the need for making the passing of that examination an indispensable condition of apprenticeship, suggesting that as the direction in which improvement is most essential.

At Liverpool, Mr. JOHN SMITH, the President of the Chemists' Association, opened the session with an inaugural address, in which he dealt with some practical details of the chemist's business, and insisted on the importance of education as a basis for improvement. In speaking of the utility of local associations and the beneficial influence of occasional meetings, he urged that by promoting unity and consolidation they are broadly conducive to the protection of trade interests. Papers on the revision of the British Pharmacopœia have been read by Dr. SYMES and Mr. A. C. ABRAHAM, besides others relating to dispensing, on jaborandi leaves, pepsin, etc. A very interesting address was delivered by

Dr. WILLIAM CARTER on "Nature's Poly-pharmacy," Mr. WARDLEWORTH gave an account of botanical observations made during his rambles in northern Spain, and Professor GIBSON read a paper on "Old Herb Gardens." A resolution was passed to admit junior members of the trade to the meetings, library, and museum.

At Glasgow several meetings have been devoted to discussions of Pharmacopœia revision, two of which were opened by Mr. THOMAS DUNLOP and Mr. GEORGE LUNAN. At the annual meeting in April a report was presented recommending various desirable alterations of the Pharmacopœia, which had been suggested by a committee appointed in reponse to the invitation of the General Medical Council. Another report on pharmaceutical legislation was presented, stating, among other suggestions as to the amendment of the Pharmacy Acts, that all persons on the Register of Chemists and Druggists should be members of the Pharmaceutical Society, and the cost of registration be defrayed by an annual fee. At the same meeting Mr. W. L. CURRIE was re-elected President, and in the address delivered at the opening of the session he strongly advocated the views put forward in the above-mentioned report. The Edinburgh Trade Association has also held several meetings under the presidency of Mr. BOA and discussed matters of practical interest.

At Birmingham papers of considerable interest were read by Mr. JOHN BARCLAY and Mr. LIVERSEEGE, on scientific subjects connected with practical pharmacy; but the meetings of the Midland Association at the early part of the year were but poorly attended. This indication of indifference in the majority was lamented by the PRESIDENT, and, with the object of inducing a better attendance, an evening was given to the consideration of "Cutting in the Retail Trade."

At Sheffield the papers read at the early part of the year were more of general than pharmaceutical interest, with the exception of one by Mr. RHODEN on "Examinations," in which he discussed the appointment of teachers as members of examining boards. At the opening of the present session Mr. CARTEIGHE distributed the prizes gained by students in the Sheffield School of Pharmacy, and at the annual dinner he spoke on several of the subjects which require to be dealt with in a Bill to amend the Pharmacy Acts.

At Plymouth the newly formed local association has been very active, and the meetings have been chiefly engaged in considering matters of pharmaceutical politics. Mr. P. A. KELLY brought forward the subject of pharmaceutical organisation, pointing out its necessity and the neglect chemists now show to their own interests, by complaining of the Pharmaceutical Society instead of taking part in its work. Subsequently a paper was read by Mr. E. A. HODGE, in which he treated of the means by which improvement in the position of the pharmacist is to be attained, and urged the great importance of thorough organisation for that purpose. In the discussion of these papers the views expressed by the authors were very generally concurred in. In October a conference of west of England chemists was held at Plymouth, at which Mr. CARTEIGHE, Mr. C. B. ALLEN, Mr. R. BREMIDGE, and Mr. HOLMES were present, and a long discussion took place on the points to be dealt with in a Pharmacy Acts Amendment Bill.

At Bristol only two meetings of the local association have been held during the year. In the annual report of the Council the experimental arrangement made with the aid of the University College and Messrs. KEEN, WHITE, and TOWERZEY,

for providing instruction in chemistry, botany, materia medica, and pharmacy, was stated to have been distinctly successful. At a subsequent meeting, Mr. KEEN, the Honorary Secretary, reported that a class of thirteen had met weekly, and taken satisfactory interest in the subjects taught.

At Cambridge useful lectures on water analysis, the phenomena of diffusion, qualitative chemical analysis, and the use of spectacles have been delivered by Mr. E. S. PECK, Mr. F. STOKLEY, the teacher of chemistry at the Technical Institute, Mr. PATTISON MUIR, of Caius College, and Mr. A. IVATT, of Christ's College. At the annual meeting in October, Mr. Ald. DECK was elected President, and delivered an address upon "Pharmacy in the Forties."

The associations at Bolton, Dover, Halifax, Leeds, and Nottingham have held several meetings during the year, the proceedings at which have been reported in the Journal.

The work of the Society and of the senior associations has been well supplemented by the various assistants' associations. At the London Chemists' Assistants' Association papers have been read upon drug adulteration, volumetric analysis, dispensing problems, filtration, nostrums, pharmaceutical preparations, pharmacopœia revision, the metric system, and essential oils. Lectures have been delivered by Mr. F. RANSOM on "Diatoms," by Mr. MEYJES on the "Pharmacist in Fiction," by Mr. J. HARRISON and Dr. SYMES on "Pharmaceutical Politics," and at one of the meetings the reading of a paper on the "Commercial Application of Electrical Energy" was followed by a visit to the St. Pancras Electric Light and Power Station, where the various operations and appliances were explained by Mr. SNELL.

In Edinburgh, also, the Chemists', Assistants', and Apprentices' Association has well maintained its position in respect to the senior associations by the production of papers on pharmaceutical subjects. At the January meeting a discussion on the Preliminary examination was opened by Mr. COULL, and at another Mr. W. M. LOCK gave an interesting account of an apprentice's experiences.

At the annual meeting Mr. A. SUTHERLAND was re-elected President, but was subsequently obliged to resign in consequence of ill-health, and at the opening meeting of the present session the vacancy was filled by the election of Mr. J. MACKINTOSH CAMERON, who delivered an instructive address on the "Evolution of Pharmacy." The Aberdeen Assistants' Association and the Brighton Junior Association have also continued their meetings.

The School of Pharmacy Students' Association has continued its activity, and a number of interesting papers and reports were read during the year. At the last meeting Professor REYNOLDS GREEN was elected President on the retirement of Professor ATTFIELD, who has held that position for the last twenty-one years.

At the meetings of the Liverpool Students' Association various useful papers have been read on pharmaceutical preparations and other subjects of interest.

Pharmacography. Several important drugs have received attention which has resulted in material additions to our knowledge of their structure and constituents. GREENISH has studied the comparative anatomy of Brazilian and Carthagenia ipecacuanha, and has shown the means by which the root and stem of each may be distinguished even in the form of powder, as well as the extent to which the diagnostic characters can be relied upon. Applying the

knowledge thus gained to the examination of commercial ipecacuanha powder, GREENISH showed that the quality of the powder supplied to the public is frequently inferior. Almost simultaneously RANWEZ and CAMPION published a similar investigation of French ipecacuanha powder with similar results. Jaborandi has again been exhaustively dealt with by HOLMES, who has shown that another variety of the drug, characterised by its simple leaves, has recently appeared in commerce; the presence of pilocarpine and the proportion in which it exists in this variety remains to be determined. WARD has identified a drug recently offered as chiretta with *Andrographis paniculata*, and GREENISH has given an account of its histology, pointing out the important features, and showing to what extent they are useful in identifying the drug. By similar means HARTWICH has identified an adulteration of senega root, previously attributed to *Richardsonia scabra*, as the root of *Triosteum perfoliatum*, a North American plant. Histological investigations of various drugs have been communicated by BASTIN, but in this department the most valuable contributions are those which have appeared in the atlas of TSCHIRCH and OESTERLE, where many new observations are recorded. BARCLAY has called attention to a substitute for cusparia bark, and UMNEY has compared the constituents of the leaves of *Empleurum serrulatum* with those of *Barosma betulina*, showing that the former contain less volatile oil than the latter, and no diosphenol. HERLANT has contributed to the study of useful plants from the Congo by examining the fruits known as "Poivre de Clusius"; which, according to HERLANT, contain 5 per cent. of piperine and 11 per cent. of volatile oil, and should, therefore, be classed with the true peppers, although in structure they resemble cubebs. PFISTER finds the powdered cinnamon of commerce to be frequently of inferior quality, and has advanced the somewhat remarkable opinion that the addition to it of powdered cassia buds is admissible, since the proportion of volatile oil would thereby be increased. HOOPER has examined tea seed, and determined the proportion of fixed oil present to be 22 per cent., and that of saponin 9 per cent. The same chemist has investigated the vesicant principle contained in the fruits of *Holigarna*, and shown it to be closely allied to, if not identical with, the cardol of the cashew nut. HOOPER has also examined the bitter principle contained in the bark of *Ailanthus excelsa*, and considers it to be a neutral rather than an acid body, and related to quassiin. FRASER and TILLIE have isolated from the wood of *Acokanthera schimperi* a crystalline glucoside, probably identical with ARNAUD's ouabain, but for which they propose the name of acokantherin.

The investigation of gum-resins has again this year been vigorously prosecuted by TSCHIRCH and his pupils. LUZ has proved that the resins of ammoniacum are free from sulphur and that one of them yields by saponification salicylic acid. On the sound basis of identity of structure of the vegetable *débris* found in commercial opoponax, BAUR refers this drug to the natural order Burseraceæ, and probably to *Balsamodendron kafal*. He found the resin unsaponifiable and the drug free from sulphur and umbelliferone, the latter, with the exception of ammoniacum, being a constant constituent of umbelliferous gum resins. In sagapenum, HOHENADEL found 15 per cent. of combined umbelliferone and 40 per cent. of a peculiar resino-

tannol. MJÖEN has investigated the nature of the vegetable *débris* in opium and found in the Turkey drug abundant fragments of the epidermis of the poppy capsule, whilst Chinese, Indian, and Persian are free, or almost free, from such remains, but Persian frequently contains starch. BRAITHWAITE has given an interesting account of a spurious balsam of tolu, showing that, by digestion with carbon bisulphide, a larger proportion is extracted than from the genuine balsam and that after evaporating the solvent the residue differs in appearance and saponification number.

In the Buitenzorg laboratory, in Java, BOORSMA has occupied himself with the examination of a number of plants and discovered several new alkaloids. In the same laboratory interesting results have been obtained in the examination of the leaves of *Palaequium borneense* and *P. gutta*; they have been shown to contain quantities varying from 4 to 8 per cent. of pure white gutta-percha. *Erythroxylon coca* var. *spruceanum* has been successfully cultivated in Java.

In connection with the valuable work carried on in the state-supported laboratory in Java, it is satisfactory to note that the Government of India has appointed a committee to consider, amongst other things, the practicability and utility of encouraging the systematic cultivation of medicinal plants indigenous to India. In Germany, also, more attention is being directed to vegetable drugs, and Russia is exerting herself to introduce into suitable districts of her empire the cultivation of plants yielding useful products. The results of these movements will be awaited with much interest.

Botany. In the domain of practical or economic botany, viewed from whatever side, whether as yielding drugs, food, or articles of manufacture, the year has not been behind its predecessors either in the introduction of new products or in developing the application of old ones. Early in the year HOOPER drew attention to tea seed for the expression of oil and the use of the residual cake. It is well known that the Chinese use the oils of *Camellia drupifera* and *C. Sasanqua* for a variety of useful purposes: the cake is applied to the ground for the double purpose of manuring and killing earthworms, but the application of the seeds of the common tea as an oil seed was comparatively new, and HOOPER showed that in Northern India hundreds of maunds of tea seeds were being wasted on the bushes of abandoned tea estates, so that if there were any demand for tea seeds for this purpose, there would in all probability be a supply. It was not, however, for the sake of the oil that the seeds were recommended for pressing, because the yield is smaller than that of many better known oil seeds; besides, much saponaceous matter is found in combination with it. But as a manure and an insecticide it was strongly recommended for trial either in the form of a powder for sprinkling over plants or in decoction for washing them. In consequence of the rise in the price of kino and its comparative scarcity early in the year, attention has been directed to other sources than that from which it is usually obtained and Bengal kino from *Butea frondosa*, as well as the African kino, from *Pterocarpus erinaceus*, have since appeared in the market. Considering the activity now shown in the opening up of Africa, the supply from that source will be probably increased, and other kino-yielding plants discovered.

In consequence of the comparative scarcity of camphor, its high price—owing to the disturbed state of the far

East, and the new uses to which the substance is now put, a good deal of attention has been given to the possibility of introducing the tree into other than its native countries, and amongst these it has been suggested that California might be made the camphor producing country for the supply of the American trade. In this connection it may be noted that in a recent number of the *Kew Bulletin* the plant is stated to grow freely in Southern Europe, and to be suitable for planting in any warm temperate climate. With reference to the popular opinion that camphor is largely used in the manufacture of smokeless powder, a note by Sir FREDERICK ABEL in the same number of the *Kew Bulletin* dispels that notion by stating that it was only used as an experimental ingredient, and never in its actual manufacture. But camphor has been used for many years past for the conversion of collodion cotton into celluloid, which is applied to the manufacture of imitation ivory, tortoise-shell, horn, etc. While on the subject of camphor, it may be well to draw attention to an article on the peculiar Ngai or Ai camphor of the Chinese (*Blumea balsamifera*) in the November number of the *Kew Bulletin*. Knowledge of the produce and extraction of Siam gamboge (*Garcinia hanburyi*, Hook. f.) has been considerably increased by the excellent account given in a report to the Foreign Office by Mr. DE BUNSEN, Her Majesty's Chargé d'Affaires at Bangkok (see *Ph. J.* [3], xxv., 1030). Under the name of "Iboga" a root from the Gaboon was exhibited so long ago as the Paris Exhibition of 1867. It was described as possessing tonic properties and in large doses was said to stimulate the nervous system. The same root is known on the Congo as "Bocca." BAILLON was the first to identify it, and named it *Tabernanthe iboga*, belonging to the Apocynaceæ. Very little is known about the uses of the plant at present, besides those just referred to, but attention is being paid to it, and when further material arrives the medicinal properties of this interesting root will probably be more fully investigated.

Turning to plants not so immediately connected with pharmacy the *Kew Bulletin* has extracted from the *Louisiana Planter* some interesting facts relating to maple sugar, from which it seems that the total production of maple sugars in the United States exceeds 10,000,000 pounds. And as the article is sold as candy rather than sugar, and as an immense amount of maple, molasses, or syrup is sold without being manufactured into sugar, it is evident that the total production of sugar and syrup from maple sap reaches in value about 1,000,000 dollars annually. Over 3,600,000 trees were tapped to produce 7,500,000 pounds of sugar, indicating an average production of about two pounds per tree per season. In this connection it is interesting to note that Brigade-Surgeon AITCHISON, who was much interested in the introduction of the sugar maple into Kashmir, applied to Kew for assistance in obtaining a supply of seed, and after some difficulty it was supplied to him. Numerous interesting notes on economic plants have appeared in the *Kew Bulletin*, besides those already referred to, notably on the distribution and collection of Siam benzoin. In these notes, however interesting though they be in regard to the details of the benzoin trade, no light has yet been thrown on the botanical origin of the plant furnishing this particular kind of resin. Under the name of "Shulang," a Chinese species of *Dioscorea* has been known as furnishing a root used in Formosa for dyeing and tanning

fishing nets. The plant occurs plentifully in the mountains, whence the roots are brought down to the coast. This plant has been described by OLIVER as *Dioscorea rhipogonoides*. Dr. HENRY says that the French in Tonkin know it as "faux gambier." In Pakhoi it is extensively used for dyeing coarse native cotton cloth and fishing nets a dark tan colour; a large trade appears to be carried on in different parts of China in this peculiar root. One of the most important contributions to the history and botany of useful plants is that on the "Vanillas of Commerce," by Mr. R. A. ROLFE, of Kew. His work has established the importance of *Vanilla planifolia*, Andr., as furnishing the true Mexican vanilla of commerce: it has also proved that *V. pompona*, Schiede, is the source of the West Indian vanillons of commerce. While hoping that competent botanists may be induced to study other equally important plants concerning which doubts may yet exist, the work done in that direction during the year just passed cannot be looked upon as uninteresting or unimportant.

Chief amongst matters of interest to botanists during the past twelve months has been the completion of the 'Index Kewensis,' but the year has also been prolific in English class-books and text-books. It is gratifying to note that Professor GREEN'S 'Manual' has been well received. DARWIN'S 'Elements of Botany' and DARWIN and ACTON'S 'Practical Physiology of Plants,' POTTER'S translation of WARMING'S 'Systematic Botany,' and VINES' more advanced 'Text-book' are all commendable books, more or less in advance of previous English works. The study of the cellular cryptogams has been assisted by the publication of the fourth volume of G. MASSEE'S 'British Fungus Flora,' containing the Gymnoascaceæ, Hysteriaceæ, and Discomycetes; M. C. COOKE'S 'Introduction to the Study of Fungi,' and G. MURRAY'S 'Introduction to the Study of Seaweeds.' WILLIAMSON and SCOTT'S 'Further Observations on the Organisation of the Plants of the Coal Measures' is an important contribution to fossil botany. Count SOLMS-LAUBACH has paid a splendid tribute to the value of WILLIAMSON'S discoveries, especially in relation to the secondary formation of wood from a cambium in the Archegoniata. The publication of F. F. BLACKMAN'S interesting researches on vegetable assimilation and respiration is one of the most important events connected with physiological botany. EDMOND GAIN'S articles entitled "Rôle physiologique de l'eau dans la végétation," and GASTON BONNIER'S "Adaptation des plantes au climat alpin," are also of more than ordinary interest. The chemistry of plant-life has been enriched by CROSS and BEVAN'S book on cellulose, and its practical applications. CORDEMOY'S "Flore de l'île de la Réunion," and BAUR'S articles on the Galapagos group are highly interesting contributions to geographical botany. The foregoing is by no means an exhaustive account of the botanical activity of 1895. Indeed, it is a mere glance at some of the more prominent pieces of work, which means that things, especially among foreign publications, equally important have not been mentioned.

Pharmacopœia Revision. The approaching revision of the British Pharmacopœia caused additional interest to be centred on the annual report presented by Professor ATTFIELD to the Pharmacopœia Committee of the General Medical Council. In this report—the ninth of the series—a large amount of critical and suggestive work was embodied. In regard to general principle, the opinion was expressed that

many of the suggestions put forward on the maintenance of the value of the Pharmacopœia as a student's manual have a too extreme tendency. Considerable attention was devoted to detailed suggestions of standardisation of the official preparations of belladonna, conium, hyoscyamus, ipecacuanha, jalap, nux vomica, opium, stramonium, cinchona, and the tinctures generally, specific suggestions being made in order to secure definite proportions of the active principles, although it was at the same time pointed out that the application of these methods would be only a partial advance to the required ends. In regard to nomenclature, reference was made to INCE'S suggestion that words at present regarded as indeclinable should follow the ordinary rules.

At the beginning of the year several articles were published in the *British Medical Journal*, written by Professors LEECH, WHITLA, and CASH, Drs. STOCKMAN and LAUDER BRUNTON, Professors DUNSTAN and GREEN, Messrs. DAVID HOWARD and KIRKBY. Some of these attracted a considerable amount of criticism at the hands of pharmaceutical writers, and it was made apparent that a considerable conflict of opinion exists amongst medical men as to what is desirable in the way of pharmacopœial revision. In this work of suggestion and criticism several of the local associations have been particularly prominent, and a bare enumeration of the papers would occupy considerable space. MARTINDALE opened a discussion at a meeting of the Western Chemists' Association of London, in which, after expressing himself strongly in favour of the official adoption of the metric system only of weights and measures, detailed reference was made to the preparations and suggestions for deletion and addition. The evening meetings in Edinburgh have been particularly productive of sound work, several evenings being devoted to the reading and discussion of papers, in which prominent medical men took a share. DOTT expressed himself in favour of the general omission of detailed processes for the preparation of chemical compounds. He considered that the inclusion and accurate description of such substances as milk, cotton-wool, copper, iron, etc., was quite unnecessary, and that they should at any rate be relegated to a schedule by themselves. On the same occasion he detailed his suggestions, and subsequently published a further communication on the subject in the pages of the *Pharmaceutical Journal*.

MABEN has contributed a reply to the criticisms which had been previously published in the *British Medical Journal* by WHITLA, CASH, STOCKMAN, LEECH, and LAUDER BRUNTON, expressing the opinion that they had been productive of few valuable suggestions. He also deprecated the tendency shown to belittle the work done by the Editor of the Pharmacopœia. STEPHENSON dealt with pharmacopœial processes, COULL urged that pharmacists had a right to co-operate with medical men in the revision of the Pharmacopœia, and after a criticism of Dr. LAUDER BRUNTON'S remarks, noticed in detail several of the official preparations. BOA, in discussing the ointments, spoke with disfavour of the proposal to establish one common basis, lest there should be a suspicion of sacrificing efficiency to uniformity. He also reiterated his previous statement that the pharmacopœial directions of stirring till cold are in many cases unnecessary, and sometimes objectionable. LYON dealt with infusions in detail, FRASER with pills, and SWAN with extracts. GLASS suggested, as a ready method for the preparation of aromatic waters, maceration in hot water with occasional

agitation and filtration when cold through a double fold of filtering paper. This process, which was recommended in 1874 in the *American Journal of Pharmacy*, has given excellent results with all the pharmacopœial waters, except cherry laurel and elder flower. DEY insisted upon the necessity for the adoption of characters and tests of linseed meal. LYON read a communication on smaller-sized pharmacopœial pills, in which the views previously expressed by STOCKMAN were embodied. In this it was shown there were many instances in which the active principle of the drug could be advantageously substituted for the drug itself, such as aloin for aloes. Ordinary excipients were found to be unsuitable as a rule, the best results being obtained by using a modification of glycerin of tragacanth, in which the proportion of glycerin was increased 25 per cent. SYMES, in a paper read before the Liverpool Chemists' Association, expressed the opinion that more harm is likely to be done by curtailing the materia medica than by retaining or adding preparations which to some may seem superfluous. DUTTON contributed a series of notes upon official preparations, suggested by work at the dispensing counter.

MITCHELL, in discussing the ointments, alluded to the indiscriminate use of paraffin bases in the present edition. In addition to the foregoing, communications were read at the Glasgow and West of Scotland Pharmaceutical Association, the scope of which was too comprehensive to allow of more than bare mention, viz., "Laboratory Notes and Suggestions for the Revised Pharmacopœia," by DUNLOP, an extensive series of notes on the same subject, by LUNAN, and the laboratory notes of BRODIE, which contain a considerable amount of information worthy of consideration, especially with reference to tinctures and infusions. The suggestion made by ABRAHAM in the course of a paper read before the Liverpool Chemists' Association, that all the preparations of each drug should be arranged alphabetically under the name of that drug, seem to be especially worthy of consideration. NAYLOR, in discussing pharmacopœial revision from the point of view of a pharmacist, combatted the arguments advanced by BUNTON in favour of embodying information which would change it into a prescriber's manual pure and simple, and briefly detailed the lines to be followed in order to effect improvement. LANGFORD SYMES has discussed the extended official recognition of animal oils, and advocated the use of goose-grease as a basis for liniments and soft ointments.

Pharmaceutical Work.

At an evening meeting in London ELBORNE described an automatic process for the preparation of medicated waters, with especial reference to those of chloroform, lime, and peppermint, based upon the Pharmacopœia process for camphor water. CRIPPS has summarised the results of previous workers on the alkaloidal strength of belladonna root and leaves, and suggested formulæ for standardised preparations of the former, taking a strong liquid extract prepared by repercolation as a basis. The deletion of the succus on the ground of its variability was recommended, but it was thought advisable to retain the green extract for the present. B. S. PROCTOR contributed a ready test for ascertaining the purity of beeswax, as well as useful notes on the preparation of mercurial ointment and approximate determination of tannin. The Pharmacopœia test for pepsin was discussed by MOFFAT, who recommended

that the official standard should be raised to five times the present strength, and also that a more detailed account should be given of the method of carrying out the assay. The opinions advanced by HARDING on the subject of pepsin testing were remarkable, as being contrary to all preconceived notions. He stated that the real proteolytic action of pepsin was but very small, the proportion of albumin dissolved in the process of assay being almost entirely due to its solubility in diluted hydrochloric acid alone. These statements were controverted by MOFFAT, who found that only 3 per cent. of albumin is dissolved by acidulated water under the most favourable conditions, and none whatever when the proportion is small. CRIPPS, after summarising the results published at various times by investigators of ipecacuanha, with special reference to those of PAUL and COWNLEY, recommended the official recognition of Brazilian root only, which, when assayed by LYON'S process, yielded between 2.0 and 2.5 per cent. of the total alkaloids. In addition, it was suggested that the methods at present official for the preparations should be retained, except that a weaker acid be used for extraction in the case of the wine, the dry extract of which should be assayed, so that the finished product may have an alkaloidal strength of 0.1 per cent. The same author has drawn attention to the use of repercolation in official pharmacy, with special reference to liquid extracts, and his results confirm those of SQUIBB, INGLIS CLARK, and BIRD as to the general advantages of the process over those entailing evaporation.

LOMULLER, after experimenting with various excipients from the preparation of glycerin ovules and suppositories, has decided in favour of agar-agar, but his method has recently been subjected to much criticism. MARTINDALE, in a paper read at an evening meeting in London, advocated the adoption for infusions and decoctions of a uniform strength of 1 in 20 with certain exceptions, and suggested that the time occupied in their preparation might in most cases be considerably reduced. His experiments showed that the latter condition only slightly reduced the proportion of extractive. In the discussion which followed, ATFIELD alluded to the probability of the introduction into the new Pharmacopœia of a class of preparations to represent the so-called "concreted infusions," and expressed a preference for their classification under the name of "essence," but this term was subsequently objected to by HALLAWAY as likely to lead to confusion with other preparations which will readily suggest themselves. KILIANI has continued his investigation of the glucosidal constituents of foxglove leaves and seed with satisfactory results. Starting with the substance prepared by MERCK from the seeds under the name of *digitalium pur.*, a process has been devised for the preparation of the glucoside digitalin in a state of purity. It has also been shown that the leaves contain a mixture of glucosides altogether different from those of the seeds, and amongst them a substance to which the name β -digitoxin has been applied by KILIANI on account of its close resemblance to the digitoxin prepared by SCHMIEDEBERG. In spite of the work of KILIANI and SCHMIEDEBERG, much remains to be done in the investigation of the active principle of this drug. GUNN has drawn attention to the presence of a fluorescent constituent in calumba root which he does not consider due to any body which has yet been isolated. An interesting summary of the views which have been entertained as the etymology of the substance at present designated

officially under the name of creosotum has been published by J. INCE, who shows clearly that creosotum (creosote) is the only correct form in accordance with its Greek construction. Articles supplementary to that published last year on "The Early History of Phosphorus," giving an historical account of the introduction of phosphorus and its compounds into pharmacy, have demonstrated the important position now occupied by preparations of this class. The requirements of elegant pharmacy have also received due attention. STANWOOD has advocated the use of tablets in preference to pills, capsules, and powders, and in an exhaustive account of the preparation of compressed tablets, published in this Journal, full details were given of the apparatus required, as well as hints on the manipulation necessary in special cases.

COWIE has recommended a 20 per cent. proof spirit tincture of elderberry pericarps as an indicator for the determination of acids, the end reaction being sharp and unmistakable. A method of preparing small quantities of aromatic waters was described by SAGE, suitable for the requirements of the retail pharmacist. GUNN has devised a laboratory filter on the principle of a syphon, which was originally intended to minimise oxidation, and has also been found useful in dealing with liquids which went indifferently through flannel and twill, and absolutely refused to go through paper. Essential oils were dealt with by J. C. UMNEY, who in a lengthy paper described in detail their chemical and physical properties as met with in commerce, and threw out suggestions in the way of descriptions, characters, and tests which he considered should be embodied in the pharmacopœial descriptions.

BARCLAY, after determining the amount of extractive in tinctures which have been kept for some time, finds that if stored under normal conditions for a reasonable length of time, there is no serious loss. He has also re-directed attention to well-known variability in the ash of kamala, and the difficulty in obtaining a sample answering the requirements of the Pharmacopœia. LIVERSEEGE, after investigating methods of analysis of sal volatile, recommends a modification of GRAVILL'S process for the determination of the ammonium carbonate, in preference to that described in the Pharmacopœia, which has proved very unsatisfactory. The keeping properties of spiritus ætheris nitrosi have received further attention, and W. SMITH—after an examination of thirteen samples obtained from retail pharmacists, when only six were above the minimum pharmacopœial requirements—reiterates the statement that this preparation should either be deleted from the Pharmacopœia or be preserved by some better menstruum than rectified spirit. BOA has objected to the official formula for belladonna plaster on the ground of excessive softness and want of adhesiveness, and suggests a reduction of strength to 1 in 10, and the use of more resin. HENRY has proposed various combinations of cod-liver oil, both alone and in combination with malt extract, or eucalyptus oil, as suitable for official recognition, and he has also devised a formula for castor oil emulsion to take the place of the official mistura.

H. WYATT, JUN., has directed attention to the presence of a blue aniline dye in a sample of crystallised sugar, and contributed a useful note on the preparation of suppositories. The same author recommends the use of an alkaline cyanide in place of the hydrocyanic acid in the tincture of chloroform and morphine of the Pharmacopœia, in order to prevent the formation of the heavy deposit which forms on standing.

HORNBLLOWER read a note on the solvent action of pepsin on albumin without heat. WALKER, in recording his experience of the use of Irish moss as an emulsifying agent, has reported in favourable terms of its use.

British Pharmaceutical Conference. The Conference at Bournemouth was an exceptionally pleasant meeting, though not so well-attended as it deserved. The President, Mr. N. H. MARTIN, distinguished his second year of office by an address as vigorous in character as that delivered at Oxford. It is doubtful, however, whether some of the principles he endeavoured to inculcate will ever find a ready response from British pharmacists as a class. To entirely eliminate trade from the practice of pharmacy would be to put an end to pharmacy as a separate profession. At the same time, even the extreme views propounded by Mr. MARTIN may prove of ultimate value in determining the true position of the craft. The papers read at the meeting came up to the usual standard, and were disposed of in good time; the excursions, etc., were exceptionally enjoyable; and the hospitality of the local pharmacists was boundless. The affairs of the Conference appear to be in a somewhat critical condition at the present time, but whatever developments may take place, the members will doubtless be unwilling, and wisely so, to forego their annual picnic. The social side of pharmacy requires frequent attention no less than its political and scientific aspects, and it would be a matter for serious regret were these annual holiday meetings to be discontinued. As a means of recording the results of scientific and technical investigations, it may perhaps be thought that they are somewhat superfluous, but no such argument can be maintained with regard to the social character of the meetings.

Death Roll of the Year. The most distinguished names in the list of those deceased during the past year are undoubtedly those of T. H. HUXLEY, LOTHAR MEYER, Dr. HUGH CLEGHORN, and LOUIS PASTEUR, the last two being Honorary Members of the Pharmaceutical Society. To these must be added Sir GEORGE BUCHANAN, Sir W. S. SAVORY, Sir JOHN TOMES, Dr. HACK TUKE, M. DUJARDIN BEAUMETZ, KARL VOGT, MILES H. SMITH, H. HELLRIEGEL, and Professor BAILLON. ANDREW FERREIN, of Moscow, Dr. RICHARD GODEFFROY, of Vienna, and Professor JEAN EDOUARD BOMMER of Brussels, were Corresponding Members of the Pharmaceutical Society; R. O. FITCH, of Hackney, was a divisional secretary; J. B. MERRIKIN and R. PARKINSON, were formerly local secretaries for Bath and Liverpool respectively. W. GUNN, of Duns; W. B. CORDLEY, of Colchester; A. SEATH, of Dunfermline; and R. GRIFFITH, of Slough, were acting local secretaries. W. DARLING, of Manchester, was a founder; G. DUDGEON, of Nottingham, was a life member, and left a legacy of five hundred pounds to the Benevolent Fund; and J. S. LINFORD, of Hull, another life member, was formerly an examiner. Other old members of the Society who have departed were JOHN BLAND, of London; EDWARD TAYLOR, of Rochdale; A. J. CALEY, of Norwich, and J. W. FORBES, of Bolton, a well-known figure at the Conference Meetings. S. M. BURROUGHS was a generous donor to the Benevolent Fund, and amongst other deceased wholesale traders are W. H. PEAT, of London; W. H. SCHIEFFELIN, of New York; C. SARG, of Vienna; W. MATHER, of Manchester; and MORITZ ZIMMERMANN, of London.

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EDUCATION AND RESEARCH.

IN the January number of *Science Progress*, Dr. ARMSTRONG repeats the story of the manner in which the manufacture of aniline colours has now largely been transferred to Germany, though the first of the colours was discovered in England by PERKINS. British policy, he points out, is the precise reverse of that followed in Germany, as manufacturers in this country generally do not know what the word "research" means. They place their business under the control of practical but untrained men, who are too often and necessarily unprogressive; and such men, as a rule, actually resent the introduction into the works of scientifically-trained assistants. As a result there is no demand in Great Britain for men who have been carefully trained as investigators, and such people are only born and grow spontaneously, the schools not seriously attempting to train investigators. "If the English nation is to do even its fair share of the work of the world in the future its attitude must be entirely changed—it must realise that steam and electricity have brought about a complete revolution, that the application of scientific principles and methods is becoming so universal elsewhere that all here who wish to succeed must adopt them, and therefore understand them. It rests with our schools to make the change possible. English boys and girls at the present day are the victims of excessive lesson learning, and are also falling a prey in increasing numbers year by year to the examination demon, which threatens to become by far the most ruthless monster the world has ever known either in fact or in fable." In the great majority of cases, students fresh from school are said to have little if any power of helping themselves, little desire to learn about things, little if any observing power, and little desire to reason on what they see or are called on to witness. Moreover, the sweeping charge is made that such students are also destitute of the sense of accuracy, and are satisfied with any performance however slovenly, being neither inquisitive nor acquisitive, and too often idle as well, so that the opportunities offered to them are blindly sacrificed. As a remedy, it is urged that boys and girls at school must be taught from the very earliest moment "to do and appreciate." No facts must be taught without their use being taught simultaneously, and, as far as possible, students must be led to discover the facts for them-

selves. With regard to the existing competitive examination system, Dr. ARMSTRONG points out that it is not a likely one for "catching the potential Faraday," and that both Germany and Japan afford evidence that it is possible to prosper without it. China is the only country beside England that believes in the system, and "recent events do not encourage us to derive any consolation from that circumstance."

THE PROGRESS OF BACTERIOLOGY.

IN this subject there is nothing startling to chronicle during the past year. In morphology, JÖRGENSEN has published an investigation on the origin of wine yeasts, from which it would seem that the *Saccharomyces ellipsoideus*, associated with wine fermentation, is a peculiar development, brought about by natural conditions, of the *Dematium* or *Chalara*-like moulds which are always present on grapes. SOREL also (*Comp. rend.*, 1895, December 16) has by certain culture methods produced a yeast-like development from *Aspergillus orizae*. MARSHALL WARD (*Nature*, vol. 52, 1895, p. 658) has described a form which gave all the ordinary reactions of a bacterium on the usual culture media, but on cultivation under high powers it was found to be a minute oidial stage of a true fungus. ELSNER (*Zeitschr. f. Hyg.*, xxi., 1895) has devised a new culture medium, a potassium-iodide-potato-gelatin, for the isolation of the typhoid bacillus, by means of which he has been able to isolate the bacillus in fifteen out of seventeen cases. PETERS (*Brit. Med. Journ.*, 1895, vol. ii., p. 1557, Path. Soc.) has described the following varieties of the diphtheria bacillus: (1) Long Klebs-Löffler bacillus; (2) short diphtheria bacillus; (3) short pseudo-diphtheria bacillus. The latter is wide-spread and non-virulent, and he regards it as possibly being unconnected with the diphtheria bacillus, though closely resembling it.

The antitoxin treatment has not only not lost ground, but has been extended in several directions. A number of statistics are now available by which its efficacy in diphtheria may be gauged, and these have been ably analysed by WELCH (*John Hopkin's Hosp. Bull.*, vi., 1895, p. 97). The final result would seem to be that the mortality in diphtheria for all cases under antitoxin treatment is about 17 per cent., as against 29 per cent. the lowest, and 40 to 50 per cent. the highest previously recorded death rates.

Antitoxin is still the best mode of treatment in tetanus, and in some cases has produced remarkable amelioration in the symptoms. Its use as a vaccin or prophylactic has been advocated in veterinary practice by no less an authority than NOCARD. The latest development of the antitoxin treatment is in the direction of an anti-streptococcus serum for use in septic conditions and puerperal fever, and the reports up to date are most promising (*An. de l'Inst. Pasteur*, 1895, p. 615, Marmorek). The work of CALMETTE (*ib.* May, 1894, and April, 1895) on the preparation of an antidotal serum against snake venom has been confirmed and extended by FRASER (*Brit. Med. Journ.*, 1895, vol. i., p. 1309), who has given many additional details. In cancer, serum therapy by means of an anti-erysipelas serum has been advocated by EMMERICH and SCHOLL (*Deut. med. Woch.*, 1895, April 25) and by COLEY (*Med. Rec. N.Y.*, 1895, May 18), but so far it seems to have been useless. COLEY's method of treatment for sarcoma by means of a fluid containing the erysipelas and prodigious toxins seems to have gained ground, and COLEY states that he has cured eleven out of forty-

three cases by means of it (*Journ. Amer. Med. Assoc.*, 1895, ii., p. 131). At the end of last year SMIRNOW and also KRUGER independently made the important discovery that bacterial toxins could be converted into antitoxins by electrolysis, and SMIRNOW has employed this artificial antitoxin for treatment (*Berl. klin. Woch.*, 1895, Nos. 30, 31). The report of the Royal Commission on tuberculosis, published last April, contains some important conclusions, chief among which are the extremely virulent nature of the milk derived from a tuberculous udder, and the fact that ordinary cooking does not sterilise the centre of a joint unless it is under six pounds in weight.

THE SOCIETY'S LIBRARY AND MUSEUM.

THE steady growth of the Library in London has necessitated a further supply of shelf accommodation during the past year; by means of this supply the Librarian has been enabled to re-arrange certain portions of the Library, which, through overcrowding, had become inconvenient to work. Among the chief additions to the Library in the course of the year may be instanced the concluding volumes of the great Index-Catalogue of the Library of the United States Army Surgeon-General's Office, which extends to sixteen volumes of about 1000 pages each volume; Ladenburg's 'Handwörterbuch der Chemie,' in thirteen volumes; 'Index Kewensis,' in four parts, compiled at the expense of the late Charles Darwin, and prepared by Mr. Daydon Jackson under the direction of Sir Joseph Hooker; Kerner and Oliver's 'Natural History of Plants'; and Vines's 'Text-book of Botany.'

Of new books there may be noted Green's 'Manual of Botany'; a translation of Warming's 'Systematic Botany'; the third volume of Trimen's 'Handbook of the Flora of Ceylon,' with accompanying plates; the first published portion of Durand and Schinz's 'Conspectus Floræ Africae,' being the fifth volume; Griffith's 'Flora of Anglesey and Carnarvonshire'; the first and second parts of the second supplement to Wurtz's 'Dictionnaire de Chimie'; Sadtler and Trimble's 'Medical and Pharmaceutical Chemistry'; the second edition of Sadtler's 'Industrial Organic Chemistry'; parts 1 and 2 of Dammer's 'Chemische Technologie'; the third edition of Remington's 'Pharmacy'; the second edition of Coblentz's work on the same subject; Planchon and Collin's 'Drogues Simples'; Buchheister's 'Drogisten-Praxis'; and new editions of the 'Extra' and Norwegian Pharmacopœias. The circulation of books has been more than 2000, nearly equally divided between London and country borrowers; for the latter class the cost of carriage one way is defrayed by the Society, and the term of three weeks allowed for the retention of books, thereby approximating an equality of privilege with town borrowers, who have to collect and return books at their own charges, and are entitled to retain the volume fourteen days only. A slight decrease is found in the number of signatures of readers attending the Library, the numbers for the year being about 4200 during the day, and nearly 1500 in the evening hours.

The circulation of books from the Edinburgh Library is increasing, upwards of 1400 volumes having been sent out last year, as compared with 1300 issued in 1894. Various new books have been added, amongst them being Green's and Vines's works on botany, and Kerner and Oliver's 'Natural History of Plants.' Several atlases of the micro-

scopic structure of plants, and some valuable works in organic chemistry, have also been placed on the shelves. The Library has been increasingly taken advantage of for reference. A detailed plan for the fitting up of the old boardroom as a library has been prepared for the approval of the Council, and it is expected that the work will be proceeded with in the course of the year just begun.

The donations to the Museum of the Society during 1895 consisted of 183 specimens of drugs, and 1771 specimens of dried medicinal plants, chiefly North American and Australian, the latter including a large number of species of eucalyptus. A descriptive report of the donations received during the year 1893-94 has recently been issued in the form of a pamphlet of 105 pages.

SCHOOL OF PHARMACY.

THE School of Pharmacy is at the present time in a very flourishing condition. The number of students attending the lectures and demonstrations is much larger than has been the case for many years past, in the Laboratory of Practical Chemistry the demand for places having been especially great. As has been pointed out on numerous occasions, the establishment of a school where those who have entered upon the calling of pharmacy should be properly instructed in the arts and sciences necessary for practising that calling in an efficient manner, was one of the principal objects that the founders of the Pharmaceutical Society had in view. It was, of course, never expected that the School would be large enough to accommodate all those who at any one time were engaged in study and preparing for examination, but it was intended that the School should be a model School where all that was necessary should be taught in the best way by teachers skilled in their respective subjects, and that the instruction given and the method of imparting it should keep pace with the progress of the times. It is matter of common knowledge that the Council of the Pharmaceutical Society have spared neither pains nor money in carrying out these objects. How well on the whole they have succeeded may be gathered from the increasing number of students attending the School, and from the very large proportion of those that present themselves for examination that are successful in satisfying the examiners. This success is the more noteworthy when it is considered how very limited is the time in which the course of instruction has to be gone through. On referring to the examination schedule officially issued, it is evident that both teachers and students must work very hard to go over a complete course for the Minor examination in about five and a half months, and then proceed immediately to a complete course for the Major examination lasting about another ten weeks. With the best intentions in the world it is clear that an average man cannot properly assimilate so much knowledge in so short a space of time. A much more satisfactory plan would be to have a two years' curriculum, one year being devoted to a course of study suitable for the Minor examination, and the second year to more advanced work. The two courses of instruction could very well exist side by side. At present all that can be done is to advise intending students to acquire as much knowledge as they possibly can before entering the School; and in order to assist them in such preliminary studies, the Society has issued a little pamphlet entitled "Advice to Students," which is sent gratis to all who apply for it to the Secretary and Registrar, Mr. RICHARD BREMRIDGE.

ANNOTATIONS.

WHAT IS WHITE WINE VINEGAR?—A fuller report of the case referred to in last week's *Supplement* appears in this week's issue (see page 18), the arguments for the defence being added. In a communication received from Mr. Jesse Boot, the statement is made that "Without question the sale of diluted acetic acid as white wine vinegar has been common in the trade, and a well-understood thing between buyer and seller." So far as the legitimate drug trade is concerned, this statement is not true, whatever custom may prevail outside. The further statements in the letter that the firm had given "very definite and positive instructions" that diluted acetic acid was not to be sold for white wine vinegar, and do not countenance the substitution in their shops, are sufficiently answered by the report of Mr. Whitwell's evidence. It is very satisfactory to note the attitude of the Stipendiary in the matter, both with regard to the responsibility of employers for the acts of their servants, and to the extra necessity for carefulness on the part of salesmen who are qualified chemists.

CHEMISTS' ASSISTANTS' ASSOCIATION.—A smoking concert will be held by the members of this Association at the Frascati Restaurant, Oxford Street, London, on Thursday, January 9. The chair will be taken at 8 p.m. by Professor Reynolds Green, Sc.D., F.R.S., Dean of the School of Pharmacy, and the vice-chair by Mr. C. B. Allen, Member of Council of the Pharmaceutical Society. Tickets (1s. each) may be obtained from Mr. T. Morley Taylor, 13, Queen's Terrace, St. John's Wood, N.W. Referring to the Cinderella dance recently held (see last week's *Supplement*, p. ii.), Mr. H. H. Robins points out that the number of tickets issued and dancers present was 150, and that Mr. C. W. Martin acted as M.C. The programme for the second half of the session includes papers on the action of certain drugs on the human eye, by Dr. Juler; the chemical training of pharmacists, by J. C. Evans, F.I.C.; nutrient preparations of beef, by A. W. Gerrard; British and foreign syrups, by Jos. Ince; and other interesting topics. There will also be the usual short papers by members, the annual dinner, a social evening, and another Cinderella dance, in addition to a visit to Idris and Co.'s factories.

GERMAN PHARMACY IN NEW YORK.—The official organ of the New York Deutscher Apotheker-Verein—the *Monatsblatt*, a monthly publication—has now ceased to represent the Society officially, but it will hereafter be issued independently, in the same manner and under the title: *Monatsblatt zur Förderung der Gesamtinteressen des pharmaceutischen Standes in den Vereinigten Staaten von Nord-Amerika*. The former publishers have assigned to the new proprietors, Messrs. A. Wortmann and R. A. Matter, all rights to existing contracts, subscriptions, etc., and ask their readers and collaborators to kindly transfer to the new firm all the favours and goodwill shown to the old concern.

THE SALE OF POISONS IN SCOTLAND.—Plain speaking seems to have been in favour at the meeting of the Glasgow chemists and druggists on Thursday last, and it is gratifying to learn that the proceedings were fully reported in the local press. There is no doubt that this is one of the best methods of educating the public to a sense of the care taken to protect it from the effects of the careless handling of poisons, and pharmacists in other places, but especially in other Scottish towns, should promptly follow the example set by their Glasgow brethren. A report of the proceedings at the meeting will be found on page 16.

MISUSE OF THE TITLE "CHEMIST."—Another instance of the too frequent misapplication of the title "chemist" was afforded by the *Bedfordshire Advertiser* for December 20, in the report of a case heard at the Luton County Court on the previous day. The defendant, T. Jackson, Hightown Road, Luton, who is not registered as a chemist and druggist, was sued for damages by a domestic servant, who alleged that she had been supplied from his shop with oxalic acid in mistake for Epsom salts. A boy of fourteen was sent for a quarter of a pound of Epsom salts and was served by Jackson, who maintained that he was asked for oxalic acid, which he supplied accordingly. The packet appears to have been properly labelled, but the plaintiff either could not or did not read the label, and swallowed a fourth of the contents of the packet dissolved in water. She realised at once that something was amiss, and emetics were administered in time to prevent a fatal result, though the girl was for some time in a dangerous condition. There was a conflict of evidence as to what the boy actually asked for, and judgment was given for the defendant, the judge observing that there was no doubt the boy was sent for Epsom salts, but it was not clear what he asked for. It is to be hoped that chemists and druggists in the neighbourhood of Luton will take steps to disclaim the connection of Jackson with themselves.

PRIZE FOR THE DISCOVERERS OF THE SERUM TREATMENT.—It can no longer be maintained that the study of experimental science does not conduce to pecuniary profit. Ramsay and Rayleigh have received large sums of money in the form of prizes for their work on "argon," and now the Albert Lévy prize has been awarded by the Academy of Medicine to Dr. Behring, of Berlin, and Dr. Roux, of Paris, for their investigations which have resulted in the serum treatment of diphtheria. The prize is worth two thousand pounds sterling—a fair reward for the introduction of a remedy which may yet prove generally inefficacious. For though it has already been fully assumed in certain quarters that the serum treatment effects the cure of diphtheria, the evidence is very contradictory, and definite proof is not yet forthcoming.

THE BOTANICAL SOURCES OF ESSENTIAL OILS.—Some little time ago a descriptive catalogue of essential oils and organic chemical preparations employed in perfumery, compiled by Dr. F. B. Power, was published in New York. This summarises the information contained in the half-yearly reports of Schimmel and Co., of Leipzig, up to the year 1894, the oils being classified alphabetically, according as they are official in the United States Pharmacopoeia or non-official. The botanical sources of the oils are stated, also their physical properties, uses, and, in many cases, the tests for purity. The organic chemical bodies form a separate chapter. It is to be regretted that the compiler has neglected to notice the occasional criticisms that have been published concerning the botanical sources of some of the oils. Thus, oil of costus is not obtained from *Costus speciosus*, but from *Aplotaxis auriculata* a Composite plant, whilst oil of cassia is erroneously stated to be distilled from an "undetermined" species of *Cinnamomum*, and oil of opoponax from *Opoponax chironium*. It would also have been an advantage if an attempt had been made to introduce a more definite terminology, by reserving the termination "one" for ketones, "al" for aldehydes, and "ol" for alcohols. Thus, carvol might have been written—carvone (carvol). This has been done in the case of salviol, which is now given as thujone. Making due allowance for these slight inaccuracies and deficiencies, the compilation should be found very useful for reference purposes by those interested in essential oils.

A NEW HEAVY LIQUID.—In the December number of the *American Journal of Science*, S. L. Penfield describes the preparation of a new heavy liquid obtained on mixing equal proportions of silver and thallium nitrates. On heating the mixture it fuses at 75° C., forming a clear mobile liquid of density 4.5. This mixes with water in all proportions, and can therefore be used to separate mineral particles of densities below 4.5. When still heavier particles have to be separated, the proportion of thallium may be increased. When the ratio is 3 : 4, the mixture fuses below 100° C. and has a density of about 4.7; at 2 : 4 the fusing point becomes 150° C., and the density 4.8; at 1 : 4 it is about 4.9, and fusion only takes place at 200°. Finally, when pure thallium nitrate is used, the point of fusion is 250° C., and the density closely approaches 5.

NEW JOURNALS OF PHARMACY AND CHEMISTRY.—America is to the fore with new pharmaceutical publications, of which that continent already produces more than any other. *Le Pharmacien Canadien*, edited by Edmond Giroux, jr., and published at 216, Rue Saint Laurent, Montreal, Canada, is a monthly review of practical pharmacy, containing also current news and professional notes. The *Southern Journal of Pharmacy and Materia Medica*, edited by Dr. R. C. Bicknell, and published at 309, North Market Street, Nashville, Tennessee, U.S.A., also appears monthly, as does, moreover, the *San Francisco and Pacific Druggist*, edited by W. A. Taylor, and published at 23, Second Street, San Francisco, U.S.A. The first number of a new French paper, the *Annales de Chimie Analytique*, edited by C. Crinon and published under the patronage of the *Syndicat Central des Chimistes et Essayeurs de France*, at 45, Rue Turenne, Paris, is dated January 1, 1896. The foreign subscription is twelve francs, and the paper will appear on the 1st and 15th of each month.

THE WORK OF THE PASTEUR INSTITUTE.—The report of the work done at the Institut Pasteur, Paris, during the third quarter of the past year shows that 382 persons were under treatment in July, August, and September, of whom 360 were French, and 22 foreigners. Fifteen individuals had been bitten by animals experimentally proved to be mad, and 137 by animals only suspected of being so. It is alleged that a boy under treatment at the Jassy branch actually recovered from an attack of hydrophobia, but this statement will probably be accepted with reserve.

NEW YEAR'S HONOURS.—The list of honours published on Wednesday, January 1, includes the names of Surgeon-General Sir Joseph Fayrer, K.C.S.I., M.D., LL.D., F.R.S., and Mr. Thomas Boord, F.S.A., of the firm of Boord and Son, upon whom baronetcies are conferred. Professor Joseph Prestwich, D.C.L., F.R.S., the distinguished geologist; Dr. Willoughby Wade, who was President of the British Medical Association at the Birmingham meeting; and Mr. Robert Martin Craven, F.R.C.S., of Hull, receive the honour of knighthood, and Mr. Harry Charles Fischer, Controller of the Central Telegraph Department of the General Post Office, is appointed C.M.G. The Poet-Laureateship has been conferred upon Mr. Alfred Austin, the appointment evoking considerable surprise in the daily press.

GLUCINUM FROM EMERALDS.—It is stated that H. N. Warren, of Liverpool, has recently extracted the glucinum from six pounds of emeralds. Stones of dull water, and of comparatively little value from the jeweller's point of view, were specially imported from various parts of the world; and, the reducing operation having been successfully performed, the metal was worked into various articles and sent to the Ameer of Afghanistan.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

MAJOR EXAMINATION QUESTIONS.

Monday, December 30, 1895.

A Paper.*

BOTANY AND MATERIA MEDICA.

Time allowed—10 a.m. to 1 p.m.

1. Describe the structure of the inflorescence and flower of any gramineous plant. Give a diagrammatic sketch of a section passing through the seed, showing the relation of the embryo to the endosperm.
2. A growing plant is placed in sunlight and a warm atmosphere until its leaves show signs of withering; it is then transferred to a very moist atmosphere. Explain any change which would take place in the appearance of the plant.
3. Compare the structures in which spores are produced in a fern, a moss, and a horsetail.
4. Give the botanical name and natural order of the plants from which the following preparations are obtained: Kola Nut, Cubebs, Catechu, Gamboge, Croton Oil. Mention the distinguishing features which will enable you to identify the above substances. What is the active constituent of each?
5. What official preparations are obtained from plants of the natural order Rhamnaceæ? Give a full account of one of them, mentioning the part of the plant from which it is obtained, and briefly describe the mode of its preparation.

A Paper.*

PRACTICAL BOTANY AND MATERIA MEDICA.

Time allowed—2 to 5 p.m.

1. Describe in botanical language the plant provided, taking its parts when present in the following order:—
Root, stem, leaves, inflorescence, flower, fruit, seed.
2. Make not more than two microscopical preparations illustrating the structure of A. Leave with your slides explanatory sketches for examination. What is A?
3. Prepare a section of the drug B. Identify it, sketch, and briefly describe your preparation. Call attention to any characteristic features which it presents. Examine it micro-chemically for the active principle it yields. Show in your drawing where this occurs.

B Paper.*

BOTANY AND MATERIA MEDICA.

Time allowed—2 to 5 p.m.

1. Describe the structure of the inflorescence and flower of any ligulate composite plant. Give a concise account of the arrangements in the flower which tend to secure cross-fertilisation.
2. A leaf is detached from a green plant which has been growing in sunlight. Both leaf and plant are placed in the dark for twelve hours. At the end of that time the detached leaf is found to contain an abundance of starch, but the leaves on the plant have little or no starch in them. Explain these facts and mention what test you would apply in searching for starch.
3. Compare the gametophyte (sexual generation) of a vascular Cryptogam with that of a flowering plant.
4. Give the botanical name and natural order of the plants from which the following preparations are obtained:—
Liquorice, Calabar Bean, Gum Arabic, Bear-berry, Wintergreen Oil.
What is the active principle in Calabar bean? In what proportion does it exist? How would you isolate and identify it?
5. What official preparations are obtained from plants of the natural order Malvaceæ? Give a full account of one of them, mentioning the part of the plant from which it is obtained, and briefly describe the mode of its preparation.

* Part of the candidates received the papers A, A, and the remainder had the papers B, B.

B Paper.*

PRACTICAL BOTANY AND MATERIA MEDICA.

Time allowed—10 a.m. to 1 p.m.

1. Describe in botanical language the plant provided, taking its parts when present in the following order:—

Root, stem, leaves, inflorescence, flower, fruit, seed.

2. Make not more than two microscopical preparations illustrating the structure of C. Leave with your slides explanatory sketches for examination. What is C?

3. Prepare a section of the drug D. Identify it, sketch, and briefly describe your preparation. Call attention to any characteristic features which it presents. Examine it micro-chemically for the active principle it yields. Show in your drawing where this occurs.

Tuesday, December 31, 1895.

CHEMISTRY.

Time allowed—10 a.m. to 1 p.m.

[Six Questions only are to be attempted.]

1. What is osmotic pressure, and how can its measurement be applied to the determination of molecular weight?

2. State and explain the laws which have been found to govern the solubility of gases in water, and account for the fact that the air which is dissolved in water contains two volumes of nitrogen to one volume of oxygen.

3. Describe fully how you would propose to quantitatively determine the calcium and phosphoric acid respectively in a specimen of bone-ash. Indicate also the principles on which the analytical process is based.

4. What is the source and mode of manufacture of arsenious anhydride? Compare the modes of preparation and properties of the several oxides and oxy-acids of arsenic and phosphorus.

5. What are Fehling's and Pavy's solutions? For what purpose, and how, are they employed, and what precautions must be observed in using them if accurate results are to be obtained?

6. How can acetylene be now obtained in large quantities? Indicate how ethyl alcohol and benzene can be respectively obtained from acetylene?

7. What is mannite? Explain fully how it is related to dextrose and lævulose respectively.

8. How would you propose to obtain phenol and mono-chlor-benzene respectively from aniline?

9. How are lactic and butyric acids commonly obtained from sugar?

PHYSICS.

Time allowed—2 to 5 p.m.

[Six Questions only are to be attempted.]

1. Describe the construction and use of the hydrometer, and show how the principle of the instrument is connected with that involved in the usual method for determining the densities of solids.

2. Describe methods for determining the relative illuminating powers of two flames, and explain the principle on which such methods depend.

3. Give some examples of the influence of light in promoting chemical change.

4. Give an account of some experiments illustrating electric induction. How can the gold leaf electroscope be used for the purpose?

5. What is the mode of action of the electrophorus?

6. What is the meaning of the terms "absolute expansion" and "apparent expansion of a liquid?" How has the absolute expansion of mercury been determined?

7. What is meant by the term "unit of heat?" Describe an experiment in which units of heat are measured.

8. A steel tool that has been used in a lathe for turning metals will frequently attract iron filings: what is the cause of this? Can a steel bar be magnetised without the use of artificial magnets or of an electric current?

9. What is meant by magnetic lines of force? Describe experiments indicating their existence in the case of a bar magnet and also in the case of one with consequent poles.

* Part of the candidates received the papers A, A, and the remainder had the papers B, B.

PROCEEDINGS OF SOCIETIES.

LIVERPOOL CHEMISTS' ASSOCIATION.—At the meeting of this Society on Thursday, December 19, Messrs. E. Dowzard and Donald Cameron and Professor Harvey-Gibson, of University College, were elected members.

Mr. T. H. Wardleworth exhibited some of the false white horehound shown by Mr. E. M. Holmes, F.L.S., Curator of the Pharmaceutical Society's Museum, at the evening meeting held in London on December 11, and identified by him as the *Marrubium candidissimum*. The following paper was then read:—

"Note on Blaud's Pills," by R. C. Cowley, Ph.Ch.

Such an amount of literature already exists on the subject of Blaud's pills, that I must almost apologise to this meeting for bringing to its notice such a well-worn theme. However, it is not my purpose to deal with the many and various methods, good, bad, and indifferent, of making these pills, nor yet to discuss the somewhat nice point as to whether the chemical reaction of their ingredients should take place before or after the pills reach the patient's stomach, but rather to place before you a few facts relative to the quantity of ferrous carbonate present in ordinary commercial specimens, such as are now being retailed at extremely low rates. With this purpose I obtained recently in all about thirteen specimens, several of which are being pushed amongst medical men as having peculiar advantages not possessed by the pills of other manufacturers. Tabulated below is the result of my analysis, the ferrous iron being all calculated as carbonate. The apparent low quantity of carbonate in No. 4 is due to the small amount of ferrous sulphate used in making it, for the dried sulphate had been used from the formula published on the package, and bicarbonate of sodium instead of carbonate of potash. Doubtless the dried sulphate was deficient in ferrous salt from over-heating in its preparation.

No. 7 represents a four-grain pill; a five-grain pill of the same strength would be equal to .956 grain of FeCO₃.

In each pill.	FeCO ₃ present.	When made.
No.	Grains.	
1.....	1.946	Fresh.
2.....	1.253	6 months old.
3.....	1.079	3 " "
4.....	.698	New stock.
5.....	1.692	9-12 months old.
6.....	1.409	18 " "
7.....	.765	12 " "
8.....	1.017	6 weeks "
9.....	1.047	12 months "
10.....	1.163	10 " "
11.....	.905	Fresh.
12.....	.785	2 years "
13.....	.898	A few months "

It will be observed from this table that many of the Blaud's pills on the market are stronger than the Pharmacopœia demands, a serious objection. The quantity of ferrous carbonate there stated is about 1 grain in each pill.

Mr. Conroy said he should like to ask Mr. Cowley how it happened that in sample No. 4 more ferrous carbonate was found than would be yielded by the amount of sulphate of iron used. The point was not very clear to him. Mr. Cowley's paper was useful from its showing that Blaud's pills of commerce if they erred at all, erred on the side of being above the B.P. requirements, still the amount of FeCO₃ in the first sample was quite abnormal, being double that of the official pill—a very serious error, and one quite inadmissible in his opinion.

Mr. Mitchell asked if Mr. Cowley had tested the solubility of the coatings on the pills he examined, for in his experience this varied considerably. His method was to place the pill in an acidulated weak solution of pepsin contained in a test tube and kept at about 93° F., shaking from time to time, and noting the length of time taken to entirely dissolve the coating.

Mr. P. H. Marsden expressed an opinion that the coating might have an influence on the result of the iron determination, and wished to ascertain if there was a method by which the coating could be effectually removed before the determination was proceeded with. He had examined Blaud's pills, and, as far as his memory served him, he got an average result of about 20 per cent. of ferrous salt.

Mr. Conroy assured Mr. Marsden that the coating had little or no effect on the determination. His method was to take ten pills, so as to get a fair average sample and to have plenty of material to work upon, dissolve them with a little acid, and then determine the ferrous iron in the usual way. The action of the stomach, he would remind Mr. Mitchell, was by no means to be represented by a test tube containing an acid liquid at the temperature of the body. There was mechanical action of a very effective nature always going on, for which the test tube offered no equivalent.

Mr. T. F. Abraham thought it a pity Mr. Cowley had not determined the total iron, both ferrous and ferric, present in the pills, as then one would have known whether the proper amount had been used in their manufacture. It was just as wrong to exceed the B.P. requirements as to be below them, and from the particulars given by Mr. Cowley there were several of the samples examined far in excess of the proper content of ferrous salt. An encouraging point, as pharmacists would admit, was that the pills made by the dispenser from the B.P. form had turned out so satisfactory.

Mr. Cowley then replied to Mr. Conroy's criticism, saying his meaning was perhaps not very clear as regarded sample No. 4. What he intended was that .698 grs. of FeCO_3 was more than the amount of FeSO_4 in the formula published on the package would yield, so that the dried sulphate had most certainly been used, though the makers did not say so. He had not determined the total iron nor had he timed the solubility of the various coatings.

Mr. Harold Wyatt, Jun., wished to draw the attention of the members, whilst Bland's pills were under their notice, to a formula published in the *Pharmaceutical Journal* of November 30 from *Il Bollettino Farmaceutico*, of Milan, by Signor Ravà, a Doctor of Pharmacy of Parma. A sample of the pill mass produced by the formula was passed round, and excited considerable interest from its light colour and evidence of containing the maximum amount of ferrous carbonate in its true, nearly white, and unoxidised condition. This was the result, Mr. Wyatt thought, of using bicarbonate of sodium, the CO_2 given off during the reaction acting as a protection to the ferrous carbonate.

The next communication was a—

"Note on Vinegar," by R. C. Cowley, Ph.Ch.

In the Pharmacopœia, vinegar is described as a brown coloured liquid with a peculiar odour, specific gravity 1.017 to 1.019. After the addition of ten minims of solution of barium chloride and filtration, a further addition of BaCl_2 solution should cause no precipitate. No change of colour is caused by H_2S . At a previous meeting I remarked that I should be sorry to see a standard given for vinegar in the Pharmacopœia attainable by but few commercial specimens, and observing that of late in the discussions relative to the new Pharmacopœia and its contents many persons advise the deletion of vinegar from its pages. I thought it might be interesting to get to know something about the commercial article. I accordingly obtained from various retailers twelve samples of vinegar, subjected them to the B.P. tests, and also determined the extractive matter dried on a water bath. The extractive yielded is important, as it

Sample.	Acid per cent.	Extractive at 212° F. per cent.	Specific gravity.	Sulphates.
A	4.78	2.13	1.015	Faint trace.
B	5.09	2.47	1.016	Did not exceed B.P. quantity.
C	4.08	2.69	1.017	Traces.
D	5.19	3.17	1.019	Not in excess of B.P. quantity.
E	2.47	1.77	1.011	Traces.
F	2.29	.46	1.005	Nil.
G	4.009	2.26	1.014	Traces.
H	4.87	2.10	1.016	Traces.
I	4.13	2.86	1.017	Traces.
K	4.26	1.71	1.013	Not exceeding B.P. limit.
L	4.206	2.55	1.015	Traces.
M	4.25	1.36	1.011	Trace.

enables one to judge whether the vinegar under examination is what it professes to be, or whether it is only dilute acetic acid.

Not one of the specimens reached the B.P. standard, but only one could be regarded as a "doctored acetic acid." This specimen was

not obtained from a pharmacist; still, the best of the series was not either, if that be consoling to pharmacists generally.

The question naturally arises, is vinegar a food or a drug? From its being contained in the Pharmacopœia it undoubtedly is a drug, and as such is used in certain pharmaceutical operations, therefore it behoves every pharmacist to strive to attain, as regards vinegar, the standard demanded by the Pharmacopœia.

In the discussion which ensued, the President said that from the sources of Mr. Cowley's samples one could not be altogether surprised at the general result. That vinegar was both a drug and a food within the meaning of the Act he for one was certain.

Mr. Conroy did not think that the specific gravity of a sample was a very safe guide as to its being a good vinegar or not, for the gravity was so easily altered and manipulated by the addition of glucose, etc. The general characters and reactions, coupled with an intelligent reading of their purport, were the only safe and reliable data from which to judge a sample.

Mr. E. Davies, F.C.S., F.I.C., speaking as an analyst, would welcome a definite and authoritative standard by which to judge vinegars. Mr. Cowley's results were fairly satisfactory except the last sample, which was undoubtedly not vinegar.

The succeeding lecture on "Some Relations of Pharmacy to Mythology," by Mr. Edward Cox, was an interesting and learned description, illustrated in many instances by drawings of antiquarian relics mostly existing in the Chester Museum of the general analogy between mythology and pharmacy. The origins of mythology, human and pantheistic, the connection of Nature's powers and products with mythological ideas, such as those dealing with life and immortality, in which alcohol in the form of wine played a great and important part, were gone into. Various ancient theories were discussed relative to the proper use of resins, gums, etc., and their action when burnt in producing sleep or unconsciousness, or a species of inebriation in which the person affected was held to become endowed with prophetic power, the Sibyls being given as examples of this form of excitement. The part played by gems and precious stones, as well as certain parts of animals, in mythology was the reason of their introduction into medicine. These the lecturer rapidly surveyed, mentioning the decadence of medical knowledge during the Renaissance, and concluding by describing minutely the various flint implements, stone altars, and sketches of other curiosities, which contributed not a little to make his remarks a highly pleasing and uncommon intellectual treat, at the close of which a cordial vote of thanks was passed to the lecturer.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION.—At the fortnightly meeting of this Association, held on Thursday, December 26, Mr. W. L. Currie, Dowanhill, presiding, a discussion took place regarding the administration of the poison laws in Scotland, and the animadversions made upon the Pharmaceutical Society by High Court and Sheriff Court Judges were strongly denounced.

The subject was introduced by Mr. D. Watson, who, in the course of a paper on the "Poison Laws," said it behoved every registered chemist, not only as a public duty, but in the general interest of the craft, to see that all the statutory obligations imposed upon the chemist were carried out faithfully. If that had been done during the last twenty-five years the trade would have been in a better position to-day, and they would not hear those remarks so often made by sheriffs, who had no sympathy with the provisions of the Pharmacy Acts. The judges would not have been in such darkness about the laws regulating pharmacy, and would have shown by this time that it was their duty to carry out the Pharmacy Acts. Recent decisions obtained in their favour in the highest Courts by the Pharmaceutical Society, although legal, were evidently not popular, judging from the remarks made by the judges in several important decisions. Trade protection pure and simple and the prohibition of company pharmacies were scarcely possible at present with such unfriendly expressions of opinion from the Bench. The public mind must be educated, and every opportunity seized to explain the true nature of things.

Mr. Laing said that, in view of several decisions recently given in the law courts, he thought it would be well for chemists to make a united protest against the way the Pharmacy Acts were administered in Scotland. Not only was odium cast on the Pharmaceutical Society, and every encouragement given to make the public look upon the Society as a persecutor of respectable tradesmen, but slurs and innuendoes against chemists

whose rights—not privileges—were usurped and abused by those tradesmen, were too common. In Glasgow, not a fortnight ago, there was a case notorious for the unintelligent reading of the Act displayed by the Sheriff and counsel on both sides, and the conviction in that case was followed by a mere admonition, without costs. It was the duty of the trade to take the matter up, for clearly the Society could not, without being seriously misrepresented; and if chemists had not sufficient stamina to assert their rights they deserved to suffer for ever after. Chemists enjoyed neither privilege nor monopoly. A complaint should be forwarded, through the Society, to the Privy Council, and he hoped the Glasgow Association would take some action, because the way in which the law was at present administered in Scotland was a scandal.

The Chairman said the absurd opinions expressed from the Scottish Bench should not be allowed to pass without comment. A strong protest ought to have been made against the remarks that fell from the judges, and a representation made to the Privy Council on the matter. A judge was there not to give his private opinion, but to administer justice, and he had no right to say that he had no sympathy with the action of the Society. In a recent Glasgow case the Sheriff said he had no sympathy with those prosecutions against employes. That was all very well, but it was not justice. The observations of the Glasgow Sheriff in particular should not be allowed to pass without comment, and he would be very willing to undertake to frame a communication and send it to the public press, protesting in the name of the Glasgow Association against the misrepresentations to which those remarks exposed chemists. There was an opinion in the public mind that the prosecutions were for the benefit of chemists themselves, but that was an error which ought to be corrected.

Mr. Russell said this was a matter which could not be proceeded with too carefully. At present the doorsteps of many of the chemists in the city were not too clean, and if they lived in glass-houses they knew what to expect.

Mr. Watson remarked that the feeling of the public undoubtedly was that the Pharmaceutical Society existed purely in the interests of chemists. That feeling was helped to a great extent by the attitude taken up on this question by the public press.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.—At a meeting held on Wednesday, December 18, at the Exchange Rooms, Birmingham, the newly-elected President, Mr. T. C. Clarke, delivered the opening address. Owing to the recent organisation of the Association, and the ground traversed being so very limited, his remarks would be confined in great measure, he said, to the outlook generally and the objects the Association has in view and desires to achieve. He was sure that anyone giving even a cursory glance at the programme for the session could not fail to be impressed with the utility of the meetings, treating, as they did, with topics of such a nature as could be turned to practical advantage by anyone desiring to become conversant with the intricacies of the profession, and at the same time not sufficiently far advanced to be beyond comprehension and appreciation.

There was a deplorable want of appreciation and respect shown to pharmacists, and of respect due to them as men above the average tradesmen's standing, both educationally and socially, and in consequence the trade was losing caste. In years gone by chemists could claim far more respect than can those of the present day, despite the fact that a period of apprenticeship was then the only qualification needed, just as in these days a grocer and a draper blossoms forth. This he accounted for by assuming that in those days there was a public tendency to regard pharmacy as a calling of an essentially and indisputably scientific nature, and so long as that opinion prevailed things went well with pharmacists, and Mr. Clarke reasoned that, in view of the fact of there now being a considerable amount of science necessary to make competent pharmacists, they were not unreasonable in looking for and desiring that respect. Moreover, he was of opinion that the best way to bring this very desirable state of affairs about was by joining and heartily supporting such an Association as the one there assembled, and in that way take a definite step in the right direction. That he thought would help to bring about a far more satisfactory state of affairs, both socially and financially, than was now extant.

He proceeded to say that another reason in favour of the formation of the Association, and, moreover, one which should in itself induce members to accord it their heartiest support, was that the social meetings which they proposed holding would alone be a means of affording facilities for making friendships and acquaintances which

otherwise would never be formed, and thereby promote that good fellowship so essential to the general welfare. Having set forth several other advantages, he concluded by reminding the assembly that they had now definitely formed an association, the destiny of which was entirely in their own hands, and therefore it remained for each member who joined their ranks to do his utmost to ensure its success. He wished to impress upon all the importance of treating that Association as a serious undertaking, and to make a point of attending each meeting, whether of a business or social nature. He promised them that the Committee would provide a programme sufficiently attractive to engage their attention at every meeting held. There were difficulties to be overcome, however, in the infancy of any association, and they could not expect to commence where others of considerable standing had finished. They would very soon, unless he was much mistaken in the character of the members, have a spirit of emulation among them, tending to improve their claim to hold a better position in the estimation of their friends, among whom, he was sure, they all reckoned their respective and respected employers.

A hearty vote of thanks was given to the President, and this having been suitably replied to, the proceedings terminated.

LONDON INSTITUTION.—Professor Vivian Lewes gave the first of a course of three lectures, intended for young persons, on "Three Great Chemists and their Work," at the London Institution on December 27. The subject of the lecture was Joseph Priestley. Beginning with a short sketch of Priestley's early life, the lecturer proceeded to mention some of his more important discoveries and investigations. His researches upon carbonic acid gas were described, and it was shown that, in addition to various observations on its properties, which were not altogether novel, he found out that it was soluble in water, and, in view of the way in which he turned this fact to practical account in the imitation of highly-purified German natural waters, he might be called the father of the aerated water trade. Noticing that a candle burning in a closed vessel of common air soon went out, while a mouse shut up in the same vessel did not live long, carbonic acid gas being formed in both cases, Priestley was led on to the discovery that a sprig of growing vegetation placed in the vessel in a few hours so revived the air that the candle could burn and the mouse live. Owing, however, to his ignorance of the true nature of the atmosphere, he was unable wholly to explain the wonderful cycle of nature by which the vegetable undoes the work of the animal, and, by continually assimilating the carbon of the carbonic acid produced by the latter, provides the constant supply of oxygen necessary to its life. Priestley's experiments with nitrous gases and with hydrochloric acid were next referred to, together with the most important discovery of his life—that of oxygen gas—in 1774.

The second lecture was delivered on December 31, and was devoted to the French chemist Lavoisier. The lecturer began by contrasting Priestley and Lavoisier. The former showed what could be done with very rough apparatus, of what might be called the pickle-bottle type, and worked in a hap-hazard way, trying numerous experiments and noting if anything happened. Lavoisier, on the contrary, never started without a preconceived idea of what he wanted to arrive at. Some of Lavoisier's earliest experiments were devoted to the subject of plaster of Paris, and to showing the falseness of the old idea that water by long-continued heating would become solid. Research into the nature of combustion might be considered his life-work. Reasoning from the observed fact that the products of combustion were heavier than the original substance burnt, he rejected the phlogistic theory, and inferred that the increase of weight must be due to something abstracted from the air in which combustion took place. He next inquired what this something was, and enunciated that the atmosphere contains two gases. It was one blot, however, on Lavoisier's fair fame that he allowed his followers to talk of him as the discoverer of oxygen though he had been informed by Priestley himself of the latter's discovery of it. The name oxygen was given by Lavoisier to the gas because he found when phosphorus was burnt in it over water that the water gave an acid reaction, and he concluded that oxygen was the producer of acids. Lavoisier was credited with the invention of the oxyhydrogen blow-pipe, and found out the identity of diamond and graphite. He was also supposed to be the discoverer of the composite nature of water, but in truth, though the explanation was Lavoisier's, the experiment which demonstrated the fact was performed by the English chemist Cavendish.

ENGLISH NEWS.

MR. WM. ROBERTS, of Lowestoft, has been selected from numerous applicants for the appointment of Dispenser to the Stockport Infirmary.

BUSINESS CHANGE.—Mr. Thomas Coleman, Chemist and Druggist, late of Bicester, has taken the business lately carried on by Mr. G. E. Clarke at 216, London Road, South Lowestoft.

NORTHERN SCHOOL OF PHARMACY.—The students of the Northern School of Pharmacy, held their Annual Smoking Concert, on Friday, December 20, at the Alexandre Hotel, Manchester. A most enjoyable evening was spent, listening to songs, etc., given by the students. The two principals also delighting the students with songs and speeches bearing upon the work of the past session. Mr. A. C. Bateson occupied the chair.

CAMBRIDGE PHARMACEUTICAL ASSOCIATION.—At a meeting held at 18, St. Edward's Passage, Mr. E. Saville Peck, M.P.S., in the chair, Mr. L. A. J. Hutchin proposed, and Mr. C. S. Addison seconded, "That this Association desires to express its loyalty to the Pharmaceutical Society, and looks to it for aid to enable the pharmacist to maintain the position to which his State-enforced education entitles him." Mr. A. S. Campkin, J.P., proposed, and Mr. H. F. Cook seconded, that the discussion should be postponed until a larger and more representative body of chemists be got together. This was carried. Mr. S. F. Barker then proposed, and Mr. H. T. Parker seconded, that invitations be issued to the pharmacist in the neighbouring counties. This was also carried. It has been arranged to hold the annual dinner on Friday, January 10, at the Prince of Wales' Hotel.

PLYMOUTH, DEVONPORT, STONEHOUSE, AND DISTRICT CHEMISTS' ASSOCIATION.—At the next quarterly meeting of the members of this Association, convened for Wednesday, January 8, at 7 p.m., at the Foresters' Hall, Plymouth, after the general business has been transacted, Mr. T. Kinton Bond, B.A., B.Sc., will lecture on the metric system.

TAKING CARBOLIC ACID IN MISTAKE FOR WHISKY.—An inquest was held on Monday, December 30, by the Coroner for Bradford, on the body of William Squires, aged seventy-two years, a quarryman, lately residing at 1, Ellacombe Terrace, Torquay, who met his death by drinking carbolic acid in mistake. It was stated that the deceased, owing to failing eyesight, seven weeks ago went to reside with his son-in-law, named Hankin, at Bradford. The family were removing on Friday to another house, and while left in the latter with a granddaughter the deceased took up a bottle of carbolic acid and drank the greater part of the contents. When his granddaughter told him what he had drank, deceased answered, "I thought I was drinking whisky." He soon became insensible, and though the stomach pump was applied he died in an hour. The jury returned a verdict of "Death from misadventure."

ACETIC ACID FOR WHITE WINE VINEGAR.—At the Hanley County Police Court, on Monday, December 23, before the Stipendiary (Mr. Harold Wright), Messrs. Boots, Limited, of Nottingham, and Frederick William Whitwell, the manager of one of Messrs. Boots' shops at Burslem, were summoned under the Food and Drugs Act for selling diluted acetic acid for white wine vinegar on November 15.—Mr. E. W. H. Knight, inspector under the Act, prosecuted; Mr. Hinde, solicitor, Nottingham, defended the firm of Boots; and Mr. F. W. Harris appeared for Mr. Whitwell.—It was stated that Messrs. Boots and Co. were in business at Nottingham, and had branch shops to the number of about fifty throughout the country. On the date mentioned Charles Frederick Grocott, an assistant to the Inspector, went to the Burslem shop and asked for a quart of white wine vinegar, and was supplied, 4*d.* being paid. The county analyst certified that the article was not white wine vinegar at all, but diluted acetic acid.—For the defence Mr. Hinde submitted that Messrs. Boots were not liable in this case, inasmuch as they had employed as their agent a duly qualified man at their shop at Burslem, and had given general instructions to all their managers that they were simply to sell the articles demanded, and not to substitute others or diluted articles

for them. On July 12 a special circular was sent out to all their shops that acetic acid must not be sold as white wine vinegar. He called Mr. Boot, who gave evidence to that effect.

Mr. Harris, for the defence of Mr. Whitwell, submitted that he had been trained to believe that diluted acetic acid was the article known in the trade as white wine vinegar, and he had been in the habit of selling it as such. He called Mr. Whitwell, who went into the box and gave evidence to that effect. He admitted that when he was selling the article he knew it was diluted acetic acid. It transpired that Mr. Whitwell was not the manager of the shop when the circular regarding acetic acid was sent out in July, as he had been at the Burslem shop since September 2 only. He said the goods sold at the shop were supplied direct from the company's headquarters at Nottingham. White wine vinegar, however, was not supplied but acetic acid was, and he had always taken that to be the same thing and sold it as such.

The Stipendiary, in giving his decision, said there was not the slightest doubt in this case that both the master and the servant were liable. To his mind, had the evidence been such as was proposed to be given, it would not have freed the master. But there was no evidence given at all on the master's part of any instructions sent to the defendant Whitwell, and all the principal defendants could put forth was that the firm had sent general instructions to their servants that they were to sell only what they were asked for.—He (the Stipendiary) never knew any shop where those instructions were not given, and if that were going to free the masters they would be free from every burden. Both parties were, to his mind, very culpable in this case, but he would have taken a more lenient view of Whitwell's case had he not been a qualified chemist. He should impose a fine on Messrs. Boots of £10 and costs for this fraud on the public, and their manager Whitwell would have to pay £5 and costs.

Mr. Hinde asked the Stipendiary to grant a case for the Queen's Bench.

The Stipendiary said he would do so if Mr. Hinde would show him a point. All the evidence he had from Mr. Boot as far as the present case went amounted to nothing. The only evidence he could give a case upon was that the firm appointed a duly qualified chemist.

Mr. Hinde said that was no use to him, and the Stipendiary remarked that there was no other point on which he could give a case.

Mr. Hinde said he should appeal to the Court of Quarter Sessions. The Stipendiary said he might take what course he thought fit.

SCOTTISH NEWS.

EAST ABERDEENSHIRE CHEMISTS' ASSOCIATION.—The annual meeting and dinner of this Association was held at Maud on Thursday, December 19, Mr. Johnston, Aberdeen, in the chair, in the absence of Mr. John Grant, President. Mr. Paterson, Aberdeen, was croupier, and there were present as members of the Association, Mr. McGregor, Ellon, Mr. Lee, Strichen, Mr. Robertson, Fraserburgh, and Mr. Tocher, Peterhead (Secretary). A telegram was read from the President stating that the inclemency of the weather prevented him from being present, and wishing a successful meeting. After loyal and patriotic toasts, current pharmaceutical topics were discussed. At the annual meeting a cordial vote of thanks was passed to Mr. Grant, the retiring President, and on the motion of Mr. Robertson, Fraserburgh, seconded by Mr. McGregor, Ellon, Mr. A. M. Lee, Strichen, was elected President of the Association for the ensuing year. Thereafter a hearty vote of thanks was passed to Mr. Johnston and Mr. Paterson for their kindness in coming so far to be present at the meeting, and for the interest they had always taken in the proceedings of the Association.

IRISH NEWS.

A NEW PHARMACY is about to be opened in Clones, Co. Monaghan, by Mr. John Beatty, L.P.S.I., at present manager of Bowers' Medical Hall, Dublin. There is only one medical hall at present in Clones, that of Mr. E. P. Murray, J.P., M.C.P.S.I.

MR. A. J. PATERSON, L.P.S.I., for many years the principal pharmaceutical assistant in the establishment of Messrs. William Hayes and Co., Grafton Street, Dublin, has been appointed to succeed Mr. Beatty as manager of Bowers' Medical Hall.

MISCELLANEOUS NEWS.

(Reprinted from last week's Supplement.)

THE DANGERS OF CHLORODYNE.—At the police court on Dec. 23, before Dr. Pike, John Chapman, 31, Southfield Street, Worcester, an Army pensioner, was charged with attempting to commit suicide by taking a large quantity of chlorodyne on Saturday. Evidence having been given, Dr. Pike said that, as a medical man as well as a magistrate, he should strongly advise the defendant to leave off the habit of taking drugs. It was a gross fault of the law that chemists should have the power to sell dangerous drugs to any one who asked for them. He did not blame chemists as the law now stood, but he considered that they should use great discretion in supplying "patent" drugs. With regard to the present case he did not think there was sufficient evidence that defendant took the chlorodyne with a felonious intent. He would, therefore, have the benefit of the doubt and be discharged.

HYDROCHLORIC ACID IN A MEDICINE BOTTLE.—On December 20 Mr. A. Braxton Hicks, the Mid-Surrey coroner, held an inquiry at Battersea with reference to the death of George Arthur Head, aged 23 years, of 33, St. Andrew's Street, Battersea, who died on December 17 from the effects of hydrochloric acid, purchased at an oilshop in the neighbourhood.—The coroner said the bottle, an ordinary eight-ounce medicine bottle, bore the following label:—"One tablespoonful to be taken three times a day, after meals." The oilman had not even taken the ordinary precaution of putting the word "Poison" on the bottle, and the landlady was much to blame for leaving the bottle in a cupboard where anybody might pick it up by mistake.—Dr. Sutcliffe said that the deceased died from the effects of hydrochloric acid poisoning.—The jury returned an open verdict: "That the deceased died from poisoning, but that there was not sufficient evidence to show for what purpose the acid was taken." They also requested the coroner to caution the oilman to be more careful in future.

CASE OF COVERING BY A CHEMIST.—In the Queen's Bench Division, on Saturday, December 21, before Mr. Justice Kennedy, the two actions—Butler and Crispe v. G. H. Doveton and Idris Water Co. v. Same—were tried together. In each case the plaintiffs sought to recover a sum of money, amounting together to some £40 odd, in respect of goods alleged to be supplied to the defendant while trading as chemist under the style of Christmas and Co. at 818, Holloway Road. It appeared that Mr. Doveton* had paid off a mortgage which the late Mr. Christmas had on his business. At the date of Mr. Christmas' death last year, a considerable sum was due for interest on the mortgage, and Mr. Doveton, in order to secure himself, had paid a sum of £50 to the widow for the chattels not secured by the mortgage. Mr. Doveton then entered into an agreement with a qualified chemist, a Mr. Norfolk, whereby Norfolk was to have a salary of two guineas a week, for which he was to use his best endeavours to carry on the business, to keep down the expenses out of the receipts, and to share with Mr. Doveton at the end of the year the surplus, if any, after paying out to Mr. Doveton interest on the capital he had in the business. There was a clause in the agreement that Mr. Norfolk was not in any way to pledge Mr. Doveton's credit. When notice was given to Mr. Norfolk to determine his engagement, it was discovered by the defendant that there were unpaid creditors of the business to the extent of some £160.—The defence was that Mr. Norfolk was not carrying on the business in partnership with the defendant, nor had Mr. Norfolk any authority to pledge the defendant's credit.

His Lordship postponed his decision until the first day of next sittings.

THE LIMITED COMPANY QUESTION IN IRELAND.—At Dublin, on December 20, in the Queen's Bench Division, before Mr. Justice O'Brien, Mr. Justice Johnson, Mr. Justice Holmes, and Mr. Justice Gibson, the case of Cleeland v. the Pharmaceutical Society of Ireland came on for argument on a motion by counsel for Mr. Cleeland to make absolute a conditional order for a mandamus to compel the Society to admit him to their examination for the licence as a pharmaceutical chemist. The conditional order had been granted on affidavits showing that Mr. Cleeland had served six years' apprenticeship with Grattan and Co., of

Belfast, and afterwards was five years with them as an assistant, and that he had attended all the requisite lectures, besides passing the Preliminary examination, but that the Council of the Society had refused to accept a certificate from Grattan and Co., because they were a limited company, all the members of which were not pharmaceutical chemists. The arguments, which were of a purely legal character, occupied the entire day; and at their conclusion Mr. Justice O'Brien said that judgment would be given on the second day of next sittings.

WELSH NEWS.

THE UNRESTRICTED SALE OF CARBOLIC ACID.—A lady named Mrs. Bancroft, residing at Bryntirion Hall, near Wrexham, last week committed suicide by taking carbolic acid. She had complained of headache and nervousness, and was of a hysterical disposition. She had spoken of suicide, and had previously attempted to take her own life, but on the night in question she appeared in fairly good spirits, and had been selecting Christmas presents for her children. The jury at the inquest, held on Friday, returned a verdict of suicide whilst temporarily insane, and added a rider to the effect that carbolic acid and similar poisons should not be sold without proper restrictions.

SUCCESS OF A STUDENT.—Mr. Wilfred S. Davies, of Tenby, who has been apprenticed to Mr. George James, High Street, Tenby, has gained the only medal offered by the Westminster College of Chemistry and Pharmacy in the last competition in dispensing. He is the second Welshman who has won the medal in twenty-five years. There were sixty-nine competitors.

THE PURITY OF DRUGS IN GLAMORGANSHIRE.—At the quarterly meeting of the Glamorgan County Council, the public analyst, Mr. C. A. Seyler, B.Sc., F.I.C., reported that during the previous three months he had analysed 239 samples of food and drugs. Amongst them were fourteen samples of pepper, eight of ginger, one of mustard, one of linseed meal, one of castor oil and castor oil pills, one of salad oil, one of spice, one of carbonate of soda, one of flour of brimstone, one of cream of tartar, one of honey, and one of baking powder. The salad oil was not olive, but cottonseed oil—an inferior article. The castor oil was pure, and the honey was genuine. Of the samples of ginger, five were genuine, two were of poor quality, and one contained 40 per cent. of spent or exhausted ginger. The samples of pepper, spice, mustard, and linseed meal were genuine, and all the drugs were pure and called for no special remark.

DEFICIENT SWEET SPIRIT OF NITRE.—At the Mold Petty Sessions, on December 30, before Mr. P. B. Davies-Cooke and other magistrates, Richard George Williams, The Stores, Tryddyn, was summoned for an offence under the Sale of Food and Drugs Act. Superintendent Davies stated that on Thursday, November 28, he called at the defendant's shop and asked the defendant for sweet spirit of nitre. He was supplied with four ounces, for which he paid 1s., and told the defendant that the article was for analysis. Defendant said, "All right; I know all about it. With every quantity I sell I give one of these labels (handing one to witness). These will protect me if it is not right. I sell it as I get it from the firm, and they supply me with the labels." The label read, "Sweet spirits of nitre. This is a special preparation, not the spirits of nitrous ether of the British Pharmacopœia, and not full alcoholic strength."—The Chairman (to the defendant): Who supplies these labels?—Defendant: I get them from Messrs. Bell, Sons, and Co., Liverpool, and they ought to be liable.—The Chairman: These labels are worthless.—Mr. W. F. Lowe, county analyst, said he received one of the samples from Superintendent Davies. It only contained 1-25th of the minimum of active principle ordered by the British Pharmacopœia, and 23 per cent. of water. It was a worthless drug.—Defendant, in reply, said he had nothing to say. He had always sold the article ever since he had been in business.—The Chairman: Is it usual for chemists to be supplied with these labels?—Mr. Lowe: No, it is not. At this point the defendant handed in a letter from Messrs. Bell, Sons, and Co., which the Chairman read.—The Chairman: It is evident that the firm are conversant with this.—Defendant: I have sent them all the stuff back.—The Chairman: You are liable to a fine of £20, but we believe you have not done this thing wilfully, and we therefore have decided to inflict a fine of 10s., and 19s. 6d. costs.

* The name of G. H. Doveton does not appear in the Register of Chemists and Druggists.

NOTICES, LETTERS, AND ANSWERS TO CORRESPONDENTS.

All Articles, Letters, Notices, and Reports intended for publication in the Journal, Books for Review, and communications respecting Editorial matters generally must be Addressed "Editor, 17, Bloomsbury Square London," and not in any case to individuals supposed to be connected with the Editorial Staff. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

ANY INSTRUCTIONS from Members, Associates, and Students of the Pharmaceutical Society, with reference to the transmission of the Journal, should be sent to the Secretary—Mr. Richard Bremridge,—17, Bloomsbury Square, London.

BUSINESS communications—including advertisements, orders for copies of the JOURNAL, and instructions from Subscribers respecting transmission of same—must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London. Cheques and money orders should be made payable to "Street Brothers."

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

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

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

QUERIES addressed to the "Editor" will be replied to in the Journal as early as possible after receipt; answers of sufficient general interest being given under the heading "Notes and Queries." The Editor cannot undertake to reply to queries through the post.

REPRINTS of articles cannot be supplied unless authors communicate with the Editor before publication.

LETTERS.

THE ANTI-CUTTING AGITATION.

"ALOES" wishes to say a word of encouragement to those firms who have, single handed, striven to maintain a minimum retail price for their manufactures. He says "Messrs. Elliman, Blondeau, Allen and Hanburys, and others, deserve the best thanks of the retail trade for their action. When I had read the first number of the *Anti-Cutting Record*, I thought the scheme would not become universal, but that any extension of the principles introduced by the above firms would be welcome to the retailers. . . . The sale of proprietary goods, although all pills and smaller articles are placed in drawers out of sight, does not diminish with me. Just let us look at the expenses and outlay on these goods: probably my stock is never under £50, therefore there is that cash laid by, then carriage on the goods will average 1s. 6d. per week, and on returned empties, 8d. per month; the time of unpacking, labelling, putting away, and wrapping up at the time of sale will therefore show a decided loss on many of the quicker selling goods. . . . If the above manufacturers have read the correspondence on this subject recently appearing in the Journal, I fear they will think that their endeavours are not appreciated by the trade, but, personally, I hope the system will be, ere long, extended so as to include most of the more widely advertised proprietaries, and that manufacturers will join hands to further the interests of the trade in this direction."

"ASSISTANT" thinks "one form of combination which probably would show good and immediate results would be the formation of a company having for its object the bringing out of proprietaries—'A Chemists' Proprietary Association'—the company to include chemists and druggists and their assistants, and begin operations with a few of the most popular forms of proprietary medicines in request. The members could, at small expense, flood their immediate localities with advertisement matter and oust all outside preparations." This project is scarcely likely to meet with commendation from many pharmacists.

MR. JOHN HALLAWAY, of Carlisle, says, "Like other of my brother pharmacists, I am interested in this anti-cutting controversy, and beg to send you some of my thoughts on the matter. I think the anti-cutting schemes brought forward by Elliman, Allen and Hanburys, Vinolia Cie, and others (I have no doubt with the best intentions) are useless, and will not remove the evil. Those schemes being based upon cutting prices, they have a minimum and

maximum price, the minimum price being the cutting price, and the cutting man will always sell at the minimum price. I suggest that there be one price only, whatever that price may be fixed at; it should be a price that would allow a fair and reasonable profit to the retailer. I dare say it is a very difficult problem to solve, and when solved perhaps difficult to carry out. Still, I beg to suggest one way, viz., for the manufacturers to charge wholesale houses one price, whatever was the quantity taken, and to fix the price they (the wholesale) are to charge retailers, both wholesale and retail being bound by agreement to sell at stated prices. I take this opportunity to thank you for your opinions on this matter as expressed in the *Pharmaceutical Journal* of December 21."

ANSWERS.

C. MACKANESS.—Thanks for your suggestion, which, however, is an impracticable one. In most cases admission is readily secured by the introduction of a member.

W. RALPH.—We do not know any process that can be depended upon for the purpose you mention. You would probably find also that the use of such a process is illegal.

F. H. SLYNN.—Exchange notices are not inserted unless the conditions specified are complied with.

WILLIAM MAIR.—Your letter was received some days ago, but nothing more had arrived at the time of going to press.

"C. M."—You have omitted to indicate your name and address.

OBITUARY.

SMITH.—On May 31 last, Miles Henry Smith, aged 63 years. Mr. Smith commenced his professional career in the laboratory of Mr. J. Lloyd Bullock some forty years back. After passing a few sessions at the College of Chemistry in Oxford Street, where, in consideration of his intelligence and industry, part of his fees were remitted by the then director of the College, Dr. A. W. Hofmann, he obtained an engagement in Perkin's Aniline Dye Works, where he was at one time a co-worker with the late Mr. Greville Williams. Subsequently he entered the well-known firm of Messrs. Hopkins and Williams, and was for many years chemist in their factory at Wandsworth, where he was always on the most pleasant terms with his employers, the latter of whom, with characteristic generosity, frequently acknowledged his indebtedness to his "friend Miles Smith" in many of his scientific papers. At an early period of his career, and whilst working in the laboratory of the London Institution, in conjunction with his friends, Messrs. Wanklyn and Chapman, they devised the permanganate process for the detection of nitrogenous organic matter by its conversion into albuminoid ammonia, in water analysis. For the last four or five years of his life Mr. Smith gave up professional work, and being an ardent lover of the country and of rural scenery, passed his latter days in the picturesque neighbourhood of Dorking.

MILES.—On December 17, George Miles, Chemist and Druggist, Pokesdown, Bournemouth. (Aged 59.) Mr. Miles had been a member of the Pharmaceutical Society since 1875.

PUBLICATIONS RECEIVED.

THE VALLEY OF KASHMÍR. By WALTER R. LAWRENCE, I.C.S., C.I.E., Settlement Commissioner, Kashmir and Jumna State. Pp. 478, with illustrations and map. Price 12s. net. (London: Henry Frowde, Amen Corner, E.C. 1895.) From the Publisher.

ANATOMISCHER ATLAS DER PHARMAKOLOGIE UND NAHRUNGSMITTELKUNDE. By Drs. A. TSCHIRCH and O. OESTERLE. Part 9. Price 1s. 6d. (London: Williams and Norgate, 14, Henrietta Street, Covent Garden, 1895.) From the Publishers.

PROCEEDINGS OF THE KENTUCKY PHARMACEUTICAL ASSOCIATION for 1895. From the Secretary of the Association.

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs. Adamson, Allen, Barber, Barker, Bateson, Bentley, Bindloss, Boot, Burge, Clower, Crouch, Davies, Davis, Dixon, Durrant, Eastes, Greenish, Guyer, Hale, Hallaway, Harries, Hender, Heron, Hewlett, Hodges, Jackson, James, Jeffs, Liverseege, Lorch, Mackaness, Mair, Morris, Plattin, Price, Ralph, Reynolds, Robins, Sharpe, Sinclair, Sincox, Smith, Smith-Elder, Spencer, Slynn, Taylor, Thornburn, Tocher, Tyler, Ward, Wardleworth, Welsh.

CAMPHOR LEAF OIL.

BY DAVID HOOPER, F.C.S.

The recent high price of camphor, on account of the war between China and Japan and trade monopolies, has caused some anxiety in countries where it is largely consumed, and China and Japan being at present the only two countries where camphor is produced on a large scale, it has been thought desirable that its cultivation should be taken up in other lands. In Japan the camphor trees grow at high elevations away from the sea, and only large trees of about one hundred years old are selected for use in making the camphor. From the export returns of this country, it seems that the supply is gradually becoming exhausted. In the island of Formosa the camphor trees are said to be by no means plentiful, and they grow only in certain favourable situations, as far as the climate is concerned, with savage tribes in the immediate vicinity. Here the trees are not considered worth taking until they are fifty years old, and the wood only of the roots and stems is subjected to distillation.

The camphor tree grows very well in India. The Calcutta Botanic Gardens possess a fine avenue of trees, which were introduced in 1802. It grows well in the Ootacamund Botanical Gardens and in other parts of the Nilgiris. It has been planted, as an experimental measure, at Jhansi in the North Western Provinces, and in other districts in the plains. Camphor has been known and used in India for many centuries. In A.D. 642, Indian princes sent camphor as a tribute or offering to the Chinese emperors. At one time the tree flourished in Nepal and Tipperah, a large tract of land lying between Bengal and the Upper Irrawaddy. Within the present century camphor was imported from Chittagong, but it has been said that the discovery of the hill-men of distilling it from the root led to the extinction of the trees.

In Ceylon the camphor tree grows well at elevations of 5000 feet and less; it has the habit of a willow in the island, and it has been suggested that, like a willow, the trees should be coppiced, and the leaves and branches used for preparing the oil. The tree grows for ornamental purposes in Naples and other parts of Italy. Professor Maisch in 1891 reported on the cultivation of camphor in Florida, where it flourished in almost any soil. The solid oil was made from the leaves and branches; the yield was 4 per cent., and the product was more like that of Japan, as it had an odour of safrol. California has lately become the scene of an industry which has for its objects the planting of the laurel camphor and the preparation of the oil for the American market. The tree has also become naturalised in Java, Brazil, Jamaica, and other isles of the West Indies, Mauritius, and Madeira.

It is very evident that the camphor tree is able to grow very luxuriantly and extensively in the warmer temperate and tropical parts of the world, far removed from China and Japan, but the slow growth of the tree would prevent all but large capitalists from opening up plantations and waiting for the plants to sufficiently mature. If it is true that in the island of Formosa the wood only of the larger trees is used, and the leaves and branches rejected, then there can hardly be a scarcity of the trees, or the manufacture must be conducted in a very reckless and extravagant manner. The

camphor from the Dryobalanops tree is said to be quite liquid if a young tree is tapped, and solid if the tree is old. Under such circumstances it would seem that the liquid oil constituted the first stage in the development of the solid substance. It is stated in some text-books on materia medica that the stearopten exists in every part of the plant, including the leaves. On the other hand, it is remarkable that the leaves are not used in China and Japan; perhaps the natives have found that the leaves only give a liquid product which cannot be profitably turned into camphor. As there is no definite information on this point to be found in any description of the industry, I thought it would be interesting to try the effect of distilling the leaves. Another reason that encouraged me to make some experiments in this direction was the hearty manner in which some energetic planters of Ceylon have taken up the camphor question.

A large number of experiments have been made, and a great deal has been written, with regard to camphor oil, the bye-product obtained in refining crude camphor before it is formed into blocks. This has been proved to be a very variable liquid with a specific gravity ranging from 0.88 to 1.00, an erratic optical rotation, although usually to the right, and containing camphor in suspension, or in solution, or none at all.

The first sample of leaves came from an umbrageous tree growing in the Government Gardens at Ootacamund. Fifty pounds of the leaves in a fresh state were distilled in a large copper still with sufficient water for six hours. Eight fluid ounces of oil were separated from the distillate, giving the yield of essential oil one per cent. The oil had a slightly yellow colour, a specific gravity at 15° C. of 0.9322, and a rotation of +9°·4 in a 2 decimetre tube. It gave off a small quantity of liquid at 160°, and began to boil regularly at 175°.

Collected below 180°	=	20.6
185°	=	31.0
190°	=	15.5
195°	=	10.6
200°	=	5.6
205°	=	3.3
Residue	=	8.6
		95.2

The loss here was occasioned by some of the camphor congealing in the condenser; the amount, however, in this sample could only be about 10 or 15 per cent. The residue in the retort was quite solid in the cold, and had a yellowish colour and strong camphoraceous odour.

The second sample was obtained from some younger trees grown at Naduvatam on the Nilgiris, a district more than a thousand feet lower than Ootacamund. The leaves were distilled in the same manner as in the previous experiment, but a large quantity of camphor condensed during the process and almost choked up the worm of the still. About four ounces of liquid were collected, having a mass of crystalline matter suspended in it. The oil was strained through cloth, and the solid matter, pressed hard to remove all the liquid portion, was left as a cake of camphor, weighing two ounces. The clear oil had a specific gravity of 0.9314 at 15° C., and twisted a ray of polarised light +54° in a 2 decimetre tube. It began to boil regularly at 165°.

Collected below 185°	=	13.3
190°	=	20.0
195°	=	15.5
200°	=	20.0
Residue	=	25.0
		93.8

The loss was again accounted for by some of the camphor condensing in the cool tube. About one-half of this oil consisted of solid camphor, or, calculating the camphor already separated, the oil from the Naduvatam leaves contained 75 per cent., which is a very satisfactory result. The camphor dissolved in rectified spirit, twisted a ray of light + 30°. The altitude of the Government Gardens in Ootacamund is 7300 feet, and it is possible that this elevation influences the formation of the solid stearopten in the leaves. At any rate, it is interesting to know that a large proportion of camphor can be obtained from the oil of the leaves and from the leaves themselves, and probably, if taken from trees grown at a much lower elevation, a much larger proportion of this useful substance could be collected.

COLOURED FILMS FOR SHOW CARBOYS.

BY T. MALTBY CLAGUE,
Pharmaceutical Chemist.

Perchance my experience has been unfortunate, but though not yet out of my teens in the service of pharmacy I have three times been a witness of that officinal catastrophe, the breakage of a show carboy. The danger to which these emblems of our craft are exposed and the care required in their handling make them a constant source of anxiety. But when Jack Frost's ruthless grip has seized on one of them and three or four gallons or more of a strongly-coloured liquid possessed of the mischief-making properties of, say, ammonio-sulphate of copper, come showering down on a well laid out window full of costly stock-in-trade, there is a stress of circumstances with which the capabilities of the English language are utterly inadequate to cope. It would be a Vandal's act to suggest that we do without them, the sentiment that values a grand historic past and the business view which uses them as a mark of trade identity in the present, alike demand their retention.

Lately, however, I had to face the question of supporting carboys in a position where it was well nigh impossible to provide what would stand a mechanical stress of three-quarters of a hundred-weight. Attempts were made to coat the inside of a carboy with a coloured film, which would suit the requirements of window display. My experiences are now given in the hope that some—

“Forlorn and shipwrecked brother
Seeing may take heart again.”

Perhaps others have solved the problem for themselves, but I decided to rush into print when I saw that a chemist in a neighbouring town was obliged to find refuge from his difficulty by keeping an empty uncoloured carboy in his window.

First, solutions of shellac and aniline dyes in methylated spirit were tried, but the tendency to chip off was found to be an objection. Next, the dyes were tried, dissolved in spirit, and the solution combined with ether and gun-cotton to make a collodion film. This was partially successful, but the difficulty was to get the film free from rolls and thicknesses.

Lastly, gelatin was adopted as a basis, and after some experiments the following formula was found to work well. For a five-gallon carboy:—

Aniline dye.....	grs. xv. to xxv.
Gelatin (not opaque)	1 oz.
Water	6 ozs.
Carbolic acid	ʒi.

Soak the gelatin in water, dissolve the dye in warm water, and next add the softened gelatin and warm till melted, then add the carbolic acid. When the solution has cooled to about 150° F., pour it into the carboy. Place the carboy in a warm position until it has acquired a temperature of from 90° to 100° F., and then remove, now keep turning it upside down and round about until the gelatin shows signs of setting, then put it on its stand and allow the jelly not adhering to the sides to settle at the bottom. Leave the stopper out for a few hours. If the first attempt is not a success, it is only necessary to put the carboy into a warm place and try again. The process is an easy one, and has been applied to half a dozen carboys with ease and success.

As to the colours the following have been tried:—Malachite green, a good colour to work with, and strikingly like sulphate of copper solution; about 25 grains to 6 ounces is required. The colour fades somewhat, so that it is well to make it a trifle dark. Methylene blue, 15 grains; a rich colour very like ammonio sulphate of copper. Methyl violet, 15 grains, a rich bluish red; can be made to vary according to the dye used. Technically, R. means red, R.R. redder, R.R.R. still redder. The blue shades are similarly indicated by the affix B. Flamingo gives the nicest red of those I have tried, 15 grains. Browns may be got with Bismarck Brown; brownish yellow with the same dye in smaller proportion, but the colours are not so striking as those named earlier. Methyl orange is wanting in brightness and transparency.

Of course, if the window is exposed to sun, the film must be allowed to harden well before being placed in its position. The carbolic acid or some other preservative is required to prevent moulds from liquefying the gelatin. The weight of a six-gallon carboy is thus reduced from 70 pounds to 10½ pounds, and the ease in handling and safety when in position are great gains. Nothing is sacrificed in appearance, and if you don't tell anybody nobody will know.

ARTIFICIAL WINTERGREEN OIL.

Thayer gives the following practical method of applying the hydrochloric acid process for the manufacture of synthetic wintergreen oil: Take 505.47 grammes of salicylic acid and 690.85 grammes of methyl alcohol (sp. gr. 0.820); place the alcohol in a wide-mouthed flask and add portions of the acid until a saturated solution is obtained.

Make the additions slowly, as all of it will not dissolve. Connect the flask with an upright condenser and heat it on a water bath until the contents are brought to the boiling point, then pass dry hydrochloric acid gas into the hot solution until the latter is saturated. Then add about 10 grammes more of the salicylic acid, again saturate the solution with hydrochloric acid and repeat the operation until all the salicylic acid has been added, the passage of the hydrochloric acid gas being continued for two hours after the last addition of the acid. It is necessary that the gas be thoroughly dried by being passed first over anhydrous calcium chloride, then through three bottles of sulphuric acid, before being conducted into the salicylic acid solution.

The lower oily layer which separates is washed with water until no longer acid to litmus, then distilled from a flask by the aid of live steam, the distillate is freed from excess of water by the use of a separating funnel, and finally dried thoroughly over anhydrous calcium chloride. The product thus obtained is of a slightly yellowish colour, has an agreeable odour, and costs 90 cents to \$1.00 per pound, the above quantities yielding 500 grammes of methyl salicylate. Ethyl salicylate, which has a more delicate odour, and a lighter specific gravity, can be prepared in the same way.—*Amer. Journ. Pharm.*

CHAPTERS IN PRACTICAL PHARMACY.

CACHETS AND CACHET MACHINES.

The administration of medicines in the form of powder presents certain advantages, and will probably increase with the growing simplicity in prescribing. For, as knowledge of the action of drugs becomes more complete, it may be anticipated that it will become more customary for physicians to prescribe single remedies, and in a large number of instances the best effect of the medication will be obtained by administering it without the addition of vehicle or excipient. Even simple solution in water or alcohol often possesses minor disadvantages, and in the case of calomel, bismuth compounds, ipecacuanha, opium, the synthetic remedies, etc., solution is of course out of the question. At the same time, to the majority of people, the dry powder form of administration, especially in the case of bitter or nauseous substances, is particularly objectionable. To avoid this difficulty the use of compressed tablets, the preparation of which has recently been described in the *Pharmaceutical Journal* (see last volume, pp. 348 and 367), is largely resorted to. But the characteristic taste of bitter and nauseous substances is perceptible whilst the tablets remain in the mouth, and disintegration is much too slow in many cases. Better methods of masking the taste of powders and yet permitting them, by the rapid solution of the envelope, to act in the briefest possible space of time, is to enclose them in wafers, cachets, or gelatin capsules.

Wafers are small, square or circular sheets of thin paper made from rice-flour. The powder is placed in the middle of a sheet, the edges are gathered and twisted together, and the package is then dipped in water, and swallowed. Or, the wafer may be dipped in water first, the powder enclosed by folding the edges over, and the wet mass swallowed with a draught of water. The whole of the manipulation must be performed by, or for, the patient at the moment of administration. Cachets, however, which may be described as modified wafers, are intended to be filled and closed by the pharmacist, who dispenses them much as he would dispense ordinary "powders," the wrapping papers being replaced by concave discs made of rice or wheat flour. The powders are weighed out in the usual manner, and then enclosed in the cachets, as described later in this article. After dipping one of the finished cachets in water, it is easily swallowed by the patient, the envelope being exceedingly flexible, and disintegration being speedily effected in the stomach, the medicament is free to act in a minimum of time. Powders thus enclosed are rendered perfectly tasteless for the time being, and they are not acted upon until they reach the stomach, whilst the particles are not compressed so as to impede solution. Moreover, the personal responsibility of the dispenser is allowed full scope, and the product of his labours is typical in the highest degree of present-day elegant pharmacy.

There are various makes of cachets now on the market, and in selecting stock it is well to bear in mind that a perfect cachet should be convenient in shape, elastic, tasteless, readily soluble, and easily digested. In price they are extremely moderate, three shillings per thousand being the usual charge for ordinary plain white cachets. So far as the cost is concerned, therefore, they compare favourably with good wrapping paper, or the use of solvents or excipients, to say nothing of the immense saving in labour. The main points to be observed in filling them are (a) the selection of cachets of the most suitable size to contain the required dose of medicament, (b) the protection of the edges whilst filling, and (c) the observance of due care in moistening the edges before closing.

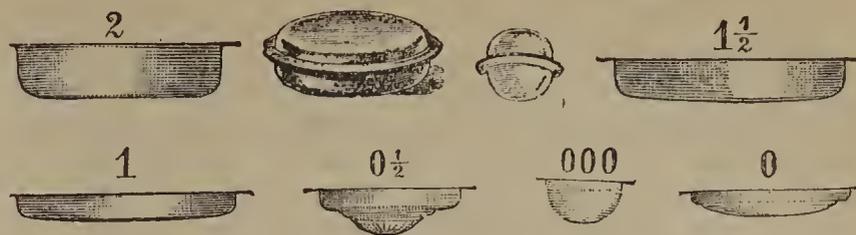


FIG. 1.—"MOHRSTADT" CACHETS.

The "Mohrstadt" cachets* may be had either white or in a large assortment of colours, and, if desired, names and addresses can be embossed upon them, or printed in grey or black lettering. The colours employed are perfectly harmless. The cachets are manufactured in six sizes (Fig. 1), as follows:—

No.		Capacity.
000		1½ grs. Quinine or Acid. Salicyl.
0	flat	3 - 4½ " " " " "
0½	deep	6 - 7½ " " " " "
1	flat	9 - 10½ " " " " "
1½	deep	10½ - 15 " " " " "
2	very deep	15 - 18½ " " " " " (or 28 " Sulphonal)

The simplest form of apparatus enables only one cachet to be closed at a time (Fig. 2), of two, three, or all sizes of cachets. It is made in four sizes, costing half-a-crown each, and must be selected in accordance with the size of the cachets to be closed. A half cachet is placed on the small cup (a), the powder in-

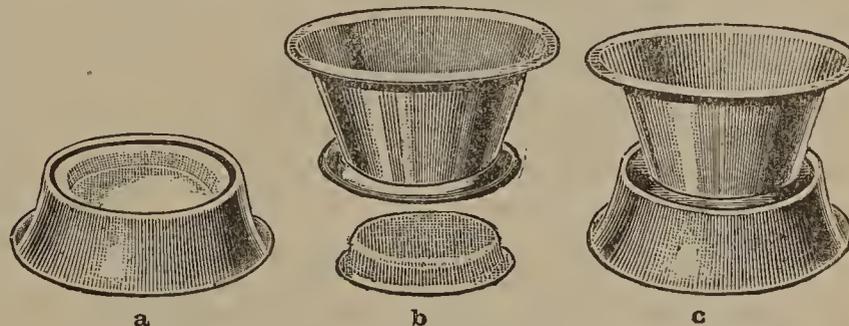


FIG. 2.—"MOHRSTADT" MACHINE FOR ONE CACHET.

serted by means of the funnel, and then gently pressed down with a thimble kept on the first finger; the funnel is next removed and placed on another half cachet lying with the opening downwards (b). This may then be lifted up and pressed on a small damping pad, after which it is superposed on the filled half cachet in the

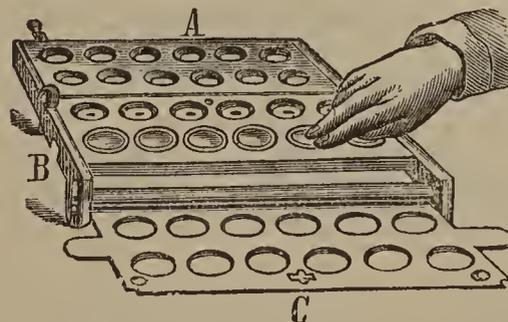


FIG. 3.—"MOHRSTADT" IMPROVED APPARATUS.

cup (a), which is thus closed and sealed (c). The finished cachet is finally pushed out by means of the thimble.

* Supplied by Thos. Christy and Co., 25, Lime Street, London, E.C.

An improved filling and closing apparatus can be obtained in zinc or nickel, at prices ranging from twelve to thirty shillings. This form enables the dispenser to fill and close a number of cachets at once, the largest size serving for twelve of each of the six sizes of cachets, without any adjustment of the apparatus to suit the different sizes of cachets. It absolutely prevents the powder from penetrating between the edges of the cachets, thus ensuring a firm closure, which is most important. The apparatus opened ready for use is represented in Fig. 3. The half cachets are

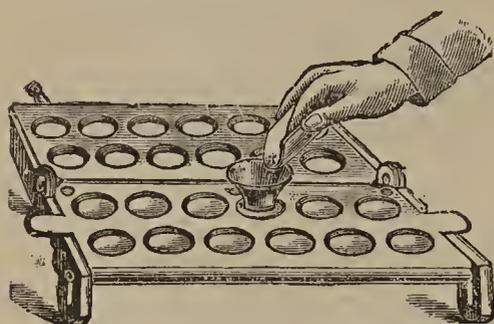


FIG. 4.—FILLING CACHETS.

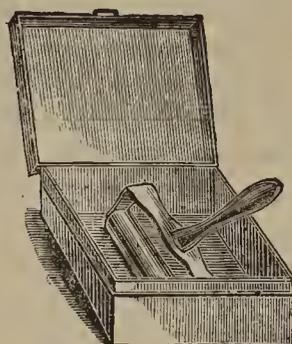


FIG. 5.—ROLLER.

pressed with the fingers into the inner spaces of plates A and B. Plate C is then turned over on B, and the powder placed in the cachets by the aid of the funnel (Fig. 4). After gently pressing the

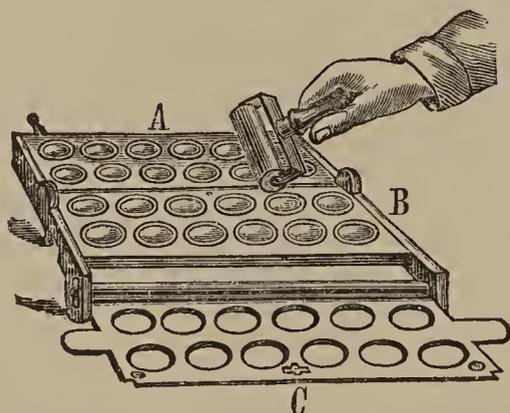


FIG. 6.—MOISTENING CACHETS.

powder down with the thimble, the plate C is lifted and the damping roller (Fig. 5), which should not be too wet, is passed over the half cachets in plate A (Fig. 6). The latter, in turn, is then turned over

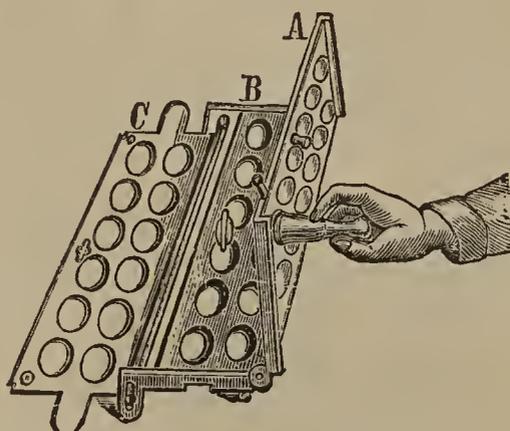


FIG. 7.—DETACHING CACHETS.

B, when a slight pressure suffices to close all the cachets, which, on opening the apparatus, may be pushed out of the plate A, to which they adhere by means of the pusher supplied (Fig. 7).

By means of the "Mohrstadt" filling and closing apparatus it is said to be possible to fill and close a dozen cachets in four minutes, including the weighing of the powders.



FIG. 8.—"FINOT" CACHETS.

The "Finot" Cachets* are made of pure wheaten flour, and can be obtained in the following seven sizes:—

No.	Capacity.	
	Antipyrine.	Quinine.
0	5 grains	3 grains
1	10 "	7½ "
1 bis	13 "	10 "
2	20 "	16 "
2½	23 "	18 "
2 bis	26 "	20 "
2 ter	28 "	24 "

The exact dimensions of the last six sizes are represented in Fig. 8. They are very flexible, tasteless, and readily soluble, and are supplied either white or coloured. They may also be obtained white, with name and address or name of medicament printed in various colours (Fig. 9). This forms a very attractive-looking cachet; or, again, the names may be embossed, the embossing being done on the surface of the cachets, thus rendering them quite smooth inside. The older method of embossing frequently caused perforation of the cachets.

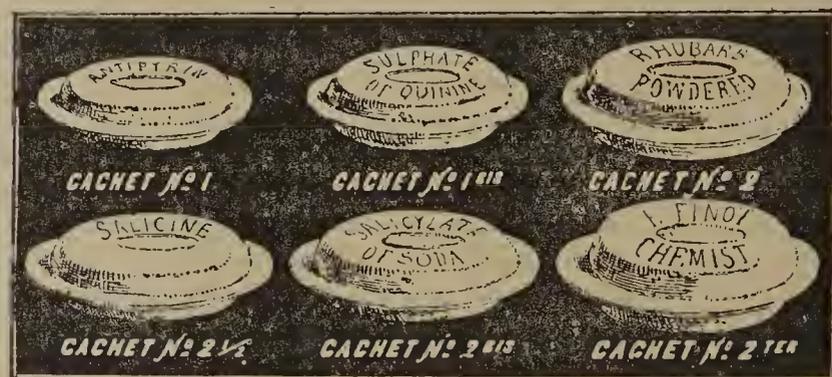


FIG. 9.—PRINTED "FINOT" CACHETS.

The "Finot" cachets can be made to fit any machine, but the filling and closing apparatus specially supplied for use with these cachets is very simple, and the complete outfit for filling twelve cachets of six sizes at a time is supplied for fifteen shillings. The cachets are placed in the holes of the wooden tray (Fig. 10), and the cups in those of the metal tray, which is then superposed upon the former. The powder is poured through

* Supplied by Cooper and Co., 80, Gloucester Road, South Kensington, London, S.W.

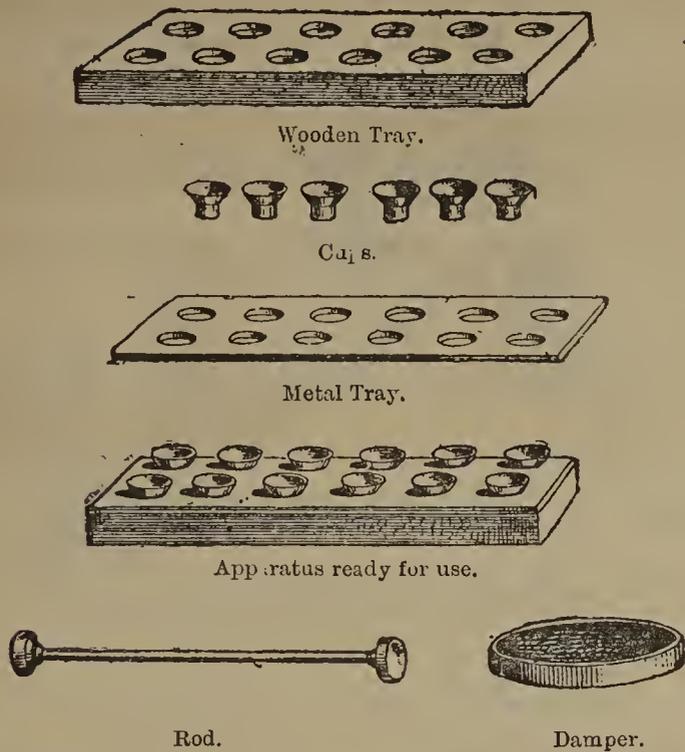


FIG. 10.—THE "FINOT" CLOSING APPARATUS.

the cups into the cachets, any particles adhering to the sides being detached by the rod, after which the metal tray and cups are lifted bodily. Next, lift one of the upper half cachets by means of the nickelled holder (Fig. 11). This is represented both closed and open, as well as in section. Pressure upon the lever at the side causes the movable

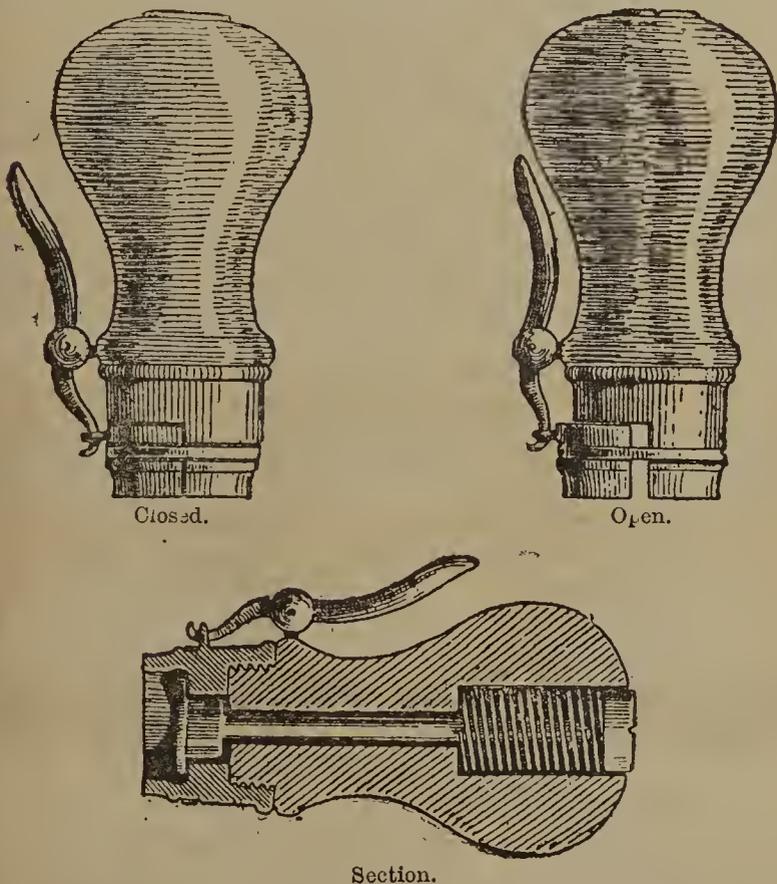


FIG. 11.—THE "FINOT" CACHET HOLDER.

jaw to open so that the half cachet can be grasped; the latter is then gently moistened upon the damper (Fig. 10), placed upon the lower half containing the powder, and closed by a slight pressure. The finished cachet adheres to the holder, and is removed by pressing the ejector shown in the section of the holder.

The "Primus" cachet machine (Fig. 12) serves for closing cachets singly, and is supplied complete with a wooden tray and

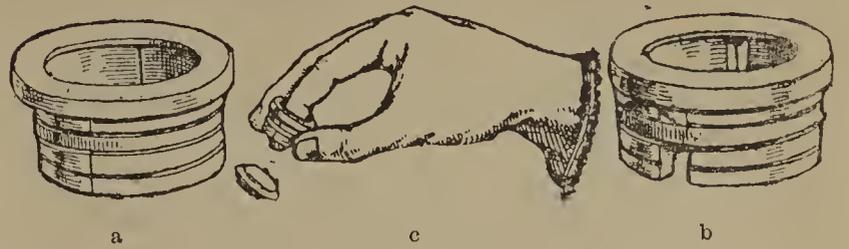


FIG. 12.—THE "PRIMUS" CACHET MACHINE.

an improved damper for five shillings. The holder consists of two metallic rings, and is shown closed at (a). By turning these rings the holder opens, as at (b), and a cachet lid can then be picked up, damped, and placed upon the filled cachet in a wooden tray, the same as with the large apparatus. The method of detaching the finished cachet is represented at (c).

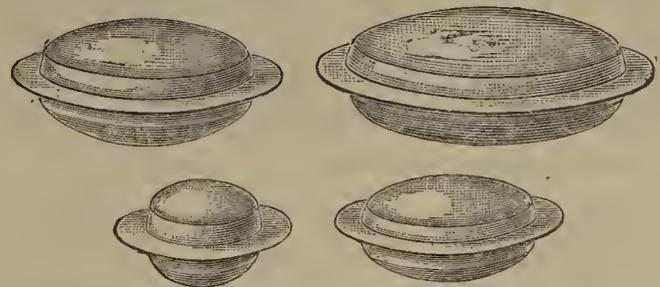


FIG. 13.—"MAW" CACHETS.

The "Maw" cachets (Fig. 13) are not characterised by any special peculiarity, but seem as well adapted to the purpose in view as any other kind examined. The machines supplied for filling and closing them probably possess the greatest simplicity attainable.

A handy little apparatus for closing six cachets* (Fig. 14) consists of two metal plates hinged together, and is supplied complete with a rubber roller for damping at the extremely low price of four shillings. It is opened as shown in the figure, cachets are placed in the holes in plate 1, and plate 2 being turned over, the powder is poured in through the apertures. Plate 2 is then raised, and the holes in it are filled with cachet lids. The moistened

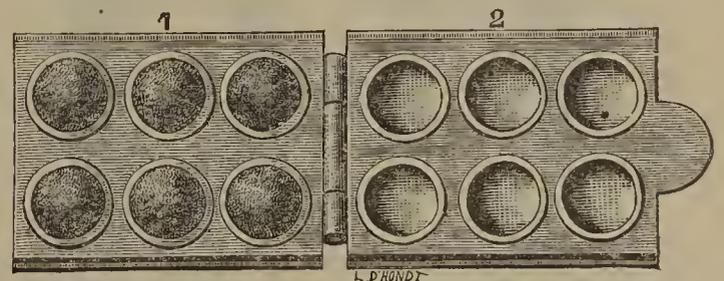


FIG. 14.—THE "MAW" CACHET MACHINE.

roller is next passed very lightly over the edge of the lids, and plate 2 again turned over and pressed gently. The cachets are thus closed and may be readily removed. A similar apparatus is also made for eight cachets, and the cachets themselves are supplied in four sizes, and of various colours.

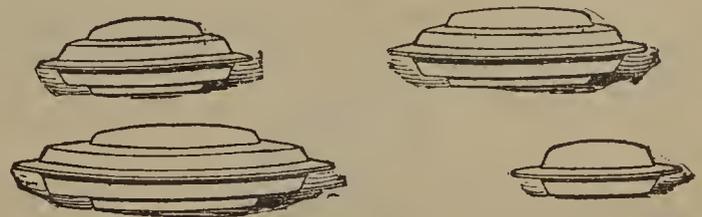


FIG. 15.—"CHAPIREAU" CACHETS.

The "Cachet S. Chapireau"† (Fig. 15) is another beautifully

* Supplied by S. Maw, Son, and Thompson, 7 to 12, Aldersgate Street, London, E.C.

† Supplied by Warrick Brothers, 18, Old Swan Lane, London, E.C.

finished article, made of the thinnest possible wafer. On account of its peculiar shape, the makers contend that it possesses a greater capacity than any other form on the market. There are four sizes—Nos. 0, 1, 2 (2 bis is of the same capacity but deeper) and 3. Any desired name can be impressed on the cachets.

The apparatus for filling and closing them is very simple and elegant in appearance, but is also practical and durable. The No. 2 outfit, recommended for a general dispensing business, costs thirteen shillings and sixpence only, and is contained in a strongly-made box, the lid of which serves as a solid base for ten of the nickel-plated moulds (Fig. 16). The moulds are fixed at

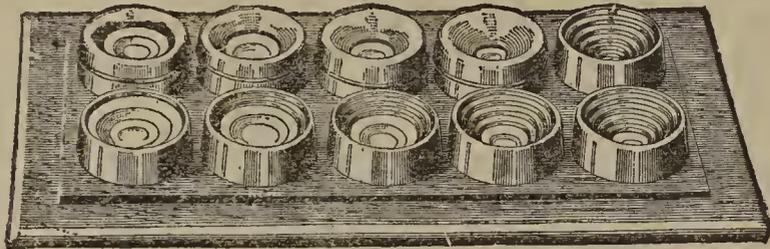


FIG. 16.—THE "CHAPIREAU" CACHET MOULDS.

equal distances on the under side of the lid, and this, on being reversed, is ready for use. Each mould is graduated so that any



FIG. 17.—THE "CHAPIREAU" CACHET FILLERS.

of the four sizes of cachets immediately falls into place on being dropped in. Four nickel-plated fillers (Fig. 17) are also supplied, one for each sized cachet.

The moulds being filled, the proper sized filler is placed over each in turn, so as to ensure the cleanly and complete filling of the

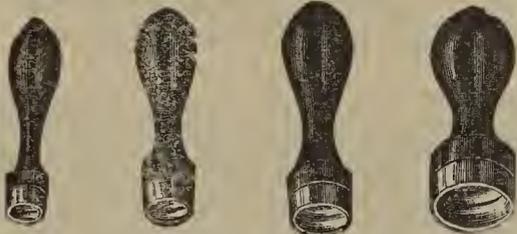


FIG. 18.—THE "CHAPIREAU" COMPRESSORS.

cachets. The filling process at an end, one of the compressors (Fig. 18) is used to accurately compress and shape the powder to



FIG. 19.—THE "CHAPIREAU" CACHET HOLDERS.

the cachet. A nickel-plated holder (Fig. 19) of the right size is then screwed on to the automatic handle (Fig. 21). By means of

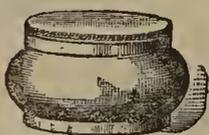


FIG. 20.—THE "CHAPIREAU" MOISTENER.

this the cachet lids are picked up one by one, and after moistening on the specially supplied cup (Fig. 20), superposed on the filled half cachets. The finished cachets are ejected from the holder by

pressing an ivory push at the top of the handle as represented in Fig. 21. It will be seen that the outfit is comprehensive, every-

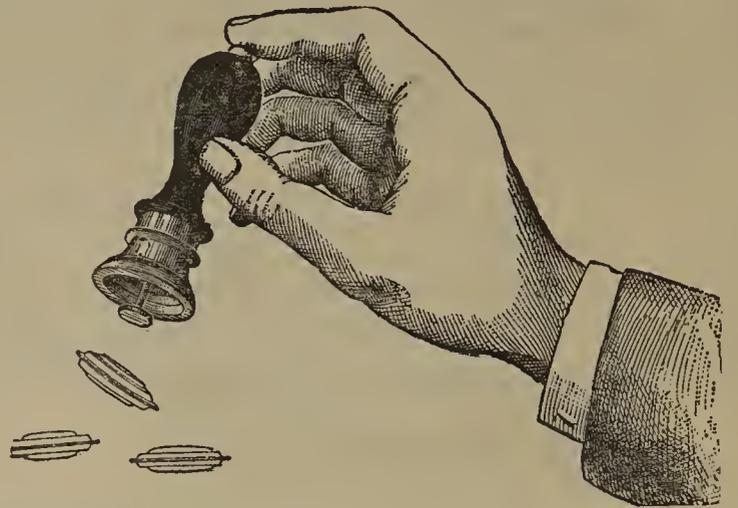


FIG. 21.—METHOD OF DETACHING CACHET FROM HOLDER.

thing necessary being included, and all parts can be readily duplicated at a slight cost.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

MEETING OF THE COUNCIL.

WEDNESDAY, JANUARY 8, 1896.

Present:

MR. MICHAEL CARTEIGHE, PRESIDENT.
MR. JOHN HARRISON, VICE-PRESIDENT.

Messrs. Allen, Atkins, Bottle, Corder, Cross, Grose, Hampson, Hills, Martin, Martindale, Newsholme, Savory, Schacht, Southall, Warren, and Young.

The minutes of the previous meeting were read and confirmed.

BOARD OF EXAMINERS.

A letter was read from the Privy Council Office, approving the appointment of the Boards of Examiners for the year.

ELECTION OF MEMBERS.

Pharmaceutical Chemists.

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

Cooper, Walter Temple London.
Dean, Arthur Shiers London.
Innes, James Hong Kong.
Massey, Cecil Nottingham.
Wright, Charles George..... London.

The following who was in business before August 1, 1868, having tendered his subscription for the current year, was elected a "Member" of the Society:—

Chemist and Druggist.

Coleman, William Juby.....Brundall.

ELECTION OF ASSOCIATES IN BUSINESS.

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

Minor.

Agar, RalphSouth Bank.
Chatterton, Benjamin Tunbridge Wells.
Coleman, Thomas Lowestoft.
Dickins, Frederick B idlington Quay.
Gambling, John Pattison Sheffield.

Nicholls, Alfred Nice.
 Pipe, William Philip Liverpool.
 Simpson, Stewart Richard Hoxton.
 Smith, Herbert Workington.
 Stephen, Alexander Liverpool.
 Thomas, Hugh William Llanfairfechan.
 Thompson, Henry Edward Birmingham.
 Wood, Charles Granville Oldham.

Modified.

Darling, William Howorth Manchester.
 Watkinson, William Joseph Preston.

ELECTION OF ASSOCIATES.

The following having passed the Minor Examination and tendered their subscriptions for the current year, were elected "Associates" of the Society.

Blamey, Charles Austin London.
 Bremner, William Aberdeen.
 Bridges, Herbert Norwich.
 Cole, Vincent Theobald London.
 Evans, John Lampeter.
 Farrow, Albert Edward London.
 Fishbourne, James William Markinch.
 Fletcher, Samuel Thomas Horncastle.
 Green, George Turton Stourbridge.
 Harry, Elias Hamilton Carmarthen.
 Horn, John William Penrith.
 Keeley, James Philip Blackburn.
 Lockwood, Harold Stephenson Stalybridge.
 Marshall, Arthur Austen Waltham Abbey.
 Parkinson, Thomas Gott Burnley.
 Pattinson, Joseph Wigton.
 Peirson, Herbert Sidney London.
 Pigott, William Edmund Wadsley.
 Taylor, Archibald Leonard Camberwell.
 Taylor, John Pontefract.
 Thomas, John Aubrey Redditch.
 Usher, Alfred Musgrave Newcastle-on-Tyne.
 Wilkes, Harry Smith Upton-on-Severn.
 Wilkinson, John Horsley Colne.
 Wood, Ernest James Tockwith.

ELECTION OF STUDENTS.

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

Alexander, Ernest Glover Sheffield.
 Barnes, Arthur Swaby Barnsley.
 Beer, Bernard East Dereham.
 Bintliffe, John William Holywell Green.
 Blackburn, Oswald Vincent Selby.
 Blakeley, William Bramley.
 Blanchflower, George Percy Gt. Yarmouth.
 Blythe, George William Bow.
 Brice, Henry Doyle Guernsey.
 Brown, Charles Northallerton.
 Burgham, Harry Hinsley London.
 Burman, William Sheffield.
 Burnett, Albert Edward Bristol.
 Butler, Richard Drighlington.
 Cannell, John Wilfred Patrick Douglas.
 Chambers, Frank Dawson Eastwood.
 Clarke, Henry Jackson Stockton-on-Tees.
 Collin, John Francis Diss.
 Curtis, Arthur Lowestoft.
 Dance, James George Brighton.
 Davies, Wilfred Sydney Paddington.
 Dell, Walter John Webber London.
 Dixon, Charles John Sunderland.
 Eaton, Henry Lutterworth.
 Evans, James Herbert Everett Liverpool.
 Firth, Fred Wakefield.
 Foggitt, Benjamin Thirsk.
 Forster, William Seaham Harbour.
 Francis, John Merthyr Tydvil.
 Gardner, Hermann Charles T. Forest Hill.
 Godkin, Archibald Aston Burton-on-Trent.

Goode, Arthur Frederick Nuneaton.
 Grisdale, William Keswick.
 Halkyard, George William Manchester.
 Hanbury, Alfred Cornelius London.
 Hass, Hermann Leo Limehouse.
 Hirst, Frederick Beaumont Batley Carr.
 Hopkins, William Edward Llandoverly.
 Horniblow, Frederick Herbert Worcester.
 Irving, George Annan.
 Jackson, Percival George William Preston.
 Johnson, Cornelius Trim Falmouth.
 Jones, Ernest William Manchester.
 Jull, Alfred Proctor Ealing.
 Lambley, Frederic Charles Blackheath.
 Leak, Frederick Thomas Edinburgh.
 Leins, Heinrich London.
 Lester, William Henry Nuneaton.
 Lewis, Richard Rice Barmouth.
 Lincoln, John Edward London.
 Lloyd, Thomas Henry Southport.
 Lowe, John Hadfield Blackpool.
 McGavin, William Preston.
 Melville, John Fraserburgh.
 Moody, Thomas Adam London.
 Oldbury, Thomas Richard Knighton.
 Owen, Samuel Arthur Bristol.
 Padgett, Edwin Austin Guiseley.
 Palk, Harold William Totnes.
 Pattinson, Thomas Guisborough.
 Peck, Harold Robinson Cambridge.
 Penistan, Arthur H. New Cross.
 Pinnington, Arthur Liverpool.
 Rackham, Charles George Halesworth.
 Rhodes, John William Leeds.
 Roberts, John Bangor.
 Robinson, James Stacey Blyth.
 Robinson, Joseph Ellis Stockport.
 Robinson, Walter Frederick London.
 Shakerley, William Arthur Clapham.
 Sheldrake, Albert Mason Colchester.
 Simpson, Henry Higson London.
 Skinner, Ernest Pape Boston.
 Smith, Ernest Edward Bristol.
 Smith, Ernest Hartmann Gosport.
 Taylor, Robert Stanley Royston.
 Temple, Frederick William Driffild.
 Todd, George Hollinwood.
 Turner, Horace Derby.
 Wellington, Charles John Rean Fowey.
 Wendon, William Totnes.
 Westlake, Lionel Leopold Windsor.
 Whitechurch, Ernest W. Nottingham.
 White, Robert S. Halifax.
 Williams, Frederick Newport (I.W.).
 Winship, Annie York.
 Woodhouse, George Ernest Bedale.
 Woolley, Percy Manchester.

RESTORATIONS TO THE REGISTER.

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

Francis Henry Appleyard, 14, Napier Street, Fitzroy, Victoria.
 Archer Farr, 1, The Grove, Hammersmith, W.
 Samuel Sargeant, 171, Kilburn Park Road, N.W.
 Thomas Taylor, 70, Connaught Road, Liverpool.

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

FINANCE COMMITTEE.

The report of this Committee was read, recommending sundry accounts for payment.

The PRESIDENT (as Chairman of the Committee) moved the adoption of the report and recommendations. On the General Fund Account the principal receipts had been for examination fees, and the payments were of the usual character, not requiring any special notice.

With regard to the Benevolent Fund, he was glad to report that several old subscribers had come back, and there had been a donation of five guineas from Mr. Gosling. The Orphan Fund remained practically about the same, and he thought the Committee would soon be able to consider the propriety of providing for another orphan. He had also to report that the Secretary of the "Camwal" Association had forwarded 100 one pound shares fully paid up, for the benefit of the Benevolent Fund, fifty from Mr. Davenport, the chairman, personally, and fifty from the chairman and directors, in accordance with the letter read last month, asking if the Society could accept the shares. A reply had been sent, saying that they would be gladly accepted, and he presumed his colleagues would all concur in the suggestion that two letters of cordial thanks for this gift should be sent, one to Mr. Davenport and one to the board of directors. The shares now stood in the name of the Pharmaceutical Society, which they could legally do, though it would not be proper for the Society to invest money in the shares of any trading company.

Mr. SOUTHALL asked if the shares could stand in the name of the Society.

The PRESIDENT said they could, the Society being a corporate body. He was sure they would be all grateful for this addition to the income of the Fund.

Mr. BOTTLE said he noticed amongst the payments a sum for the expenses of the Director of the Research Laboratory. He presumed that did not mean his personal expenses.

The PRESIDENT explained that the expenses in question formed a portion of the £150 which was granted annually for the expenses of carrying on the work of the Research Laboratory, in addition to the salary paid to the Director.

The report and recommendations were then unanimously adopted.

BENEVOLENT FUND COMMITTEE.

The report of this Committee included a recommendation of the following grants:—

£20 to the widow (64) of a registered chemist and druggist and subscriber to the Fund. Applicant's late husband had three grants previous to his death, and was elected an annuitant in December but died the next day. Applicant is in bad health and unable to earn anything. (Cheltenham.)

£12 to the widow (62) of a chemist and druggist who died in 1887, and who for some years previous had acted as dispenser. Applicant is in bad health, and her children are unable to help her. (London.)

£10 to the widow (46) of a registered chemist and druggist and subscriber, who carried on a small business but died in October last in debt. Applicant is endeavouring to carry on a general business with Post Office attached. Five children are dependent, or partially dependent upon her. (Leeds.)

£12 to the widow (66) of a former member and subscriber, who has had five previous grants. (Doncaster.)

£15 to a member and former local secretary (69), who had a grant of £20 in November, 1894, and was an unsuccessful candidate at the late election. He is suffering from hernia. (Barry.)

£15 to a registered chemist and druggist (70) who has had one previous grant. He is unable to work, and has no friends able to assist him.

One other application was again deferred for further information, and one the Committee declined to entertain.

Mr. HAMPSON, in moving the adoption of this report, went through the individual cases it embraced, in order to point out that the Committee had done its best, with the funds at its disposal, to meet the more pressing needs of applicants. He added that he thought the help the Committee was able to render encouraged self-help, which he supposed they all recognised was a feature to be encouraged.

Mr. ATKINS said he should like at the start of the new year to make an earnest appeal to friends for assistance to this Fund. Whilst he did not complain of lack of assistance, he would remind all interested in this part of the work of the Society that the Committee is giving away all that was available, and that the new year seemed a favourable time for all to remember the existence of this Benevolent Fund, and to consider whether they could not extend their aid to it. Though the Committee recommended grants amounting to a large sum he did not see that less could be done. One thing that struck him in the Committee's proceedings was the large amount of local interest excited in almost every case that came before it. The members were greatly aided in their deliberations and decisions in regard to

the applications with which they dealt by the large amount of information received, and the practical help given by local secretaries and other friends resident in the different neighbourhoods. He hoped this feeling would continue, and that friends throughout the country would graciously remember the needs of the Fund, and help it as far as possible.

Mr. HAMPSON said he quite concurred in the views to which Mr. Atkins had given expression, and that further help would be most acceptable, and could be made eminently serviceable.

The VICE-PRESIDENT, calling attention to the case where an annuitant died the day after being placed on the Fund, said the incident, to his mind, enforced a view which he had long held, that they would have to consider whether something better than the present system of election could not be adopted, with the aim, if possible, of relieving the more pressing cases before death put an end to their distressed friends' troubles and anxieties.

The PRESIDENT said that having nothing to do with the practical administration of this Fund it was the more gratifying to him to see a tendency in the Committee to vote what he would call respectable sums when recommending relief. He liked to see sums of £20 in the lists of proposed grants because he felt that in many cases such an amount would be infinitely more serviceable than two grants of £10 each. Although he knew what this involved, he had the fullest confidence that their brethren would support a generous policy, and he was glad to recognise in many quarters indications of a kindly disposition towards the Fund and its administration, especially on the part of those who came forward at the elections and acted as scrutineers, and those who assisted the Society as divisional and local secretaries. Such things, he thought, gave good promise for the new year. In this connection they must remember that the times are not brilliant, and probably those who could give large sums are much fewer now than they were twenty-five years ago; but it should equally be remembered that those who could afford to give smaller sums had greatly increased. There could be no doubt there were many of their friends who were getting a fair livelihood and could well afford to give small contributions to this Fund; and for his part he hopefully looked forward to the future, if providing them less large subscriptions, materially increasing the smaller ones.

The motion was then agreed to.

LIBRARY, MUSEUM, SCHOOL, AND HOUSE COMMITTEE.

Library.

The SECRETARY read the report of this Committee. It stated that the report of the Librarian had been received, (including the following particulars:—

	Attendance.	Total.	Highest.	Lowest.	Average.
November ...	Day	545	31	10	21
	Evening.....	172	15	4	8
Circulation of Books.		Total.	Town.	Country.	Carriage paid.
November	223	123	100	£1 7s. 4d.	

Donations to the Library had been announced (*Pharm. Journ.*, Dec. 14, p. 500), and the Committee had directed that the usual letters of thanks be sent to the respective donors.

The Committee had recommended that the under-mentioned works be purchased:—

For the Library in London:—

Sadtler, Industrial Organic Chemistry, 2nd ed.
Stevenson, Spirit Gravities and Tables.

Museum.

The report of the Curator had been received, and included the following particulars:—

	Attendance.	Total.	Highest.	Lowest.	Average.
November ...	Morning.....	644	37	12	21
	Evening.....	60	7	1	2

Donations to the Museum had been received (*Pharm. Journ.*, Dec. 14, p. 500), and the Committee had recommended that the usual letter of thanks be sent to the respective donors.

The report also stated that a Sub-Committee had been appointed, consisting of the President, and Messrs. Martindale and Bottle, to confer with the Burroughs' Memorial Committee, with a view to formulate details and to report. The Committee had recommended that the evening meetings be held in future on the Tuesdays following the Council meetings in February, March, April, November, and December, instead of on Wednesdays. An application for a grant from the Liverpool Pharmaceutical Students Association was considered and adjourned.

The PRESIDENT, in moving the adoption of the report and recommendations, said it was hoped that the Sub Committee appointed would soon have a meeting with the Burroughs' Memorial Committee, and be able to report to the next meeting. With regard to the evening meetings, it was found that the officers of the Society, including the President, had so much to do on the Wednesday following the Council meeting, when the Library Committee met, and sometimes other special Committees, that it interfered with the necessary preparations required for the success of the evening meeting. The meeting was sometime ago moved from the day on which the Council met for the same reason, and it was then thought that the business of the Library Committee would not take so long as to interfere with preparing for the evening meeting, but it was found that it often occupied several hours, and it was suggested that for country members of the Committee who liked to take the opportunity of being in town to attend the evening meetings, it would be as convenient to come up on the Tuesday evening as to stay in town on the Wednesday; and on the whole the Committee thought the proposed change would be beneficial. An additional reason for it was that the Chemists' Assistants' Association held its meetings on Thursdays, and it was not always convenient for young men to get away on two successive evenings. With regard to the application from Liverpool, he might say that the Committee was prepared to recommend a grant, and the matter had simply been adjourned for the purpose of arranging details.

The report and recommendations were adopted.

CORRESPONDENCE.

The PRESIDENT said a letter had been received from the Honorary Secretary of the Edinburgh and District Chemists' Trade Association, enclosing a copy of a resolution recently passed by that body, thanking the Pharmaceutical Society for its endeavours to bring about an amendment of the Companies Acts, and promising to assist in any effort to put an end to the recognised evils associated with one-man companies. The usual letters had also been received from the Examiners, thanking the Council for their appointment.

ILLEGITIMATE TRADING.

The PRESIDENT said he would like to draw the attention of the Council and of local secretaries to some difficulties in which the Council was placed by the fact that, through the mistaken kindness of some of their brethren, others were allowed to carry on business by means of branch shops under conditions which were now held to be contrary to law. Cases of apparent hardship occurred from time to time, in which information was placed before the Committee, which was obliged to recommend the Council to act if it was found that a branch shop was left in charge of an unregistered assistant as manager. It was intimated privately that there must be many of these branch businesses still extant where registered persons were not in charge; and it was only right he should say, that when the Council found cases of that sort occurring—whether of one month's standing or more—it was obliged to exercise the powers vested in it, and to enforce the law without any personal consideration whatever. He referred to the matter publicly because it was becoming the habit of some of their brethren to ask for consideration and clemency in certain cases, and he conceived there was nothing more detrimental to the interests of the body politic than that any of their brethren in any city or town should calmly allow one of their number to carry on two or half a dozen branch pharmacies, knowing all the while that they were in charge of unregistered persons. The ethics of their craft, he thought, required that a neighbour should call on such persons and ask them to put themselves right. That would be true kindness; but to allow them for years to carry on business under such conditions, and then when information came to the Council—sometimes from public sources—and it was obliged to take action, to come forward and ask for clemency was a thing he could not consider to be right. It was the duty of every member of the Society and everyone on the Register not only to carry on his own business strictly in conformity with the law, but it was also his duty both to his neighbour and to the Council that he should do whatever in him lay to get his neighbour to do the same thing. If the Council could get the law carried out in its entirety, without any prosecutions, that would be preferable. The Council did not desire to recover penalties either from registered persons, or from grocers, or indeed any other class of persons, but its duty was to enforce the law. Sympathising as he did with all his brethren in their desire to

ameliorate their condition and to fight the battle of life as cheerfully as possible, he could not sympathise with, but was bound to condemn, both personally and officially, that form of friendship which allowed a wrong thing to go on for many years, and when it was found out, endeavour to shield the wrongdoer on the ground that it had been a thing of long standing. He made this statement in order to save himself from any possible misconception. Neither, he as President, nor the Registrar, could have any feeling in this matter. Their duty was plain and must be carried out, whether it were against a friend or a neighbour, or an outsider.

Mr. BOTTLE said he endorsed to a very large extent what the President had said. The only qualification he would make would be to throw the duty of remonstrance on the Local Secretary rather than on the neighbour of the offending party. He had felt it his duty as Local Secretary when he came across anything illegal, either committed by a member of the craft or an outsider, to intimate to that man that he was doing wrong, and if the wrong were corrected he heard no more about it. On the other hand, when such a hint had not the desired effect, more active measures had to be taken. He thought it was the duty of local secretaries in all cases to do their utmost to see that the trade in their own district was carried on upon strictly legitimate lines.

Mr. HILLS thought the truth probably lay between the President and Mr. Bottle. In some cases the local secretary would have more influence, but where a friend could intervene he might sometimes produce more effect.

The PRESIDENT said he quite endorsed what Mr. Bottle had said; but, at the same time, the greatest kindness one friend could do to another was to put him right if he were wrong.

Mr. BOTTLE said it sometimes happened that near neighbours were not friendly, and the local secretary could speak with the authority of the Society.

GENERAL PURPOSES COMMITTEE.

The report of this Committee was, as usual, read and considered in committee. It included the usual letter from the Solicitor as to cases in which proceedings had been instituted.

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

AN OLD DRUG SHOP.

A hundred and fifty years ago the practice of pharmacy was probably altogether in the hands of members of the Society of Apothecaries, but the interval between that period and the year 1815 is interesting as having been the time when the evolution of the chemist and druggist took place, and the business carried on under that designation became more definite. There are perhaps few shops now in existence where a business of that nature was carried on so long ago as in one which has recently been pulled down in the Briggate at Leeds. As will be seen from the accompanying illustration, it bore the inscription "Established in 1750," and the locality where it was situated was then known as "near the Cross." According to some old manuscript records one of the proprietors of this shop was Samuel Glover. Some extracts from the manuscripts above referred to were published last year in the *Leeds Mercury*, and they serve to give an idea of the conditions under which business was carried on prior to the commencement of the present century. Samuel Glover was a native of the West Riding of Yorkshire, and after receiving a moderate education in the district, and serving his apprenticeship in Yorkshire, he spent several years as an assistant with a large firm of druggists in London. At the age of twenty-four he began business on his own account in Knaresborough, and subsequently removed to Leeds in 1804, taking the Briggate shop with the aid of money borrowed from relatives and friends. He lived at his shop as was then the custom, and in moving from Knaresborough his effects were carried by waggon or canal. The premises were newly fitted up and furnished, probably the bow windows shown in the engraving date from that period. The interior was fitted with oak shelves, counters, drawers, etc., by a local joiner at a cost of about seventy pounds, the painting and decoration cost thirteen pounds. A desk purchased in London was brought to Leeds by sea, and a three-light oil lamp costing three pounds seven was hung in the shop. The invoice of this lamp describes it as being of the most improved description. Outside a large sign was put up over the shop windows representing the figure of a snake in the grasp of an eagle. Among

other provisions for business, a tea licence was obtained, for which five shillings were paid for the year. Advertising seems to have been but moderately adopted in those days, as the sum expended in that way is entered as thirteen shillings.

After these preliminary operations had been completed, a circular was issued in the following terms:—

Leeds, January 1st, 1805.

Sir, or Madam,—Permit me to acquaint you, I have taken and entered to the shop occupied many years by Mr. David Joy, at the Rose and Crown Yard end, near the Cross, where I intend carrying on the business of druggist, grocer, tea dealer, and seedsman. Having laid in a stock of every article of the best quality, from the first markets, and having lived upwards of three years in a very respectable house in London, I flatter myself I have an opportunity of serving you upon equal terms to any house in town; if therefore the utmost attention, punctuality, dispatch, and unceasing regard to your interests afford any claim to, I trust, I shall not be found altogether unworthy of, which circumstance, aided by my constant endeavours to merit your favours, augments the zeal with which I hope for your patronage.

Remaining very respectfully,

Your most obedient humble servant,
SAMUEL GLOVER.

Mr. Glover appears to have been sensible of the necessity of making a good personal appearance judging from the record that he provided himself with a suit of superfine black cloth at 25s. per yard, and with a clean-shaven chin, neatly powdered hair, a white neck-handkerchief tied in a handsome bow, a frilled shirt, knee breeches, black silk stockings and buckled shoes, was prepared to wait upon ladies or gentlemen who might favour him with their patronage as solicited in the circular above quoted.

Druggists in those days sold many things besides drugs, oils and colours, varnishes, gums, etc., and these more bulky articles were stored in an old warehouse at the top of a back-yard. The flow of custom was such as to lead to the desire for a partner soon after commencing, but no suitable replies having been received to the advertisements for one, Mr. Glover altered his mind and remained sole master. Some of the prices charged are of interest, as marking the altered conditions now prevailing:—Black tea, 4s.; Congou, 8s.; Pekoe, 12s.; gunpowder tea, 13s.; best Turkey coffee, 6s.; White's cocoa, 4s. 8d.; Fry's chocolate, 6s.; Sir Hans Sloane's chocolate, 7s.

Between 1805 and 1809 trade prospered. Various additions were made to the shop fittings and the stock increased. It is recorded that Mr. Glover kept a good table and generally indulged in a glass or two of wine after dinner. In summer he took a week or two at the Spa and braced himself for work by a dip in the sea at Scarborough.

From some letters sent to him it appears that he did not always satisfy customers for whom he procured things that were not in his stock. A Witherby shopkeeper complains that four dozen lemons he supplied at 2s. 6d. a dozen were "rubbish, and not worth a penny."

The influence of taxation is shown by the changes in price of various articles, white pepper changing from 4s. to 6s. and 8s., vinegar being advanced 3d. per gallon. In anticipation of a reduced tax on coffee, the stock was allowed to run low, and then the dealer in York could not roast it fast enough to supply his customers.

After some time Mr. Glover took an apprentice, and the guardians of the parish hearing of this asked him to take a parish apprentice as well, and, failing to do so, he had to pay a fine of £10 to the Leeds Workhouse.

The hour of opening shop was eight, and when the postman delivered letters there was a long adding up of postages, so many at 10d., 8d., 5d., or 4d., and 9s. 7d. to pay in all. The letters were written on post letter paper, folded and doubled one end into the others, with the addresses on the back, as envelopes were then unknown. The fire insurance premium in the Phoenix was 12s. on £400, and the duty ten shillings. A notice for the payment of a rent amounting to 1s. 7d. ran as follows:—

"Manor of Whitkirk, in the county of York. Parcels of the possessions of the late dissolved Monastery or Priory of St. John of Jerusalem in England." You are hereby summoned to appear at the Court Leet of our Sovereign Lord the King and Court Baron of the Right Honourable Frances, Lady Viscountess Irwin, Lady of the said Manor, on the 21st day of April instant, by ten of the clock in the forenoon, at the house of Mrs. Atkinson, in Whitkirk aforesaid, then and there to pay your rents and do your suit and service. Dated the 12th day of April, 1809.

MICHAEL SCHOLEFIELD, Steward.

After business hours time was passed in reading last Saturday's newspaper, or the *National Register*, or *John Bull*. Friends dropped in to talk over the news of the day, bad debts, etc., all lamenting that money was never so hard to get, and they don't know what the country is coming to. Then about eleven o'clock the shutters were put up, and all retired to bed.

But notwithstanding bad times, Mr. Glover made the acquaintance of a lady further down the street, and putting on a pair of Austrian boots, which cost him two guineas, a green cloth coat with brass buttons, fawn-coloured cashmere breeches, and a hat which cost 28s., with an allowance of 7s. for the old one, he pays his addresses, and is soon afterwards married. In the preparation for that event the house is redecorated, the parlour papered with paper costing 7s. 3d. a piece, and the drawing-room with one at 9s. 6d., besides an elaborate French green border costing £1 18s. 6d. Some furniture is brought from London, the rest made in Leeds. Pots, dishes, and jugs costing £11 came from Liverpool by canal. After the wedding at the Parish Church the whole party drive off to Harewood in three chaises for the day, and Mr. Glover pays for them £2 8s., with 7s. to each of the jockeys.

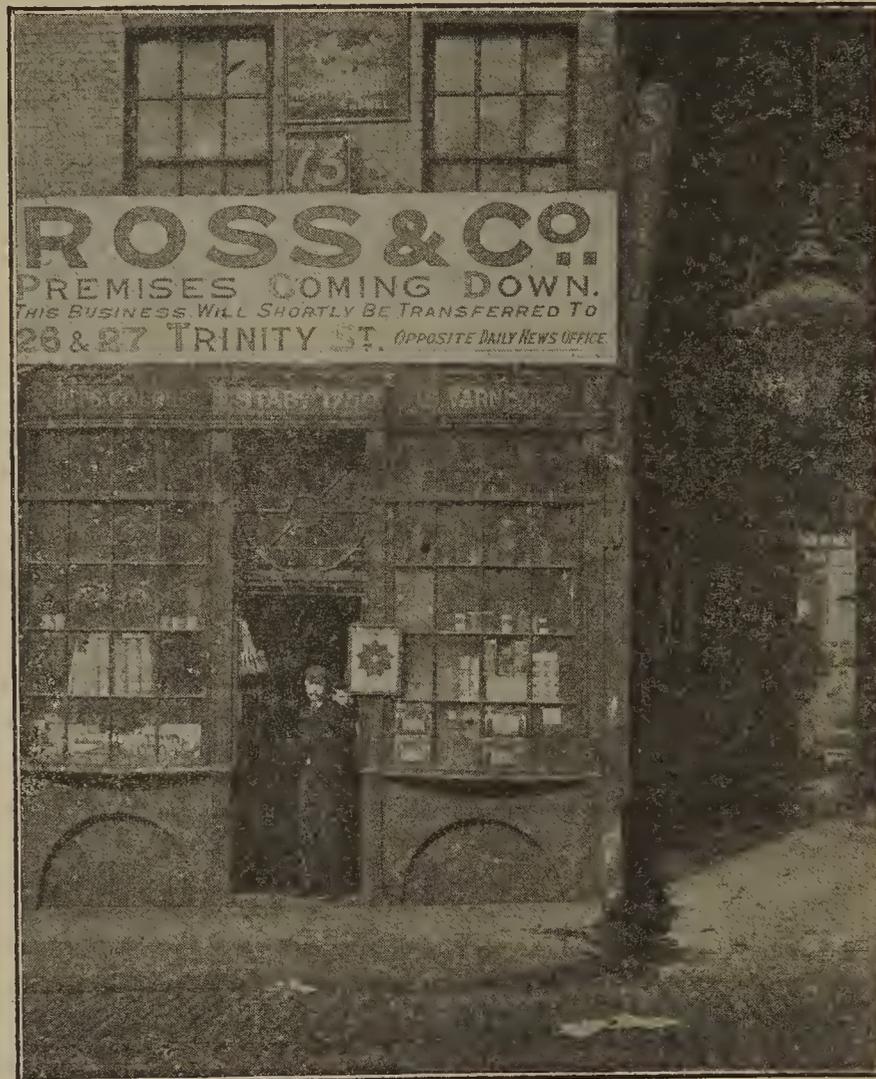
He had scarcely settled down to business after his marriage when he finds himself liable to serve in the Militia for five years, and has to find an acceptable man to take his place,

as appears from the following certificate:—

Borough of Leeds, in the West Riding of the County of York.—I do hereby certify that Samuel Glover, of the Upper Division in Leeds, in the said borough, druggist, was balloted to serve in the Militia of the said West Riding, and that he provided James Kays, of Blackburn, in Lancashire, cotton weaver, a substitute in his place and stead, who was sworn and enrolled the 1st day of September, in the year of our Lord 1810, as a substitute of the said Samuel Glover, for the space of five years, and for such further time as the Militia should remain embodied. As witness my hand this third day of September, in the year of our Lord 1810.

THOMAS BOLLAND,
Clerk of the Sub-Division Meetings of the said Borough.

These records of the period antecedent to the passing of the Apothecaries Act when the pharmacists of that day became recognised medical practitioners, do not say much of drugs or pharmacy, although the business carried on by Mr. Glover was called that of a druggist. It was evidently of a very miscellaneous character, and probably the business carried on by persons registered in 1868 as having been druggists before that date was, in many instances, of the same character.



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LONDON: SATURDAY, JANUARY 11, 1896.

THE COUNCIL MEETING.

AT the opening of the proceedings last Wednesday a letter from the Privy Council Office was read by the PRESIDENT, communicating approval of the appointments of Examiners made at the previous meeting of Council.

The additions to the Society comprised six Members, thirty-eight Associates, and eighty-six Students.

The report of the Finance Committee, in addition to ordinary details, mentioned that several former subscribers to the Benevolent Fund have resumed their position as contributors to the Fund, and that a donation of five guineas has been received from Mr. GOSTLING. The shares of the Camwal Association given by Mr. HORACE DAVENPORT and the directors for the benefit of the Benevolent Fund, have been received, and directions were given that letters of thanks should be sent to the donors. These shares, which are fully paid up, will be held by the Pharmaceutical Society in its capacity of a corporate body, and will produce a welcome addition to the income of the Benevolent Fund. In reply to a question put by Mr. BOTTLE, the PRESIDENT explained that part of the sum mentioned in the report as having been paid for the Research Laboratory was for the expenses of carrying on work.

On the recommendation of the Benevolent Fund Committee, six grants amounting in all to eighty-four pounds were ordered to be paid, one of twenty pounds, two of fifteen pounds each, two of twelve pounds each, and one of ten pounds. Mr. HAMPSON, in moving the adoption of the report, remarked that in endeavouring so far as possible to meet the more pressing need of applicants, the Committee hoped to encourage self-help. Mr. ATKINS, taking the start of a new year as an opportune time to appeal for assistance, called attention to the fact that the Committee is giving away all its available money, and could not well have done less than it has done. He also expressed satisfaction at the evidence of local interest taken in the applications, affording in several instances much assistance to the Committee. The Vice-President called attention to the recent death of a candidate immediately after his election as suggesting the desirability of some better system of election. Before the adoption of the report the PRESIDENT remarked that the tendency of the Committee to grant more respectable sums was especially gratifying, although it involved full confidence, in the

generosity of supporters, and he referred to various indications of kindly disposition to the Fund which justify a liberal policy. If those able to give large subscriptions are less numerous than formerly, the number of those who can contribute small amounts is now much greater, and therefore the future may be looked forward to with confidence.

The report of the Library, etc., Committee stated that arrangements have been made to confer with the Burroughs' Memorial Committee, and that the consideration of a grant to the Liverpool Students' Association was adjourned for arrangement of details. It was decided, on the recommendation of the Committee, to hold the evening meetings of the Society in future on Tuesday, instead of Wednesday.

Among other correspondence a letter has been received from Mr. CLAUDE F. HENRY, enclosing a resolution passed by the Edinburgh District Trade Association, thanking the Council for its endeavours to bring about amendment of the Companies Acts with a view to prevent the recognised evils of one-man companies, and promising assistance in that direction.

The report of the General Purposes Committee gave information as to the progress of cases in the hands of the Society's solicitors, and, on the recommendation of the Committee, instructions were given for proceedings to be taken in several instances of infringement of the Pharmacy Act, which had been considered by the Committee.

Before the close of the meeting the PRESIDENT drew attention to the circumstance that in the administration of the Pharmacy Act the Council is sometimes placed in difficulty through the mistaken kindness of members of the craft in asking for consideration and clemency in cases where the Council has had to enforce the law. When information is given that branch shops are being carried on without registered persons in charge, the Council cannot do otherwise than fulfil the duty imposed upon it by the Act. Cases of apparent hardship may occur, but the Council cannot be influenced by feeling or personal considerations, and while it is the duty of every person on the Register to carry on his business in strict conformity with the law, it is equally a duty to induce others to do the same. By the exercise of friendly influence that might often be done to general advantage. But nothing can be more detrimental to the common interest of the craft than to ignore a breach of the law by a neighbour, and then to plead for clemency when the offender is found out. True kindness and regard for the obligations of each registered person to the whole body should be manifested in a different manner.

Mr. BOTTLE concurred in these remarks, and added that as Local Secretary he had felt that his duty was to remonstrate with anyone acting illegally. He thought local secretaries should do their utmost to see that the trade is legitimately carried on.

THE USE OF FOOD PRESERVATIVES.

WE have on several occasions referred to applications of the Food and Drugs Act, which were indicative of excess of zeal on the part of public analysts, and the case reported in the Journal of November 9 last appears to be of that nature. A decision has been given in the case only this week (see page 38), and as it is in favour of the defendant the inference may be drawn that the prosecution was a vexatious interference with the sale of the article to which it related.

The question at issue was purely medical, and the opinion that a small proportion of salicylic acid used to preserve sweet wines can be injurious is distinctly opposite to medical opinion, so that the only ground for the charge of adulteration was an exaggerated doctrinaire on a subject outside the province of an analyst.

ON PEPSIN AND ITS ACTION.

THE value of reliable preparations of pepsin in certain cases of functional disorder of the stomach is established, whilst, as has been previously pointed out in these columns, preparations which profess to contain all the digestive ferments are valuable or otherwise solely in proportion to the amount of pepsin they contain, trypsin and the other ferments, except pepsin, being destroyed by the acid of the stomach. It is of importance to know the relative value of samples of pepsin obtained from the stomachs of different kinds of animals, and also what effects different acids and substances, such as caffeine, may have in modifying the rate of gastric digestion. In this connection a series of experiments recently published by WRÓBLEWSKI (*Zeitschr. für Physiol. Chemie*, July, 1895) deserve attention. Two parallel series of observations were made; in one pepsin obtained from the stomachs of children soon after death, and in the other pepsin obtained from the stomachs of pigs, was used. Fibrin stained with carmine was the material by which the digestive power of the preparations was tested in the usual way, the rate of the process being judged by the relative depth of the colour the various liquids assumed after a given time. The acids were made equal to viginti-normal alkali solution by means of litmus, except in the case of phosphoric acid, which differs from the other acids in its action on litmus, and so the solution was made by means of estimating the sp. g. of the solution. A second solution of phosphoric acid was also made having a litmus equivalence of $\frac{1}{20}$ Na_2CO_3 , and it was found by taking the specific gravity that this solution had the equivalence of a deci-normal alkali solution.

Two kinds of pepsin were used: pig's pepsin prepared by WITTE'S method, *i.e.*, glycerin extraction and subsequent filtration; and human pepsin obtained in the same way from the stomachs of infants that had perished during birth. The pig's pepsin extract was more powerful than that of infants, so that the former required dilution to make it of exactly the same digestive power as the extracts from the stomachs of children. Ten C.c. of the different acid solutions were placed in two sets of twelve similar test tubes. One tube was set apart with distilled water to serve as a control. One C.c. of carmine fibrin was placed in each tube, and then 1 C.c. of child's pepsin extract in the first series of tubes, and the same amount of diluted pig's pepsin extract in the second series. The tubes were shaken from time to time, and were kept at a temperature of 15° C.

The tabulated results of these experiments show that digestion is most rapid with oxalic acid solution ($=\frac{1}{20}$ normal alkali solution), and after that successively with HCl, HNO_3 , and H_3PO_4 , tartaric, lactic, citric, malic, paralactic, sulphuric, and acetic acids. With pig's pepsin and oxalic digestion was complete in thirty minutes, and with child's pepsin in forty minutes; in the rest of the series a gradual decrease of digesting power was observed—with the exception mentioned below—so that the acetic acid tube showed only a trace of red colour in the liquid after twenty hours' digestion with child's pepsin, and none, after

the same period, with pig's pepsin. With stronger H_3PO_4 ($=\frac{1}{10}$ normal alkali) the process was complete in both cases after forty minutes. The control tube showed no colour in the water after twenty hours. Some differences were observed in the behaviour of the two kinds of pepsin; thus, with pig's pepsin, phosphoric acid ($=\frac{1}{20}$ normal alkali) came fifth on the list, whilst with child's pepsin it came sixth, and lactic acid fifth. A further series of observations were made to test the effect of various substances in modifying the rate of digestion. The results showed that whether as hydrochlorates or as the free base, caffeine hastened digestion, as did also, but less markedly, theobromine and codeine. On the other hand, veratria delayed the process to a marked degree, and to a less extent the same effect was noticed with morphia, conine, or atropine. The hydrochlorides of narceine, strychnine, quinine, and coniine also delayed digestion.

THE INTERPRETATION OF THE PHARMACY ACT.

So much difficulty has been experienced in time past in convincing County Court judges of the exact scope and meaning of Section 15 of the Pharmacy Act, 1868, that the remarks of His Honour Sir HORATIO LLOYD, on the 3rd inst. (see pp. 37-38), seem worthy of special reference. The offence having been fully proved, acknowledged indeed by the defendant, the judge observed that, according to the strict letter of the law, the moment it is proved to his satisfaction that a man who is not a registered chemist has sold any of the poisons mentioned in the Schedule or any preparation of them, the defendant is proved to have committed an offence against the law, and therefore liable to the specified penalty, which the judge has no power to remit. The question of quantity, it was pointed out, has no bearing upon the matter, so long as it is proved that poison is sold. This is a very satisfactory reading of the Act, and, if upheld, should go far to obviate some of the difficulties experienced in proving such cases in court. The judge also pointed out that "it is most important that the sale of poisons should be restricted to the hands of fully qualified and registered chemists." Incalculable mischief, he observed, may arise through the sale of poisons which it may not be possible to trace to the seller, when obtained through other than legitimate sources. This, of course, is the chief reason for restricting sales from the legal point of view, but it is equally important that public interests should be safeguarded by all poisons passing through the hands of persons specially trained to deal with them.

OLD-TIME PHARMACIES.

It has been suggested that some information relating to the business of the chemist and druggist during the early part of the century would be interesting to readers of the Journal, and that many members of the trade throughout the country could furnish details as to the past history of the business with which they are connected or others of which they have a knowledge. We shall be glad to receive communications of that nature or to be informed of sources from which particulars may be obtained. In the present number (see p. 30) an illustration is given of a shop in Leeds, where a druggist's business was carried on from 1804, and probably even from an earlier date.

ANNOTATIONS.

INTERNATIONAL PHARMACEUTICAL EXHIBITION IN PRAGUE.—The Prague Pharmaceutical Society has decided to celebrate the termination of the twenty-fifth year of its existence, by holding an international pharmaceutical exhibition in the exhibition palace in the Král O'ora, between August 15 and September 15 next. A general invitation has been issued to chemists and druggists, pharmaceutical associations, producers of pharmaceutical and chemical preparations, makers of machines and instruments for pharmaceutical purposes, and all other firms having business relation with chemists and druggists, to participate in this, the Second International Pharmaceutical Exhibition at Prague. Applications for particulars, programmes, etc., should be addressed to the President of the Executive Committee, Dr. K. Fragner, pharmaceutical chemist, Prague III. nro 203, by whom the invitation is signed.

DATE OF NEXT EVENING MEETING IN LONDON.—To prevent inconvenience to members and associates of the Pharmaceutical Society who attend the evening meetings in London, special attention is directed to the fact that the Council has decided to hold the next meeting on Tuesday, February 11, instead of Wednesday. This alteration of the day of meeting will be a permanent one (see pp. 28-29).

SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY.—This Society has taken the Montgomery Hall, Sheffield, for Mr. W. Lamond Howie's lecture on the Swiss Alps. The date is January 29, and Sir H. Stephenson, J.P., has accepted an invitation to preside.

CAMBRIDGE PHARMACEUTICAL ASSOCIATION.—The annual dinner of this Association was announced to be held at the Prince of Wales' Hotel, Cambridge, on Friday, January 10, at 8.45 p.m. precisely. Members and friends who open their Journals promptly on receipt, on Friday morning, are reminded that they are cordially invited, and may obtain tickets (3s. 6d. each) by applying at once to either of the honorary secretaries, Messrs. E. Saville Peck, 30, Trumpington Street, and S. F. Barker.

INDEX TO THE 'PHARMACEUTICAL JOURNAL.'—The index to the first volume of the new series of the Journal is published with this week's issue. To suit general convenience it has been so arranged that it may be placed either at the beginning or end of the volume. Probably in most cases the former alternative will be adopted, and instructions should be given to the bookbinders accordingly. This index is fuller than any previous one, extra cross references being given wherever likely to prove useful.

THE CHEMISTS' BALL.—A committee meeting to make the final arrangements for the Chemists' Ball, will be held at 16, Bloomsbury Square, W.C., on Monday next, January 13, at 2 p.m. The Ball will take place on the following Wednesday, January 15, at the Portman Rooms, Baker Street, W. The quadrille band will be conducted by Mr. Dan Godfrey, Mr. T. C. W. Martin will officiate as M.C., and the proceedings are to commence at 9 p.m. Inclusive tickets (Ladies 12s. 6d. each, Gentlemen's, 17s. 6d.) may be obtained from the Honorary Secretary, Mr. John C. Umney, 48 and 50, Southwark Street, S.E., or from Mr. Richard Bremridge, 17, Bloomsbury Square, W.C. Applications for tickets should be sent without further delay, and must be accompanied by remittances.

ANTISEPTIC VALUE OF SODIUM FLUORIDE.—According to the *Nouveaux Remèdes*, fluoride of sodium (fluorol) is reported by Daclos to be a valuable antiseptic. It is prepared in the form of a bluish white, odourless powder of saline taste. It is preferable to sublimate, which is sixteen times more poisonous, also to silver nitrate, formalin, and permanganate, for when employed in hypodermic injections it is painless. In one per cent. or even half per cent. solution it acts as a powerful germicide. Lagrange states that probably its efficacy as a disinfectant and bactericide is due to the fact that it does not coagulate albumin like sublimate, consequently the microbes are not protected by an envelope of coagulated albumin. It is specially useful in ophthalmic practice; the lachrymal mucous membrane tolerates injections of fluorol without the least reaction, since it is neither caustic nor painful and provokes no irritation.

TU-CHUNG BARK.—The botanical source of this curious bark, which is much valued as a medicine by the Chinese, and forms a considerable article of commerce in China, has at last been definitely settled, and a full description of the plant published. A partial account was published in the 'Icones Plantarum,' pl. 1950, but as the plant was unisexual (*Ph. J.* [3], xxi., p. 738; xxii., p. 613) and the male flowers were unknown, it was doubtfully referred to the Euphorbiaceæ. Now that complete material, collected by Mons. R. P. Farges, in Szechuen, has been examined, Professor Oliver refers the plant to the Trochadendraceæ, of Prantl, a group of plants which includes also the genera *Cercidiphyllum*, *Euptelœa*, *Trochadendron*, and *Tetracena*. This group, he thinks, should be separated from the Magnoliaceæ; the late Professor Baillon considered it to be allied to the Hamamelidaceæ and Saxifragaceæ. The tree is cultivated in the district of Tchen-keou in Szechuen. The following is the description now given in the 'Icones Plantarum,' No. 2361:—"*Eucommia ulmoides*, Oliv., 'Ic. Pl.,' 1950, floribus præcocissimis, masculis pedicellatis in axillis squamarum cataphyllacearum solitariis, staminibus circa 8 (6—10) receptaculo nudo insertis; filamentis brevissimis, antheris elongato-linearibus, obtuse tetragonis, apice in connectivo oblongo-lanceolato acutiusculo productis, longitudinaliter dehiscentibus: rudimentis; gynœcii O; floribus fœmineis breviter pedicellatis solitariis ovario nudo uniloculari, longe stipitato elongato compresso-apice æqualiter vel subæqualiter bifido, lobis intus papilloso-stigmatosis, stigmatibus apices productis patentibus reflexisve, ovulis anatropis geminatis pendulis, arcte applicitis."

A THOUGHT MACHINE.—From that "perennial source of stupendous sensations," as the United States has been described, come details of a marvellous invention by J. Emmner, jun., of Washington, who is alleged to have produced a machine capable of permanently recording thought. "Man can think directly into a machine, and produce an accurate permanent record of his thought, transcribable at any time." The National Press Association describes the machine as seen by some newspaper correspondents, with the utmost gravity, and proceeds, "Mr. Emmner then requested silence for a moment, seated himself before the thought machine, adjusted it for recording, and opened the electric circuit. The mechanism began its smooth, noiseless motion, the cylinder, revolving on its axis, pressed softly by the electric pencil passing along its face. Then, as the inventor brought his head within a foot of the recorder, directing his mind upon the machine, a thin cloud-like thread wound spirally about the glistening film from left to right. This was the thought-record, which, after several minutes of silent work, had overspread the entire film with its smoky, tinted coils." The description seems exact, whether true or not.

CALENDAR OF THE PHARMACEUTICAL SOCIETY.—The Calendar of the Pharmaceutical Society for 1896 will be ready for publication on the 15th inst. The advanced proof sheets show that the contents have been thoroughly revised and brought up to date. Reference to page vi. of our advertisement columns will show that the text of the Calendar covers a very wide field of information—pharmaceutical, legal, and official—and should appeal to every one connected with the Society, if not to every member of the trade. Registered persons will find a perusal of that portion of the book dealing with the various enactments affecting the practice of pharmacy of great value in the conduct of their business, as it is possible for the most conscientious man to offend against the law if he is ignorant of or only partially acquainted with the provisions regulating his calling. A copy of the Calendar will be sent, post free, on receipt of application, enclosing remittance (2s. 4½d.), by Mr. Richard Bremridge, 17, Bloomsbury Square, London, W.C.

PERCHLORIDE OF MERCURY IN WHOOPING COUGH.—The *Giornale Medico del Esercito* advises painting the throat of children affected with whooping cough with a 1 per 1000 solution of perchloride of mercury, going well to the back of the tongue and over the uvula and tonsils every morning. No toxic effect has been observed, and most cases can be cured in from eight to fourteen days.

FRENCH HONOURS FOR SCIENTIFIC WORKERS.—On the occasion of the Centenary of the French Institute, Professor Max Müller, who is an Associate of the Academy of Letters, was appointed Commander of the Legion of Honour. Professor Ramsay and Lord Rayleigh, as well as Messrs. Simon Newcombe, Alexander Agassiz, and Rowland, of the United States, who are all corresponding members of the Academy of Science, were made Officers of the Legion of Honour; while Mr. Adolphus Hall, of America, a corresponding member of the Academy of Science, was appointed Chevalier of the Legion of Honour.

A REMARKABLE PHOTOGRAPHIC DISCOVERY.—According to the Vienna correspondent of the *Standard*, Professor Röntgen, of Würzburg University, has performed a truly remarkable feat, being nothing less than the photographing of bones *in situ* in the human body, or metals enclosed in wooden or woollen coverings. The light emitted by electrically excited vacuum tubes was employed, and photographs of the human hand are said to be obtainable in Vienna, which show the bones and rings, but not the accompanying flesh. The proffered explanation of this phenomenon is that wood and other organic substances are transparent to the invisible light rays, whilst metals and bones are opaque and absorb the rays, a representation of those substances alone therefore appearing on the photographic plate. Further confirmation of the discovery will be required before the facts are accepted in this country, in spite of the assurance of the *Presse* that "there is no joke or humbug in the matter."

'HISTORY OF THE CHOLERA CONTROVERSY.'—In a work bearing this title (Churchill, 3s.), Sir George Johnson, F.R.S., describes his experiences in the study and treatment of cholera, and gives directions for treating the disease, based on those experiences. Sir George is of opinion that the practice of arresting most forms of diarrhoea by means of opium is unscientific and dangerous, and he expresses satisfaction (*vide* p. 55), at finding that, "after forty years of controversy, the evacuant or eliminative treatment is now being generally looked upon not only as rational and scientific, but in practice most successful."

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

EXAMINATIONS IN EDINBURGH.

January, 1896.

MAJOR EXAMINATION—PASS LIST.

Candidates examined	4
„ failed	3
„ passed.....	1

Lamb, William Henry.

MINOR EXAMINATION—PASS LIST.

Candidates examined	165
„ failed	100
„ passed.....	65

Anderson, James.	McDonald, David Baird.
Barron, Robert.	Macintyre, Archibald Chalmers.
Barrow, John Robert.	McKenzie, Alexander.
Blyton, John Henry.	McKenzie, Charles.
Bosticey, William George.	Mason, Herbert.
Brawn, Wilfred Percival.	Melville, John.
Burch, Thomas William.	Murchie, John.
Campbell, Donald.	Nicholson, Thomas.
Chalmers, William Thomas.	Oates, Cleophas Henry.
Currie, Archibald.	Patrick, Christopher.
Donald, Joseph.	Pickworth, George Boyer.
Donaldson, James.	Plowman, Charles William.
Field, John Faram Victor.	Rimington, Whitworth.
Finlayson, William.	Rowan, William.
Fowler, Frank.	Rowland, Geo. Howard Chas.
Gill, Frank.	Scott, George Baty.
Hadfield, Albert Edward.	Slater, Thomas Sutcliffe.
Hall, Louis Clarence.	Smith, Walter.
Harley, David.	Smith, William Davidson.
Harper, James William.	Snowdon, William Hall.
Harris, Abraham.	Suttie, Joseph Henry Cole.
Hill, Richard Barker.	Swanson, Alexander Jas. R.
Houlton, Joseph Leighton.	Taylor, Thomas John.
Hoy, Charles.	Tierney, Frank.
Jack, William.	Uttley, Luke.
Kirk, William Grant.	Vergette, George Lucas.
Knight, Harry Herbert.	Westley, George Ernest.
Latham, Hugh.	White, John Alexander.
Latham, William.	Wilby, Frederick Tertius.
Lennox, James.	Winton, William Colin.
Lister, James.	Woodhouse, Frederic Richard.
Littler, John, Junr.	Wright, Joseph.
Lamb, Henry Alexander.	

ENGLISH NEWS.

SOCIETY OF CHEMICAL INDUSTRY (MANCHESTER SECTION).—At the third meeting of the session, held on January 3, at the rooms of the Chemical Club, Victoria Hotel, under the chairmanship of Mr. G. E. Davis, the first paper read was by Dr. B. W. Gerland, on "Some New Methods of Testing Indigo." Dr. Gerland, in his paper, stated that there were innumerable methods of testing indigo, but none that was absolutely reliable—a circumstance which was all the more surprising in view of the value of indigo as an article of commerce. He favoured the nitrobenzol process, which differs very much from the ordinary methods. In the course of the discussion which followed a good deal of diversity of opinion was manifested. Mr. Rawson, of Bradford, said he had come to the conclusion that the best method was that of oxidising with permanganate of potash. He had heard, he said,

of experiments with the nitro-benzol process, in which it was found that the high temperature destroyed some of the indigotin. The Chairman also favoured the use of permanganate of potash, the action of which, he said, was constant and reliable. Dr. Gerland admitted that it was so when the indigo was pure. Mr. Wilfrid Irwin followed with a paper relating to gas manufacture. At the closing meeting of last session he read an interesting paper on the enrichment of gas, a subject which is at present receiving much attention from gas companies and corporations owning gas works, as it is found that by the use of oil, benzol, and other enrichers, it is possible to dispense to some extent with the use of high-priced cannel coal. He now discussed the effect of heat on the illuminating power of coal gas, and its relation to the theory of flame. He described some of the phenomena of flame, referring in particular to the stratification, observable in an ordinary gas flame, a point as to which, he remarked, we did not yet know all that was to be known. In certain experiments he had made he had found that on subjecting coal gas to a high temperature there was a great reduction in the illuminating power. Luminosity he found to be due to two different sets of reactions, and he pointed out that while one burner was more favourable to one set, another might be more favourable to another set. The results he had obtained seemed to show that the argand burner, which was used for the purpose in most gas works, was scarcely a fair method of determining the commercial value of gas, and he suggested that a fairer method would be to take the average of the union jet and the slit burners, which were those in everyday use.—The discussion of Mr. Irwin's paper was postponed.

LONDON INSTITUTION.—Sir Humphry Davy was the subject of the third and last of Professor Vivian Lewes's Christmas lectures, delivered at the London Institution (see *ante*, p. 17). As at the other two lectures, there was a large and interested audience. The lecturer, beginning with Davy's early life, gave an account of his more important researches. It was while living in Penzance that, with primitive apparatus, he learnt that marvellous skill in manipulation which stood him in such stead afterwards. At a "Pneumatic Institute" in Clifton he investigated the physiological action of various gases, and discovered the anæsthetic properties of nitrous oxide. Being appointed Professor of Chemistry at the Royal Institution in 1801, he carried on his researches in galvanism, and, by means of the large battery which he had at his disposal there, was able to effect the decomposition of soda and potash and isolate the elements sodium and potassium. Later on he demonstrated the elementary nature of chlorine and, showing muriatic acid to be a compound of that gas with hydrogen, broke down the old supposition that oxygen was a necessary constituent of acids. In 1815 he invented the miner's safety lamp. In connection with this occurred a lamentable incident of his career, for he was somewhat embittered because George Stephenson invented the same thing almost simultaneously with himself. The investigations he carried on when engaged on the safety lamp led to the enunciation of his theory of the luminosity of flame. In conclusion, Professor Lewes exhibited the splendid light obtained by burning pure acetylene—a gas which Davy had noticed, but had not fully investigated.

THE USE OF POISONOUS WEED KILLERS.—On Monday, December 30, Mr. T. Buss, County Coroner, held an inquiry at the Bicycle Hotel, Sevenoaks, into the circumstances attending the death of Ebenezer Upton, aged 44, which occurred on the previous Saturday, from the effects of drinking weed-killer containing arsenic. The jury returned a verdict of "Suicide during temporary insanity," and added a rider to the effect that the jurors "thought there should be some restrictions as to the sale and exposure of so deadly a poison. This was not the first case of the kind which had occurred in the neighbourhood, one on the Montreal Estate being the result of an accident. The label on the three-gallon jar of weed-killer found in the potting-shed was printed very indistinctly in small letters, and they thought the vessel should be kept under closer observation."

A SHEFFIELD CHEMIST ROBBED.—Several cases of shop-breaking have occurred recently in Sheffield, and an exceptionally impudent instance of theft has taken place on the premises of Mr. S. P. Lowe, chemist and druggist, of 42, London Road, and 1, Lansdowne Road. During the temporary absence of Mr. Lowe the thief had effected an entrance by the use of a skeleton key. A lady's gold watch was broken, and a number of valuable articles were stolen.

SUPPOSED SUICIDE OF A TORQUAY CHEMIST'S ASSISTANT.—A distressing case of supposed suicide occurred at Torquay on Monday afternoon, January 6, the victim being Charles Albert Snow, 19 years of age, assistant to Mr. Bathe, chemist, of Fleet Street. It appeared that Mr. Bathe returned to his shop from dinner about 2.30 and found his assistant quite dead with three prussic acid bottles lying beside him, and the circumstances point to a case of suicide. The body was removed to the mortuary at the Torquay Hospital to await an inquest. Deceased had been with Mr. Bathe for about three and a half years.

DEATH OF A PROMINENT SHEFFIELD SURGEON.—By the death of Mr. Arthur Jackson, surgeon, at the comparatively early age of fifty-one, the pharmacists of Sheffield have lost a good friend. He was present and spoke at their annual meeting and then seemed hale and hearty. About a month since he caught a chill on returning from visiting a patient, from the results of which he has died. In his profession, in connection with the medical charities of the city, is all church and educational matters, Mr. Jackson filled a large and important place. He took the keenest interest in the history and topography of Sheffield, and not many men knew more about it and its people than he did. He had a large collection of the biographies of Sheffields, as well as of local books, pamphlets, and papers, and the hope is entertained that they will be secured for the city.

SCOTTISH NEWS.

CARBOLIC ACID FOR WHISKY.—The steamer *Cholmley*, belonging to Whitby, arrived in Leith early on Saturday morning from Grangemouth, and a fireman, about thirty years of age, named Ivan Nieminen, belonging to Finland, died from carbolic acid poisoning while being removed from the ship to Leith Hospital. It appears that on the previous evening, about four miles above the Forth Bridge, a seaman gave deceased a drink from a gill bottle, which contained carbolic acid. The seaman believed that the bottle contained whisky, as he had bought a gill bottle of whisky before leaving Grangemouth, and placed it in his locker. Nieminen became ill, and died shortly after the arrival of the steamer in Leith docks. The seaman, named James Russell, was detained by the police for a short time pending inquiries, and then liberated.

THE PRESCRIBING OF PROPRIETARY REMEDIES.—At a meeting of the Glasgow Parish Council on December 3, Mr. J. Anderson Russell called the attention of the Medical Committee to the circumstance that medicines of a proprietary nature were being prescribed by the medical officer. A Sub-committee was appointed to make inquiry and report, and on January 7 Mr. Russell was enabled to state that the Sub-committee had reported as follows:—"Your Sub-committee met at the collector's office yesterday (December 18), the medical officer who prescribed the proprietary medicine particularly commented upon. The mind of the Medical Committee was shown to him as being opposed to the practice of this, or proprietary medicines generally, being prescribed by the medical officers of the Council. After some discussion, he expressed himself as being quite agreeable to fall in with the wishes of the Committee." The Committee had approved of the Sub-committee's report, and, on the suggestion of Mr. Russell, it had been agreed that an excerpt of this part of the minutes should be sent to each member of the outdoor medical staff. The latter proposal was not approved of by the Council without some lively discussion, but was finally confirmed by an overwhelming majority.

IRISH NEWS.

PHARMACEUTICAL SOCIETY OF IRELAND.—The monthly meeting of the Council was held on Wednesday, the 1st inst., the President, Mr. W. F. Wells, jun., in the chair. The report of Dr. George W. Duffey, the Lord Lieutenant's Visitor, on the Society's examinations held during the past twelve months, was received. The answering at the Preliminary examinations during the year was, the report stated, indicative of an improvement in the elementary education of a majority of the candidates. The number of candidates for the licence had exceeded that of any former year, but of the sixty-eight candidates only one-half passed. The subject in which the largest number of failures occurred was chemistry, but a noticeable improvement had shown itself in compounding. Dr. Duffey took exception to a practice on the part of

the examiner in chemistry of devoting a two-and-half-hours' examination entirely to a paper of twelve questions, of which only eight were to be attempted, and recommended a paper of six questions and an oral examination of ten minutes for each candidate, the examination to last not less than three hours.

The President remarked that it would be only necessary to convey to the examiner the wish of the Council that oral examination in chemistry should be continued at the licence examination, in order to have that course followed. The report was referred to the House Committee. A letter from Dr. Montgomery, secretary of the Apothecaries' Hall, stated that William Stevens, of 6, Rock View, Old Swan, Liverpool, whose case was referred to at the previous meeting of the Council (see *Ph. J.*, December 21), did not hold the licence of the Hall, but was a qualified assistant. Donations were acknowledged from the Pharmacy Board of New Zealand of copies of their October examination papers, and from the Editor of the *Pharmaceutical Journal* of a copy of the work entitled 'The Discovery of Oxygen.' The House Committee submitted a plan for the improvement of the druggists' examination. A copy of the plan was ordered to be sent to Mr. Turkington, a member of the Council, who had initiated the matter.

Mr. Hayes read a letter from Mr. R. S. Moone, L.P.S.I., of Belfast, stating that a fund was being raised there to give medals and prizes at the Society's final examination for the licence, and inviting the Council to join in the project. Mr. Hayes moved a resolution affirming the desirability of such a step being taken. In the course of discussion, it was remarked by Mr. Grindley that if the Council took the step suggested, they should keep the control of the medals and prizes in their own hands.

The resolution was passed, and other business having been disposed of, the Council adjourned.

THE USE OF PATENT MEDICINES IN PUBLIC DISPENSARIES.—The Local Government Board has addressed a long letter to the Edenderry Poor Law Guardians on the subject of the use of patented or proprietary medicines in dispensaries, the report having special reference to medicinal preparations used at the Rathangan Dispensary. The inspector, Dr. Stafford, recently reported on the supplies of medicine in that district, and the explanation received being considered unsatisfactory, the Board ordered the facts to be noted in the records of the department against the medical dispensary officer. The Local Government Board proceeds to say that the list of authorised drugs and medical preparations given in the dispensary rules was prepared from the British Pharmacopœia, the resources of which are found sufficient for the requirements of medical practitioners generally. As, however, the Guardians had entered into a contract for medicines, including "a number of patent and proprietary preparations not authorised by the British Pharmacopœia, the Local Government Board has directed the attention of the auditor to the matter, with the view to his disallowing any expense incurred in respect thereof. . . . The Local Government Board cannot sanction the use of the list, as they are not prepared to recommend the Treasury to recoup any portion of the cost of patent and proprietary medicines." Dr. Stafford's report on the same matter stated that he had found that the dispensary medical officer of this district had ordered some of these expensive patent medicines which had not yet received the approval of the British Pharmacopœia, and added that if a dispensary medical officer "desired to experiment with new drugs or non-official remedies he must do so at his own expense, as the ratepayers and the Treasury cannot be expected to pay for this class of experiment." In his explanation, the dispensary medical officer, Dr. Bray, denies that the outlay was extravagant, as only a very small sum was so expended, and shows that the cost of medicines last year was only about half what it was in the former year, whereas there were in 1895 some hundreds more of patients prescribed for. The Guardians have decided to adhere to the Pharmacopœia list in future.

IMPORTANT PROSECUTION UNDER THE PHARMACY ACT—At the Rathfriland Petty Sessions, David Wilson, Church Street, Rathfriland, was prosecuted "for that he, on October 17 last, did sell and retail and dispense a poison—to wit, cantharides—contained in a bottle of Leeming's essence, to Sergeant Nelson, R.I.C., Rathfriland, contrary to the Pharmacy Act (Ireland), 1874, 38 and 39 Vic., cap. 57, section 30, he not being a person properly qualified in that behalf according to law." In a second summons the defendant was charged with having kept open his shop for retailing and dispensing poison, contrary to the

same Act. Mr. Galway, solicitor, Belfast, prosecuted on the part of the Pharmaceutical Society of Ireland, and Mr. Crothers, solicitor, Rathfriland, defended. After hearing evidence, the chairman said that the magistrates had nothing to do but to impose the full penalty of £5 in each case, and order that one-third of the sum be paid to the person who had been the means of bringing the defendant to justice—Sergeant Nelson, he supposed. They would allow £1 costs in each case to meet the expenses of the Pharmaceutical Society in connection with the prosecution and the costs of the Court.

PRESENTATIONS during the festive season seem more than usually appropriate when feelings of cordial friendship animate both donors and recipient. Under such a heading comes undoubtedly the presentation to Mr. A. J. Paterson, L.P.S.I., last week, of a silver tea and coffee service by his late fellow-assistants in the establishment of Messrs. William Hayes and Co., on his leaving to manage another pharmacy. The presentation, on the 6th instant, of the distinguished chemist, Sir Charles Cameron, M.D., by the Governor (Professor Tichborne, LL.D., F.I.C., etc.) and Company of the Apothecaries' Hall of Ireland, of the Honorary Diploma of that body, probably reflects as much honour upon the donors as upon the amiable and highly respected new apothecary.

FOREIGN NEWS.

FRENCH SPECIALTIES.—In France *spécialités*, which are similar to English so-called "patent" medicines, but unstamped, are much prescribed by medical men. Their composition is stated on the label or in the circular with each one. Legally their composition should be approved of by the "Académie de Médecine," as not being injurious to the health of the general public. A case bearing on this point was heard at Paris, on December 18, and the decision is of vital interest as to the responsibility of *pharmaciens* delivering these medicines. The mother of a girl, eleven years old, who suffered from "incontinence d'urine," read a prospectus giving details of the benefit to be obtained from the use of the "Dragées B" for this complaint. This statement was supported by testimonials from medical men and private individuals. In June, 1894, she commenced the treatment, and continued for some time according to instructions given, but not obtaining satisfactory results the treatment was ceased. Some months afterwards, March, 1895, not feeling well, she asked her mother's permission to recommence, which was accorded, and as there were still some left in the bottle she took "several."

Shortly afterwards she died after much suffering. Analysis and medical evidence proved death to be caused by strychnine. Consequently the maker and the chemist who sold them were charged with manslaughter, imprudence, and negligence by not observing the law (*Loi Germinal l'an, xi., 1846*) of causing the death of the girl.

The prosecution was based principally on the fact that these dragées were stated to owe their virtue to *Scopolia japonica*, but each dragée contained in addition two milligrammes (1/33 grain) of strychnine, which fact was admitted by the maker, and also that they were stated to be "inoffensive." The defence was that they were inoffensive if taken as directed, two daily, gradually increased to six; that instead of three at least ten were missing from the bottle, and also they had been sold for thirty years with satisfactory results and no complaints. The law necessitating the approval of the Académie de Médecine had fallen out of use, although existing since 1857, as since that date no *spécialité* had been authorised, although formally applied for, as in this case. Great importance was also attached to the negligence of the mother in allowing the girl to take them without control. The decision of the court was that the maker was considered culpable of manslaughter by imprudence, and fined 600 fr. The *pharmacien* was considered culpable simply for delivery of a *spécialité* not authorised and without a physician's prescription, and fined 500 fr., with the rights of the *Loi Beranger*, which pardons the first offence, but adds the penalty to the second.

Consequently the *pharmacien* is legally responsible for the negligent use of any *spécialité* he sells. The "*Loi Germinal l'an, xi.*" (Oct., 1846) is now only used to approve of the insertion in the Codex (Pharmacopœia) of products recognised to be of public utility, and known as "antipyrine," "phenacetine," "sulphonal," etc., and formulæ such as our tinct. chlorof. et morphinæ (chlorodyne substitute), pilula ferri (Blaud's pill), etc.

LOSS OF GOODS IN THE POST.—It may interest English firms to know that a Paris magistrate has recently given a decision to the

effect that the value of articles sent by post, and lost in transmission can be recovered from the vendor if he despatches the goods. The plea that a registration fee should have been paid by the purchaser, as well as the postage, did not hold good.

THYROID EXTRACT.—At the Therapeutic Society, M. Vigier has explained a process for the preparation of an extract of thyroid gland, which consists in reducing to pulp the fresh gland and mixing with it powdered sugar, and then borax and charcoal to prevent decomposition. Excellent results were obtained by the use of this medicine, and numerous doctors testified to its activity. The glands should be quite fresh and healthy, and the manipulation must be carried out quickly. The dose is the same as that of the fresh gland.

REDUCED PRICES IN PARIS.—Pharmacies where goods are sold at reduced prices have now become so common in Paris that the public regard it as a matter of course to be allowed 20 or 25 per cent. off the prices marked on specialties, but the preparation of prescriptions has always commanded a fair remuneration. Now, however, this department has received its first attack. A *pharmacien*, M. Chabaud, late analyst to the Municipal Laboratory, has just opened an establishment in the Rue Monge, the appearance of which testifies to its revolutionary intentions. The shop front is devoid of the usual chemist-shop appearance, the windows being painted over and bearing the startling inscription "Commerce de Pharmacie." Prescriptions dispensed for fifty centimes, one franc, and one franc and a half. Circulars are distributed in the neighbourhood containing the following:—"Without discussing the reasons, good or bad, that are urged in support of the antiquated privileges of the *pharmacien*, which constitute one of the devices now existing for the exploiting of one man by another, we ask whether it is not restricting in a singular manner the liberty of the subject to compel anyone needing a medicine of little value to pay, for example, one franc, for what costs ten centimes or less, without taking into consideration that a doctor's prescription, costing a considerable sum, is required in order to obtain this medicine. Therefore, thinking it expedient to acquaint the public with the real value of those drugs that are in common demand, we have appended a list, marking the prices at which we retail them and what they cost wholesale." Then follows a catalogue of medicines, with particulars of wholesale cost, and the rates adopted by M. Chabaud.

The circulation of this prospectus naturally excited a great deal of indignation among the pharmacists of the quarter and also at the School of Pharmacy, resulting a few nights ago in the assembling of between two and three hundred students, who marched in a body to the pharmacy in question, and to the cries of "Down with Chabaud! Down with the Grocer Pharmacist," proceeded to bombard the shop front, the convenient proximity of a barrow loaded with apples supplying the missiles. In a few minutes mirrors, glasses, and bottles were all demolished, and the place wrecked before the arrival of the police, by which time the manifestants had dispersed. The proprietor, who thought it inadvisable to show himself to his unwelcome visitors, has lodged a complaint with the police, and measures have been taken to prevent a recurrence of any disorder.

PROCEEDINGS UNDER THE PHARMACY ACTS.

THE SALE OF WINSLOW'S SOOTHING SYRUP.

At the Rhyl (North Wales) County Court, held on Friday, January 3, before His Honour Sir Horatio Lloyd, the Council of the Pharmaceutical Society of Great Britain sued Joseph Littler, a grocer, carrying on business at Prestatyn, in the county of Flint, for the recovery of £10, being two penalties of £5 each, to which it was alleged he had rendered himself liable by selling poison, he not being a registered chemist in accordance with the Pharmacy Act, 1868.

Mr. R. E. Vaughan Williams, barrister-at-law (instructed by Messrs. Flux, Thompson and Flux, of 3, East India Avenue, London, E.C.), appeared on behalf of the plaintiffs, and the defendant, who was not legally represented, appeared in person.

In opening the case, Mr. Williams said the action was brought under the Pharmacy Act, 1868. The defendant carried on business as a grocer at Prestatyn, and the penalties were sued for in respect of two sales of a preparation called "Winslow's soothing syrup,"

which on being analysed was found to contain poison. Defendant was not a registered chemist and druggist. The first sale took place on October 26, 1895, when two bottles were sold, and the subsequent sale of one bottle took place on November 20. Mr. Foulds was instructed by the Society to go to the defendant's premises at Prestatyn. He did so, and on the first occasion he asked for two bottles of the soothing syrup. There was none at that moment in the shop, although the defendant kept it in stock. Defendant's wife offered to send for it, and on Mr. Foulds returning a few minutes later he was served with two bottles by Mr. Littler. On November 20, Mr. Foulds went to Mr. Littler's establishment and asked for the syrup, which was immediately produced, and he purchased one bottle. All the syrup was handed over to Mr. Moon, Clerk to the Registrar of the Society. He handed it over to the analyst of the Society, who found, as may have been expected, morphine, which was the most active principle of opium. The company which manufactured the preparation advertised it as containing morphine, but not so little as had been obtained in this case. Upon production of the Register and proof of the sale, counsel submitted that the plaintiffs were entitled to recover the penalties.

Mr. Arthur Foulds said he was instructed by the Registrar of the Pharmaceutical Society to make these purchases. On October 26 he went to the defendant's shop and bought two bottles of Winslow's soothing syrup. They were wrapped in the wrappers produced, on which was printed the words, "This preparation contains, among other valuable ingredients, a small amount of morphine, and in accordance with the Pharmacy Act is hereby labelled Poison." On November 20 he bought one bottle, which was wrapped up in the same way. He handed them over to Mr. Moon. The bottles were sold in the wrappers produced, and were closed.

Mr. Harry Moon, clerk in the office of the Registrar of the plaintiff Society, said the last witness handed him three bottles, the wrappers of which were produced, the first two on October 29, and the third on December 11. They all remained in his possession until December 16, when he handed them over to Mr. Eastes, the analyst.

Mr. Ernest John Eastes said he was an analyst and a Fellow of the Institute of Chemistry, also Demonstrator of Practical Chemistry to the Pharmaceutical Society of Great Britain. He was handed three bottles on December 16 by Mr. Moon. They were enclosed in wrappers, and were opened in his presence. He analysed the contents of the bottles, and found that each bottle contained morphine. He mixed the contents of two bottles together, and found that the mixture contained the equivalent of .08 of a grain of morphine per bottle. The third bottle contained .09 of a grain of morphine. The quantity of morphine present would be sufficient to injure the taker, if an infant.

Defendant: That is if the person took the whole bottle.

Witness: Yes, or for a young child, only a portion.

Defendant: It is only intended to take a portion.

Witness: It depends mainly on the age of the child. Children are very susceptible to opium.

The Judge: I suppose this syrup is intended for children?

Witness: Yes.

The Judge: What quantity would be harmful to a child of one year?

Witness: Probably a whole bottleful would be dangerous to a child of less than one year, a smaller quantity might prove harmful.

Defendant here interposed and said he was not a chemist, but held a licence to sell "patent" medicines, and he thought he was perfectly right in selling this. He had not the faintest idea that he did anything against the law, or that he was doing anything wrong or harmful in any way.

Counsel handed up the Register of the Society, and, after citing cases, said: A small quantity of poison is sufficient to secure a penalty, whether sold alone or mixed with other substances.

The Judge: The Schedule includes opium.

Counsel: Yes, and morphine preparations have been included in it. If this preparation were taken by a child or an infant it might prove hurtful to the taker.

The Judge: It does not appear to me that quantity enters into the question. (To defendant): What have you to say?

Defendant: I admit having sold it. I consider that I have committed a technical offence, but I had not the slightest idea that I was doing wrong. I think common sense will tell you that I should never incur the risk of these penalties for the sake of the paltry penny or twopence profit that I get.

The Judge: I have had to look at these cases before, and it seems to me that I am in a very helpless position. The moment it is proved to me, so the law says, that a man who is not a registered chemist sells any of the poisons mentioned in the Schedule of the Act, or any preparation of them, he is proved to have committed an offence against the law, and renders himself liable to certain penalties which I have absolutely no power to remit. I have had cases which have been very hard indeed—or may be thought so by the defendants—where a man has done his very best to prevent a sale of poisons; but some may have been left in stock and sold by an assistant. I have no power to remit the penalties.

Defendant: I thought you had the right to use your judgment, and had power to reduce them.

The Judge: No, I have no power to reduce them or to remit the penalties if the case is proved that you sold poisons.

Counsel: I am afraid, as you say, that your Honour has no power to reduce or remit if we prove the offence.

The Judge (to defendant): Read the section of the Act, it is clear enough.

Defendant: I saw that there was a case where the Pharmaceutical Society applied for a much larger amount—I do not know whether it was on all fours with mine—and where His Honour reduced the penalty to ten shillings.

The Judge: That was not in the County Court but in the Police Court.

Defendant handed a letter to the Judge and said that was the first intimation he had of the case, but he took no notice of it as he thought it was an attempt to extort money.

The Judge: The letter is from the Society's solicitors. I need hardly tell you that it is most important that the sale of poisons should be restricted to the hands of fully qualified and registered chemists; there are so many unfortunate people who might do a great deal of harm if they could easily get hold of poisons. Incalculable mischief may arise through the sale of poisons, which it may not be possible to trace to the seller.

Defendant repeated that he had not the slightest idea he was committing any offence, and he thought it was rather hard that he should have to pay such high penalties.

The Judge: That is a matter you will have to leave in the hands of the Society. The moment it is definitely proved that you sold poison it is incumbent on me to impose the full penalty and nothing else. I give judgment; I cannot help myself.

Counsel then asked for judgment for the two penalties of £5 each, and a certificate for counsel and witnesses' costs. He did not ask for costs on the higher scale, though he was entitled to it, as this was a matter of great public interest.

The Judge: Very well. I shall have to impose two penalties of £5 each, ordinary costs of witnesses, and certificate for counsel.

Counsel: These proceedings are taken in order to put a stop to this thing, whether done innocently or otherwise.

The Judge: I quite understand that.

Defendant suggested that the Society might have asked him if he kept the preparation, and informed him of the penalty he was liable to. They could have told him not to sell it, or they might have proceeded for one offence only, which would have been quite sufficient to deter him from selling it.

The Judge: I am afraid they know their business better than I do.

Counsel: The preparation is labelled poison, and people must get to know to what they are liable if they sell poisons illegally. They cannot sell poisons unless they are registered chemists and druggists.

POLICE PROSECUTION UNDER SECTION 17.

At the Haslingden Police Court on Monday last, before the Mayor (Councillor Law), Mr. G. A. Smith, and Dr. Harrison, William Henry Halstead, grocer, Blackburn Road, Haslingden, was charged with an offence under Section 17 of the Pharmacy Act, 1868. It was alleged that he had unlawfully sold to P. C. Bailey a quantity of morphine, contained in a bottle of Winslow's soothing syrup, the bottle not being labelled with his name and address as the seller of the article.

The sale of the bottle was duly proved, but P. C. Bailey said he knew nothing about the contents, except what was stated on the label. It appeared that the contents had not been analysed, the prosecution depending upon the fact that the label indicated the presence of morphine, and bore the word poison.

Mr. Whitaker, who was instructed for the defence by the Patent Medicine Vendors' Association, submitted that the prosecution must make out the nature and quantity of the poison present.

As they had failed to do so, he asked the Bench to dismiss the case.

The Mayor said, inasmuch as there was no evidence what the bottle contained, the magistrates had decided to dismiss the case.

LEGAL REPORTS.

PROCEEDINGS UNDER THE SALE OF FOOD AND DRUGS ACT.

THE PRESENCE OF SALICYLIC ACID IN ORANGE WINE.

After a long adjournment through the vacation of the magistrate, the decision was given on Monday, the 6th inst., at Westminster Police Court, in the prosecution under Section 6 of the Sale of Food and Drugs Act, of the well-known firm of Walton, Hassell, and Port, for selling orange wine containing per bottle .038 per cent. of salicylic acid. The proportion of the acid which, it was said, was necessary for antiseptic purposes was equivalent to 26.6 grains per gallon.

Mr. A. Gill prosecuted for the vestry of St. George, Hanover Square, and Mr. Rose-Innes, instructed by Messrs. Loxley, Elam, and Gardner appeared for the defence. A *résumé* of the evidence given has already appeared in the *Pharmaceutical Journal* of November 9.

Mr. de Rutzen said he had given very earnest consideration to the case. The analysis of the wine showed that there was an amount of salicylic acid added equal to 26 grs. per gallon, a proportion in the opinion of Mr. Cassall, the Vestry Analyst, which was injurious to health. Whether this was so or not was really the question of fact which he had to determine, and was the subject of evidence of the very learned experts who had been examined. Salicylic acid appeared to have been first discovered about 1838, and had since then come into general use as a medicine for acute rheumatism and other complaints. It was apparently admitted on both sides that the acid possessed powerful antiseptic properties, and acted upon wines of different sorts which contained but a small proportion of alcohol in themselves, as a preventive from fermentation, and the decomposition which would render them unfit for human food. It also seemed to be admitted that orange wine was one of those productions which could not be preserved (owing to the small amount of alcohol which it contained in its pure state) without the addition of some antiseptic, either pure alcohol or some other ingredient which has the same properties. Mr. Cassall, the analyst, said that when salicylic acid was added to any article of food, the outside quantity required to produce the antiseptic effect was 1 part in 10,000, or 7 grains per gallon, and that therefore, there were 19 grains too many in a gallon of this wine; but the analyst went further, and said that the acid of salicylic acid in sufficient quantity to produce that antiseptic effect was injurious to health. His Worship proceeded: The only witness called to corroborate the view taken by the analyst is a very eminent gentleman, Dr. Corfield, who, while generally agreeing with what Mr. Cassall has said, materially qualifies it by saying that a bottle containing 4½ grains, equal to 18 grains per gallon if not more, would not perhaps be prejudicial. That is, without reading it, practically the effect of the evidence given on behalf of the Vestry. For the defendants the following gentlemen have been called—Mr. Bond, Dr. Paul, Dr. Luff, Dr. Wm. Murrell, Dr. Thudichum, and Mr. A. Gordon Salamon, consulting analyst; and Dr. Bond says as to the quantity in this wine "there is no possibility of injury to the human body. I don't think, taken in these quantities, it would affect anyone. It is a preservative and retards decomposition." Dr. Paul says:—"I think the quantity present in this wine is necessary as a preservative; it would preserve the article from acetous fermentation. It would become unfit for consumption without it. The quantity found in my opinion is absolutely uninjurious." After quoting the opinions of other experts for the defence, Mr. De Rutzen continued: That is the result of the evidence for the defendants, and I am sorry that it should be left to me to decide where doctors differ, but after giving the evidence the most careful consideration, and after looking at the subject in the different learned works to which I have been referred, I have no hesitation in coming to the conclusion that the summons should be dismissed, on the ground that the case comes within the first proviso to Section 6, viz, that salicylic acid is not injurious to health, and has been added to the wine because it is required for the production of the wine in a fit state for consumption, and not fraudulently to increase the bulk or conceal the inferior quality thereof.

My attention has been called to cases which have been decided in this and other courts, and no doubt there have been decisions both ways, but I have not been able to gather much from them, as it is a question of fact and more or less turns upon the evidence given in each particular case.

Mr. A. Gill remarked that the vestry could not appeal, as the case was decided on the question of fact. There was a second summons against another firm, charging a similar offence, but it would be withdrawn in view of the decision given. No application was made for costs.

COMMERCIAL NOTES.

THE PRODUCTION OF HONEY.

BY P. L. SIMMONDS, F.L.S.

We have not to consider honey in its food aspect, but in its medicinal uses it deserves some consideration. From 1870 to 1885 the imports were left out of our trade returns, but for the last ten years it has reappeared, our imports from abroad ranging now from 19,000 to 21,000 cwt. yearly.

In 1850, Braithwaite Poole, in his 'Statistics of British Commerce,' estimated the production of honey in the United Kingdom at 2000 tons, value £80,000. Indeed, in the preamble to the Act, 23 Elizabeth, Chap. 8, it is stated that "the land doth yield great plenty of honey and wax, as not only doth suffice the use of the Queen's Majesty and her subjects, but also a great quantity to be transported to other realms." In this and some other minor rural industries we are somewhat retrograding, considering we have now to import honey, instead of exporting it.

There is both commercial honey and clarified or depurated honey used in pharmacy in most countries, besides oxymel and other preparations.

Recent statistics show that the production of honey in Europe was about 80,000 tons annually, and in the United States 30,000 tons. But it is produced in all countries, the West Indies, South and Central America, India, Africa, and Australasia.

Indeed, we drew our supplies in 1894 mainly from the United States, Chili, the British and foreign West Indies, Australia, and France. Although the honey we import is chiefly used for food purposes, yet, as in early times, it constitutes the principal ingredient of several medicinal preparations, and serves as a means of taking powders and the sweetening of medicines.

Honey may be used when suffering with a cough, stoppage of the lungs, shortness of breath, and in all affections of the chest. An admirable preparation for coughs, especially during feverish or inflammatory attacks, is composed of honey, olive oil, lemon juice, and sweet spirit of nitre—each 1 fluid ounce—to be taken several times a day in $\frac{1}{2}$ fluid drachm doses.

Besides grape-sugar, honey contains manna, mucilage, pollen, acid, and other vegetable odoriferous substances and juices. The manna of itself is both food and medicine, and the pungent vegetable extracts have rare virtues. The honey collected by bees retains some of the physical qualities of the flowers from which it has been obtained. Thus Commerson found that the bees in Bourbon or Réunion produced a honey which retained the perfume of the flowers of the *Acacia heterophylla*. Biob and De Candolle also noticed, the first in the Balearic islands, and the second in the neighbourhood of Narbonne, that the rosemary gave to the honey of those two countries their superior qualities. Paul Louis Couvier also states "That the orange blossoms are the reason why at Reggio, in Naples, they have better honey. The bees of Mount Hybla have only the thyme, and have no orange trees to feed on." The honey of Mount Hymetta owes its exquisite flavour to the Labiatae, which cover that mountain; that of Provence to the lavender, and those of Valence and Cuba to the orange flowers; that of Southern India to the *Strobilanthus*.

But while there are some plants that permit bees collecting an exquisite and more perfumed honey, there are others which communicate less perfect properties, and in some cases produce deleterious effects on the system. Olivier de Serre states that the flowers of the elm, broom, euphorbium, arbutus, and box yield a bad honey. Seringe also relates the fact that two Swiss priests having been poisoned from eating honey which had been collected by bees from the flowers of *Aconitum dyaconum* and *A. napellus*. The hemlock of the Levant (*Cocculus suberosus*, Dec.) communicates its properties to the honey of Asia Minor, which, although very sweet, is often

dangerous in its effects. Accidents are attributed to the circumstance that the bees collect the nectar of the flowers of the *Azalea pontica*, and probably those of *Rhododendron ponticum*.

Analogous phenomena were observed by B. S. Barton ('Trans. Amer. Soc. of Philadelphia,' v., p. 51) from honey collected by bees on plants of the same family, such as *Kalmia angustifolia*, *K. latifolia*, and *K. hirsuta*, and *Andromeda mariana*.

There are also many rank and poisonous plants in the tropics. Honey from certain districts of Turkey produces headache and vomiting, that from Brazil is used chiefly in medicine.

There are other insects besides the bee that produce honey. There is an ant in Mexico, which has been named *Myronecocystus mexicanus*, which produces honey in its distended abdomen. The natives make a pleasant drink of it mixed with water, which they also use in cases of fever where medical attendance cannot be obtained. The honey is also used by them as a cure for eye diseases, especially for cataract.

In subterranean cavities in Ethiopia a honey is found which is made without wax by an insect resembling a great mosquito. The natives call it "tazma"; the following is an analysis of it:—

Water	25.5
Levulose and glucose	32.0
Mannite	3.0
Dextrine.....	27.9
Ash	2.5
Impurities and loss	9.1

100.0

The composition of this honey is similar to that of the mannas of Sinai and Kurdistan, which were formerly analysed by Berthelot; and that of the sugary matter of the leaves of the linden, analysed by Boussingault; as well as that of ordinary honey. It differs from all these substances in the absence of cane-sugar.

POISONING CASES AND INQUESTS.

Laudanum.—Mr. William Brown, a gentleman of Croughall, near Whitchurch, died on December 10 from the effects of an overdose of laudanum taken to induce sleep. Verdict: "Death from an overdose of laudanum, taken by mistake."

Poisonous Liniment.—Mr. John Jakes Jones, aged 75, of Malvern Link, died on December 12 from the effects of inadvertently drinking from a bottle containing a poisonous liniment. Verdict: "Death from misadventure."

Laudanum.—Thomas Charles Need, a florist, of Malvern, died on December 17, from the effects of an overdose of laudanum, taken to induce sleep. Verdict: "Deceased died from failure of the heart's action, consequent upon his taking laudanum, but whether taken accidentally or not there was not sufficient evidence to show."

Hartshorn.—Philadelphia Hazelden, aged 79, of Maresfield, died on December 18 from the effects of inadvertently drinking hartshorn. Verdict: "Death from taking a dose of hartshorn."

Ammonia.—Henry Rooke, a labourer, of Kidderminster, died on December 24 from the effects of drinking ammonia in mistake for beer. Verdict: "Death from misadventure."

Chloral.—William Kemmish, aged 65, of 38, Lena Gardens, Hammersmith, died on December 21 from the effects of an overdose of chloral, taken to induce sleep. Verdict: "Death from misadventure."

Carbolic Acid.—Mrs. Barcroft, wife of Mr. W. G. Barcroft, of Bryntirion Hall, committed suicide on December 26 by drinking carbolic acid. Verdict: "Suicide whilst temporarily insane," and the jury added a rider that carbolic acid and similar poisons should not be sold without proper restrictions.

Cyanide of Potassium.—Charles Marcus Guttenberg, aged 31, of 41, Belsize Road, South Hampstead, died on December 12 from the effects of taking cyanide of potassium. Verdict: "That the deceased died from poisoning, but that for what purpose the poison was taken there was not sufficient evidence to show."

NOTICES, LETTERS, AND ANSWERS TO CORRESPONDENTS.

All Articles, Letters, Notices, and Reports intended for publication in the Journal, Books for Review, and communications respecting Editorial matters generally, must be Addressed "Editor, 17, Bloomsbury Square London," and not in any case to individual supposed to be connected with the Editorial Staff. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

ANY INSTRUCTIONS from Members, Associates, and Students of the Pharmaceutical Society, with reference to the transmission of the Journal, should be sent to the Secretary—Mr. Richard Bremridge,—17, Bloomsbury Square, London.

BUSINESS communications—including advertisements, orders for copies of the Journal, and instructions from Subscribers respecting transmission of same—must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London. Cheques and money orders should be made payable to "Street Brothers."

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

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

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

QUERIES addressed to the "Editor" will be replied to in the Journal as early as possible after receipt; answers of sufficient general interest being given under the heading "Notes and Queries." The Editor cannot undertake to reply to queries through the post.

REPRINTS of articles cannot be supplied unless authors communicate with the Editor before publication.

LETTERS.

LIN. BELLADONNÆ.

MR. R. A. CRIPPS, of Haywards Heath, writes as follows:—"In your issue of December 21 (p. 514), the author of an article on the official liniments states that belladonna liniment when prepared from the alcoholic extract possesses a colour different from that of the official preparation, and if prepared from standardised liquid extract, as proposed by me, 'the same difference will be apparent.' Permit me to point out that this latter remark is incorrect. If prepared as described by me, the colour differs very little from that of the official liniment; whereas that from the solid extract is much darker. This is as might be expected, no heat being needed in preparing the liquid extract of belladonna."

SPIRIT OF NITROUS ETHER.

MR. E. WARRELL, of 202, Caledonian Road, London, N., refers to the recent charge against him, under the Sale of Food and Drugs Act, for selling spirit of nitrous ether adulterated with 50 per cent. of rectified spirit, an article of equal value. He observes that the magistrate, in convicting him, "somewhat inconsistently" stated that had he taken the line "that the article sold was as labelled, viz., 'Sweet Nitre,' he would have held it a good defence." In conclusion, Mr. Warrell expresses the opinion that the sooner the official formula and test for spirit of nitrous ether are "abolished, the better for the reputation of the B.P."

THE B.P. STANDARD FOR VINEGAR.

MESSRS. C. G. MOOR AND T. H. PEARMAIN write with reference to the note on vinegar by Mr. R. C. Cowley, reported in the *Pharmaceutical Journal* for January 4, p. 16. They say: "Mr. Cowley criticises the standard laid down in the British Pharmacopœia as being too exacting, and in support of this contention gives some figures obtained on twelve 'commercial samples,' obtained from various retailers. We would point out that we think Mr. Cowley cannot fairly argue from these figures that the standard as laid down in the British Pharmacopœia either is not or cannot be maintained. We would refer Mr. Cowley to papers in the *Analyst* for 1893, pages 180 and 240, by Alfred H. Allen and one of us, in which analyses of several vinegars are given. It will there be seen that vinegar is made by the chief makers in six different strengths, from 'No. 24,' the strongest, containing about 6.2 per cent. of acetic acid, down to

'Diamond,' the weakest, containing about 3.3 per cent. of acetic acid. We have analysed the malt vinegars as made by all the principal makers, and we find their Nos. '24' and '22' fulfil in every case the British Pharmacopœia requirements, so there is absolutely no need for any lowering of the official standard. It does not seem altogether reasonable to expect a strictly B.P. article from retailers taken at random, but that the B.P. article can and ought to be supplied by pharmacists is indisputable, and we strongly urge everyone to resist any attempt to lower the quality or strength of vinegar at present required."

ACETUM DESTILLATUM.

MR. OCTAVIUS CORDER, of Norwich, writes as follows:—"After more than fifty years' experience I may inform your readers that I have always considered acetum dest. to mean white wine vinegar or distilled vinegar, and not dilute acetic acid. I may add that a most respectable firm in this place has distilled this article for many years, and still continues to do so from malt vinegar. I need hardly state that this is not retailed at fourpence a quart in your own jugs."

A CORRECTION.

MR. W. S. DAVIES says our Welsh Correspondent's note (*ante* p. 19), is somewhat incorrect. He is not aware that he is the second Welshman to win the medal referred to, and he says the number of competitors is exaggerated.

ANSWERS.

E. J. EVANS.—Your package arrived, but was found to contain fragments of broken glass only.

W. MAIR.—Received with thanks.

"PROVINCIAL PHARMACIST."—If, as you suggest, diluted acetic acid is sometimes supplied for white wine vinegar, the practice is much to be regretted. Individuals who do so cannot be representative pharmacists.

OBITUARY.

THOMPSON.—On December 31, William Thompson, chemist and druggist, Sunderland. (Aged 79.) Mr. Thompson was one of the oldest chemists in Sunderland, and had been president of the local association for many years. On retiring, two years ago, he was presented with an illuminated address by the members of the Association. He was the father of the Sunderland Town Council, to which body he was returned in 1847. He was made an alderman in 1865, and was twice Mayor of the town. He was also a River Wear Commissioner and a Justice of the Peace, and in every position he held did his duty well and conscientiously. The funeral on Friday, January 3, was a very large one, being attended by the Mayor, Corporation, Justices, and many of the public men of the town, as well as by the members of the Sunderland Chemists' Association.

RITSON.—On December 27, John Ritson, Chemist and Druggist, Manchester. (Aged 63.)

JEWELL.—On December 28, John Jewell, Chemist and Druggist, Liverpool. (Aged 59.)

ARCHER.—On January 2, Albert Archer, Chemist and Druggist, Sheffield, late of Torquay. (Aged 48.)

MICHIE.—On January 2, Harry Michie, Chemist and Druggist, Marywell, N.B. (Aged 74.)

OGDEN.—On January 4, Henry Ogden, Chemist and Druggist, Leeds. (Aged 55.)

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs. Allen, Atkinson, Bayley, Bindloss, Bird, Blackburn, Blinkhorn, Bowman, Brown, Burge, Callaway, Cammack, Carter, Clarke, Cooper, Cripps, Cupit, Davies, Davis, Dewar, Dixon, Evans, Essam, Ferguson, Gadd, Hall, Harvey, Holmes, Hudson, Hughes, Jarvis, Johnson, Knight, Line, Mair, Male, Marshall, Moor, Morris, Pearmain, Pike, Polkingham, Ranken, Reeve, Reynolds, Richards, Robbs, Robson, Russell, Saunders, Spalding, Stapel, Thompson, Tndor, Tunnicliffe, Walker, Warrell, Warrick, Welsh, Wright.

ALCHEMY AND PHARMACY. THEIR MYSTERY AND ROMANCE.

BY C. J. S. THOMPSON.

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(Continued from Vol. I., page 394.)

CHAPTER V.

The Philosopher's Stone.

The dominating ambition of those pioneers of science—the early alchemists—was to search after the unknown. In the same spirit the modern worker in science gropes onward, and dreams of discovering some contribution towards solving the elixir of life, in the form, it may be, of conquering at least one fell disease. The ancient workers in alchemy confined their researches almost exclusively to metals; they believed that all natural things were composed of four elements, which they termed Fire, Air, Earth, and Water. "When these four elements are conjoined," says Roger Bacon, in his 'Radix Mundi,' "they become another thing, whereas it is evident that all things in Nature are composed of the said elements being altered and changed."

But the patient researches of the alchemists were not so much due to a love for scientific research as to the overwhelming desire to gain wealth.

The majority had two fixed objects in view as the goals of their ambition, one being the discovery of some body that would be capable of transmuting the baser metals into gold and silver; and the other, the discovery of an elixir which would prolong the span of human life to an indefinite period. Both these objects seem to have been sought for by man from pre-historic times, and their origin is lost in antiquity.

The philosopher's stone was sought for by the Chinese philosophers at a very remote period, afterwards by the Greeks and Arabs, and by others down to the seventeenth century.

Men of undoubted ability and genius wasted both their lives and fortunes over the search for this illusive chimera, and others descended into fraud and trickery of the meanest description in its pursuit. Apparently no alchemist of any repute thought it right to die until he had at least claimed to have solved one of these great problems. Thus the claimants of the discovery were numerous. The descriptions given of the various processes in ancient manuscripts and works for producing the philosopher's stone are usually of a very elaborate description, and couched in the most fantastic language.

Failure to produce the desired result was invariably accounted for by the omission to carry out some minute

detail. Some who professed to have discovered the secret demanded large sums of money to reveal it, and several visited the various Courts of Europe to demonstrate it by means of trickery and conjuring.

The notorious Dr. Dee, who flourished in the time of Queen Elizabeth, was one of the last claimants to the discovery, and is said to have received immense sums of money from dupes for imparting the coveted secret, which he demonstrated by means of an ingenious trick.

Realgar, mercury, sulphur, and many other substances were credited with the magical property of transmutation.

In the illustration, which is taken from an authentic engraving of the sixteenth century, we have a figure of the apparatus used for distilling the "Water of Life," the process for which is described by Gesnerus in the 'Newe Jewell of Health,' printed in 1576. The alchemist, arrayed in his imposing robes, is depicted as giving instructions to his assistant as to certain precautions to be taken in conducting the process.

Bacon states that sulphur and mercury are the mineral roots and natural principles upon which nature herself acts and works in the mines and caverns of the earth; the latter metal he believed to be the true elixir of the philosopher's stone; others, such as Euclid—Rhazes and Merlin believed it to be an amalgam of gold and mercury, fantastically called the Red man and his White wife.

Concerning the vessels for producing this "Citrine body" as Bacon calls it, the most exact precautions were taken. Special apparatus was used, and a special heat, which was not to exceed the heat of the body. For this purpose horse-dung was used. Senier, the philosopher, says, "dig a sepulchre and bury the woman (mercury) with her man (gold) in horse-dung, the fire of the philosopher, until such time as they be conjoined."

Bacon's definition of alchemy was, "Alchymie is the art or science teaching how to make or

generate a certain kind of medicine which is called the elixir. It teaches how to transmute all kinds of metals, one with another; and this by a proper medicine." George Ripley, a monk, in 1476, thought that he had discovered the much coveted stone in pure sulphur. He says, "let the two sulphurs, viz., the white and the red, be mingled with the oil of the white elixir that they may work the more strongly, and you shall have the highest medicine in the world to heal and cure human bodies, and to transmute the bodies of metals into the most pure fine gold and silver." One cannot but think with pity of the immense labour expended and lost in the attempts made by many of these pioneers of science in their pursuit after this chemical chimera.



A STILL FOR DYSTILLING THE WATER OF LYFE.
From 'Newe Jewell of Health,' Gesnerus. 1576.

CHAPTER VI.

The Black Art and Occult Sciences.

To make a thorough analysis of this interesting subject and trace the origin of magic, would take much more space than we have at our command, and we can only mention a few of the many forms which may be grouped under the head of the occult sciences, and those especially which had any connection with the alchemists and apothecaries of mediæval times. There is little doubt that most of the alchemists were students, if not practitioners, of magic or some of its branches.

The antiquity of magic is very great, and we have record of magicians and wise men in early Jewish times, as well as the magic formulæ of the Vedas in India, as handed down to us in the religion of the Hindoos. Moreover, magic was practised by the Chaldeans, of whom a certain tribe devoted their energies to studying the occult sciences. Pliny tells us of the dealings in the supernatural in the time of Homer, and other writers record that magic was also known to the Etruscans and Assyrians from a very early period. As time rolled on, the different forms of magic practised, became specialised according to their several natures. For instance, we had Astrology and Oneiromancy, which comprised the various forms of divination; Theurgy and Goetry, the art of evoking good or evil spirits; Necromancy, by means of which communication was held with the dead; and Sorcery, which exercised its power by the influence of dreams.

The longing after the supernatural and unknown felt by the great ignorant masses brought forth individuals in plenty to take advantage of their credulity. During the thirteenth and fourteenth centuries the occult sciences were openly taught in the universities and schools, and two hundred years later reached the zenith of their influence, and practitioners of astrology and the black arts, abounded and flourished throughout Europe.

The professors of oneiromancy were those who divined or interpreted dreams, and founded their traditions in the art from its being in accordance with the Scriptures. The explanation of dreams also did not go counter to the doctrines of the Church, and so the cult found many believers among all classes of society. It was denounced by Pope Gregory II. as a detestable practice, but this did not prevent it being largely employed in forecasting the future.

Arnauld de Villeneuve, who wrote a work on the subject in the thirteenth century, gives a certain code by which those who practised it worked.

Whoever dreamt that his hair was thick and carefully curled, would soon become wealthy. If anything was wrong with the hair, evil was betokened. It also foreshadowed harm if a wreath of flowers was worn that were not in season. Other codes signified, that to dream of the eyes, it related to children; the head, to a father; the arms, to brothers; the feet, to servants; the right hand to the mother, to sons, and to friends; and the left hand to the wife and daughter. Another method was founded on a theory of whatever was dreamt the antithesis or opposite would follow in life. From this we have probably the saying common to-day, dream of a wedding and it is a sign of a funeral. According to many old writers there was scarcely any important event in the middle ages which was not announced by a dream.

The day before Henry II. was struck by the blow of a lance during a tournament, Catherine de Medicis, his wife, dreamt that she saw him lose one of his eyes. Three days before he fell beneath the knife of Jacques Clément, Henry III. dreamt he saw the royal insignia stained with blood, and trodden under foot by monks and people of the lower orders.

Henry IV., also, before he was murdered by Raveillac, it is said heard during the night his wife, Marie de Medicis, say to herself as she woke, "Dreams are but falsehoods!" and when he asked her what she had dreamt, she replied, "That you were stabbed upon the steps of the little Louvre!" "Thank God it is but a dream," rejoined the King.

The necromancers, who were supposed to be able to conjure up spirits and raise the dead, were accounted on a somewhat higher plane than the interpreters of dreams. They also based their authority on the Old Testament. The nature of the art was gruesome and awe-inspiring, and there is little doubt many dark deeds were perpetrated by those who practised it. One method of evocation was to kill a child, and place its head upon a dish surrounded by lighted candles; the desired spirit was supposed to enter this ghastly object and speak through its mouth. Sometimes the spirit simply consisted of some muttered words from behind a curtain in a dark cellar; or another method was to cause the appearance of a sepulchral figure out of smoke or vapour, which would indicate by gesture and reply to questions asked. To evoke a dead man's spirit, it was necessary to go to the grave at midnight with a companion who bore a candle in the left hand and a crystal stone in the right, the conjuror holding a hazel wand with the name of God written on it, and repeating the words.

Teragrammaton + Adonai + Agla + Craton +.

Then striking three times on the ground, with a prayer he commanded the spirit into the stone, when it appeared in the shape of a child.

The conjuror often wore a girdle of lion's skin with the name of God written on it, and the Solomon's circle he described with a bright knife, on the blade of which was written certain mystic words. Necromancy gradually merged into sorcery, which has occasionally come to the surface in comparatively recent years.

Chiromancy, the art of divining or foretelling future events from marks on the palm of the hand, was also practised in antiquity, but in mediæval times was strongly opposed by the Church. The practice is supposed to have been brought into Europe from the East by the Bohemians in the early part of the fifteenth century. This art eventually merged into astrology, which exerted the greatest influence of all the occult sciences.

The antiquity of astrology is very great, it having originated in Chaldea, and was thought by some of the Jews to have been a method by which the Creator could communicate with his people. The art itself was based on astronomy, and like alchemy was the beginning of the study of real natural science. The teller of the stars was not only supposed to foretell forthcoming misfortunes to individuals, but also to forecast the destinies of kings and empires.

The belief in its power was so great, that it became the fashion among royal personages of the sixteenth century to keep their own special astrologers, who were lodged easy of access and loaded with honours and wealth. These men were mostly astute Jews well versed in the science of

their time, and by means of their supposed powers often played a very important part in the political affairs of the nation. In the fifteenth century Rovigo, an astrologer of eminence, who is said to have perfected the astrolabe, was attached to the court of King John II. of Portugal, also Simon Pharès, who figured at the Court of France in the time of Charles VIII. We must not forget to mention Cosmo Ruggieri the Florentine astrologer, and the confidant of Catherine de Medicis, and the celebrated Nostradamus, astrologer and trusted adviser of Charles IX. This extraordinary man played a prominent part in the history of his time, and was supposed to practise magic and alchemy, as well as the healing art. He was consulted by the king in all positions of difficulty, and it is said became immensely wealthy. He died in 1566 at Salon, after having written several notable works.

(To be continued.)

SHORT NOTES ON THE PREPARATIONS AND FORMULÆ OF THE BRITISH PHARMACOPŒIA.

SOLUTIONS.

The solutions of the Pharmacopœia are aqueous in character, the exceptions being those of sodium ethylate, gutta-percha, and blistering liquid. The last two should have a class to themselves, and along with liquor iodi be termed pigments.

Liquor Ammoniac Fortior.—The directions for preparing this solution may be safely omitted, as it can only be made on a commercial scale from such sources as "gas liquor," obtained as a by-product in the manufacture of illuminating gas.

Liquor Ammoniac Acetatis Fortior.—The present formula is a great improvement over the 1867, as a definite amount of ammonium carbonate is neutralised with acetic acid to form a solution of ammonium acetate of definite strength. In the German Pharmacopœia a solution of ammonia may be used instead of the carbonate, but the final product requires to be boiled to expel any traces of tarry matter that may be present. In the U.S.P. definite amounts of both acid and carbonate are taken, which yields a product containing free acetic and carbonic acids. This latter form is preferable to that of the B.P., as it is extremely difficult to ascertain when the exact point of neutrality is reached, while the excess of acetic acid prevents the solution becoming alkaline from absorption of ammonia from the atmosphere after the bottle has been opened a few times.

Liquor Ammonii Citratis is in little demand, and except that it is perhaps more palatable than the acetate, there seems no sufficient reason for its inclusion, particularly as it can be made directly from the stronger solution. If, however, it is to be retained, 5 or 10 per cent. of alcohol should be added to prevent cryptogamic growths.

Liquor Antimonii Chloridi.—Butyr of antimony is still very largely used in some affections and is one of the most powerful caustics employed in modern surgery. The solution should be filtered through glass wool or asbestos, as it destroys cotton fabrics so rapidly.

Liquor Arsenicalis.—The official synonym, liquor potassii arsenitis, is hardly correct, as, to ensure combination, the mixture of potassium carbonate and arsenious acid should first be boiled with a very small quantity of water, the liquor then containing potassium arsenite, which is probably HK_2AsO_3 . When this is diluted with water, carbonic acid is absorbed and decomposition takes place, the solution finally containing arsenious acid and alkaline carbonate. The proof of this is that if Fowler's solution is kept any length of time crystals of arsenious acid are slowly deposited. The solution is liable to fungoid growths, which are retarded but not altogether prevented by the addition of compound tincture of lavender.

Liquor Arsenici Hydrochloricus is simply a solution of the two acids. When arsenious and hydrochloric acids are heated together and submitted to distillation, volatile arsenious chloride, As_2Cl_6 , is formed, which decomposes into the compounds from which it was prepared as soon as it is dissolved in water.

Liquor Arsenii et Hydrargyri Iodidi.—This again is a solution which merely contains the iodides dissolved in about molecular proportions. Care should be taken to see that the arsenic iodide is in good condition, as if any free iodine is present dark coloured solutions result. When freshly made the solution has a pale yellow colour, which on exposure to direct light gradually disappears, hydriodic and arsenious acids being formed. This preparation was first introduced into medicine by Dr. Donovan, of Dublin, who recommends it to be made by rubbing arsenious acid, mercury and iodine with a small quantity of alcohol, which was supposed to aid combination, the resulting dry mass being afterwards extracted with water and boiled.

Liquor Atropinæ Acetatis.—Now that this preparation is made with camphor water, it certainly keeps much better, but still has a tendency to decomposition. Tichborne showed in 1877 that solution of the alkaloid in salicylic acid would keep without change for an indefinite period.

Liquor Bismuthi et Ammonii Citratis.—The present method of preparing this solution is distinctly better than that followed in the former edition of the B.P., contamination with ammonium nitrate being avoided. As generally met with, however, it scarcely fulfils the official requirement of being colourless. The reason for this has been frequently explained. The use of stained mortars and earthenware pitchers should be carefully avoided, only glass vessels being employed. Absolute cleanliness is a *sine quâ non*. Secondly, the solution of ammonia should be added to the citrate very gradually as directed, care being taken that no rise of temperature takes place. If, notwithstanding all precautions, darkening still occurs, the solution may be rendered colourless by shaking with equal parts of talc and purified animal charcoal, and subsequently filtering through white paper.

Liquor Calcis Saccharatus, if prepared as directed, develops a brown colour, rapidly becoming darker, even when preserved in sealed bottles and away from the light. This has been shown to be due to the formation of an organic compound of iron derived from the impurities in the lime, and may be avoided by the use of lime prepared from Carrara marble, which is practically free from iron and manganese. Some slight colour is no doubt caused by the action of the soluble alkalies in the lime. These may, however, be removed by a previous washing with water, as directed for lime water. It is a well-known fact that strong syrup may be even boiled with pure lime for a long time without darkening taking place, but if the slightest trace of soda or potash be present, a faint coloration appears almost at once.

Liquor Ferri Acetatis Fortior was modelled after the German formula, but the product of normal acetate with excess of acetic acid is different. If less acid were used, the salt would have the formula $(\text{FeOH})_2(\text{C}_2\text{H}_3\text{O}_2)_4$, which is the one commonly used on the Continent, but is much more readily affected by heat and light, precipitation taking place even in the dark.

Liquor Ferri Perchloridi was introduced to take the place of the tincture, inasmuch as it retains the salt in an unchanged condition. Perhaps this substitution may actually take place in the next edition.

Liquor Ferri Pernitratitis is officially prepared by dissolving iron wire in dilute nitric acid, with directions that if the action becomes so violent as to volatilise the nitric acid, it is to be moderated by the addition of cold water. The U.S.P. seeks to overcome this difficulty

by preparing ferric hydrate which is dissolved in the nitric acid. This would appear to be the more scientific method, as Berzelius observed that besides ferrous nitrate, ammonium nitrate is also formed, and no gas evolved, if a mixture of iron and dilute nitric acid is kept below 120° F.— $2\text{Fe}_2 + 10\text{HNO}_3$ yielding $4\text{Fe}(\text{NO}_3)_2 + \text{NH}_4\text{NO}_3 + 3\text{H}_2\text{O}$. The formation of ammonia is a secondary reaction, and depends upon the action of the nascent hydrogen on the nitric acid; it is lessened, but not entirely prevented by a stronger acid and a higher temperature, and augmented as the temperature and the strength of the acid are decreased.

Liquor Hydrargyri Nitratii.—In the preparation of this solution mercury is dissolved directly in dilute nitric acid, heat being applied after solution to convert any mercurous salt that may have formed into the mercuric variety. The U.S.P. accomplishes the same result more rapidly by dissolving red oxide of mercury in dilute nitric acid, which may be done without disengagement of objectionable fumes.

Liquor Hydrargyri Perchloridi would be rendered more stable if hydrochloric acid were employed instead of ammonium chloride.

Liquor Iodii as suggested in the early part of this paper would be more correctly termed pigmentum iodii. The directions require a little amplification—dissolve the iodine and iodide in a very little water, and then add sufficient to produce 1 pint. By this method solution may be effected in a few minutes.

Liquor Magnesii Carbonatis.—This solution, when freshly made, forms an agreeable antacid drink, but after the bottle has been opened a few times, carbonic acid is lost and normal magnesium carbonate is deposited. It would be better to direct the solution to be preserved in ordinary aerated water syphons, so that any required quantity can be withdrawn without prejudice to the remainder. There need be no sentiment about this procedure, as the official directions for the effervescing solutions of lithia, potash, and soda can only be carried out by an aerated water manufacturer, and the solutions themselves kept in bottles specially constructed to stand the pressure.

Liquor Magnesii Citratis is probably never used.

Liquor Morphine Acetatis is only occasionally used, and might be omitted altogether. The acetate is one of the most unstable of the morphine salts, the acetic acid being slowly decomposed in aqueous solutions with separation of a brown compound, while at the same time crystals of the alkaloid are deposited.

Liquor Morphine Bimeconatis.—It is difficult to advance any good reason why this solution should not be made of the same strength as the other solutions of morphine. If it is necessary to make this one $1\frac{1}{4}$ per cent., so as to correspond with the morphine strength of tincture of opium, then the same ought to apply to the other two. The present cry is for uniformity, therefore let these be made uniform.

Liquor Plumbi Subacetatis.—Several basic compounds of lead are known, which may be obtained by treating solution of the neutral acetate with the requisite quantity of lead oxide. The B.P. directs nearly six molecules of the oxide to five of the acetate, so that the solution contains chiefly $\text{Pb}(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot \text{Pb}(\text{OH})_2$, and in addition a small quantity of the triplumbic acetate. When diluted with water, the mixture becomes turbid almost at once, either from the carbonic acid held in solution, or in the atmosphere producing some carbonate. This may be avoided to some extent by directing the distilled water to be recently boiled, but decomposition will take place again directly the solution is exposed to the atmosphere.

Liquor Potassæ.—The process for the manufacture of this solution is an extremely troublesome one, and might be very well simplified by directing the requisite quantity of potash to be dissolved in water and the strength determined in the usual manner.

The strength, by the way, would be more convenient if made exactly 5 per cent. The same remarks apply to liquor sodæ.

Liquor Sodæ Chlorinatæ.—The carbonate of sodium should be directed to be dissolved in boiling water and added to the solution of chlorinated lime in a closed vessel. By this means a very dense instead of a very bulky precipitate is obtained, which minimises the loss.

Liquor Sodæ Arseniatis.—The solutions of arsenic, like those of morphine, are redundant.

Liquor Strychninæ Hydrochloratis.—This solution is liable to deposit crystals of the acid (? neutral) salt if exposed to a low temperature. This never occurred before 1885, and Paul and others have shown that the excess of hydrochloric acid is the main cause. As this is, perhaps, one of the most frequently prescribed, as well as one of the most potent, remedies in the Pharmacopœia, the compilers will no doubt take care that the relative proportions of acid and alkaloid, as well as the relations between the alternative formulæ, are more accurately adjusted in the next edition.

PHOTOGRAPHY EXTRAORDINARY.

Within the last fortnight a statement has been published which has certainly startled not only the laity but even the initiated in photography. The following is the extract from the *Standard* :—

“Professor Röntgen, of Würzburg, uses the light emitted from one of Crookes' vacuum tubes, through which an electric current is passed, to act upon an ordinary photographic plate. The invisible light rays, of whose existence there is already ample evidence, then show this peculiarity, that to them wood and various other organic substances are transparent; whilst metals and bones, human and animal alike, are opaque to those rays. That is to say, they will, for instance, absorb the rays which have passed through a wooden case in which bones or metals are enclosed. Thus it is possible to photograph in the manner described any bones or metals which may be contained in wooden or woollen coverings.

“Moreover, as human flesh, being organic matter, acts in the same way as such coverings towards the invisible rays from a Crookes' vacuum tube, it has become possible to photograph the bones, say, of a human hand, without the flesh surrounding the bones appearing on the plate. There are said to be photographs of this description already in Vienna. They show the bones of the hand, together with the rings that were worn on the fingers—metals, as remarked above, being opaque to these rays—but they show nothing else. They are ghastly enough in appearance, but from a scientific point of view, they open up a wide field for speculation.

“Among the practical uses of the new discovery, it is stated that it will henceforth be possible for surgeons to determine by help of this new branch of photography the exact position of any bullet that may be embedded in the human body, or again, to render visible any fractures there may be in the bones prior to performing any operation on that respective part of the body. And there are various other uses to which the method may be put, as for example, in connection with caries and other bone diseases.”

It is almost superfluous to say that some of the photographic journalists have made much fun out of this, but as a matter of fact it is no more chimerical than ordinary photography.

When the negative pole of an induction or influence machine is connected with a wire sealed into a tube, which can be partially or completely evacuated, certain rays proceed from the negative pole or cathode, which are for the most part invisible, but become visible, roughly speaking, the more perfect the vacuum. These cathodic rays have the curious property, like the Hertzian waves, of penetrating organic matter, but not metallic substances, except when the latter are in very thin plates; quartz and glass are quite opaque to them, whilst paper, wood, flesh, etc., are transparent. These facts account for the extraordinary statements reprinted above.

It is not necessary to use a lens, in fact, as will be seen, that would vitiate the experiment. All that is required is a Crookes' tube for the production of the cathodic rays, and a wooden box—light-tight, of

course, or else the plate would be fogged by light—in which the sensitive plate or paper is placed with the object to be photographed.

It must be understood that though the results obtained may be called photographs pure and simple, yet they are not quite what this word would convey to the mind of the uninitiated; they are, or might be more strictly called, shadowgraphs, in that the sources of light being behind the object, the shadow of the object rather than an image of the detail of its surfaces would be obtained.

On the other hand, it is quite possible that these rays, like the now famous Hertzian waves, are capable of refraction, polarisation, and reflection like the ordinary waves of light, and therefore, it might be possible to obtain by photography images of the surfaces of objects by the reflection of these waves.

Though the term "source of light" has been used, it is not strictly correct, because essentially the cathodic rays are not light, and for want of a better term they are simply called "cathodic." A practical application of these rays for the production of light has been worked out by Ebert, and described in Wiedemann's 'Annalen.' He uses a compressed mass of some luminous substance, such as phosphorescent calcium sulphide, in the interior of an exhausted globe. On the outside of this are cemented two strips of tinfoil, which are connected with the negative and positive poles of an induction coil. The phosphorescent substance glows with great brilliancy with a total expenditure of energy of about two thousand times less than that required to maintain the normal Hefner-Alteneck amyl-acetate lamp. This approaches very nearly, therefore, the economical light of the glow-worm and other light-giving forms of lower life in which no heat is evolved, as enunciated by Professor Langley.

Röntgen does not seem to have been the first to obtain photographs by means of the cathodic rays, as M. Lenard describes in *La Nature*, July, 1894, some such experiments.

The importance of this discovery cannot as yet be appreciated, but the statement that it could be applied to the examination of the body by surgeons is not without foundation, and certainly there are many other uses and abuses to which it could be put. Psychic photography, or photographs of ghosts, would, of course, be rendered extremely easy, as it would only be necessary to make a metal shape resembling that of the human form and place the same against a wooden partition, and behind this to place a Crookes' tube, to obtain, without the aid of a lens or camera, the image of a veritable psychic form.

COD-LIVER OIL EMULSIONS.*

BY PROFESSOR GAY (MONTPELLIER UNIVERSITY).

Cod-liver oil emulsions, the use of which has become general, have their origin in the old form of emulsive syrups with a cod-liver oil basis, but the objection which caused the latter to fall into disuse is avoided. These syrups, although satisfactorily disguising the taste and smell, only contained about 8.5 per cent. of oil. Emulsions as now prepared are intended to disguise the appearance, taste, and smell of the oil, and to contain as a rule 50 per cent. of the active ingredient; they also serve for administering such remedies as phosphates, hypophosphites, arseniates, creosote, eucalyptol, etc., when their association with cod-liver oil is desired. Numerous processes have been proposed for the preparation of cod-liver oil emulsion. The main object of this paper is to discover a formula which can be used extemporaneously, and, in addition, fulfil other necessary conditions. We will first discuss the conditions which should be fulfilled by a formula for an emulsion as we now understand it.

1. *Simplicity; no Special Form of Apparatus being Needed.*—All commercial formulæ have their good points. It has been shown that a prolonged and energetic pounding—which is ensured by using mechanical beaters, or Merier's beater with its three-jointed pestles—ensures the stability of the emulsion by favouring the perfect division of the fatty body, but a pharmacist's working formula should only require the use of a mortar.

2. *Use of the Usual and Unobjectionable Emulsifying Agents.*—The most popular agents can be grouped as follows:—

A. Usual Emulsifying Agents.

Gum Acacia.

Gum Tragacanth.—Acacia emulsions are more stable if tragacanth is used as well.

Gum and Starch.—This combination is useless.

Glycerin.

Glycerin and Gum.

Gelatin (white gelatin or Irish moss).

Yolk of Egg.

Condensed Milk.

Saponin.

B. Digestive Ferments or Their Products.

Malt Extract.—The preparation of the U.S. Pharmacopœia should not be used, as it is only the dextrin and maltose contained in this extract which are of service, the diastase being no use at all.

Pancreatin.

Peptone.

C. Alkaline Substances.

Sodium Carbonate.

Lime Water.

Glycerin and Lime (prescribed by many practitioners).

Saccharated Lime.

With regard to the above emulsifying agents the use of saponin or quillaia does not seem free from danger; malt extract, condensed milk, and other agents are not generally used, whilst alkaline substances answer in special cases. I prefer to use gums.

3. *Stability of the Emulsion.*—Absolute stability is impossible; even the best makes require to be shaken before taking, still separation should be slow, and brisk agitation should cause perfect re-emulsification. This result is easily arrived at by means of gums.

4. *Greater Strength.*—Fifty per cent. is the usual standard. This leaves a sufficient margin for alteration in the emulsifying agent, and, if necessary, in the other remedies.

5. *Suitable Correctives.*—Although it is difficult to disguise the odour, the taste is more easily masked, but the acrid sensation in the throat is seldom entirely suppressed. Two classes of correctives are used:—

A. Sweetening Correctives.

Sugar, glycerin, and various syrups have often been combined with the oil with good results. Stout has recommended ammoniated liquorice, using 50 to 60 grammes to each litre of oil. Saccharin may perhaps be looked upon as the most powerful corrective. Its intense sweetness overcomes the taste of the oil. The proportion used varies from 0.05 to 0.2 gramme per litre. M. Eisenchitz has proposed to dissolve it in its own weight of acetic ether previous to introducing it into the oil. But as the question arises whether it is advisable to give saccharin in long-repeated doses, especially to children or to invalids whose digestive organs are weak, it is, perhaps, better to confine ourselves to sugar and liquorice.

* Translated from the *Repertoire de Pharmacie*.

B. Aromatic Correctives.

The combination of various essences with the oil is a well-known plan: bitter almond, citron, neroli, eucalyptus, mint, canella wintergreen, aniseed, sassafras, vanilla, and roasted coffee are looked upon as the most efficacious, whether used alone or variously combined. The use of a perfumed spirit is in my opinion still more efficacious, cognac, rum, and kirsch can be recommended. Robinson has proposed using a 10 per cent. solution of chloroform in alcohol in the proportion of 4 grammes to 30 of oil, whilst Foster recommends 10 drops of ether to each table-spoonful of oil. Care should be taken not to use essences excessively, as they are apt to fatigue the stomach.

6. *Sufficiently Lengthy Preservation.*—To guarantee indefinite keeping properties, as manufacturers are in the habit of doing is useless, as such a condition of things can only be arrived at by the excessive addition of preservatives, such as glycerin, spirits, and essences. The use of glycerin is recommended by many authors and specialists in the quadruple capacity of emulsifying agent, by reasons of its viscosity, and of sweetening, preservative, and analeptic agent. The last effect does not seem certain, seeing that the nutrient properties of glycerin have been disputed. With regard to its emulsifying power, is not its viscosity balanced by its high density? I prefer to exclude it from a general formula. It will suffice for our purpose, since the preparation is made extemporaneously, if its keeping qualities can be guaranteed for the time necessary to use up such quantities as the pharmacist may be able to sell, say, one to two litres.

The formula which I propose fulfils the foregoing requirements satisfactorily, and the simplicity of the process in particular excels all others. Two forms of it have been worked out in response to the different tastes of patients and physicians: first, a creamy emulsion having a mixture of acacia and tragacanth as the emulsifying base, and a stable consistency which only allows of a very slight aqueous separation at the bottom, even after standing for a long time; secondly, a liquid emulsion, having a basis of acacia and liquid consistence, which soon separates into two layers, easily mixed by being shaken when taken.

A. Creamy Cod-liver Oil Emulsion.

Cod-liver oil	500 grammes
Finely sifted sugar	190 "
Powdered gum acacia	5 "
Powdered gum tragacanth	5 "
Coffee infusion	200 "
Rum or kirsch	100 "

Mix the sugar and gums in a mortar; weigh the oil and cold coffee infusion into the bottle which will contain the emulsion, and shake until mixed. Pour into the mortar, at the same time constantly stirring, sufficient of the mixture to make a semi-liquid; weigh the spirit and add it to the mixture of oil and coffee remaining in the bottle; shake and mix with the emulsion by degrees.

B. Liquid Cod-liver oil Emulsion.

The creamy emulsion can be modified so as to form the liquid emulsion by replacing the tragacanth by the same quantity of acacia. The corrective chosen in these typical formulæ imparts a colour of *café au lait* to the emulsions, in which the odour and especially the taste are conveniently disguised. But in this particular the formula can be modified *ad lib.* Various remedies can also be introduced.

7. *Change of Correctives.*—First, the spirit can be omitted and the quantity of coffee infusion increased to 300 grammes; in this case the coffee no longer suffices to cover the taste of the oil, and it becomes necessary to such an essence as bitter almonds dissolved in the oil to the extent of 20 or 30 drops per kilogramme. Secondly, one of the essences previously mentioned can be substituted for

the coffee itself, by dissolving previously in the cod-liver oil; the infusion of coffee is then replaced by water or an aromatic water. Thirdly, a more intense sweetness is obtained by mixing 30 grammes of glycerin with the aqueous vehicle.

8. *Addition of Other Remedies.*—First, in the aqueous vehicle, hypophosphite of sodium or calcium, phosphoglycerate of sodium or calcium (in the last instance the alcohol had better be omitted), alkaline, iodide, sodium arseniate, soluble salts of iron, etc., can be dissolved. Hypophosphites and iodides cause a disagreeable taste, in addition to that of the oil; the addition of a strongly flavoured corrective is then necessary, such as bitter almond, alone or associated with coffee, coffee or kirsch, eucalyptus essence, etc.

Secondly, 300 grammes of lime-water can be substituted for the aqueous vehicle; in this case the liquid emulsion formula will suffice, the lime-water itself having an emulsive action, which makes up for the absence of the tragacanth; still the stability of the emulsion will be increased by mixing the oil and lime-water in the mortar instead of in the bottle, the water being gradually mixed with the oil by trituration. A strong aromatic corrective will still be necessary.

Thirdly, such remedies as creosote, guaiacol, eucalyptol, iodine mercuric iodide, iodoform, etc., which are insoluble in water, can be dissolved in the cod-liver oil if the extent of the solubilities be remembered. In support of the foregoing I will give, in conclusion, an example of an emulsion to which commonly occurring remedies have been added:—

Creamy Emulsion of Cod-Liver Oil and Hypophosphites.

Cod-liver oil	500 grammes.
Essence of bitter almonds	20 drops.
Essence of wintergreen	20 "
Finely sifted sugar	190 grammes.
Powdered acacia	5 "
Powdered tragacanth	5 "
Distilled water.....	285 "
Calcium hypophosphite	10 "
Sodium hypophosphite	5 "

Dissolve the essences in the oil, the salts in the water, and proceed as before.

LATENT LIFE IN SEEDS.—In a very interesting paper in the *Archives des Sciences Physiques et Naturelles* (June 15), M. Casimir de Candolle records a series of experiments on seeds—chiefly wheat, oats, and fennel—with a view to ascertaining their power of resistance to unfavourable external conditions. He comes to the conclusion that seeds may pass through a period of completely suspended animation, during which all the functions of the protoplasm are quiescent, but from which they revive when again placed in conditions suitable for germination. The immunity from injury appears to depend on the protoplasm passing into a comparatively inert state, in which it is incapable either of assimilation or of respiration before being subjected to the unfavourable conditions. This period of suspended animation may extend over an indefinite time, probably through a long series of years, and the seeds may be subjected to very low temperatures without destroying their vitality. By the use of a refrigerator M. de Candolle obtained temperatures varying between -30° and -53° C.; seeds of wheat, oats, and fennel operated on in this way, 118 times in succession, still retained the power of germination; and previous experiments of M. Pictet indicate that the temperature may be reduced as low as -100° C. On the other hand, the greater number of the seeds of the sensitive plant and of *Lobelia erinus* succumbed to the experiment. These observations appear to open out most interesting possibilities with regard to the possible revival of species belonging to extinct floras, and entirely confirm the stories of the germination of long-buried seeds.

REVIEWS AND NOTICES OF BOOKS.

HAM'S INLAND REVENUE YEAR-BOOK, 1896. Edited by E. GRANT HOOPER, F.I.C., F.C.S., and other officers of H.M. Revenue Services. Pp. 376. Price 3s., or, with Warehousing Regulations, 4s. 6d. (London: Effingham Wilson and Co., 11, Royal Exchange, E.C. 1896)

It is generally recognised that the Inland Revenue Department virtually makes its own law, for few individuals care to risk the enormous expense involved in challenging its interpretations of the law. Therefore, as pointed out in the notice of last year's edition of this book (*Ph. J.* [3], xxv., 727), it is an advantage to be able to see many questions affecting the Inland Revenue from the official point of view, as the reader of the pages edited by Mr. Grant Hooper is enabled to do, the work being primarily intended for the use of Revenue officers. The present edition of this work shows that much of the more important matter introduced during recent years has been amplified; the tincture section has been re-written, certain articles have been extended, and pains have been taken to render the book even more useful than formerly.

The regulations affecting the manufacture of medicinal spirits, flavouring essences, and perfumes, and the use of methylated spirit and methylic alcohol, are given in a very concise form. Useful hints may also be obtained from the pages devoted to "patent medicines," wrongly so-called, a review being given of the principal provisions of the law under which liability to Stamp Duty is incurred, together with illustrations of dutiable labels, etc. Excise licences of different kinds receive their share of attention, and much useful information is given with regard to Income Tax, Death Duties, etc., etc. The general utility of the book is further enhanced by the inclusion of a handy calendar and diary, postal regulations, Inland Revenue directory, and other matters too numerous to specify. Readers of the Journal will find it of value in their business in many ways, and the slight cost incurred will be more than compensated by the aid afforded in avoiding difficulties.

THE TALLERMAN-SHEFFIELD LOCALISED HOT-AIR BATH. Patent. Baillièrè, Tyndall and Cox, London, 1895. Price 2s. Pp. 51.

This small book gives a description of a new invention for the local application of dry heat in the form of hot air. The value of dry heat in conditions such as neuralgia and chronic rheumatism has long been known to physicians. Hot air in the form of the ordinary hot air bath is a familiar method of obtaining diaphoresis in Bright's disease, but in none of the methods hitherto employed is the air kept in a state of dryness. Where a naked flame is used, the water generated by combustion is present, as well as that derived from the perspiration. The secret of the Tallerman-Sheffield apparatus is said to consist in an arrangement at the closed end of the cylindrical case in which the limb is placed for treatment. "The limb to be treated is passed into the open end of a cylinder through an air-tight curtain, which is afterwards secured in such a way as to close the chamber completely. The heat is applied by means of rows of gas jets, and a thermometer, the bulb of which lies in the air space, indicates the temperature. It is said that with dry air a temperature of 300° F. can be borne, whilst in a Turkish bath the limit in the hot room is 170° F. The method has been tried in many of the large London hospitals, and the evidence of unimpeachable witnesses proves that for suitable cases it works successfully. It is satisfactory to read that only such patients as are recommended by medical men are treated at the institution which has been established for the purpose, but for this restriction serious abuse of this ingenious therapeutic appliance would doubtless occur.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

DONATIONS.

At a meeting of the Library, Museum, School, and House Committee, held on Wednesday, the 15th inst., the Librarian presented the following report of donations:—

To the Library (London).

- The Surgeon-General U.S. Army, Washington:
Index-Catalogue of Library, vol. 16.
Abbreviations of Titles of Journals.
- Whittaker and Co., London:
Thompson, The Chemist's Compendium, 1896.
- Chemists' Assistants' Association, London:
Proceedings, 1894-5, No. 11. Two copies.
- Dr. G. Dragendorff, Rostock:
Beiträge zur gerichtlichen Chemie, 1895. Two parts.
- Danmarks Apothekerforening:
Ny pharmaceutiske Tidende, Nos. 14-26, 1894.
Archiv for Pharmaci og Chemi, August, 1894, to February, 1895.
- Association belge des chimistes, Bruxelles:
Bulletin, 1894-95.
- F. M. Bailey, Esq., Colonial Botanist, Queensland:
Botany Bulletin, No. 12, 1895.
Bailey, Peculiarities of the Phanerogamic Flora of Queensland, 1895.
Lanterer, Queensland Native Astringent Medicines, 1895.
- British Pharmaceutical Conference:
Year-Book of Pharmacy, 1895. Two copies.
- University College, Nottingham:
Calendar, 1895.
- Colonial Pharmacy Board, Cape of Good Hope:
Medical and Pharmacy Register, 1895.
- George Watt, Esq., M.B., C.M., C.I.E., per Superintendent of Government Printing, Calcutta:
Agricultural Ledger, 1894, nos. 5, 12; 1895, nos. 5-7, 9, 10, 12, 13, 16, 17. Two copies.
- J. H. Maiden, Esq., Sydney (Corresponding Member):
Agricultural Gazette of N. S. Wales, Nov.-Dec., 1894; Jan., Mar.-Oct., 1895.
- Allgemeiner österreichischer Apotheker-Verein:
Zeitschrift für 1895.
- Alumni Association of the Philadelphia College of Pharmacy:
Report, vol. 31, nos. 4, 6-7, 9; vol. 32, nos. 1-3.
- The Proprietors of the American Druggist:
Numbers for 1895.
- Philadelphia College of Pharmacy:
American Journal of Pharmacy for 1895.
Annual Announcement, 1894.
- Society of Public Analysts:
Analyst for 1895.
- Pharmaceutical Society of Australasia:
Australasian Journal of Pharmacy for 1895.
- British Medical Association:
British Medical Journal for 1895.
- The Editor of the Canadian Pharmaceutical Journal:
Numbers for 1895.
- The Editor of the Chemical News:
Numbers for 1895.
- Chemical Society of London:
Journal for 1895.
Proceedings for 1895.
Charter and Bye-laws, 1895.
List of officers and fellows, 1895.
- The Proprietors of the Chemist and Druggist:
Numbers for 1895.
Chemists' and Druggists' Diary, 1896.
- Mr. H. Helbing:
Helbing's Pharmacological Record, nos. 32, 33, 36.

- Kaiserliche Akademie der Wissenschaften in Wien :**
Anzeiger, mathematisch-naturwissenschaftliche Classe, 1895.
Sitzungsberichte, Chemie, 1893, 8.-10. Heft; 1894, 1.-10. Heft.
- Linnean Society of London :**
Journal, Botany, for 1895.
Proceedings, 1893-94.
List, 1895.
- Manchester Literary and Philosophical Society :**
Memoirs and Proceedings, ser. 4, vol. 9, nos. 1-5.
- Pharmaceutical Society of New South Wales :**
Pharmaceutical Journal of Australasia, Jan., Feb., Apr., June,
Aug., 1895.
- Pharmacie Centrale de France :**
L'Union pharmaceutique et le Bulletin commercial for 1895.
- Royal Photographic Society of Great Britain :**
Journal and Transactions for 1895.
- Royal Botanic Society of London :**
Quarterly Record for Jan.-Sept., 1895.
- The Director of the Royal Gardens, Kew :**
Bulletin of Miscellaneous Information for 1895.
- Royal Society of London :**
Proceedings for 1895.
- Société française de botanique :**
Revue de botanique, Mai, 1894, to Février, 1895.
- Society for the Advancement of Medical Science in Japan :**
Sei-I-Kwai, Medical Journal for Jan., Mar.-Nov., 1895.
- Society of Chemical Industry :**
Journal for 1895.
- The Editor of the Timehri :**
Part 2 for 1894; part 1 for 1895.
- The Proprietors of the Western Druggist :**
Numbers for 1895.

To the Library (Edinburgh).

- Alumni Association of the Philadelphia College of Pharmacy :**
Report, 1895.
- Pharmaceutical Society of Australasia :**
Australasian Journal of Pharmacy, 1895.
- Pharmaceutical Society of New South Wales :**
Pharmaceutical Journal of Australasia, 1895.
- Mr. J. J. Nelson, Edinburgh :**
Bulletin of Pharmacy, 1895.
- Colonial Pharmacy Board, Cape of Good Hope :**
Medical and Pharmacy Register, 1895.

The Curator presented the following report of Donations:—

To the Museum (London).

- The Director, Royal Gardens, Kew :**
Specimens of the materials used in preparing the Uali poison in
British Guiana.
- Commendatore Thos. Hanbury, F.L.S., Ventimiglia :**
Specimens of the resins of *Pinus maritima*, *Pinus halepensis*,
and *Cupressus sempervirens*.
- Mr. F. C. J. Spurrell, Belvedere :**
Specimen of a resin found in an excavated shop at Tel el
Amarna, in Egypt, and dating from 1450 B.C.
- Sir F. von Mueller, K.C.M.G., M.D., etc., Melbourne :**
Specimens of the kinos from *Eucalyptus calophylla*, *E.*
corynocalyx, *E. diversicolor*, *E. melliodora*, and *E. viminalis*.
- Messrs. T. Christy and Co., London :**
Specimens of African kino recently imported.
- Mr. J. Ch. Sawyer, Brighton :**
Specimens of Patchouli leaves from Singapore, and of two
varieties of oil of patchouli.
- Mr. D. Hooper, Ootacamund :**
Specimens of the barks of *Ailanthus excelsa*, *Amoora rohituka*,
Schleichera trijuga, and *Terminalia arjuna*; of the roots of
Cylista scariosa, *Centaurea behen*, *Doronicum pardalianches*,
Gentiana kurroo, *Merendera persica*, an African dye root im-
ported into Bombay, and red behen; of the fruits of *Celosia*
argentea, *Phyllanthus emblica*, *Salvia plebeia* (?); and of the
seeds of *Antiaris toxicaria* and *Butea frondosa*.
- Messrs. Wright, Layman, and Umney :**
Specimen of ergot from the Canary Isles.

To the Museum (Edinburgh).

Messrs. Wright, Layman, and Umney, London :
Specimens of Ergot of Rye from the Canary Islands.

To the Herbarium.

Commendatore Thos. Hanbury, F.L.S., Ventimiglia :
Specimens of *Pilocarpus pennatifolius* in flower and fruit.

Mr. J. Ch. Sawyer, F.L.S., Brighton :
Specimens of Patchouli plants from Java.

EXAMINATIONS IN LONDON.

January, 1896.

MAJOR EXAMINATION—PASS LIST.

Candidates examined	24
„ failed	14
„ passed.....	10

Armitage, Nathaniel Newborn.	Dyson, Thomas Hatfield.
Arrowsmith, George Micklem.	Lucas, Harry.
Arundel, Edmund.	Taylor, Charles Ludlow.
Boorne, Herbert Edward.	Udale, George William.
Cocker, Lewis Alexander.	Walker, John Robert.

MINOR EXAMINATION—PASS LIST.

Candidates examined	187
„ failed	130
„ passed.....	57

Adams, John.	Hughes, Thomas Henry.
Alder, Sydney Frank.	Jones, William Parry.
Alexander, Ernest Glover.	Kellam, Edward Henry.
Atkinson, Thomas Cawood.	Kenney, George William.
Barnes, Victor Geo. Harry.	Knight, William Arthur.
Barritt, Alfred.	Leins, Heinrich.
Bell, Charles.	Lewis, Richard Rice.
Benney, John Herbert Leslie.	Mays, Sydney Walter.
Bramley, William Miles.	Meynell, Henry.
Cheshire, Geoffrey.	Morrell, John George.
Cowley, Thos. Norbert Bodnum.	Moseley, Geo. Robert M.
Dale, John Arthur.	Poole, Arthur Walter.
Davies, Lewis John Arthur.	Rees, John Melbourne.
Davies, Philip Percival.	Smith, Ernest Edward.
Davies, Thos. Edgar Owen.	Sykes, Richard Alfred.
Daybell, Samuel Maltby.	Tindale, Joseph Edward.
De Morgan, Frederick Filmer.	Tuffin, Alfred Henry.
Dewdney, Albert Victor.	Turner, Walter Frederick.
Fore, Walter Thomas.	Tute, James Scott.
Francis, John.	Veitch, William Cuthbert.
Green, Samuel Marston.	Walker, William Henry.
Hanson, Arthur.	Ward, Tom Goodrich.
Hawley, Thomas Herbert.	Wilkinson, Ernest Munkman.
Hemingway, George Garrett.	Wilson, Harold.
Hickman, Fredk. Stanley.	Wood, John Edward.
Holman, Henry.	Woodland, Walter Bayley.
Holt, William.	Woollen, John James.
Hopkins, William Edward.	Wright, Robert Edwin.
Howell, Ellen May.	

FIRST EXAMINATION.

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

Bartlett, Henry Walsh	Brackley.
Casson, Frank	Birmingham.
Coulton, Arthur William	Southsea.
Coverdale, Arthur Edward	Kennington.
Crake, John William	Morpeth.
Fowler, Robert H.	Bishop's Stortford.
Francis, Herbert Stanley	London.
Grayson, Joseph	Whitehaven.
Greaves, Sydney Chater	Chesterfield.
Hewitt, Neville Charles	Cowes.
Jewell, Russell	Brixton.
Jewson, John Robert	Wisbech.
Johnson, George Sheriff	Ibstock.
Johnson, Robert Clitherow	Scawby.

Kennard, Lilian Sarah	Lambourn.
Knight, Thomas	Reading.
Leak, William	Buersil.
Pratt, Edward Adams.....	Bridgnorth.
Rawlins, Thomas.....	London.
Robinson, Richard Charles	Kendal.
Sandberg, Frederick James	Settle.
Simmons, Edward Harry	Birkenhead.
Stabler, Edgar	Levens.
Wells, John James	Harrogate.
Wilkinson, William J.....	Grantham.

FIRST EXAMINATION QUESTIONS.

January 14, 1896.

LATIN.

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

I. For all Candidates. Translate into Latin :—

1. There were many citizens in the town.
2. A stone has been thrown into the wide river.
3. Between these two boys there has been a very great friendship.
4. I shall go back to my home in Italy.
5. This message being received, some were filled with joy, others with fear.

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

(Candidates must not attempt both authors.)

A.—CAESAR.

1. Id ea maxime ratione fecit, quod noluit eum locum, unde Helvetii discesserant, vacare, ne propter bonitatem agrorum Germani, qui trans Rhenum incolunt, e suis finibus in Helvetiorum fines transirent, et finitimi Galliae provinciae Allobrogibusque essent. Boios, petentibus Aeduis, quod egregia virtute erant cogniti, ut in finibus suis collocarent, concessit; quibus illi agros dederunt, quosque postea in parem juris libertatisque conditionem, atque ipsi erant, receperunt.

2. Dies colloquio dictus est, ex eo die quintus. Interim, saepe ultro citroque quum legati inter eos mitterentur, Ariovistus postulavit ne quem peditem ad colloquium Caesar adduceret: vereri se, ne per insidias ab eo circumveniretur; uterque cum equitatu veniret; alia ratione sese non esse venturum.

Grammatical Questions.

(For those only who take Caesar.)

1. Give the infinitive perfect and indicative present (third person singular only) of *noluit, incolunt, transirent, collocarent, concessit, dederunt, erant, receperunt* (Par. 1).

2. Give the comparative and superlative of *laetus, facilis, magnus, celer, malus, digne, graviter*.

3. Write in Latin :—16, 39, 106, 14th, 19th, 47th, twice, four times, three each.

4. How are questions expressed in *oratio obliqua*? Give two examples.

B.—VIRGIL.

1. Ac veluti magno in populo quum saepe coorta est Seditio, saevitque animis ignobile vulgus :
Jamque faces et saxa volant ; furor arma ministrat ;
Tum, pietate gravem ac meritis si forte virum quem
Conspexere, silent, arrectisque auribus adstant :
Ille regit dictis animos, et pectora mulcet.
Sic cunctus pelagi cecidit fragor, aequora postquam
Prospiciens genitor, coeloque investus aperto,
Flectit equos, curruque volans dat lora secundo.

2. Jam pater Aeneas et jam Trojana juvenus
Conveniunt, stratoque super discumbitur ostro.
Dant famuli manibus lymphas, Cereremque canistris
Expediunt, tonsisque ferunt mantilia villis.
Quinquaginta intus famulae, quibus ordine longam

Cura penum struere, et flammis adolere Penates ;
Centum aliae, totidemque pares aetate ministri,
Qui dapibus mensas onerent, et pocula ponant.

Grammatical Questions.

(For those only who take Virgil.)

1. Give the infinitive present and indicative perfect (third person singular only) of *coorta est, saevit, volant, silent, adstant, regit, mulcet, flectit* (Par. 1).

2. Give the comparative and superlative of *laetus, facilis, magnus, celer, malus, digne, graviter*.

3. Write in Latin :—16, 39, 106, 14th, 19th, 47th, twice, four times, three each.

4. How are questions expressed in *oratio obliqua*? Give two examples.

ARITHMETIC.

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

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

1. A gallon of water weighs 10 lbs., and a cubic foot of water weighs 1000 ozs. How many gallons are there in a cubic foot?

2. Take $\frac{2}{31}$ of £4 0s. 1d. from $\frac{5}{43}$ of £7 14s. 1d.

3. If $\frac{1}{2}$ of an acre of land costs $\frac{156}{100}$ of £198, what ought $\frac{3746}{100}$ of an acre to cost at the same rate?

4. What will be the cost of painting the walls of a room 32 ft. long, 18 ft. wide, and 11 ft. high, at 1s. $1\frac{1}{2}d.$ per square yard, allowing for three windows each 6 ft. by 4 ft., and two fireplaces each 5 ft. by 6 ft.?

5. A house is insured for $\frac{3}{4}$ of its value at $1\frac{1}{2}$ per cent., and the premium is £18: what is the value of the house?

6. A tradesman advertises a reduction of 10 per cent. on the prices marked; at what price should he mark two articles for which he wishes to obtain 10s. 6d. and 19s. 6d. respectively?

The following question must be attempted by every candidate:—

7. Express 2 cwt. 3 qrs. 11 lbs. in kilograms, and 4 miles 3 fur. 30 pls. 9 yds. in metres.

ENGLISH.

Time allowed—from 3 p.m. to 4.30 p.m.

1. Analyse :—

“ My better parts

Are all thrown down, and that which here stands up
Is but a quintain, a mere lifeless block.”

2. Parse fully :—*are thrown, down, that, but, mere*.

3. Correct the following sentences, giving your reasons :—

(i.) I am neither a good actor in tragedy or comedy.

(ii.) The audience was divided; some of them were in favour of the speaker, and some of it against him.

(iii.) So frightened was he that he dare not move.

4. In the following passage supply the necessary capital letters, and put in the stops and inverted commas where necessary :—an elderly grey whiskered gentleman had been walking down the street glancing up at the numbers of the houses now as his eyes fell upon the old man he came straight for him hullo said he perhaps you are gregory brewster my name sir answered the veteran you are the same brewster as i understand who is on the roll of the scots guards as having been present at the battle of waterloo i am that man sir though we called it the third guards in those days

The following question must be attempted by every candidate.

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

(i.) A visit to some large town.

(ii.) The lasting effect of early associations.

(iii.) “ It is not the tools that make the workman.”

(iv.) “ If you wish for peace, prepare for war.”

CORRESPONDENCE.

[Letters to the Editor should be written as concisely as possible, on one side of the paper only, and preferably with name and address for publication.]

"SCIENTIFIC" NONSENSE ABOUT VINEGAR, ETC.

Sir,—After more than fifty years' experience of the drug trade, I hold the opinion that acetum dest. is not white wine vinegar. Notwithstanding the similarity, long experience, and opposite conclusion held by my respected friend, Octavius Corder. Fifty years ago I was taught that vinegar, as the derivation of the word implies, was sour wine, but that custom and convenience sanctioned the extension of the term to sundry other liquors containing acetic acid obtained from malt, sugar, etc. It was also customary to speak of port wine as red wine, and sherry as white wine, and the special designation of white wine vinegar was necessary to discriminate between vinegar made from malt, and that resulting from the souring of pale coloured wines, which alone has the right to be called white wine vinegar. At the same time we sold malt vinegar under the names of malt or brown vinegar; the vinegar which we imported from Cognac as French or wine vinegar, and also dilute acetic acid as white or wood vinegar. I do not know that we were ever asked for distilled vinegar, but frequently for white wine vinegar. When white wine vinegar was demanded and the Cognac vinegar was offered, it was frequently objected to and the wood vinegar taken in preference.

Things have changed much during fifty years, and among other changes the sale of vinegar has gone very much out of our hands, a few gallons of malt, and a few gallons of wine vinegar per annum being all that now remains. I think that the so-called high qualities do not please the public so well as acetic acid of a purer kind well diluted. I do not think that is injurious to the health of the consumer nor in any sense to his prejudice, unless he pay a price out of proportion to the cost of the article and reasonable profit, a point upon which chemists do not need to say much. The difficulty lies mainly in the carelessness of the public, who do not know what they want, and will not take the trouble of asking for things by correct names. If I were a J.P. (I am thankful to say I am not) I would no more willingly fine a grocer for selling diluted acetic acid at 4*d.* per quart under the name of vinegar than I would fine Mr. Corder for selling acet. dest. (ex. P.L.) as white wine vinegar. I should require proof that the purchaser had suffered in health or in purse, and that the seller had been made to understand what the purchaser desired to have.

When malt vinegar is asked for we may reasonably say vinegar made from malt should be supplied; when white wine vinegar is asked for, vinegar made from light-coloured wines should be supplied. But when the term vinegar is used without qualification, and the purchaser does not suffer either in health or purse, he has no cause of complaint if he does not get the particular kind of weak acetic acid he desires. I daresay many of my righteous brethren will say I am very wicked to teach such doctrine. Perhaps I am very wicked. The Medical Council instructs us to mix squill root with dilute acetic acid, and call it vinegar of squills, and to mix cantharides with strong acetic acid, and call it vinegar of cantharides. Surely they are very wicked. A common custom of the trade is to mix acetic acid with spirit and perfumes, and sell it as toilet vinegar, and to mix very strong acetic acid with essential oils, and sell it as aromatic vinegar. Oh, brethren, are we not all very wicked?

Newcastle-on-Tyne.

BARNARD S. PROCTOR.

January 13, 1896.

THE POLICY OF 'THE ANTI-CUTTING RECORD.'

Sir,—As any reference in the *Pharmaceutical Journal* to the policy of the *Anti-Cutting Record* seems to command the attention of the editorial department of that publication, perhaps you will allow me to note the first paragraph under the heading of "Trade Notes" in the issue for January. The note refers to Jackson's febrifuge. In his advertisement (p. 16) the inventor tells us that the production of this almost perfect medicine constituted his sole study for over thirty years; that it possesses (!) a chemical action upon almost any diseased or deranged portion of the human system; and that it is an unfailing remedy for all kinds of fever, sore throat, headache, neuralgia, bronchitis, inflammation, pneumonia, influenza, quinsy, croup, feverish colds, weakness, debility, etc. Of course, the above is in line with the usual quack medicine advertisement, but surely it is out of place in an organ addressing the trade. Does Mr. Jackson expect chemists to use the article? Or does he expect chemists to endorse what he himself says about it?

The remainder—and probably the most important part—of the inventor's advertisement is left in the hands of the writer of the *Record's* "Trade Notes." We are told that the article is an invaluable febrifuge, and when "taken up" by the retailer it quickly makes for itself a rapid sale. Will the writer of the note kindly tell us exactly what is implied by the words "taken up," as used in this connection? On the same page of the *Record* it is stated that the demand for proprietaries is created, and has been created, not as the *Pharmaceutical Journal* states, by chemists and druggists themselves, but by persistent and colossal advertising. The *Record* may fitly supplement that statement by adding that in future such demand will be, or ought to be, created by chemists "taking up" the articles.

Further, "the article has been in use for over a quarter of a century, so that its reputation is not of recent origin." I cannot make out whether this statement is made by the inventor or by the writer of the note: in either case, what is its reputation? I have been in the retail trade for nearly a quarter of a century, and never before heard of the nostrum; nor can I find any trace of it in either London or Edinburgh catalogues of proprietaries.

January 13, 1896.

ANTI-HUMBUG.

ANALYTICAL NOTES.

A CRYSTALLINE COMPOUND OF FERROUS CHLORIDE AND NITRIC OXIDE has been obtained by V. Thomas by introducing the gas into an ethereal solution of ferrous chloride, when the liquid turns black and leaves a syrupy substance on evaporating off the ether. After this has stood for some time it becomes crystalline. The crystals have the following composition:— $\text{FeCl}_2 \cdot \text{NO} \cdot 2\text{H}_2\text{O}$. On evaporating the solution at 60° to 100° the compound is obtained free from water. The salt containing water of crystallisation occurs in well-formed black crystals; the anhydrous salt forms small yellow-coloured crystals. Ferrocyanide of potassium produces a white precipitate with the solution (*Apoth. Zeit. Jahr.*, x., 330).

PURITY OF ZINC OXIDE.—Schneegans has recently met with several samples of zinc oxide contaminated with sulphur—an impurity he considers due to the use of metallic zinc containing zinc sulphide in preparing the oxide. Part of the sulphide appears to be mechanically carried over undecomposed, and may be detected in the oxide by the action on lead-paper of the gas produced when dissolved in acid. Schneegans is of opinion that this test should be applied to zinc oxide (*Journ. f. Ph. v. Els. Lothr.*, and *Ph. Centralh.*).

PHARMACEUTICAL JOURNAL.

A Weekly Record of Pharmacy and Allied Sciences.

FIFTY-FIFTH YEAR OF PUBLICATION.

Circulating in the United Kingdom, France, Germany, Austria, Italy, Russia, Switzerland, Canada, the United States, South America, India, Australasia, South Africa, etc.

Editorial Office: 17, BLOOMSBURY SQUARE, W.C.

Publishing and Advertising Office: 5, SERLE STREET, W.C.

LONDON: SATURDAY, JANUARY 18, 1896.

COMMERCIALISM IN PHARMACY.

THE Editor of the *Apothecary* is nothing if not optimistic. In the latest number of his journal he expresses the opinion that slowly but surely true scientific pharmacy will assert itself and throw off the commercialism which has so long trodden it under foot. Possibly pharmacy in the United States may have made great progress of late in the direction indicated, but the prevailing impression in this country has been that the slowness of the movement referred to was more marked across the Atlantic than even here, where it is sufficiently pronounced to calm any fears on the part of the most fossilised ultra-conservative. Nevertheless, even though the wish be father to the thought so far as present appearances are concerned, many leading British pharmacists will join hands with Professor OLDBERG on the question, and hope with him that the parting of the roads where the mere merchant druggist and the real pharmacist will part may soon be reached. At the same time, it is difficult to conceive of pharmacy becoming purely professional in the exact sense of the term. The trade element seems bound to persist, and on the whole it will perhaps be better to accept this view with as much equanimity as may be forthcoming.

As an interesting sign of the times, it is stated that the purely commercial retail druggist in the States is now demanding that the colleges of pharmacy shall instruct their classes "in such purely commercial matters as the art of buying and selling, advertising, dressing show windows, 'handling' merchandise having no connection whatever with legitimate pharmacy, and other similar 'practical' means by which the sales and profits of the drug store may be increased." This, if carried into effect, would surely be technical education run mad, for it is difficult to credit that any intelligent individual honestly believes that such training, to be of any real value, can be obtained anywhere except in a shop. As Dr. OLDBERG justly insists, all of the purely mercantile special training which the druggist is expected to have must be gained in the shop, and it may be observed parenthetically that it is better obtained before than after entering upon a college course. On this point the opinion here expressed is not at one with that which at present finds favour in the States, but British experience fully endorses the statement that shop training should precede college instruction.

Compulsory preparatory general and special education for pharmacy; a complete system of registration for apprentices, assistants, and pharmacists; and a fixed period of shop experience precedent to registration and licence, are the chief desiderata stipulated for by our contemporary, and British pharmacists generally would view a law enforcing these with much equanimity and satisfaction. They ought also to approve of the suggestion that "when a boy or young man goes into a drug store to learn the business he ought to be told at the very beginning, and with authoritative finality, whether or not he can ever become anything more than an errand boy, a porter, or a mere salesman. If his general education is not sufficient to warrant his registration as a student, qualified to become an intelligent and competent pharmacist, he should be at once so informed, instead of being permitted to entertain the hope of being a registered pharmacist some day." It may be added that the onus of deciding with regard to the pupil's educational capacity should be left to competent examiners rather than the pharmacist, and the test ought to be imposed before he is allowed to enter the shop. Candidates for admission to the ranks of pharmacy undoubtedly require sifting out, but the sieve must be used at the right time and by the right persons, if the process is to be properly efficacious.

THE SALE OF POISONOUS WEED-KILLERS, ETC.

It is refreshing, after the storm of abuse levelled at the Pharmaceutical Society by different trade papers in connection with the proceedings taken against grocers, photographers, and seedsmen, for infringing the Pharmacy Act, to read the sensible remarks that appear on the subject in the *Gardeners' Chronicle*. The Editor of that paper is not disposed, as he says some of his correspondents are, to decry the action of the Pharmaceutical Society in undertaking the responsible duty of prosecuting persons who infringe the law by selling poisonous preparations when not expressly authorised so to do. It is pointed out that seedsmen and nurserymen incur great risks in dealing with poisonous substances, since, according to the Pharmacy Act of 1868, no person, not being a duly registered pharmaceutical chemist, or a chemist and druggist within the meaning of the Act, can legally sell certain poisonous substances, or preparations containing them.

"The object of this enactment," proceeds our contemporary, "is obvious enough—and every sane man will say it is reasonable. But the operation of the law is another matter." Certain correspondents, it appears, have complained bitterly against the action of the Pharmaceutical Society, urging that a poison is no less poisonous if sold by a druggist, and no more poisonous if retailed by a seedsman. "It must be remembered, however, that the pharmaceutical chemist has passed through a course of education to fit him for his duties, and has passed various examinations. He is therefore presumed to have a fuller and more intimate knowledge of poisonous substances than a grocer or a seedsman, who has given no such public pledges that he is a responsible person, and one competent to handle and dispense such dangerous ingredients." Aspersions against the Society—as being the possessor of a monopoly, and influenced by sordid motives in securing for its members exclusive privileges—are designated as not only in bad taste, but also untrue. "The Society would, we expect, gladly be relieved of what must be a very unprofitable and an extremely disagreeable duty. On the other

hand, the general public would have ample right to complain if the Society did not execute the commission entrusted to it by the State. So far from being too active in the matter, we are inclined to think it is not active enough."

Further, it is urged that if seedsmen were to be allowed to sell tins of weed-killer, they ought, for the public safety, to exercise their calling under the same sort of restriction as the druggist does. At present the druggist must keep a register detailing the amount of poison sold, the name and address of the person to whom it is supplied, and other particulars, but the grocer, oilman, or seedsmen takes no such precautions. "As matters now stand, a child may purchase a packet of vermin-killer or fly paper from an oilman, enough to poison half a parish." It is appropriately observed that no one, druggist or otherwise, should be allowed to deal in these dangerous substances without in some way giving a voucher to the public that he is a responsible and a competent person, and, in conclusion, it is suggested that "surely the facts of the case demand not lessened but increased restriction."

THE PRESERVATION OF DRUGS.

WE have been favoured by the receipt of an advance proof of a paper on a method for preserving organic products and protecting them from insect attacks, read before the Agri-Horticultural Society of India, at Calcutta, by Mr. J. CLEGHORN, of the Public Works Department. The paper is too long for reproduction in the *Pharmaceutical Journal*, but a brief summary of its salient points will probably be found interesting. The process has been used with good effects in the case of cassia pods, cigars, and cigarettes. Out of one hundred and five bales of cassia sent by one firm to London, five were treated by this sterilising process, and those five realised prices about seventy per cent. better than the rest.

The apparatus used in the experiments, which is somewhat vaguely described, consists of a large zinc box, raised on supports to a convenient height from the ground. The box is divided into two compartments, each of ten cubic feet capacity, "with an annular space on the bottom and sides." At diagonally opposite corners there are apertures in the "outside compartment," through either of which water is poured until a depth of about two inches is registered. Thermometers are attached to the caps closing these apertures, so that the temperature can be observed. There are two closely-fitting lids to each compartment, both resting on felt linings, and there is a space of about eight inches between the upper and lower lids to keep the temperature uniform. Over the whole apparatus two covers are placed, one of "gunny" and the other of blanket.

The articles to be treated are arranged in the compartments, tier upon tier, with battens between. When full, the covers are placed in position, and three ordinary paraffin oil stoves are lighted and placed below the apparatus. As soon as the thermometers record 138° F., *i.e.*, in about three or four hours' time, one stove is removed and the others are adjusted so that the temperature can be maintained at that point for five hours. The apparatus is then allowed to cool gradually, so that any vapour given off by the drugs, etc., may be reabsorbed evenly. On removal, the contents are found to be thoroughly sterilised, and are stated to be even improved in flavour. The effects of the process are to coagulate albumin, rupture starch granules, preserve tissues, destroy insects and their eggs, and kill germs. It is also said to

enable the goods treated to be kept with impunity in a suitable climate for maturing, and finally to improve their condition.

THE 'INDEX KEWENSIS' AND BOTANICAL NOMENCLATURE.

Sir JOSEPH HOOKER and Mr. B. DAYDON JACKSON are to be congratulated on the completion of that stupendous compilation,—the 'Index Kewensis'—which should so greatly lighten and facilitate the labours of all working botanists. It is doubtful, however, whether the prohibitive price—ten guineas—placed on the work will not entirely frustrate the intentions of the late CHARLES DARWIN, and leave the copies to moulder in the publisher's stores. It may be well to explain that the work is primarily an index down to the end of 1885, leaving much for successive monographers to do in the matter of synonymy. Still, an immense amount has been done in this direction, and according to the *Kew Bulletin*, there is a good prospect of an early publication of a supplement embracing the decade 1885 to 1895, which has been a very busy one, not only for would-be reformers of botanical nomenclature, who have probably added some 50,000 names to the already appalling synonymy of previously described plants, but also for systematists who have described the numerous discoveries of collectors in all parts of the world, more especially in tropical Africa, Madagascar, and China. Names have also been largely increased by a class of botanists who see species in individual variations, as in *Hieracium* for example, of which there are now upwards of a hundred reputed British species! Genera are also liable to this disturbing influence. A distinguished French botanist has dismembered the genus *Loranthus* as ordinarily understood, and without finishing, has already segregated about ninety groups, which he has raised to the dignity of genera. With regard to the rule of priority in nomenclature, there is a growing feeling in Europe in favour of making 1753 the starting point, subject to certain exceptions of not reviving obscure names to replace familiar ones that have been in general use for half a century or more. The director of Kew has publicly announced his adhesion to the rule of retaining and employing current familiar names; and whatever view may be taken of the question, this course has the advantage of adding nothing to synonymy, and at present causes no inconvenience.

POISONING BY CARBOLIC ACID.

It is high time, says the *Aldershot News*, that attention should be given by the proper authorities to the medical view of the danger of the unrestricted sale of carbolic acid. An Aldershot medical man, who has recently had to attend two cases of suicide by its means, has expressed a strong opinion that carbolic acid should be included in the list of scheduled poisons, and the local paper comments upon his remarks in the following sensible and pertinent passage:—"No one, of course, will suppose that the mere fact of scheduling it will alone be sufficient materially to reduce the total number of suicides, but it is reasonable to believe that the more we curtail the facilities for purchasing poisons the less likely are persons who choose them to find them at hand during those temporary periods when the mind is so unhinged as to allow them deliberately to contemplate self-destruction. And who shall say that many a person has not been saved from death by his own hand by lack of opportunity at the critical moment?"

ANNOTATIONS.

MANCHESTER PHARMACY BALL.—The third annual ball and musical promenade in connection with the Manchester Pharmaceutical Association, will be held at the Hulme Town Hall, Manchester, on Wednesday next, January 22. Inclusive tickets (double, 12s. 6d.; ladies', 5s. each, gentlemen's, 8s. 6d.) may be obtained of Mr. A. Blackburn, 7, Exchange Street, Manchester, and should be applied for without delay. Mr. T. B. Blyton will officiate as M.C., and the music will be provided by Messrs. Forsyth Bros.' band. The musical promenade commences at 8 p.m., dancing will begin at 8.30 p.m., and carriages may be ordered for 2 a.m.

HELMHOLTZ MEMORIAL LECTURE.—The Helmholtz Memorial Lecture of the Chemical Society will be delivered by Professor G. F. Fitzgerald, F.R.S., of Dublin, at an extra meeting of the Society, to be held at Burlington House on Thursday next, January 23, at 8 p.m.

TARAXACIN: A CRYSTALLINE BITTER PRINCIPLE FROM DANDELION ROOT.—According to Sayre (*Am. Journ. Pharm.*, lxxviii., 465), taraxacum root contains, in addition to an amorphous bitter substance, a crystalline bitter principle which he calls taraxacin. It is obtained from a diluted fluid extract of taraxacum obtained by displacement, by precipitating with solution of basic lead acetate. The filtrate from this is treated with sulphuretted hydrogen, the lead sulphide filtered off, and the liquid evaporated to near dryness. The pasty mass is mixed with sand and dried at 55° for three days; it is then exhausted with chloroform. This solvent, on evaporation, leaves the taraxacin in the form of crystals. The yield is about 0.05 per cent.

ARROW POISON OF NAMAQUALAND.—According to the *Scientific African*, the bushmen of Namaqualand poison their arrows with the venom of the "ring-halse," or black night-adder. This is forced from the poison glands by violent compression with a two-pronged stick, and mixed with a resinous extract from the root of *Buphane toxicaria*, being then ready for use. Formerly the head of the puff-adder was stewed with this resinous extract, together with beetles and noxious herbs, the incantations of a witch-doctor being also considered essential to ensure efficacy.

THE FIRST ARTICULATED SKELETON.—Andreas Vesalius—who is the first subject in an attractive series of articles promised by the *Practitioner*—is distinguished as being the first person recorded to have produced an articulated skeleton. With the help of a friend he stole the skeleton, which attracted his attention owing to the fact that vultures had picked it particularly clean, from the gallows erected near Louvain in 1536. He was also probably the pioneer "resurrection man," and made recognition of smuggled bodies impossible by removing the skin as soon as they arrived in the dissecting room.

THE FATE OF MICROBES IN INSPIRED AIR.—The desirability of inspiring air through the nostrils only is further emphasised by the results obtained by Drs. St. Clair Thomson and Hewlett. They have previously shown that the mucous membrane of the healthy nose only exceptionally shows any micro-organisms whatsoever, the interior of the great majority of normal nasal cavities being perfectly aseptic. They now find that nasal mucus is capable of exerting an inhibitory action on the growth of micro-organisms, though they have not been able to obtain any proof that it possesses bactericidal qualities.

THE CHEMISTS' BALL.—No more successful Chemists' Ball has been held than that on Wednesday last at the Portman Rooms, London. More than three hundred tickets had been sold, and supper was laid for two hundred and ninety persons. Mr. T. C. W. Martin filled his usual office as M.C., with as much tact and success as ever. The perennial Chairman, too—Mr. Michael Carteighe—was in his accustomed good form. His complimentary allusions to the manner in which the members of the Committee had fulfilled their self-imposed duties—and especially the Honorary Secretary, Mr. John C. Umney—were acclaimed with a heartiness that proved they were fully endorsed by all present. Mr. Carteighe also read a telegram received from Stonehouse, in which the chemists of the Three Towns and district, who were holding a ball at the same time, sent hearty greetings to their associates and friends assembled at the Portman Rooms. The whole of the proceedings passed off without a hitch, and the new Honorary Secretary is cordially congratulated on the results of his efforts. Amongst others present were Messrs. Butt, Bowen, Martindale, Cooper, White, Tanner, Taylor, Mathews, Wright, Bremridge, Francis, Greenish, Umney, Warren, and other prominent pharmacists too numerous to mention, accompanied in practically all cases by the lady members of their families.

WOMEN AS SURGEONS.—At a recent meeting of the Fellows of the Royal College of Surgeons, a resolution was carried to the effect "that, in the opinion of the Fellows of this College, women should be admitted to the diplomas of the College."

BLINDNESS CAUSED BY EXTRACT OF MALE FERN.—According to the *Journal de Médecine et de Chirurgie Pratiques*, Masiers has reported a couple of cases of amaurosis produced by extract of male fern. In one case a carpenter, after taking thirty-two capsules of extract of male fern and extract of pomegranate, and also a dose of castor oil, rapidly lost consciousness, and the next day his eyes showed total mydriasis and complete amaurosis. A week afterwards atrophy of the optic nerves supervened, and the patient became stone blind. The toxic effect of oil of male fern has been shown to be due to filicic acid, which is soluble in castor oil and other fatty bodies, and so more readily absorbed. Toxic symptoms are always more grave where a dose of oil has followed the ingestion of the male fern extract.

OESTERREICH. ZEITSCHRIFT FÜR PHARMACIE.—The official organ of the Austrian Apotheker-Verein has just published its jubilee number, having been commenced in 1846. This special number contains an article on jaborandi leaves and their structure, by Professor A. Vogl; a paper on columbin and columbic acid, by Professor A. Hilger; one on the source of dammar resins, by Professor J. Wiesner; and the first part of an elaborate illustrated paper on storax, by Professor J. Moeller. Communications on the assay of *Secale cornutum* by Professor H. Beckurts, and the histology of cinnamon chips, by Dr. T. F. Hanausek, are also amongst the contents of this excellent number of the *Zeitschrift*.

DISTRIBUTION OF FUNGI BY SNAILS AND TOADS.—Vogolino communicates a suggestive paper to the *Nuovo Giornale bot. Ital.* (1895 181), in which he demonstrates that certain fungi (Agaricineæ) are distributed by snails and toads. An examination of the stomach of the snails showed the presence of spores of various species of fungi which were seen to have begun their germination, and culture experiments with the excrements of various snails produced a large number of germinating spores of fungi. The same was observed on examining the stomachs of toads, in which the spores of *Russula* and *Lactarius* were specially abundant.

PROCEEDINGS OF SOCIETIES.

CHEMISTS' ASSISTANTS' ASSOCIATION.—The Chemists' Assistants' Association inaugurated the second half of the session by a smoking concert, which was held in the large hall of the Frascati Restaurant on Thursday, the 9th inst. When Professor J. Reynolds Green took the chair there was already a representative gathering present of pharmacists and their friends, and this was largely augmented in the course of the evening. Amongst those who attended were Mr. C. B. Allen, who occupied the vice-chair, Professor H. G. Greenish, Messrs. John Harrison, Joseph Ince, R. Bremridge, G. Claridge Druce, F. Ransom, C. Umney, J. C. Umney, Clarke, W. Watson Will, P. MacEwan, and T. C. W. Martin. An admirable programme had been drawn up by Messrs. T. Morley Taylor, and W. S. Crouch (Hon. Secs. to the Smoking Concert Committee), and amongst the items may be mentioned Mr. Frederick Russell's "Ventriloquism up to Date," which proved quite as successful a feature as at the School of Pharmacy Cricket Club "smoker." Mr. G. T. Miles' harp solos and Mr. Walter Churcher's recitations evoked hearty applause. It only remains to be added that Professor Green made a most acceptable Chairman, the same remark applying to Mr. Allen in his capacity as "vice," and that the general arrangements reflected credit upon all concerned.

SCHOOL OF PHARMACY STUDENTS' ASSOCIATION.—A meeting was held on January 9, Mr. H. A. D. Jowett, B.Sc., in the chair. A paper was read by Mr. R. Payne entitled the "Antiquity of Man." In the first part of the paper, after treating of the monuments of Egypt and Chaldæa, and the most important early records, the author summed up by saying that over 7000 years ago there existed in Egypt a united nation, in a very high state of civilisation, in some respects equal to that of the nineteenth century. Chaldæa, he said, tells us practically the same tale, although we cannot go quite so far back as in the case of Egypt, and have not such a complete historical record. In the second part of the paper the author described the various geological periods, and discussed the probable length of their duration, expressing the opinion that the recent period had lasted about 20,000 years, the Quaternary about 200,000 years, and the Tertiary about 2,000,000 years. In conclusion, the opinion was expressed that we should have to go back into the Eocene or earliest Tertiary stage for the origin of man, and, further, judging from the present state of our knowledge of the antiquity of man, he said that he felt quite safe in saying that the probable date of man's origin was at least one million years ago, and that many facts pointed to a much greater antiquity. A discussion followed, in which Messrs. Eastes, Grier, Senter, Spurge, and Umney took part. The Chairman then gave notice of motion in connection with the proposals of the Executive Committee to amend the rules of the Association. These amendments will be discussed and voted upon at the next meeting, on Thursday, January 23.

LINNEAN SOCIETY OF LONDON.—At the meeting on December 19, Mr. W. P. SLADEN, Vice-President, in the chair, Mr. William Scott was elected a Fellow of the Society, and the Rev. T. R. Stebbing, Rev. H. P. Fitzgerald, and Mr. A. W. Geffcken were admitted.

Mr. W. B. Hemsley exhibited specimens and photographs of *Cactææ* from the Galapagos Islands, and gave an account of some of the more remarkable species.

Mr. George Brebner exhibited and described, with the aid of microscope and lantern-slides, the following new and rare algæ:—*Colaconema bonnemaisonia*, Batters, *C. chylocladia*, Batters, *Trailliella intricata*, Batters (*Spermothamnion turneri*, var. *intricata*, Holmes and Batters, 'Revised List Brit. Algæ'), *Ectocarpus velutinus*, Kütz., var. *laterifructus*, Batters, and *Hymenoclonium serpens*, Batters (*Callithamnion serpens*, Crouan). These were found by Mr. Brebner while studying the marine algæ of Plymouth and the neighbourhood. The first two are endophytic and new to science; the discovery of the tetraspores of the third (which in regard to position and development are unique in the group to which it belongs) justified the creation of a new genus for its reception (*cf. Journ. Bot.*, 1896, p. 8). The fourth is a variety of a well-known parasitic on *Himanthalia lorea*, Lyngbye, probably only a late autumn and winter form not hitherto described. The fifth was a young specimen of a rare Alga first discovered in this country by Mr. Holmes, and found, like the others, in Plymouth Sound.

Mr. J. E. Harting exhibited a living specimen of the Snow-Bunting (*Emberiza nivalis*), which had been captured with several others off Cape Race on board the s.s. "Ottoman" in October last, during the voyage from Boston to Liverpool, as mentioned at a former meeting (November 7).

Mr. R. A. Rolfe gave an abstract of a paper entitled "A Revision of the Genus *Vanilla*," in which some fifty species were enumerated, seventeen of which were described as new, though five of them had been previously confused with older forms. The plants in this genus were described as tall forest climbers, some of them leafless, found almost throughout the Tropics, though generally somewhat local in their distribution. Of the species described, twenty-nine were American, eleven Asiatic, and ten African. Six of the American species were stated to have aromatic fruits, and three are well known in commerce, although only one of them, *Vanilla planifolia* (often confused with other species), is largely cultivated as an economic plant. Mr. Rolfe gave an account of the morphology and mode of fertilisation of the genus, its affinities and geographical distribution, and an enumeration of the species with descriptions. As indicating a still imperfect knowledge of the genus, he remarked that it was even now uncertain to what species the Peruvian plant with aromatic fruits belonged, which was noticed by Humboldt more than eighty years ago. The paper was illustrated by a series of carefully made drawings.

Mr. E. S. Goodrich communicated a report on the collection of Cephalopoda in the Calcutta Museum. He explained that this collection had been forwarded from Calcutta to Professor Ray Lankester, at whose request he had undertaken to examine and report upon the species. It contained 162 specimens, almost all of which were collected in the Indian Seas from the Persian Gulf to the coast of Australia during the cruise of H.M.S. "Investigator." Fifteen genera were represented, and several new species were described belonging to the genera *Cheiroteuthis*, *Histiopsis*, *Abraha*, *Doliolus*, and *Faonius*. The paper was illustrated by original drawings.

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY.—Perhaps the most successful of the annual dinners in the history of this Society was the latest—the sixth—held at the Alexandra Hotel, Liverpool, on the 9th inst., under the presidency of Mr. T. S. Wokes. The arrangements were perfect, the after-dinner programme of music, vocal and instrumental, ran without a hitch, and last, but not least, the gentlemen to whom the task of proposing the various toasts was confided were commendably concise in their remarks, the replies being of a like nature. In response to the toast of the "Medical Profession," proposed by Mr. R. H. Mitchell, an exceedingly happy and well-turned speech was delivered by the doyen of the Liverpool medical faculty, Dr. J. B. Nevins, M.D., F.R.C.S., who has from the first exhibited an interest in the affairs of the Liverpool Pharmaceutical Students' Society, much valued by the members.

The menu card this year was a novelty in its way, being adorned with punning illustrations of the subjects in the syllabus of the Society's lectures. Fermentation showed two disciples of the "fistic art" having a "set-to"; "supporting the Pharmaceutical Society" was a modern Atlas with the Society's arms on his brawny shoulders; aquatic plants gave a huntsman taking an impromptu header into a ditch, whilst a bony and broken-down Rosinante was deemed a fit illustration of "weak points," etc. It seemed uncomplimentary, by the way, on the part of one of the musical friends, to herald the toast of the medical profession by the song "The Goblins in the Churchyard"! The visitors included Drs. Nevins, Larkin and Logan, Charles Sharp, Esq., F.L.S., Charles Symes, Esq., Ph.D. (who replied to the toast of the Pharmaceutical Society), and Professor R. J. Harvey-Gibson, F.L.S., F.R.S.E., of University College, as well as many members of the Liverpool Chemists' Association.

PLYMOUTH, DEVONPORT, STONEHOUSE, AND DISTRICT CHEMISTS' ASSOCIATION.—The quarterly meeting of the members of this Association was held at the Foresters' Hall, Union Street, Plymouth, on Wednesday, January 8, the President, Mr. C. J. Paik, in the chair. After the general business had been transacted, the Secretary announced the receipt of three books, kindly presented to the Association by Mr. E. M. Holmes, of the Museum Department, Bloomsbury Square, viz., Remington's 'Pharmacy' and two copies of Attfield's 'Chemistry.' A vote of thanks was unanimously passed to Mr. Holmes for his generous gift.—Mr. J. Kinton Bond, B.A., B.Sc. (hon. member), was to have delivered a lecture on "The Metric System," but owing to an urgent engagement out of town Mr. Bond was prevented from attending, and the lecture was consequently postponed to another date.

The final meeting of the Pharmacy Ball Committee was afterwards held, and reports presented by the Hon. Secs. (Messrs. F. Maitland and H. O. Westcott). Details of decorating the Town Hall, Stonehouse, and various other matters concerning the ball on the following Wednesday were agreed to. It was stated that this would be the first Pharmacy Ball ever held in the West of England, and there were many expressions of pleasure at the successful arrangements which were being made. The Secretary announced that no more tickets could be issued, as nearly 250 persons, including the Mayor of Devonport and the Chairman of the Stonehouse District Council, had intimated their intention of being present.

The Junior Section of the Association held its monthly meeting at the Foresters' Hall, Octagon, on Thursday, January 9, when an interesting paper on "The Microscope" was read by Mr. W. S. Favener (Plymouth), and much appreciated by those present. The early history of the microscope was traced, and its various developments and improvements up to the present day explained. Its uses in the study of botany and chemistry were enlarged upon, especially as it affects the pharmaceutical student. The bacteriologist found this instrument of great value in his researches, and it was the indispensable companion of the true scientist. Stress was laid upon the fact that it was advantageous to commence the use of the microscope as early as possible in student days, it being of great aid in the sciences. At the close of the paper a short discussion took place, after which a cordial vote of thanks was passed to the essayist, proposed by Mr. Darke (Stonehouse), and seconded by Mr. E. A. Hodge (Devonport).

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.—On Wednesday, January 8, the following paper was read by F. Casson, of which the following is an abstract:—

"Ferments," by F. Casson.

The word "ferment" is derived from *fervere*, to boil, and was formerly applied to those cases in which a liquid or semi-liquid mass was seen to become puffed up and disengage gas without any apparent cause, that is, without any cause that could be understood and explained.

The meaning of the term has been much extended, until at the present day we mean by fermentation those chemical changes which take place in a substance through the agency of a body derived either from the animal or vegetable kingdom, termed a ferment. This ferment remains the same, qualitatively, both before and after the reaction. Hence we class many bodies as ferments, to which the word ferment, as meaning a "boiling," is misapplied. All ferments possess three properties:—

1. They are nitrogenous organic substances.
2. They are unstable—heat, acids, etc., readily destroying them.
3. A relatively small quantity is capable of producing great changes in the body acted upon, especially if the products of the change be removed.

Ferments can naturally be divided into two great classes:—

1. *The Formed or Organised Ferments.*—These have a definite organised structure, and are capable of independent growth and multiplication. They include:—

- (a) The Moulds.
- (b) The Saccharomycetes or Yeasts.
- (c) The Schizomycetes or Bacteria.

2. *The Un-formed or Soluble Ferments.*—These have no organised structure or power of multiplication. They include amongst others—

- | | |
|----------------------------|------------------------------|
| (a) The Diastatic Ferment. | (c) The Rennet Ferment. |
| (b) The Peptic Ferment. | (d) The Pancreatic Ferments. |

The action of the first class appears to be due to the presence of one or more living cells in a body; the action of the second may be traced to the molecules of which they are composed, and which are the carriers of the chemical force that causes the changes. The second class of ferments will only be dealt with here.

1. *Diastatic Fermentation.*—The best known instance of this occurs in extract of malt. If a solution of extract of malt be heated to about 30° C. with its own weight of starch in solution, the starch is completely converted in a few minutes into maltose and dextrine, and ceases to answer the iodine reaction (experiment shown). The diastatic fermentation occurs to a small extent in the saliva. The diastatic body may be obtained by filtering saliva, and mixing with five or six times its weight of alcohol. The very slight precipitate which falls is dried at the temperature of the air. It has a strong diastatic action.

2. *Peptic Fermentation.*—This fermentation takes place in the stomachs of animals when food is digested, and the stomachs are the sole source of pepsin.

Various theories of digestion have been advanced from time to time that the changes were due to heat only, to grinding only, or to the action of strong acids, etc.

Gastric Juice exudes when the surface of the stomach is touched. It is usually colourless, and always acid in reaction. Human juice has a sp. gr. from 1.001 to 1.010, and contains less than 1 per cent. of solid matter. On boiling, it is not coagulated, but its power is totally destroyed. It may be kept for months unchanged.

The power of gastric juice in dissolving proteids may be traced to the pepsin it contains, which can only act in the presence of an acid, preferably hydrochloric.

The Preparation of Pepsin.—The B.P. directs that the mucous membrane of the stomach be, after washing, simply scraped off and dried. Pepsin can readily be obtained purer, and therefore stronger, than by this method. Wassman dissects off the mucous membrane and treats repeatedly with water at 30° to 40° C. The liquors are mixed, precipitated with lead acetate, the precipitate collected, suspended in water, and sulphuretted hydrogen passed through. The filtrate is concentrated and alcohol added to precipitate pepsin.

Another method is to exhaust the stomach and mucous membrane with weak acid, and saturate the solution with salt. A scum rich in pepsin rises to the surface and may be skimmed off. It is either dried and powdered at once, or mixed whilst still wet with sugar of milk.

Pepsin may also be obtained by digesting the membranes in glycerin, in which the pepsin is soluble, and precipitating with alcohol.

Pepsin is absolutely indiffusible through parchment paper, and advantage may be taken of this to purify it by dialysis.

3. *The Rennet Ferment.*—The fourth stomach of the calf has been long known for its milk-curdling properties, due to a ferment termed chymosin. This ferment is invariably present in the healthy human stomach, and is present in many animals. The chymosin may be extracted from the calf's stomach with water, but a better way is to digest with weak acid for twenty-four hours and carefully neutralise. Aqueous solutions of salicylic acid extract the ferment well, and will keep. Alcohol precipitates the ferment in an impure form. Prolonged contact with alcohol, especially if strong, is said to destroy the ferment. Fixed caustic alkalies have a powerful destructive action upon it, even in very small quantities, and carbonate of sodium, calcined magnesia, etc., act the same, though in a lesser degree. Heat readily destroys chymosin, especially if acid.

The Ferments of the Pancreas.—Pancreatic juice is a more or less viscid liquid, invariably alkaline and readily putrefying. Alcohol causes an abundant precipitate, which carries down the ferments it contains. These are at least three:—

- (1) A proteolytic ferment acting in neutral or alkaline solutions.
- (2) A diastatic ferment, similar to that in the saliva.
- (3) A fat-decomposing ferment which emulsifies and decomposes fats into glycerin and fat acids.

The proteolytic ferment (trypsin) does not exist in the perfectly fresh pancreas, but is formed in an hour or two's time. It may be extracted by digesting with water, precipitating with alcohol, re-dissolving, re-precipitating, and digesting in absolute alcohol. The precipitate is treated with water, acetic acid added, filtered, sodium hydrate added to slight alkalinity, filtered, concentrated at 40° C., filtered, and precipitated with alcohol. If necessary, it is purified by dialysis.

Trypsin acts most readily in a solution containing about 1 per cent. of Na_2CO_3 , that being the strength of the juice. It acts in neutral and in very slightly acid solutions, but contact with warm acid fluids gradually decomposes it.

The Diastatic Ferment is obtained by treating the pancreas by extracting with glycerin, chloroform water, solution of borax with boracic acid, brine, etc. By these methods solutions of the two ferments are obtained, which may be precipitated by alcohol. The ferment acts most readily on starch at from 30° to 45° C. One part of the diastase is said to be able to convert 40,000 parts of starch into sugar and dextrin.

The Fat Decomposing Ferment cannot be extracted or kept so readily as the others. If 2 parts of juice be agitated with 1 of olive oil, or of some fat melting below 40° C., a perfect and persistent emulsion is formed immediately. The fat globules are said to be finer than those in milk. Both the pancreas and its juice possess the power of decomposing fats. If a particle of the pancreas be dehydrated by means of alcohol, well teased out in an ethereal

solution of butter-fat, and afterwards transferred to a drop of tincture of litmus, a cover-glass being placed above it, the litmus is seen to be reddened all round the particle, due to the action of the fat-acids separated from the butter.

Eight samples of pepsin were tested by the B.P. test, and the results were shown. Six answered the test, two left much albumin undissolved. Five samples tested by the U.S.P. method were shown, of which three were satisfactory.

Thanks are due to Messrs. Southall, Bros. and Barclay, in whose laboratories the experiments were performed.

In the discussion which followed, the President thought the paper, which might have been termed "Digestive Ferments," was one of exceptional interest to pharmacists. He had listened with the keenest pleasure to every word and had learned much.

Mr. H. S. Lawton, having in view the samples which had been tested, asked if the price was any guide to the quality of pepsin.

Mr. H. Jessop said that as pepsin was only active in the presence of an acid, would it not be advisable to use pig pepsin less and human pepsin more, by administering hydrochloric acid when pepsin was indicated?

In replying, Mr. Casson said it was satisfactory to learn that those samples of pepsin which had proved themselves the best, were, with few exceptions, the highest priced. Regarding the question of administering acid for digestive purposes, he believed this was a common practice, but it must be left to medical men to decide whether the stomach of a patient is deficient in pepsin or acid.

A vote of thanks was passed and proceedings closed.

SHEFFIELD MICROSCOPICAL SOCIETY.—A general meeting of this Society was held on Friday, January 10, at the Rutland Institute, Fargate, the President, Mr. A. H. Allen, F.I.C., F.C.S., in the chair. There was a fair attendance. The paper for the evening was on the filamentous algæ, by Mr. R. B. Greaves, Ph.C., F.C.S., of the Sheffield College of Pharmacy. Mr. John Austen read the paper and explained the diagrams and specimens in the unavoidable absence of the author. At the close a hearty vote of thanks was accorded to Mr. Greaves for his admirable paper, on the motion of Mr. J. Newton Coombe, seconded by Rev. C. R. Killick, M.A.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION.—On Thursday, January 9, a smoking concert under the auspices of this Association was held in the Alexander Hotel, Bath Street, Glasgow. Mr. W. L. Currie, president, occupied the chair, and almost eighty gentlemen were present. A most enjoyable evening was spent in song and recitation. Amongst the contributors to the night's amusement were Messrs. Gideon, Duncan, Currie, Laing, Irvine, A. F. Leifer, and Thomson. A violin solo was played by Mr. W. L. Bowman, and an instrumental trio, under Mr. Bruce, gave some selections. The most marked feature of the evening was the enthusiastic manner in which some patriotic songs were received, "Van Tromp and His Broom" in particular being vociferously cheered. The concert on the whole was a great success.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION.—The third meeting of the eighteenth session was held in the Pharmaceutical Society's Hall, 36, York Place, Edinburgh, on Friday, January 10, at 9.15 p.m., Mr. J. Mackintosh Cameron, President, in the chair. The minutes of the last meeting having been read and approved, the following communications were read:—

"Note on *Pilula Ferri, B.P.*," by William Lyon.

During the past summer I made a series of experiments with the view of reducing the size of Bland's Pills. The official formula is a very satisfactory one, so far as massing and keeping properties are concerned, and it has been taken as a standard during the experiments. After many trials the following formula was found to be equal to the B.P. pill in every respect, and the bulk is a fifth less.

Take of—

Dried carbonate of potassium	30 grains
„ Sulphate of iron	36 „
Powdered sugar	15 „
Powdered tragacanth	3 „
Glycerin	2 minims
Syrup	10 minims
	or a sufficiency.

* By using carefully-dried sulphate of iron pharmacists may rely on this formula, giving a pill mass which will meet every test that

can be applied to the B.P. mass. Pills made as above can be readily varnished with ethereal solution of tolu residue. Another method which gives a nice result is to moisten the surface of them in finely powdered wood charcoal, and when dry varnish with tolu solution. Thus treated they have a nice glossy black appearance, and the gradual oxidation of the pill is not observed by the patient.

"Note on Compound Colocynth Pills," by William Lyon.

So much has been written about this pill at one time or another that it seems superfluous to deal with it again. This note, however, is merely to draw attention to the suitability of aromatic spirit of ammonia as a massing agent. During the summer months I subjected it to prolonged trials, and came to the conclusion that it was far superior to any agent I had tried. After being kept for nearly six months the pitting was scarcely perceptible, a big contrast compared with the present B.P. pill. Unfortunately, however, for the adoption of sal volatile as a massing agent, the B.P. pill is very frequently prescribed along with calomel, which undergoes decomposition in the presence of salt of ammonia, and this constitutes a strong argument against it being included in a new pharmacopœia, and restricts its usefulness at the dispensing counter.

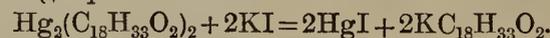
"Note on Oleate of Mercury and Ointment of Potassium Iodide," by William Lyon.

Some time ago the following prescription was handed in to be dispensed.

I. R. Hydrarg. oleatis. ʒi.
Ung. potass. iodid. ʒvii.
Sig. The ointment. Misce.

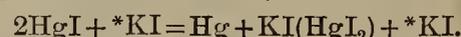
On mixing this, it assumes a bluish colour, which quickly changes to dirty brown, but on standing for a day or two the colour gradually disappears, and it remains yellowish white. The reaction is, of course, a well-known one, but I thought it might be of some interest to the younger members of the Association if a few experiments were made by way of explaining to them what takes place.

In the first place, when oleate of mercury and iodide of potassium come together, double composition takes place, as indicated in the following equation:—

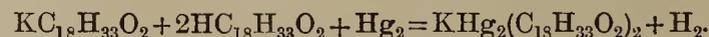


If the oleate and the ointment are slowly mixed, the greenish yellow colour of the mercurous iodide may be readily noticed.

In the second place mercurous iodide in the presence of potassium iodide (and the above proportions give an excess of potassium iodide) undergoes decomposition, the double iodide of mercury and potassium being formed and mercury liberated—



If the fat is washed out of the ointment the mercury will be formed. The next reaction that takes place results in the disappearance of the mercury in the free state. Though the few experiments I have had time to carry out are not conclusive on the point, still they indicate that the final change that takes place in the ointment is probably shown in the following equation:—



When the proportions of the oleate of mercury and the ointment of iodide of potassium are altered the reactions are gradually lessened as the proportions approach equality. Thus:—

II. Hydrarg. oleat. ʒii.
Ung. potass. iodid. ʒvi.

On mixing it assumes a bluish colour darker than the former. After a day or two yellowish green spots are seen on its surface. On further keeping it becomes yellowish white, darker than the former.

III. Hyd. oleatis. ʒiii.
Ung. potass. iodid. ʒv.

In this case the reaction is somewhat similar to II., except that the final colour is not yellowish white, but reddish yellow (a mixture of mercurous and mercuric iodides).

IV. Hydrarg. oleat.
Ung. potas. iodid. aa. ʒiv.

The bluish colour which is found on partially mixing is quickly changed to bluish green and finally to yellowish green (mercurous

iodide). The samples shown have been kept for nearly three months.

Mr. James McBain then read some "Random Notes from 'Macquer's Chemistry,'" which had been suggested to him when reading this old text book published in 1758. The notes dealt with many of the curious notions and explanations of chemical phenomena which prevailed at this early period, and cast an interesting light on some of the processes and names still familiar to pharmacists, such as liver of sulphur, salt of tartar, milk of sulphur, butter of antimony, sweet spirit of nitre, corrosive sublimate, red precipitate, etc.

The reading of the papers was followed by a discussion taken part in by Messrs. Cameron, Hay, Hill, McBain, and Sinclair, and on the motion of the Chairman a vote of thanks was awarded to the authors.

ENGLISH NEWS.

CASE OF COVERING BY A CHEMIST.—On Saturday the 11th inst. Mr. Justice Kennedy, in the Queen's Bench Division, gave judgment in the two actions *Butler and Crispe v. G. H. Doveton*, and *Idris Water Co. v. same*, which were argued before him on the last day the court sat before Christmas, as reported in the *Pharmaceutical Journal* for January 4 (p. 19). The plaintiffs in each case sued for a balance of account for goods supplied to a chemist's business carried on under the name of Christmas and Co., at 818, Holloway Road. The facts of the case were that the defendant, Mr. Doveton, was a mortgagee of Mr. Christmas, and on the death of the latter he took over the business in satisfaction of his mortgage, but, not being a registered chemist and druggist, he entered into an agreement with a Mr. Worfolk, a duly qualified man. By this Mr. Worfolk was to carry on the business under the name of Christmas and Co., he was to receive £2 2s. a week for his personal services, Mr. Doveton was to receive £2 10s. a week as interest on his capital, and then after the payment of all necessary expenses, including rates and taxes, the profits of the business were to be divided equally between Doveton and Worfolk. Mr. Worfolk's engagement was to be determinable on one month's notice, except in the event of certain favourable results in the way of profits being obtained, when it was only to be determined by Mr. Worfolk's consent. Whenever the agreement did come to an end, Mr. Worfolk was to leave on the premises stock to the value of £180. In his Lordship's opinion, Mr. Doveton was liable to pay for the goods supplied to Christmas and Co., the relation of the defendant to Mr. Worfolk being that of principal and agent. Under these circumstances, judgment would be entered for the plaintiffs in both cases. It was stated by Counsel that there were several other cases against the defendant, the total amount claimed amounting to some £160.

ALCOHOL IN HERB BEER.—On January 3, at Preston Police Court, John Hummersley, shopkeeper, of Marsh Lane, Preston, appeared to answer a summons for selling beer without having a retail licence.—Mr. Wallace Child, inspector of Inland Revenue, said the beer in question was herb beer, but when analysed it was found to contain 4½ per cent. of spirit, whereas it ought not to contain above 2 per cent. Defendant had previously been warned on an occasion when his beer had been found to contain close on 6 per cent. of spirit.—James Robbins, analyst from Somerset House, corroborated, and in answer to the Bench said an ignorant person might, in manufacturing these teetotal beverages, easily get 4½ per cent. of alcohol without having any guilty intention whatever.—Defendant was fined £2 10s., including all costs.

THE SALE OF CARBOLIC ACID.—An inquest was held on Friday afternoon, January 10, by Mr. J. A. Pearce (Borough coroner) at Burt's Falcon Hotel, Stoke, Devonport, into the circumstances attending the death of Charles Albert Budd Palmer, aged 47 years, a gunner serving on H.M.S. "Gorgon," coast defence ship at Devonport, who had died at 11, Higher Portland Road, Stoke, on the previous evening, after taking carbolic acid. The act was attributed to weakness of mind, caused by the effects of a sunstroke the deceased had two years ago at Bermuda, and the worry of his wife's long illness and recent death. The coroner, in summing up the evidence, said with regard to the poison it seemed a very absurd thing that some poisons should be scheduled according to Act of Parliament, and various other poisons, which anyone could get simply by asking, and would cause death quite as quickly as

those, were not scheduled at all. He was of opinion that all poisons or anything that would cause the death of a person, should be scheduled, so that there might be better precautions taken with regard to their sale. The jury returned a verdict of suicide by poisoning whilst temporarily insane.

SCOTTISH NEWS.

DEATH OF LORD BLACKBURN.—The death is announced on the 8th instant, at Doonholme, of Lord Blackburn, who was a Lord of Appeal from 1876 to 1886. The deceased judge will be known to pharmacists as one of the three law Lords before whom the case of the Pharmaceutical Society *versus* The London and Provincial Supply Association, Limited, was argued in 1880. It may be of interest now that the question of company trading is engaging the attention of the powers that be, to recall one or two passages in Lord Blackburn's judgment in the above *cause célèbre*. He held that "There could be no sale, whether a corporation be the ultimate vendor or not, unless a person—a natural person—manages the sale, and that natural person, if unqualified, would clearly become liable to the penalty under the Act." But he went further, and expressed himself as "strongly inclined to think" that the principle of *qui facit per alium facit per se*, might render a corporation liable to penalties under Section 15, if it caused an unregistered servant to conduct sales contrary to the Act. That is to say, that although a corporation cannot in its corporate capacity do an illegal act, it may be made liable for the performance of illegal acts by natural persons acting under instructions. It would be interesting to registered persons to see a case on these lines submitted to the courts. Lord Blackburn was in his eighty-third year.

IRISH NEWS.

BELLADONNA LINIMENT FOR WHISKY.—Mr. C. Friery, County Coroner, held an inquest at Coolock Police Barracks on January 7, regarding the mishap to Constable Sweeny, who came by his death by drinking a belladonna preparation in mistake for whisky. Constable Doherty deposed that he had used the liniment for lumbago, and left it on the mantelpiece in the day room on Saturday night, where deceased was sitting. Having occasion to leave the room for a little time he was alarmed on his return by finding Sweeny spitting in the hall and declaring he had taken poison. Witness immediately administered mustard and water, which caused copious vomiting. In about three-quarters of an hour later, finding Sweeny becoming unconscious he went for Father Mulqueen and immediately despatched another constable for a doctor. Dr. C. M. O'Brien deposed that on examination he found the deceased quite unconscious and breathing heavily, the breath smelling of belladonna, and the general aspect of deceased suggestive of acute poisoning from this drug. He administered emetics, antidotes, and stimulants, both by hypodermic needle and by the mouth. But the patient, though he recovered consciousness and rallied considerably for a time, ultimately succumbed. The jury found a verdict in accordance with the medical testimony, and expressed their satisfaction with the prompt measures taken by the police for the relief of their unfortunate comrade.

PHARMACEUTICAL SOCIETY OF IRELAND.—At the recent Pharmaceutical Licence Examination the following have passed:—Messrs. W. H. C. Baskin, D. O'Sullivan, C. Crowley, A. W. Mann, J. A. Doyle, J. Walsh, R. A. L. Wilson. Five were rejected. At the Preliminary examination the following candidates passed:—Miss C. M. Jessop, Messrs. T. W. Campion, J. D. Hunt; M. B. Widdess and J. P. E. Wright, equal; Miss M. K. McKnight; Messrs. J. Jennings and F. W. Warren, equal; T. Johnston; T. J. Anderson and M. Campbell, equal; W. Baxter, M. J. Monaghan, and E. B. Palmer. Nine were rejected. At the quarterly examination for the licence to act as registered druggist, held at Dublin, two candidates presented themselves, of whom one, Mr. R. J. Gore, passed. At an examination for the licence to act as registered druggist, held at Queen's College, Belfast, on Tuesday, the 14th instant, the following candidates passed:—Messrs. S. E. Alexander, D. Forde, I. Kirker, T. K. Scott. One candidate was rejected.

FOREIGN NEWS.

A REVOLUTION IN PHOTOGRAPHY.—According to the Vienna Correspondent of the *Standard*, the *Presse* for January 7, gives further details of the remarkable scientific discovery made by Professor Röntgen, of Würzburg University. "The Professor came upon his discovery quite by accident. He was experimenting in the dark with a Crookes' vacuum tube, which was covered with some sort of cloth. A strong electric current was passed through it, while close by there was some prepared photographic paper but no camera. On this paper the professor noticed next day several lines for which he could not account. By restoring exactly the circumstances as they existed on the preceding day, he was able to ascertain the real origin of these mysterious marks. He continued his experiments with the Crookes' tube and photographic paper, and found, in the first place, that not only may a camera be dispensed with, but that the image from the light rays of the Crookes' tubes is not obtained if it has to pass through lenses.

"By the use of these rays photographing is immensely simplified. There is the vacuum tube; in front of it is the object to be photographed, and immediately behind it is the prepared paper, in a wooden case, wood being transparent to these rays. An ordinary plate, whether wet or dry, must not be exposed to daylight until after fixing, because the ordinary light rays would act upon the silver or other compounds. But in the case of the Crookes' rays this difficulty does not exist, because the sensitised paper can be left in the wooden case, and, therefore, in complete darkness.

"That, however, is not all. The Professor found that these peculiar rays are not refracted, which is the reason for the inapplicability of lenses or the camera, and he further found by experimenting that they develop no heat, and that they are without any influence upon the most sensitive magnetic instruments. He also discovered that these rays possess this extraordinary peculiarity, that they do not travel in undulating waves, but by moving forward in a direct line. The theoretical interest attaching to this last peculiarity, if it be confirmed, is enormous. The first photograph of a human hand, showing only the bones and the rings on the fingers, was obtained by the Professor placing his own hand on the wooden case with the prepared paper, and allowing the rays from the Crookes' tube to fall directly upon it.

"There are already nine different Crookes' tube photographs in Vienna, the majority in the keeping of Professor R. Boltzmann, of Vienna University. This eminent Professor of Physics declares that the discovery of this "new light," as he terms it, will form an epoch in the history of science. He says that there are still certain obscure points that require clearing up; but, on the whole, he is not sceptical. The repetition of the experiment, however, has not yet been successful in Vienna; but this, it is said, is because the Crookes' tubes at the disposal of the experimenters here were not sufficiently large."

A correspondent of the *Standard* observes, in confirmation of Professor Röntgen's discovery, that he and a friend "have obtained distinct proof that the radiations in question do pass easily through various substances that are quite opaque to ordinary light, and do produce strong impressions upon ordinary photographic plates entirely incased in light-proof material. Indeed, all substances that we have so far experimented on in this laboratory appear to be transparent to these radiations, even sheets of ebonite, carbon, vulcanised fibre, copper, aluminium, and iron, though there is considerable variation in degree."

A later report states that Professor Klupathy, of the Physical Institute at the University of Pesth, has repeated, with very satisfactory results, the experiments made by Professor Röntgen. He was able to obtain pictures on a photographic dry plate enclosed in a wooden case, and has likewise photographed a larger part of the human body than the hand, obtaining pictures of the bones only, without their fleshy covering.

"Professor Röntgen has sent rays of the new chemical light through aluminium plates of one and a half centimetre in thickness, and they went as clean through as if the substance had been wood. The same was the case with two sets of books, including many volumes. These he placed between the Crookes' tube and an ordinary compass; behind them was the wooden case with the dry plate, and the result was as complete a photograph of the compass as possible. It is, perhaps, not strictly a photograph in the ordinary sense, because no lenses are used; it is not a negative, but a positive plate that is obtained. Hence some people are inclined to call such

a figure simply the shade of the object. It has not, however, up to the present, been found possible to get such a shade fixed."

THE "SOCIÉTÉ MUTUELLE D'ASSURANCE CONTRE LES ACCIDENTS DE PHARMACIE" has just published its annual report. This Society is under the patronage of the General Association of French Pharmaciens, and was founded in order to guarantee its members against pecuniary losses resulting from accidents caused by errors committed by members or their employés in the pursuit of their business. The entrance fee is twenty francs, and annual subscription five francs, these amounts constituting the reserve fund, from which all charges are paid. These charges (compensation, law costs, etc.) are totalled at the end of each year, and the amount levied in equal shares upon the members. During the past year only one case has occurred involving compensation. One of the members of the Society was prosecuted for having supplied salt of sorrel instead of Epsom salts, causing the death of a widow, who left four children without resources. He was condemned by the Tribunal to pay an annuity of 150 francs to each of the children until they attain their majority.

PRESENCE OF CUCUTINE IN THE ELDER.—The *Gazetta Chimica Italiana* says that .005 per cent. of cicutine has been extracted from the branches and leaves of the elder, by exhausting with acidulated water, precipitating with lead acetate, removing excess of lead by sulphuric acid, and then obtaining the alkaloid by means of Dragendorff's bismuth iodide reagent.

PROCEEDINGS UNDER THE PHARMACY ACTS.

SALE OF POISON BY AN UNREGISTERED PERSON.

The case of the Pharmaceutical Society v. E. C. Peacock was heard before His Honour Judge Bedwell, at the Hull County Court, on Wednesday. Mr. T. R. Grey, barrister, represented the plaintiff Society, and Mr. H. C. Hare appeared for the defendant.

Mr. Gray, in opening the case, said the defendant carried on business at 13, Barmston Street, Hull. On October 26, he sold a bottle of a preparation containing morphine. That bottle was labelled "The Mother's True Friend: for mothers and children." Then come instructions giving the amount to be taken, and following were the words "Prepared at Peacock's Drug Stores, 13, Barmston Street."

His Honour: "A blessing to mothers for infants and teething."

Mr. Grey (continuing) said the bottle contained a syrup in which there were morphine, Epsom salts, and dill water, the whole being coloured. It was most pleasing to the smell.

His Honour: You say it has a persuasive smell. Well (smelling it), there is a tone of dill water about it.

Mr. Grey said the syrup was carefully analysed, and found to contain as much as one-third of a grain of morphine in an ounce of fluid. There was 5½ ounces of fluid, and in that there was 17 grain of morphine. That amount of morphine was highly dangerous, and would certainly be fatal to infants. The dose for infants, mentioned on the label, ought really to be given, if at all, to adults, and would probably be fatal were infants to take it.

His Honour: Then if thirty drops is enough for an adult, two teaspoonfuls must be too much.

Mr. Grey: The analyst we will call will give you a scientific opinion on that.

His Honour: It may be important to ask what you have got to prove. Have you to prove the mere existence of morphine in the bottle? If you have to prove that the existence of the morphine would be fatal, that seems a different matter altogether. On all previous occasions I have had simply to decide on the aye or nay: is the stuff in the bottle a poison?

Mr. Grey: What I contend is we have only to prove that it is harmful.

Ida Mitchinson, fourteen years old, proved going with her father to Peacock's Drug Stores on October 26 last and purchasing a 1s. bottle of "Mother's True Friend."

John Mitchinson said that in consequence of instructions from the Pharmaceutical Society he got his daughter to purchase a bottle of "Mother's True Friend" from Peacock's Stores. She handed the bottle and its contents to him when she came out of the shop, and he then sealed it.

Harry Moon, clerk in the office of the Registrar of the Pharmaceutical Society, said he received the bottle and its contents from

the last witness on. October 28 and retained it in his possession until November 7, when he handed it to the analyst.

Ernest John Eastes, Fellow of the Institute of Chemistry and Demonstrator of Practical Chemistry to the Pharmaceutical Society, said he received the bottle (produced) from the last witness. It was then sealed up. He made a careful analysis of the contents of the bottle, and found it to contain a syrup containing morphine and Epsom salts, flavoured with dill water. The bottle contained $5\frac{1}{2}$ fluid ounces. It was full. There was nearly a third of a grain of morphine to each ounce of fluid, and in the whole mixture $1\frac{7}{10}$ ths of a grain. As to the risk of danger from the contents of the bottle it would depend on the quantity taken. If the whole were taken the results would be very serious. The result of a child taking the whole would undoubtedly be death. If it took half the result would be the same. There was enough in the bottle to kill two grown-up persons. A very much less quantity than a quarter of the contents would kill a child.

Cross-examined, witness said he made a careful analysis of the contents of the bottle. There was very much more than an eighth of a grain per fluid ounce in the mixture. If the whole contents were taken it would be death even to an adult. That he said seriously. He based his opinion on this, that $\frac{3}{4}$ of a grain of morphine was the smallest fatal dose for an adult. If there was an amount of antimony wine mixed with the morphine it would not have the effect of destroying the action of the morphine. A large dose would act as an emetic. He would not say there was no antimony wine in the bottle. He should be very much surprised to hear that, although thousands of bottles have been sold, there had never been any complaint of injury received.

Mr. Grey here put in the Register of Chemists and Druggists to prove that the defendant's name did not appear on the Register.

Mr. Hare asked His Honour to non-suit the Society on the ground that Mr. Grey had not proved sale by the defendant.

Mr. Grey: My case is for selling or keeping open a shop.

Mr. Hare: I contend that if sold by an assistant the assistant would be liable, and not the defendant.

Mr. Grey: The assistant is liable, and also the owner of the shop.

His Honour: I rule against the non-suit.

Mr. Hare said that although the defendant admitted there was a quantity of morphine in the mixture, there was not the quantity mentioned by Mr. Eastes—nearly one-third of a grain to a fluid ounce. Mr. Peacock in the measuring and mixing was careful not to put more than one-eighth of a grain to a fluid ounce in the mixture, though the mixture contained antimony wine, which would, in the event of an overdose or an attempt at poison, prevent ill effects, because it would act as an emetic. Then there was the fact that the defendant had been trading in this particular syrup for a considerable time, and had sold some thousands of bottles; and it was somewhat singular that during the whole of the time there had been no complaint or suggestion that any injury ever occurred to any patient—adult or juvenile—who had been in the habit of taking it. Under these circumstances His Honour had the discretionary power to say whether the poison was in such a limited quantity as to be safely administered to adults and infants.

E. C. Peacock then gave evidence bearing out Mr. Hare's statement of the defence, and added that on an average he sold two gallons per week, and he had sold it for twelve years. He sold it loose, and he sold it in bottles. He had never had any complaint. It was impossible for it to kill.

By Mr. Grey: He had no profession; he kept a drug store. He had a little knowledge with regard to drugs. He had never heard of Dr. Stevenson, the celebrated analyst, and did not think it possible for a hundredth part of a grain of morphine to kill an infant. For selling "Mother's True Friend" on December 13, 1894, he paid a penalty of £5 to the Pharmaceutical Society. He remembered paying penalties for two bottles—one sold on February 16, and one on March 2, 1895. He called morphine "Mother's True Friend." On May 29 and June 22, 1895, he again sold two bottles of the same mixture, and was again proceeded against in the Hull Court, and again he paid the two penalties without going into Court. Altogether he had paid £25. He was induced to test this case by seeing a report of a case heard in Scotland, and because he saw that the President of the Pharmaceutical Society had said that less than an eighth of a grain of morphine was not poison. He was, however, unable to produce any corroboration.

Mr. Grey: I am instructed that the President of the Society never made such a statement.

His Honour gave judgment for the plaintiffs, and said the penalty must be £5 with costs.

LEGAL REPORTS.

PROCEEDINGS UNDER THE SALE OF FOOD AND DRUGS ACT.

THE COLOURING OF GREEN PEAS.

At Southwark Police Court, on Wednesday afternoon, a case was part heard before Mr. Fenwick, with regard to the alleged injurious effects of the use of copper sulphate in the preservation of vegetables. The case was that of A. A. Grist, Sanitary Inspector of St. Saviour's District Board of Works, against Mr. H. C. Summers, trading as George Mence Smith, at High Street, Borough, and also many other places, for selling preserved peas mixed or coloured with an ingredient injurious to health, viz., $\frac{8}{10}$ ths of a grain of copper per pound of peas, whereby the defendant became liable to a penalty of £50.

Mr. Frank Dodd, barrister, who appeared for the parish, stated that the summons was taken out under Section 3 of the Adulteration of Food and Drugs Act, 1875. The question to be decided was whether or not some preserved peas sold by the defendants were so coloured or stained as to render the article injurious. From the analyst's certificate it appeared that the quantity of metallic copper found in the peas was equal to 3.16 grains of sulphate of copper per pound of peas. He contended that chronic poisoning might result from a constant use of the peas. The chief object in introducing the copper into the peas was to give them their original green colour.

Mr. A. A. Grist was called, and stated he was the Sanitary Inspector for the St. Saviour's District Board of Works. On September 4 he sent his daughter into the defendant's shop for a bottle of preserved peas. When he had received them he returned to the shop and informed the defendant that they were for the purposes of analysis, and divided them in the usual way. He produced the analyst's certificate.

Miss Margaret Grist, daughter of the first witness, gave evidence as to procuring the peas.

Mr. Bodmer, public analyst, stated that he had examined the peas and found copper to the extent of $\frac{8}{10}$ ths of a grain to a pound of peas. The $\frac{8}{10}$ ths of metallic copper would amount to 3.16 grains of sulphate of copper. Witness not being a medical man was unable to give an opinion that the copper would be injurious to health.

Mr. Bonsey, barrister, who appeared to defend, cross-examined at great length, and during the cross-examination it was stated that in Paris in 1882 the Board of Health put restrictions on the use of copper in preserving peas and other vegetables, but in 1889 the French Government took off the restrictions. The peas in question were called *petits pois Anglaise*. Mr. Bonsey also referred the witness to several authorities, all of whom consider that the small amount of copper introduced is not injurious to health.

Evidence was also given by Dr. Leonard Wylde, M.R.C.S., Medical Officer to the Bedfordshire County Council; Dr. F. J. Waldo, Medical Officer of Health, St. George the Martyr, Southwark, Dr. Somerville and Dr. Herron, Medical Officer of Health, St. Saviour's, all of whom expressed an opinion that the use of preserved peas coloured with sulphate of copper would be attended with injury to health. Mr. Bonsey, in cross-examination of the witnesses, produced several books written by eminent doctors, whose opinions differed from those of the witnesses. The case for the prosecution was then concluded.

Before counsel addressed the magistrate for the defence, it was agreed to take the evidence of Dr. Burney Yeo, Physician to King's College Hospital, who gave his opinion that the amount of copper present in the peas would not be injurious to health.

Reference was made in the course of the proceedings to a previous adjournment of the case which had been taken for the purpose of procuring an analysis at Somerset House. It appeared that the result of that analysis had now been received, and that it showed only .461 grain of copper as against the public analyst's certificate of $\frac{8}{10}$ ths of a grain. On inquiry, however, it appeared that this analysis might have been somewhat vitiated by the fact that the sanitary inspector conveyed the material to Somerset House in a tin vessel. The inquiry was again adjourned.

NOTICES TO CORRESPONDENTS.

All Articles, Letters, Notices, and Reports intended for publication in the Journal, Books for Review, and communications respecting Editorial matters generally, must be Addressed "Editor, 17, Bloomsbury Square, London," and not in any case to individuals supposed to be connected with the Editorial Staff. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

ANY INSTRUCTIONS from Members, Associates, and Students of the Pharmaceutical Society, with reference to the transmission of the Journal, should be sent to the Secretary—Mr. Richard Bremridge,—17, Bloomsbury Square, London.

BUSINESS communications—including advertisements, orders for copies of the JOURNAL, and instructions from Subscribers respecting transmission of same—must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London. Cheques and money orders should be made payable to "Street Brothers."

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

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

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

QUERIES addressed to the "Editor" will be replied to in the Journal as early as possible after receipt; answers of sufficient general interest being given under the heading "Notes and Queries." The Editor cannot undertake to reply to queries through the post.

REPRINTS of articles cannot be supplied unless authors communicate with the Editor before publication.

ANSWERS.

"V. L."—It is difficult to say with certainty, but probably *Veratrum viride*. There is reason to doubt whether much *V. album* is in the market, and *V. viride* is often substituted for it.

"S. A."—Why not use alcohol in the form of rectified spirit, the taste and odour of which are more easily masked?

"Bromo."—Full information on the subject will be supplied by the Registrar of the General Medical Council on application. Address your inquiry to the Medical Council Office, 299, Oxford Street, London, W.

L. B. PRAGNELL.—Your idea is a good one, but not absolutely novel, being already represented by the well-known method of producing so-called "Russian vignettes." Perhaps, however, if you were to re-write the article more fully, and on one side of the paper only, it would be accepted by the editor of the *Amateur Photographer* or some similar paper.

"BIENVENU."—You have omitted to add your name and address.

"STUDENT."—1. The best way of preparing for the examination in practical botany and materia medica is to learn practically how to cut sections by hand, and apply appropriate reagents to differentiate the various tissues, cell-contents, etc. Use Cross and Cole's 'Modern Microscopy' (Baillière, Tindall and Cox, 3s. 6d.) and Bower's 'Practical Botany for Beginners' (Macmillan and Co., 2s. 6d.). Also study the articles on practical pharmacognosy published in the *Pharmaceutical Journal*, volumes xxiv. and xxv. No particular book is used in the class you refer to. 2. Uncertain as yet. 3. The other matter you refer to does not rest with the Editor.

"LIN. SAPONIS."—The matter is receiving attention.

QUERIES.

"LAVENDER" asks for the formula for "Hay's Wash" or "Hay's Lotion." He also desires to know where it was originally published, and who was "Hay."

D. S. C. REID asks for the addresses of French makers of "screw feeders."

PUZZLED asks if any light can be thrown on the third ingredient of the following prescription:—

R. Tr. ferri sesquichl.	ʒiij.
Liq. strych.	ʒxxiv.
Solut. sodæ minor	ʒiij.
Aq. ad.	ʒvi.

OBITUARY.

HALL.—On December 30, at his residence, Queen's Road, Finsbury Park, Thomas Howard Hall, Pharmaceutical Chemist. (Aged 56.) Mr. Hall was a life member of the Society, with which he had been connected over thirty years, and in the work of which he manifested considerable interest. When, in 1889, the representation of the Society in London by divisional secretaries was decided upon, the Council selected Mr. Hall to take charge of the Parliamentary Division of East Islington, and he held the position until his death, though his long illness had necessarily precluded any active participation in pharmaceutical matters for some time previously. Those who knew the deceased gentleman will recall his unassuming manner and amiability of character, and will regret his somewhat untimely death. He was practically helpless for the last fifteen months of his life, and the progressive paralysis from which he suffered had for a long time before that put a period to his pharmaceutical work. Mr. Hall leaves a widow and two young children.

COCKSEGE.—On Friday, January 3, H. B. Cocksedge, Pharmaceutical Chemist, Sandown, Isle of Wight. (Aged 80.) Mr. Cocksedge was a candidate for the post of Secretary and Registrar of the Pharmaceutical Society, at the time Mr. Elias Bremridge was appointed, the latter gaining the appointment by a single vote.

BAINES.—On December 24, John Baines, Chemist and Druggist, late of Corsham. (Aged 73.)

APPLEGATE.—On January 1, Edwin Applegate, Pharmaceutical Chemist, Islington. (Aged 65.)

HUMPHRIES.—On January 6, Jacob Humphries, Chemist and Druggist, Bradford. (Aged 36.)

WHITE.—On January 7, Luke Pearson White, Pharmaceutical Chemist, Penistone. (Aged 72.)

LOWE.—On January 7, John Lowe, Chemist and Druggist, Woolwich. (Aged 80.)

GARBUTT.—On January 11, James Garbutt, Chemist and Druggist, Wellingborough. (Aged 80.)

DAVIDSON.—On January 13, T. R. Davidson, Chemist and Druggist, Morpeth.

POISONING CASES AND INQUESTS.

Chlorodyne.—Dr. Charles Palé, aged 52, of 38, Keppel Street, Russell Square, Bloomsbury, died on January 6, from the effects of an overdose of chlorodyne taken to assuage internal pain. Verdict: "Death by misadventure."

Laudanum.—Ellen Slack, aged 53, of Docking Hill Road, Doncaster, died on January 7, from the effects of drinking an overdose of laudanum. Verdict: "Died from opium poisoning," but as to the circumstances under which it was taken there was not sufficient evidence to show.

Paregoric.—Margaret Isabel Biddulph, aged 14 months, daughter of J. A. Biddulph, of 12, Red Lion Mews, Camberwell Gate, died on January 3, from the effects of an overdose of paregoric. Verdict: "The cause of death was congestion of the lungs probably accelerated by an overdose of opium."

Belladonna and Aconite.—Edith Padgett, aged 2, the daughter of William Padgett, 1, Mission Place, Grantham, died on January 2, from the effects of belladonna and aconite contained in a liniment administered by her mother in mistake for medicine. Verdict: "Death through misadventure."

Laudanum.—Rose Allen, a widow, of Buxton, died on January 3, from the effects of an overdose of laudanum, taken for neuralgia. Verdict: "Death from an overdose of laudanum taken accidentally."

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs. Annesley, Austen, Blackburn, Bindloss, Bentley, Bird, Burge, Brown, Channock, Cory, Davies, Davis, Fairley, Faraday, Ferral, Forret, Gadd, Griffin, Gayer, Howorth, Howard, Holloway, Jarvis, Jast, Morrells, Macdonald, Melckebeke, Mackenzie, Owles, Pragnell, Parke, Proctor, Rymer, Reid, Robinson, Russell, Ross, Smith, Sawyer, Salter, Stratton, Thompson, Walker, Wall, Williams, Wyatt, Wood, Wardleworth.

ARISTOLOCHIA ARGENTINA.*

BY DR. O. HESSE.

Some twenty years ago several varieties of *Aristolochia* were chemically examined, without any well-defined substance being obtained from them beyond a yellow bitter or acrid resin. Walz† gave to products of that nature from the root of *Aristolochia clematis* the names aristolochic acid ($C_{11}H_{16}O_3$) and clematitin ($C_9H_{10}O_6$), but did not obtain these substances in a state of purity or further study them. The latter substance was probably identical with the serpentarin or aristolochin, which Chevallier‡ obtained from the root of *Aristolochia serpentaria* as the poisonous constituent. Frickinger§ subsequently obtained from the young underground shoots of *Aristolochia clematis* a substance crystallising in small amber-yellow needles, which he named aristolochia yellow, but the individuality of the substance was not established. Not long ago Dymock and Warden|| examined *Aristolochia indica*, and obtained from it a yellowish or brown resin of a basic nature. The publication of their results induced me to make known my investigation of *Aristolochia argentina*¶ so far as it had gone, showing the presence of an ester, probably palmityl phytostearin, an alkaloid—aristolochine—and a yellow crystalline body—aristin. At that time I was unaware of the publication by Pohl of investigations of various species of aristolochia, describing a finely-crystalline yellow substance under the name of aristolochine. As that substance is, in fact, of an acid nature, it will be desirable to call it aristolochic acid, and thus avoid a confusion with the alkaloid to which the name is more properly applicable. Since that time I have continued my investigation with a larger supply of material, and now give the results obtained.

ARISTOLOCHINE.—On extracting the roots with alcohol after treatment with soda a considerable quantity of brown resin is obtained after distilling off the alcohol. This was treated with solution of sodic carbonate and extracted with ether. On shaking the ether solution with dilute tartaric acid, the alkaloid is separated and the yellow acid solution can be decolorised by charcoal without much loss. Addition of ammonia gives a flocculent precipitate of the base, which is readily soluble in ether, and on evaporation a colourless residue is obtained, which shows distinct crystallisation. In alcoholic solution aristolochine turns litmus paper blue; it completely neutralises acids, but the salts are amorphous. A solution of the hydrochloride gives amorphous precipitates with potassium iodide or sulphocyanide. The platinum salt is also amorphous. Strong sulphuric acid dissolves the base with dark green coloration passing into blue-green on addition of ferric chloride. An accident prevented me from making an analysis.

* Translated from the *Archiv der Pharmacie* for December, 1895.

† *Jahrb. f. prakt. Pharm.*, xxiv., 65; xxvi., 65.

‡ *Journ. Pharm.* [2], v., 565.

§ *Repert. fur Pharm.* [3], vii., 1.

|| *Pharm. Journ.* [3], xxii., 245.

¶ *Ibid.* [3], xxii., 551.

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INDIFFERENT SUBSTANCE.—When atmospheric air containing ammonia is passed through an ether extract of the crushed roots, the liquid, after becoming yellow and turbid, deposits a red crystalline mass. When that is at an end the ether is shaken with acid to remove ammonia and any trace of aristolochine. On distillation an oily greenish-brown residue remains, which yields a copious crystallisation of palmityl phytostearin, $C_{42}H_{74}O_2$, melting at 82° C., and associated with it is a minute quantity of a crystalline body—aristolin—which has a composition represented by the formula $C_{15}H_{28}O_3$, and is probably an alcohol, though the quantity at my disposal did not admit of further examination.

ARISTINIC ACID ($C_{18}H_{13}NO_7$).—The red deposit from the ammoniacal ether extract consists for the most part of the ammonia salt of this acid. After purification the acid forms greenish-yellow laminae and needles, melting at 275° C. with decomposition. It has a disagreeable bitter taste, and reddens litmus paper. It is sparingly soluble in ether, chloroform, benzene, and hot alcohol, and almost insoluble in water. Strong sulphuric acid dissolves it slowly, with a fine green coloration increasing on the application of heat, especially in the presence of a trace of ferric acid or molybdic acid. When heated with strong caustic potash no ammonia is evolved, but as the solution becomes concentrated the potash salt separates as a carmine-coloured mass.

ARISTIDINIC ACID ($C_{18}H_{13}NO_7$).—This acid remains in the acetic acid solution from which aristinic acid has been separated in purification, being more soluble in hot glacial acetic acid than aristinic acid is. It is soluble in ether, and crystallises in small needles. In dilute caustic potash it dissolves with yellowish-brown colour, and on adding more potash the salt separates as a dark red amorphous precipitate.

ARISTOLIC ACID ($C_{15}H_{16}NO_7$ or $C_{15}H_{11}NO_7$).—The alkaline liquor from which the two previously described acids have been separated gives, on addition of hydrochloric acid, a yellow flocculent precipitate, which is shaken out with ether, and is obtained on evaporating the ether as an orange-yellow crystalline residue, soluble in hot alcohol, and crystallising in small yellow needles as the solution cools. The crystals darken at 220° , and melt between 260° and 270° C. The potash salt is more soluble than those of the acids above described. The acid dissolves in strong sulphuric acid with dark green colour, a character which indicates relation to the other acids and also to the aristolochin or aristolochic acid of Pohl, and probably these substances are related to each other as follows:—



Probably the clematin of Walz and the aristolochin or serpentarin of Chevallier were nothing more than impure aristolochic acid, though the crystalline aristolochia yellow of Frickinger forming amber-yellow prisms may be a different body from it and from the acids above named, as their yellow colour is more intense than the term amber-yellow denotes.

The substances above described probably exist to a greater or less extent in other varieties of the genus *Aristolochia*, as I have previously suggested (*Pharm. Journ.* [3], xxii., 551), but in the roots of *Aristolochia longa* I have not been able to detect either the alkaloid aristolochine or any other base, nor yet aristinic, aristidinic or aristolic acids.

PROCEEDINGS UNDER THE PHARMACY ACTS.

THE SALE OF ARSENICAL FLY-PAPERS.

Bloomsbury County Court, January 21.
BEFORE HIS HONOUR JUDGE BACON.

Pharmaceutical Society v. Walton, Hassell, and Port.

In this case Mr. Grey appeared for the plaintiff; Mr. Danckwerts for the defendants.

Mr. Grey, in opening the case, said: This action is for a penalty incurred by the defendants for selling or keeping open shop for the retailing, dispensing, or compounding poisons contrary to the Pharmacy Act, 1868. The defendants are in a large way of business, and amongst their other shops they have one at 244, Brixton Road; and there, on July 15 last, they sold twenty-five what are called fly-papers for the sum of 8*d.* Those fly-papers were analysed, and the result of the analysis is certainly most startling; because in one of those twenty-five papers—No. 2, I think—they are all numbered—there was as much, I believe, as 12·9 grains of arsenic, and on the average, in the twenty-five, I think I shall be right in saying there were 8 grains of arsenic in each. Besides being analysed by Dr. Paul, they were also analysed by Dr. Stevenson, and I understand there was a joint analysis, so that there will be hardly any, if any, question as to the amount of arsenic contained in these papers; therefore, the twenty-five papers which were sold for 8*d.* contained as much as 200 grains of this most deadly poison arsenic, and the question which will be before your Honour to-day is whether the sale of these fly-papers comes within the Pharmacy Act of 1868. I will draw your attention to the label. I hold in my hand now one of these fly-papers, and you will find printed on it these words—"Mather's chemical fly-paper for poisoning flies, wasps, ants, mosquitoes, etc. Directions for use for flies, wasps, ants, mosquitoes, etc.: Spread each paper on a dish or plate and keep moist with cold water two or three times a day; remove the tray or dish beyond reach of children and out of the way of domestic animals." The reason, as we will prove before you, why the papers should be moistened is that nine-tenths of the arsenic in the paper is extracted on the application of cold water. So that the fluid which is given off from the paper is of the most deadly and poisonous character, containing quite nine-tenths of the arsenic which is originally put into the fly-paper. The Act under which we are suing is the Act of 31 and 32 Vict, c. 121. There it sets out the object of the Act in the preamble. It is an Act to regulate the sale of poisons and to alter and amend the previous Pharmacy Act:—"Whereas it is expedient for the safety of the public that persons keeping open shop for the retailing, dispensing, or compounding of poisons, and persons known as chemists and druggists should possess a competent practical knowledge of their business, and to that end, that from and after the day herein named all persons not already engaged in such business should, before commencing such business, be duly examined as to their practical knowledge, and that a register should be kept as herein provided." Then Section 1 says:—"It shall be unlawful for any person to sell or keep open shop for retailing, dispensing, or compounding poisons, or to assume or use the title 'Chemist and Druggist' or Chemist or Druggist or pharmacist, or dispensing chemist or druggist, in any part of Great Britain, unless such person shall be a pharmaceutical chemist, or a chemist and druggist, within the meaning of this Act, and be registered under this Act." Then Section 2, which defines what poison is under the Act, says:—"The several articles named or described in the Schedule A shall be deemed to be poisons within the meaning of this Act. Arsenic—the article contained in these fly-papers—is one of the articles named in the Schedule.

The Judge: There is not the slightest doubt, if there is an appreciable quantity of arsenic, it is within the Act if arsenic comes within Part I. of Schedule A.

Mr. Grey: If it comes within Sections 1 and 15 of the Act. Then the only other section I need refer you to in this case is Section 13, which makes the Register—which I put in before you—evidence. The Section says, "the absence of the name of any person from such printed register shall be evidence, until the contrary shall be made to appear, that such person is not registered according to the provisions of the Pharmacy Act, or of this Act." I do not think in

this case that point will be contested. Section 15 is the important section, and it provides that "any person who shall sell—," etc.

Mr. Danckwerts: It may, perhaps, shorten the case very considerably if I say that, after it has been proved what this fly-paper contains—and of course I want to see the analyst in the box to prove that—I think the question will be for you to decide whether, sold in the shape in which it is sold, it comes within the provisions of the Act.

The Judge: Do you question the analysis, that it contains enough poison to kill anybody—a packet of these papers?

Mr. Danckwerts: A packet.

The Judge: You at any rate want to ask some questions.

Mr. Danckwerts: I want to ask the analyst certain questions, and I want to put certain evidence before you as to matters of common knowledge, which must be borne in mind in construing the Act. I think the action is really a test case in order to try a question which will affect not only fly-papers but the daily life of the British public to an unlimited degree.

The Judge: I am told that half the green colours in wall-papers and posters contain arsenic. Persons who sell wall-papers will not be chemists.

Mr. Danckwerts: I think we should both agree that we would like your Honour to take a note of the evidence.

The Judge: I assumed that. I had begun by writing down the heading of the case. I assumed you would want a note.

Mr. Danckwerts: It may perhaps save you trouble if I tell you that a shorthand note is being taken.

The Judge: No; that is no use to me at all. The Queen's Bench Division will not look at it.

Mr. Danckwerts: Yes, they do. They did so in a case which I argued quite recently before Commissioner Kerr.

The Judge: He is a little difficult to get to take a note, is he not?

Mr. Danckwerts: Not now. I think he has become perfectly amenable on that point.

The Judge: However accurate a shorthand writer's note is, I should have to go through it to be sure it is right. I will take a note. I never object to take a note, although I never do it unless I am asked.

Mr. Grey: That being the case the shortest way will be to refer you at once to cases which have been tried lately under the Act. I have drawn your attention to the Sections of the Act, and especially Section 15. There is only one other matter that I wish to draw attention to—with reference to Section 17—viz., that arsenic comes in Part I. of the Schedule. Therefore, even if it is sold by a chemist or druggist, he has to do certain things. It is unlawful for him to sell any arsenic "to any person unknown to the seller, unless introduced by some person known to the seller; and in every sale of any such article the seller shall, before delivery, make or cause to be made an entry in a book to be kept for that purpose, stating in the form set forth in Schedule F to this Act, the date of the sale, the name and address of the purchaser, the name and quantity of the article sold, and the purposes for which it is stated by the purchaser to be required," besides labelling it "poison." Therefore, of course, if arsenic can be sold in the shape of fly-papers, and the Act does not apply, these fly-papers can be sold by anybody and to anybody; no trace can be obtained of them, and arsenic can be sold in this large quantity, whereas if it comes within the Act all these things have to be done to safeguard the public from the sale of the poison arsenic. The last case I will refer you to as being the most important is *The Pharmaceutical Society v. Armon*, which, as you are aware, went up to the Court of Appeal, and I have the report of that case here.

The Judge: What was the medicine there?

Mr. Grey: In that case it was Powell's Balsam of Aniseed. The case is reported in 1894, II. Queen's Bench, p. 720. The headnote is "The prohibition in Section 15 of the Pharmacy Act, 1868, against the sale of poison by other than registered chemists, is not confined to the sale of the scheduled poisons in their simple state, or of preparations of such poisons, but extends to the sale of a compound containing a scheduled poison as one of its ingredients." That was the case of Powell's balsam of aniseed, which contained one-tenth of a grain of morphine. The Master of the Rolls, in his judgment, on page 723, makes use of this expression: "It is said that the defendant did not sell a poison mentioned in the Schedule, because, though nothing has been done to it which alters its chemical nature, it had been mixed with other things. Does that, in

ordinary language, make it not poison? Does poison put into a bottle of wine cease to be a poison? Or does poison put into a cup of tea cease to be a poison? It is clear that when poison is put into a medicine, and a person sells the medicine, he sells the poison that is in it. There is nothing in the Act of Parliament, that I can see, reading it in its ordinary language, which says that you may sell a poison mixed with other things, though you may not sell poison by itself." Then I will not read what was said about the argument with regard to *de minimus non curat lex*, because that cannot be raised in this case if my case is correct.

Mr. Danckwerts : I do not suggest that.

The Judge : If your analysis is right.

Mr. Grey : Well, 2 grains is a fatal dose for an adult, so that settles the point. I understand that my friend does not contend that point. The real point is, does the Act cover fly-papers? That is shortly the point. Then Lord Justice Kay says, on p. 725 : "Therefore, anybody who sells opium, or any preparation of opium or poppies, is selling that which by this Act no one can sell without incurring a penalty, except a pharmaceutical chemist or a chemist and druggist within the meaning of the Act." Lord Justice Smith also says : "But it is said, Oh, he did not sell the poison *per se*, for he sold it together with something else!" Supposing a man filled up a bottle half with chloroform, which is one of the prohibited poisons, and the other half with water, and sold it, does he not sell chloroform? Of course he does—he sells chloroform and he also sells water ; and the prohibition is that he is not to sell chloroform unless he be a chemist. It seems to me there is a direct prohibition in this Act against other than legalised persons selling poisons ; the present defendant has sold a poison, and is within the meshes of this Statute." Then, your Honour, there is also the case of the Pharmaceutical Society *v.* Piper ; but I do not think that carries the case any further. This, of course, is a higher authority.

The Judge : What was that—chlorodyne ?

Mr. Grey : That was the case tried before your Honour, and the Court approved your Honour's decision in that case. That went up to the Divisional Court, and was not pursued further. Then, as I understand, my friend Mr. Danckwerts who appears for the defendants, does not desire me to do anything beyond proving the analysis.

The Judge : If Mr. Danckwerts does not succeed, do you mean to appeal this and to take it to the highest Court ?

Mr. Danckwerts : Very likely. I admit that the fly-papers have been analysed by an analyst in conjunction with Mr. Bevan, and that they were bought at my clients'. I will admit that my clients have no qualification.

The Judge : Then you had better prove your analysis.

Mr. Grey : Then I understand the analysis is all I have to prove in this case at present ?

Evidence for the Plaintiff.

Dr. Benjamin Horatio Paul, sworn, examined by Mr. Grey.

The Judge : What University do you belong to?—Geissen.

Mr. Grey : Are you a consulting chemist and a commercial analyst?—Yes.

Did you on January 1 receive certain fly-papers?—Yes.

Whom did you receive them from?—Mr. Partridge.

The Judge : I understood Mr. Danckwerts to admit that the papers submitted to the doctor were bought at defendants' shop.

Mr. Grey : Yes, I should have saved your Honour's time by omitting this.

Mr. Danckwerts : It is perhaps better to have a short note on it.

The Judge : I will put down the admission that the defendants are not qualified to sell poisons ; that these papers which were submitted to Dr. Paul were sold by the defendants.

Mr. Danckwerts : I am obliged to your Honour.

Mr. Grey : How many fly-papers were originally handed to you?—Twenty-five.

How many have you got before you? You gave three, I believe, afterwards to Dr. Stevenson, did you not?—I have eleven.

Did you number those fly-papers?—Yes.

Did you make a careful analysis of those fly-papers?—Yes.

What was the result of the analysis? I understand there has been a joint analysis?—Yes.

As well?—Yes.

Whom did you make this joint analysis with?—Mr. Bevan.

Mr. Bevan, on behalf of the defendants?—Yes.

Did you agree as to that analysis?—We did.

Now, will you tell me the result?—The result of my own experiments?

How many fly-papers did you analyse in the joint analysis?—Four.

Which four were those?—Numbers 5 to 8.

First of all, with regard to 1 to 4, you made an analysis of your own, I understand?—I did.

What was the average? What did you find in those papers?—The average quantity of arsenic was 8 grains per paper.

Mr. Danckwerts : Per piece of paper?

Mr. Grey : Per fly-paper.

Mr. Danckwerts : Will you call it a sheet?

The Judge : It was a packet of so many fly-papers. It will be each paper.

The Witness : 8 grains ; that was the average.

Mr. Grey : This is 1 to 4 you are stating now, are you not?—I am giving you now the result of the analysis that I made myself.

One to 4, is that?—Yes ; 1 to 4.

What was the amount you found in any one paper of those four?—Nearly 13 grains.

Let us come to the ones that you analysed jointly with Mr. Bevan. What was the result of the analysis of those?—11 grains and a fraction.

Mr. Danckwerts : Nearly 13, did you say?—Yes.

Are you sure?—Yes.

Mr. Grey : These are the ones numbered, I understand, from 5 to 8?—These are 5 to 8.

You analysed them with Mr. Bevan?—Yes.

And you say the average amount of arsenic in those fly-papers was 11 grains?—11 grains.

The Judge : And a fraction?

Mr. Grey : And a fraction?—11.1 it really was.

What was the largest amount you found in any one of those papers?—Those were not analysed separately ; they were taken together, mixed.

What is that you have before you?—This is the remainder.

The Judge : Is that the arsenic?—No ; this is the remainder of the papers.

After the arsenic is taken from it?—Before the arsenic is taken from it. It contains such a large quantity of arsenic that it was necessary to take only a portion of the paper for an accurate analysis.

Mr. Grey : What is the result if you follow the directions on this fly-paper? I am referring to the words "keep moist in cold water two or three times a day."—The arsenic contained in the paper is dissolved by the water.

How much of the arsenic is extracted by cold water?—The greater part of it.

Cross-examined by Mr. Danckwerts :—

You are a commercial analyst, you say?—Yes.

You are, no doubt, therefore thoroughly well acquainted with the articles of commerce?—Yes.

In the first place you tell me the quantities that you have given have been obtained by means of the hot water test?—Yes.

Boiling water?—Warm water.

Answer the question, please. I suppose you only come here to give us information?—Yes.

Would you mind answering without waste of time?—Will you repeat the question?

Your quantities were obtained by means of the boiling water test?—No, they were not.

None of them?—No.

The Judge : Warm water?—Warm water.

Mr. Danckwerts : You, of course, as expert, would obtain more from fly-papers than somebody who was not an expert?—No.

You do not think so?—No.

The Judge : It depends on how the expert tests it.

Mr. Danckwert : Yes. I mean an uninstructed person would not obtain the same quantity of poison from the paper as you got?—I think they would.

That is to say if they pursued the same method you did?—I think he would anyhow, putting it in water.

The Judge : Did you only soak them in water, and so find the arsenic?—Merely water ; it is perfectly soluble in water.

In what form did you obtain the poison?—In the form of ammonium-magnesium-arsenate ; that is a compound of arsenic acid, ammonia, and magnesia.

How would you describe that with reference to arsenic?—I should

describe it as arsenic in reference to the terms of the Pharmacy Act.

I did not ask you that.—Will you put your question more definitely, and I will answer more definitely?

The Judge: Do you mean you got 11 grains of arsenic pure?—Arsenic pure.

Without having discharged or got rid of the ammonia and magnesia?—I will explain it to your Honour.

How much pure arsenic did you obtain on an average?—Eight grains for each paper.

Then the ammonia and magnesia were in addition?—Added on. The arsenic as it exists in the paper cannot be got out for the purposes of analysis with accuracy because there is colouring matter mixed with it which would interfere with that result. It has to be transformed into arsenate of ammonium and magnesium, a definite substance which represents the arsenic which is in the paper.

Is it possible by any process after that to separate the ammonia and magnesia from the arsenic?—It could be separated, but it is weighed in that state. That is the actual thing got out from one of the papers.

Mr. Danckwerts: As I understand, what you procured was a mixture—a chemical mixture or a mere physical mixture.—A chemical compound—a well-known, definite, chemical compound.

Was what you obtained a chemical compound or a mere physical mixture?—A definite chemical compound.

So that what you obtained was not arsenic?—Yes, it was arsenic.

You have just told me it was a chemical compound of arsenic, ammonia, and magnesia.—Properly called arsenic.

Pure arsenic?—Pure arsenic? I do not know what you mean by pure arsenic. Arsenic is a general term not only for this substance but for any compound of this substance.

Very well; if I get arsenic and mix it with flour the result, according to you, is arsenic?—No, it is a mixture.

Is every chemical substance arsenic, according to you, that contains arsenic?—Not every one, but specific ones.

Which are they?—Arsenous acid, arsenic acid, arsenites, and arsenates.

Under which of those heads did your chemical compound come?—Arsenate.

Did you try to separate the ammonia and the magnesia?—No. You did not?—I had no occasion to.

Why not?—Because I wanted it to remain there.

I just want to understand your evidence if I can?—I will endeavour to make it clear.

Did you say that all arsenic compounds are arsenic within the meaning of the Act?—Yes, the one that I have given you specifically.

What do you understand by a preparation of arsenic?—A preparation of arsenic I should understand to mean a medicinal preparation containing arsenic.

A mixture?—It might be a mixture; it might be a compound, but a medicinal article.

I suggest to you by a preparation of arsenic is meant a chemical preparation of arsenic?—Well, I do not agree with that.

You do not?—I do not.

You said you were educated at Geissen?—Yes.

That is a German University, is it not?—It is.

Are you a German?—No.

Are you English—you understand English?—Rather.

Having obtained this chemical compound of ammonia, arsenic and magnesia, did you from that calculate the quantity of pure arsenic?—I did.

How did you do that?—By figures.

Come: do not answer me like that. Cannot you explain to me how you did it?—I say again by figures—calculation.

The Judge: What was the formula?—The formula was that so much of the compound represented so much arsenous acid, called, in common language, arsenic.

Mr. Danckwerts: Is that a constant quantity?—A constant quantity—a very definite compound.

Does this chemical compound of magnesia, ammonia, and arsenic always present a constant quantity of arsenic?—It does; it is a very definite substance indeed.

The Judge: I do not follow it quite. If you mix together three things of that sort will they turn into something else if there is less arsenic or more arsenic, or more ammonia or more magnesia?

Surely it does not?—It is a compound, a definite compound, containing a definite proportion of arsenic.

I want to know if you put more arsenic would it become another compound?—There would be more of the compound.

Suppose you have 1 grain of ammonia and 1 grain of magnesia, and 2 grains of arsenic, that makes this compound you speak of?—Yes.

Then how do you know how much there is in it, because you would have made the same compound if you put 3 grains of arsenic?—The same compound, but more of it.

It would not be the same compound?—The same compound.

Surely if you put brandy and water and sugar, you cannot say there is so much brandy. You may have as much brandy as there is sugar. How can you tell, in a tumbler of water, how much brandy there is unless you ascertain the quantity of brandy?—With two tumblers there would be just twice as much as one.

There would not be twice as much sugar or brandy or water necessarily.

Mr. Danckwerts: I think the witness has given your Honour the explanation that I have been trying to get from him. I will explain it, and put him right too. It is not a mixture, but a chemical compound. These substances only combine in certain proportions?—That is what I told you.

That is what I have been trying to get from you.

The Judge: That is what I put to you. If there were more arsenic would it cease to be this chemical compound. You said no, there would be more of it?—There would be more of it.

Mr. Danckwerts: I presume there would be a certain proportion of arsenic not utilised in the formation of this compound?

The Judge: There would be more arsenic in a grain of the compound.

Mr. Danckwerts: It would be a mixture of arsenic then and the compound.

The Witness: May I explain?

The Judge: I wish you would help me?—It does not matter what quantity of arsenic you have to determine; the quantity of the compound formed will be proportionate to it. If there is 1 grain of arsenic to be found, you get, say, 2 grains of the compound; but if you have 2 grains of arsenic you will get 4 grains of the compound: that proportion of arsenic to ammonia and magnesia is constant in the compound, but the quantity of compound may be different. The relative proportion of one thing to the other is constant.

The Judge: I cannot follow you.

Mr. Danckwerts: What you say is that a certain quantity of magnesium has an affinity for a certain quantity of arsenic?—In definite chemical proportions.

So that if you mix a disproportionate quantity of the two you get a mixture which is partly your compound and partly something else?—No, nothing of the kind. You always get the definite compound, and it is that fact which enables you to deduce from the quantity of the magnesia compound the quantity of arsenic.

Will you tell me what becomes of the superabundant quantity of arsenic?—There is no superabundant quantity.

Assuming you have put in a superabundant quantity?—That is a foolish assumption.

The Judge: Surely I or Mr. Danckwerts might add to this which you say is a compound a little more arsenic. What would be the contents then?—Then you would have a mixture, but that is not what the chemist does in analysis. The object of analysis is to get a definite thing so that he can tell how much of the substance is in his hands; and if I get 10 grains in one case and 5 in another I know with perfect certainty from the definite nature of the compound weighed how much arsenic there is in it.

I suppose there are formulæ for that in some book?—There are formulæ, certainly.

In what book shall I find the formulæ?—Any book on analysis.

Will you mention one?—Thorpe's 'Analysis,' and Fresenius.

Will that formula show how much arsenic there is in that chemical compound?—Yes, you will find that it is very nearly half; it may be taken as a half roughly. Ten grains of that represents 5 grains of what is called arsenic, in common language—white arsenic.

Mr. Danckwerts: Do you still maintain that if you try to combine an insufficient quantity of magnesia and ammonia to absorb the whole of the arsenic that the arsenic disappears; it is not combined?—That would be bungling, that would not be analysis.

Can you for a moment put yourself in the situation of trying to

produce the compound artificially which you found in the fly-paper?
—Yes.

You find magnesia, ammonia, and arsenic?—Yes.

Supposing you put a disproportionate quantity of arsenic and try to combine that, what would become of the excess of arsenic?
—I say again that would be bungling, that would not be analysis.

Is that the only answer you can give?—That is the only answer that is to be given to your question.

Mr. Danckwerts: We can form an opinion on that.

The Judge: You say that would be bungling, that it is not analysing; but surely what Mr. Danckwerts asked you was compounding this, not analysing it. If you had to make this material somehow; suppose for a moment it is possible that you put too much arsenic, what would be the result?—You do not put in arsenic, you take what is there.

Yes, that is analysis. If it is possible to say to the Court this bottle contains ammonia, arsenic, and magnesia, surely you could compound it with those three drugs in your laboratory? You could make this compound from that, could you not?—These things compound themselves from their inherent nature.

If you put the things together with their inherent nature they will make a compound, will they not, in the proper proportions?—They do, and, analytically, in order to ascertain the quantity of the substance you are searching for you will put enough of the things to combine with it. If you do not put enough it is bungling.

Mr. Danckwerts: As I understand, "preparation" means a medicinal preparation in your view?—That is what I understand a preparation to mean.

The Judge: You say this compound contains half pure arsenic? How did you divide the other half—I mean the ammonia and magnesia?—There is ammonia, magnesia, and a very small proportion of moisture. A definite proportion of moisture.

How much ammonia?—26 parts to 115 of arsenic acid. I had better write it down.

Then it would be 122 of magnesia, 150 arsenic, and 28 of ammonia as the balance?—The arsenous acid amounts to nearly one half.

Yes, you said 150?—Taking it roughly, the arsenic is one half, the rest is made up of magnesia and ammonia.

And a little water?—A small proportion of water.

Mr. Danckwerts: Is it not the fact that many articles of commerce contain arsenic?—Yes, they do.

Of everyday commerce?—I believe some pigments contain arsenic.

Is that all?—Well, there are sheep washes.

And arsenic in a form, I put to you further, that could be as easily extracted as it is from the fly-papers?—Possibly it would.

Take, for example, this document into your hand. Is not that green full of arsenic?—It may be.

To be got at by simply dissolving it in water?—No, I do not think that.

If it has been done, what do you say then?—I do not think so.

I say if it has been done, what do you say then?—I say I do not think so.

Mr. Danckwerts: Perhaps you will be enlightened about that. Perhaps your Honour would like to see this? [Handing up a large green poster.] It is Sir Charles Hall's advertisement in Manchester.

The Judge: A war was waged on green papers and green dress materials at one time.

Mr. Danckwerts: Look at that; does not contain arsenic? [Handing up a piece of fabric.]—I cannot say.

Then that could be dissolved out by water?—I could not say.

Mr. Danckwerts: We will give you another one.

The Judge: Without trying it a doctor, a man of science, will not say it does; he has never analysed it, and he does not know that it does.

Mr. Danckwerts: Just test it.—I cannot say from its appearance.

Do you not think it likely that the arsenic can be got out of that cloth by simply putting it in water?—If arsenic is there in a soluble form water will take it out.

Look at that. Do you say the same as to that? [Handing up another piece of fabric.]—I should say if there is any arsenic there it is not soluble in water.

Will you give me your reason?—Because I should imagine that it is in a state of combination which is not soluble in water.

Very well, then you have a fine imagination?—No, it is not from imagination. It is my judgment and experience that I speak from.

Do not many coloured fabrics contain arsenic in a soluble form

that would be soluble in water?—I should say not when they are in a state fit for sale.

Do you deny that there are any cloths commonly sold which contain any arsenic in a soluble form?—When they are in a fit state for sale I should say they do not contain arsenic. Arsenic is used in the process of calico printing.

Then take the case of sheep dip?—Sheep dip of course you may take as containing arsenic.

In a soluble form?—In a soluble form.

Emerald green?—Emerald green.

As bought in paint shops?—Emerald green contains arsenic, but the arsenic in emerald green is not in a soluble form.

Commercial sulphuric and hydrochloric acid?—They may contain traces, infinitesimal traces.

Zinc?—Infinitesimal traces.

The Judge: Is that in a soluble form?—No, not in a soluble form there, and it is very infinitesimal.

Mr. Danckwerts: Lead!—Possibly, if it is not pure.

Is not arsenic often deliberately put into lead?—Yes, it may be for certain purposes.

Bronze?—Possibly also infinitesimal.

But arsenic put in deliberately?—It may be.

They like to get a nice green colour on it?—I do not think arsenic would make bronze green in colour.

Lacquer for brass work?—I cannot say.

Brass-work itself before it is lacquered?—Brass-work contains some infinitesimal proportion of arsenic.

Common gunshot?—Yes.

The Judge: That is lead, is it not?

Mr. Danckwerts: Yes.

The Judge: You have asked him lead. He says in an infinitesimal degree, but not in a soluble form.

Mr. Danckwerts: It is put into lead to increase the quantity, and I think shot is one of those?—No, it is never put in to increase the quantity.

To harden it?—Yes, that is another thing altogether.

That is to increase the natural quantity of arsenic there?—Well, it may increase it 1/100,000th part, or a millionth part perhaps.

It does increase it?—If you call that increasing it.

The Judge: I assume not in a soluble form. Could you extract the arsenic?—It has no relevance to this case.

We do not know yet, but you could not extract it by pouring water hot or cold upon the shot?—No.

Mr. Danckwerts: Suppose you were to go to a bird-stuffer, would you not buy a large quantity of soluble arsenic?—Possibly.

The same if you bought the stuffed head of an animal?—It is used for preserving animals.

Many wall-papers contain arsenic in soluble form?—No.

None?—I should say none now.

Might they?—No, I should say not.

Never?—I have very good reason for saying that they do not.

Bills, posters?—They may perhaps.

In white wall-papers is there not a large quantity of arsenic to produce the satin white?—I do not think so.

Supposing you were to buy one of those summer numbers or Christmas numbers of the *Graphic*, would you not buy an appreciable quantity of arsenic there in the pictures?—I should hope not.

You do not think you would—not in the green colours of the pictures?—No.

That you swear?—I simply tell you I should think there would not be arsenic there. I hope that is intelligible.

Have you tried?—I have not.

Do you apply the same answer with respect to all the things that you should think not—that you have not tried?—That is my opinion; the result of my experience.

Green paint on walls, does that contain arsenic?—No, green paint for wall-papers does not contain arsenic.

No, green paint on walls I asked you?—It may contain arsenic if it is an arsenical pigment.

White lead, I put to you, contains traces of arsenic?—Well, there may be an infinitesimal amount on account of the arsenic in the lead from which the white lead is made; beyond that there is none.

Dunging liquor, which is used in calico printing works for mixing mordants, does not that contain a large quantity?—It may contain a small quantity of arsenic.

It may contain a small quantity of arsenic?—That was formerly a liquor from cow dung.

I believe the origin of that is this, that they used the ordinary cow dung at one time, now they use arsenic?—Yes, that is it.

The Judge: That is to fix colours?—Yes.

Or to produce them?—It is a process used in calico printing.

Mr. Danckwerts: Do you know arsenite of glycerin?—No.

It is used for brightening colours in calico printing. Does it not contain arsenic?—Very likely. Which do you mean, arsenate or arsenite?

Arsenite.—Possibly that is a solution of arsenous acid and glycerin. Of course that would contain arsenic.

I am going to put another general question to you. Is it not a fact that a chemist will tell you that we are continually surrounded by arsenic in greater or smaller quantities in our daily life?—Well, we are surrounded by a great many things.

Do answer the question, please?—Arsenic is one of the elements existing in the universe, and of course that surrounds it as well as any other object.

Yes, but most things contain arsenic in some form or other?—No, I should not say that. That would be a very exaggerated statement.

Re-examined by Mr. Grey: Is there any difference in the amount of arsenic contained in one of these fly-papers, whether you use hot or cold water?—None whatever.

Why in this case was hot water used?—Because my object was to get the arsenic out, and to determine it as quickly as possible.

The Judge: Hot water is a more rapid process?—It is more rapid.

Mr. Danckwerts: And more effective, too?—Not at all more effectual in the long run.

Mr. Grey: With regard to these fly-papers. Is arsenic put into them in such a form that it is soluble in water?—I should say it is from the state in which I find it there.

You have examined, I believe, certain wall-papers, have you not?—I have examined within the last few days six different green wall-papers.

What was the result?—There was not a trace of arsenic.

The Judge: What is a fatal quantity of arsenic to a human being?—From half a grain to 2 grains is given in the authorities on toxicology. Two grains is looked upon as a very dangerous dose, I think.

How much can be safely prescribed?—It is given in quantities of 1-16th of a grain, and less.

I believe the habit increases, does it not?—*l'appétit vient en mangeant!* It is a cumulative poison, I think, is it not?—No, it is not, it acts too rapidly, there no time for accumulation.

Dr. Thomas Stevenson, sworn, examined by Mr. Grey: Are you a doctor of medicine?—Yes.

And analyst to the Home Office?—Yes.

On January 11 did you receive from the last witness three fly-papers?—Yes.

Did you carefully analyse those three fly-papers?—One of them.

No. 9?—No. 9 I completely analysed.

What was the result of your analysis?—It contained 11½ grains of arsenic expressed as white arsenic; the oxide.

Can arsenic be extracted by the application of water?—From these papers easily.

How much?—I could get nearly 11 grains by water; over 10.

You have the fly-papers before you?—I have.

What would be the result of applying water to this fly-paper as directed—keeping it moist?—The arsenic goes into solution and you get a coloured liquid which, according to the amount of water, varies from the colour of whisky up to that of dark brown sherry. It is almost tasteless; you might put it on the tongue and scarcely perceive any flavour; certainly nothing unpleasant.

Would most of the arsenic from the paper become extracted?—Yes, I extracted nearly 11 grains by water from this.

What is a fatal dose of arsenic?—2 grains is fatal—probably 1 grain.

And with regard to the solution obtained from the fly-paper with water, how many people would that be sufficient to poison?—A paper such as I have analysed would be capable of killing about six people.

The Judge: This is most dangerous knowledge.

Mr. Grey: It is, no doubt. Have fly-papers being used for the purposes of murder?—Yes. A few years ago there were eleven people killed by fly-papers in a northern city, and two people were convicted and executed for it.

Was there also a later case in which you yourself gave evidence?—Yes, in which fly-papers were steeped in water.

The Judge: Is that the Maybrick case?

Mr. Grey: Yes, your honour.

The Witness: I cannot say that arsenic was employed there.

Mr. Danckwerts: There is a doubt about it?

Cross-examined by Mr. Danckwerts: I am sure you will bear with my ignorance, Dr. Stevenson, and give me some information. Did you employ hot or cold water?—I employed cold water, and found the arsenic would come out; then I employed hot water to get a full extraction quickly.

You mean to say hot water is more effective and speedier?—It is more speedy. The end result is the same.

If you employ a sufficient quantity of cold water?—Or let it soak long enough.

How long did you soak your fly-paper?—To get the arsenic out I soaked it only a few minutes, but I extracted with hot water until I could get no more arsenic out.

How long did that take you?—Some hours, I think, to get the last traces.

I suppose you would agree that an expert like yourself would get more extract out of these fly-papers than a layman like myself?—I do not think so. If you simply soak it in water anyone could get it out—the bulk of it at all events.

In what form did you find it in this fly-paper?—Chiefly in the form of white arsenic; some of it in the form of arsenate; about 2 grains in the form of arsenate.

What is white arsenic?—The lower oxide, commonly called arsenic.

Will you tell me what you understand by a preparation of arsenic?—Something prepared with arsenic as a constituent otherwise than a chemical compound of definite proportions.

In other words a mixture?—It may be a mixture, or it may be the arsenate, and then you have a chemical compound perhaps mixed with something else.

The Judge: Tell me again what you call a preparation?—Something prepared with arsenic as an ingredient other than a definite chemical compound.

Mr. Danckwerts: Is the arsenate a preparation of arsenic?—The arsenate is a compound of arsenic.

Not a preparation?—A chemical compound.

Not a preparation?—I do not call that a preparation. I do not know what you would say legally, but that is my opinion.

What is arsenous acid?—It is the white arsenic I have spoken of, commonly called arsenic.

Is that a preparation of arsenic?—No, it is a definite compound of arsenic and oxygen in unvarying proportions.

Have you answered me about the arsenite?—Just now.

The Judge: Arsenite is a chemical compound?—Yes.

Mr. Danckwerts: It is not a preparation, I understand. Now, arsenous acid?—Yes, it is a definite chemical compound.

Not a preparation?—I do not call it, strictly speaking, a preparation.

Will you tell me also about arsenates?—They are definite chemical compounds.

And not preparations?—Not strictly speaking.

The Judge: Is there a difference between arsenite and arsenate?—The arsenates are compounds of arsenic acid, the arsenates are composed of arsenous acid, the arsenic acid and the arsenates contain more oxygen.

Mr. Danckwerts: These are all chemical compounds, I understand?—They are, in a state of purity, chemical compounds.

I assume a state of purity for my questions?—Yes.

In what form did the arsenic subsist in the paper before you dissolved it?—Chiefly in the form of arsenous acid or white arsenic.

How would you describe it; where is it, in the paper; is it absorbed into the matter of the paper?—If you look into the paper you can see it on the paper; some of it as a white substance.

With a microscope, you mean?—With the eye.

Whatever you see, is that arsenous acid or what?—I think it is chiefly.

That is not the soluble form of it, is it?—Oh, it is soluble.

In water?—Yes.

Not readily, is it?—It will dissolve; about a wine glass would contain more than the fatal dose.

Now tell me about something else; you know something about the things which are ordinarily sold in shops and elsewhere?—Yes, I am not much of a commercial analyst, but I know with reference to arsenic.

Are there not many substances sold daily in commercial life

which contain arsenic in a soluble form?—I do not think many are sold containing arsenic in a soluble form, except for special purposes in the manufactures and arts.

Take this poster, which has been put in; will you kindly look at that?—I should say that probably contains arsenic in an insoluble form.

Look at it again?—Of course I have not analysed it, but it looks to me like arsenical green, which would not be soluble in water if it is copper green—Scheele's green. I am merely expressing an opinion on the view of it. I think it would be insoluble in water.

What is the proportion of arsenic or the substance you have taken from the fly-paper which could be dissolved into the water?—Practically, the whole of it; or about 11 grains out of 11½.

In what quantity of water? What is the proportion of arsenic in water?—You can dissolve that in about 1 ounce of water—about 2 tablespoonfuls; about 40 parts; you could get it into rather more than 2 tablespoonfuls.

The Judge: Out of the 11½ grains you found 11 grains of arsenic soluble in water?—Nearly 11.

Soluble in 2 tablespoonfuls of water?—It might be got into solution by dissolving it in hot water and then cooling; you could get it into 2 tablespoonfuls.

Mr. Danckwerts: Do you know Dr. Alfred Swain Taylor's book?—I believe I am the editor.

This does not purport to be edited by you?—Then that is an old edition. If it is the one on "Poison," I have edited it.

It says the grain dissolves in 400 parts of its weight in water. The proportion in hot water dissolves about 1-400th part of its weight in arsenic?—That must be a mistake.

It is so here. It says you only find a very small quantity can be dissolved in tea or coffee. [Handing book to the witness.] This is not the one I edited. If you pour on hot water it would take up that amount, but you can get very much more. If you follow it on he says the water kept boiling with the poison and allowed to cool dissolves 1-40th part of its weight.

1-400th, I think; I read it?—You only read part of it.

The Judge: It begins with cold water?—If you pour hot boiling water on the poison it dissolves 1-400th part, but water boiled for an hour with the poison and allowed to cool, holds 12 grains per 1 ounce; that is 2 tablespoonfuls.—I said 11 grains. If you read on you will see it.

Mr. Danckwerts: I have Dr. Tidy here. He says, speaking of the solubility of arsenous acid, 1000 grains of cold distilled water after standing twenty-four hours dissolved 1.74 in a transparent form, 1.6 grains in the opaque form?—That is cold water standing on arsenic.

Yes, distilled fresh crystals, 2 grains, so that you see that is 1-500th?—That is simply standing water on the arsenic, arsenic in crystals. In this form in which it is in the paper it comes out much more readily than if you pour water on white arsenic. It does not mix well with water, it floats about in lumps.

One thousand grains of boiling water poured on the acid and allowed to stand twenty-four hours dissolved 10.12 grains, that is 1-100th part?—That is about 1 per cent. Most of the authorities that I know give 1 per cent., that is to say, 1-40th as the maximum.

What do you say about this poster?—It looks to me like copper arsenic insoluble in water.

Look at that. [Handing a piece of stuff.] Does that contain arsenic?—I cannot say, I should think it probably contains small quantities. Some of these fabrics contain small quantities which are left as an impurity in the dye.

You agree that this green paper, whatever your opinion about its solubility in water, is dangerous?—If you eat it. It is a poster.

Take this cloth. [Handing specimen to the witness.] What do you say to this?—I cannot say, but some of these dyes do contain arsenic, generally in small quantities.

You heard the list of things I put to Dr. Paul?—Yes, zinc, lead, white lead, brass, and so on.

Do you agree that they all contain arsenic in some form or other?—In the commercial form they contain traces in the metal, and such things, white lead prepared from lead, and so on; arsenic is insoluble, if you take the white lead itself it is poisonous.

It is insoluble in water, but contains arsenic in the concrete form?—If you take white lead the lead is much more poisonous than the arsenic, which is a minute impurity, and does not go into water at all.

In what form does it subsist in the white lead?—As arsenate of

lead; that would be the compound you would look for; the very insoluble compound.

The Judge: What you describe you found in this fly-paper was arsenic in its common form?—The chief portion of which was ordinary white arsenic—commonly called arsenic.

In a preparation in the sense that we have previously had?—I should say not; probably it was some waste arsenic.

Not arsenic?—Arsenic; probably some waste arsenic from some liquid or other. I do not know that it had been added as white arsenic. I should think probably it had been obtained from some manufacturing liquid.

Mr. Grey: I do not ask the witness anything more.

The Judge: Is that your case.

Mr. Grey: It is admitted, I understand, that I need not produce the Register.

The Judge: No.

Mr. Grey: Then I need not call any other witnesses. That is the plaintiff's case.

Mr. Danckwerts: Perhaps it will be shortest that I should call my evidence first, and then address you on the case afterwards.

The Judge: You may if you like.

Evidence for the Defence.

Mr. Edward John Bevan, sworn, examined by Mr. Danckwerts: What are your qualifications?—I am the analyst of the County of Middlesex.

What are your medical qualifications?—I have no medical qualifications.

You are county analyst?—County analyst. I am a Fellow of the Institute of Chemistry.

Did you, together with Dr. Paul, analyse these fly-papers?—Yes. Nos. 5, 6, 7, and 8.

Will you tell his Honour how you did it, and what you found?—We extracted the arsenic by means of water which was very nearly boiling—it was quite hot water—and we repeatedly washed the residue that was left in—that is, in the fly-paper. We repeatedly washed it and poured the washings through until we concluded that we had got all out by those means.

What did you find?—We found 10.92 per cent., or in grains, assuming the weight to be the same as the rest of Dr. Paul's samples, the total number of grains was 11.6. But his papers weighed considerably more than the papers that had been submitted to me, and on the basis of my average weight they were 9.9 grains per paper.

So that the papers vary in weight and substance?—Yes.

In what form did you find the 11 grains?—You mean in what form did I weigh it?

The Judge: What was the 11 grains?—That is calculated as arsenous oxide—white arsenic.

Mr. Danckwerts: Do you agree with Dr. Paul that it was a compound of ammonia and arsenic and magnesium?—Yes, that is the ordinary way of estimating it.

Just explain that? Do these substances only combine chemically in certain proportions?—Yes, if you take a certain quantity of the arsenic in solution, and you add to that a large quantity—an excess of a mixture of sulphate of magnesia and ammonia chloride, you then have precipitated this white crystalline compound, which is a perfectly definite composition, and which contains, roughly speaking, half of its weight of arsenic. It does not matter very much how much of the magnesia mixture you use so long as you put enough to precipitate the arsenic. Then you get only this definite compound. To ensure getting it all down you have an excess of this sulphate of magnesia mixture.

What becomes of the excess?—It passes away in the filtrate, and the rest goes away, and we wash until it is pure.

Do you think the ordinary common-place person would get as much from the fly-papers as you would?—No, I think an unskilled ordinary person would soak the fly-paper in cold water, and by that means, in my experience, only a small proportion dissolves out.

How does the substance exist in the fly-paper in its ordinary dry condition?—It is disseminated more or less equally throughout the paper.

I suppose the way in which it is put in is, it absorbs it in the moist form, then it is dried?—Yes, it is allowed to dry.

The Judge: This is only a surmise of yours?—No, I have very good reason to believe that it is put in as a solution and arsenite of soda. In fact, I know it is either that or potash.

Mr. Danckwerts: It is caustic soda?—The white arsenic is

boiled up with caustic soda, or caustic potash, and it then goes into solution, and it is that solution which is used for the purpose.

With some colouring matter?—Yes.

The Judge: Then you say it is a preparation of arsenic?—No, it is a compound of arsenic.

You say it is boiled up with so and so. Is not that a preparation?—It falls exactly under Dr. Stevenson's category of a compound. It is an arsenite. It is a compound.

Mr. Danckwerts: May I put a question which will elicit this point? When the caustic soda and the arsenic are mingled in this way, do you get a mixture, or does a chemical change go on, and you get a chemical compound?—You get a definite chemical compound.

A chemical change taking place?—Yes.

Is it in the fly-paper in the same form as you produce it by means of dissolving in water?—I am not quite sure I follow that.

You produce the oxide, you told us. Is that the shape in which it subsists in the fly-paper itself?—No; no doubt part of it is. The majority of it is there as an arsenite, together with some portion of arsenate.

Is this arsenate or arsenite in the fly-paper a preparation or a compound?—They are compounds.

So that in the fly-paper as it is in the dry state, what the purchaser gets is a fly-paper containing that arsenite or arsenate?—Yes.

The Judge: Which can be prepared as you say from arsenic?—Yes.

Mr. Danckwerts: Chemically compounded from arsenic?—Yes.

The Judge: Can be prepared? You gave me the process. You put together arsenic and caustic potash and you produce this. Is not that a preparation of arsenic?—I see what you mean.

Mr. Danckwerts: I should not say you produce it—they produce themselves.

The Judge: They would not unless you prepared for the production; unless you prepared for the production they would not be produced.

Mr. Danckwerts: I agree. The point is, would you, as an expert, call that a preparation of arsenic?

I agree with Dr. Stevenson's definition. Of course every compound is prepared as his Honour says, there is no getting over that fact.

Mr. Danckwerts: But using the word preparation, supposing you were speaking of arsenic and its preparations would you include in that the arsenates and the arsenites?—Yes, I should have done so; it is done in text-books sometimes.

Did you have these posters; have you analysed any of them?—No, not these.

But similar ones?—Yes.

What did they contain?—They contained considerable quantities of arsenic.

In a soluble form?—In a form which can be readily removed by means of water.

The Judge: The consequences of the decision one way or the other can hardly enter into the consideration of any court that has to decide upon this Act of Parliament, can they? As time goes on other things are found out. That was used as an argument, was it not, against the chlorodyne, and used as an argument in Powell's balsam of aniseed. If you once get to that you would prosecute every village grocer who is selling a box of cough lozenges. I do not think that was laid the way that the Courts had to decide.

Mr. Danckwerts: But I think that you will find when you consider the arguments I have to address to you, at all events, that we propose to raise again, possibly in the ultimate tribunal, that this becomes material.

The Judge: Of course. But what I wanted to persuade was this. Suppose you prove that, you ruin half the shops, or make it very inconvenient for old women to get a pill.

Mr. Danckwerts: To put it shortly to you; can you tell me whether or not, assuming this fly-paper to be prohibited by the Act, there are a number of other commercial articles which are commonly sold which are in the same position?—Yes.

Mr. Danckwerts: That will shorten it if I put it in that way.

Cross-examined by Mr. Grey: There is only one question I want to ask you. Do you agree with what Dr. Stevenson says, that white arsenic is introduced into these fly-papers in a soluble form?—It is purely relative matter; it is introduced in a soluble form.

It is introduced into these fly-papers in a soluble form?—I did not understand Dr. Stevenson to say that, but it is so.

And the chief part is not arsenic at all, is it; it is arsenous acid?—No; I do not agree with that at all.

You do not agree with Dr. Stevenson there?—No.

On the application of water as you are directed to apply, do you obtain white arsenic again?—No; you obtain a solution of arsenite of soda. As a matter of fact, it is not there as arsenous acid at all, or only in small quantities. It is there as arsenite.

The Judge: What is that little bottle there that Dr. Paul produced as that result?—I think that was the ammonia magnesia arseniate that he produced.

Mr. Danckwerts: Yes; that was so.

Mr. Grey: Do you agree, then, with Dr. Stevenson when he says that he found 9.51 grains in the form of white arsenic?—I cannot either disagree or agree with him, because I did not analyse it with him. I agree with Dr. Paul.

Dr. Paul is, I think, to the same effect?—Dr. Stevenson did not find it in that form. I do not know that it very much matters.

Mr. William Thomson, sworn, examined by Mr. Danckwerts: Are you a member of the Council of the Institute of Chemistry of Great Britain and Ireland?—Yes.

A Fellow of the Royal Society of Edinburgh?—Yes.

Fellow of the Chemical Society and a Fellow of the Royal Microscopical Society?—Yes.

Were you in partnership with the late Dr. Crace Calvert?—Yes.

You have carried on the profession of consulting and analytical chemist for the last twenty-five years?—About that time.

Have you had great experience in analysis?—Yes.

And particularly, I believe, in commercial analysis?—Yes.

You have analysed some of these fly-papers, I believe, but not the fly-papers in question in this case?—That is so.

I believe you brought out a considerably lower result?—Yes.

Mr. Grey: I object to this.

The Judge: He has not analysed any the defendant has sold?

Mr. Danckwerts: No.

Mr. Grey: I do not know at all what has happened with regard to other fly-papers. This case is merely with regard to the twenty-five fly-papers sold by the defendants.

Mr. Danckwerts: Have you analysed these placards and cloths that I have produced here?—Yes.

What did you find in Sir Charles Hallé's green placard?—Equal to 6.4 of arsenous acid.

Mr. Grey: With regard to those wall-papers, I understand now their being put in evidence. I must object to them.

The Judge: I do not see how you can put them in evidence. As I said to you just now when the chlorodyne case was being discussed, it could not be proved to any useful purpose that Powell's balsam of aniseed was as bad. That is what you are doing.

Mr. Danckwerts: What I am trying to prove is that there are many commercial articles now sold in this country.

The Judge: That may be, but your reason for repealing the Act cannot help me to construe the Act.

Mr. Danckwerts: I submit that it is important.

The Judge: I do not see that you ought to put it in evidence.

Mr. Danckwerts: It is with reference to the argument I shall have to address to you upon the construction of the Act.

The Judge: I cannot see the relevancy. These other things are not fly-papers.

Mr. Danckwerts: That is true.

The Judge: I do not see how you can put it in evidence in this case, because your argument must surely be that there are other articles of commerce as bad as fly-papers or as noxious as fly-papers.

Mr. Danckwerts: I will state the point shortly.

The Judge: What is the argument you want to found upon it.

Mr. Danckwerts: My argument is this, that the Statute uses popular language, and you must construe it with reference to the state of things existing in the country just like any other document. The Courts have often said there is no mystery about a Statute. It is to be construed like any other document in popular language, unless technical language be employed, and with reference to the state of things which one knows to be in existence. If I prove to your Honour that in the ordinary life of the country there are many commercial articles, sold in a form which cannot possibly be covered by the Statute, and containing as much of the poison as this fly-paper, then I say that the Statute must be construed in such a way as not to cover any of these things.

The Judge: I could not accede to any such proposition. I thought you were going to argue that the Act was to be construed in the ordinary sense of the word, but the Act was passed to prevent these things, and if your contention is right, the first prosecution under

the Act would have failed. I will decide at once upon that argument. If that is the argument in support of which you wish to submit this evidence, I will not allow you to put this in evidence, because I am against you upon that argument, and this cannot be evidence. I will not allow you to give it in evidence.

Mr. Danckwerts: Well, perhaps not, but I will suggest for your consideration—as this case must go further—that in order to avoid it being sent down again, the evidence should be taken, subject to any objection.

The Judge: *De bene esse?*

Mr. Danckwerts: Yes.

The Judge: Very well. I think it is only a waste of time.

Mr. Danckwerts: So far as you are concerned, now you have ruled in that particular way, it may be.

The Judge: I do not mind if you are agreed.

Mr. Grey: I do object to the evidence with regard to those things.

The Judge: I do so constantly—in cases where I think perhaps a nonsuit may be the right course to adopt—rather than put the suitors to the expense of coming back again should the Queen's Bench Division take a different view of it. I do very often allow evidence to be adduced in employers liability cases, reserving to myself the right—

Mr. Danckwerts: To disregard it of course.

Mr. Grey: I cannot agree.

Mr. Danckwerts: I shall not be entitled to refer to the evidence upon the argument which you have only admitted *de bene esse* in this way.

Mr. Grey: If it were in any way relevant, of course I would not say one word, but what I submit to you is that it has absolutely nothing whatever to do with this case.

The Judge: No. I think in this case there is no question of expense, as there is sometimes under the Employers Liability Act, Expense is no object.

Mr. Grey: The question of costs cannot arise, and I do object.

The Judge: No, I do not think you ought to give such evidence, I think it is irrelevant to the issue I am trying.

Mr. Danckwerts: I submit to your Honour that this is not within the meaning of the Act. All the cases which have been referred to by my learned friend were cases of selling medicinal preparations. Not one of them was the sale of anything, but a medicinal article which contained as one of the ingredients poison in some form or other, and in its natural condition. Here in this case you have had described to you the process by which the fly-paper is made, and the arsenic is mixed with caustic soda, and a chemical change takes place. A chemical compound is formed, which, according to the witnesses for the prosecution, without exception, is not a preparation of arsenic, but a chemical compound and a different substance. I submit the proper meaning of the word "preparation" is something prepared in the ordinary way—mixed in such a way that a new substance is not obtained. That is what Lord Esher pointed to in the judgment which he gave in the case of *Armson*. You will find there that it was distinctly found that the poison was put into the *Powell's* balsam or whatever the case was (it does not much matter), and it remained there in the shape in which it was originally, and no chemical change at all took place. You will find that is specifically pointed out by Lord Esher. "It is said that the defendant did not sell a poison mentioned in the Schedule, because, though nothing has been done to it which alters its chemical nature, it has been mixed with other things." Then he says, "Do you sell it the less because you sell it mixed with other things." I submit to you here, in the first place, that it has been proved to you that what has been put in the fly-paper and what exists there, although something else is dissolved out of it, is the chemical substance known as arsenate or arsenite, and that those are chemical compounds, and not preparations. The language both of Dr. Paul and Dr. Stevenson is particularly clear upon that point, that the word preparation is understood to mean something other than a compound, namely, a medicinal mixture of some sort or other. Therefore, I put it first upon the ground that in the fly-papers nothing is sold except a chemical compound, which is neither arsenic nor one of those preparations. Therefore, in the fly-papers you do not sell any poison within the meaning of the Act. That is my first argument. In the next placemy submission to you is that those things are only within the Act which can be sold in the shape in which the Act permits them to be sold. Take Section 17 of the Act: "It shall be unlawful to sell any poison either by wholesale or retail, unless the box, bottle, vessel, wrapper or cover in which such poison is contained be distinctly labelled with the name of the article and

the word 'poison,' and with the name and address of the seller of the poison" and so on. Seeing that you can only sell these things in that way, it was not the intention of the Act to include within the prohibition any commercial articles which could not be sold ordinarily in the form permitted by the Act. It is absurd to suppose that the Act intended to lay down that wall-paper or printed calico or things of that sort, all of which contain poison in one form or another, should only be sold by qualified chemists. The commerce of the country would be absolutely impossible to be carried on, and you must give the Act of Parliament a reasonable construction just as you do any other document. I remember Mr. Justice Day, in many a case, to have said that the proper way in which to look at an Act of Parliament is to look at the whole of it and see what is the scope of it, and if you find that unreasonable consequences result, then you throw overboard and abandon the interpretation which produces unreasonable consequences.

The Judge: Yes; when those cases come before the court you need not apply the Act to unreasonable cases.

Mr. Danckwerts: Exactly; that is just what I am putting to you.

The Judge: Is it unreasonable with regard to the fly-papers here?

Mr. Danckwerts: If you say fly-papers, why stop at fly-papers? Why should you not go to wall-papers? Why should you not go to cloths and these things, which all contain, as I was prepared to prove to you, this very same poison in an equally soluble form? That is what I wanted the evidence for. In fact, it has been substantially admitted that it is so.

The Judge: You mean if a nurseryman sells a laurel bush that he can be brought under the Act.

Mr. Danckwerts: I do not know what a laurel bush is supposed to contain.

The Judge: Was not Sir Theodosius Broughton supposed to have been poisoned by prussic acid extracted from a laurel bush.

Mr. Danckwerts: I do not know whether that contains prussic acid or not. I think you could not say the nurseryman was not entitled to sell laurel bush because it contained prussic acid in some shape or other, which could be extracted from it. That is only another illustration of the argument I was putting before your Honour. It is ridiculous to say that all these commercial articles shall only be sold by qualified persons, because that is really what the contention of the prosecution would result in. You will have to make the ordinary draper become a qualified chemist, and be registered by the Pharmaceutical Society before he can sell any of these cloths, if the decision which your Honour is asked to give is consequent upon the Act. I submit that that is a perfectly absurd contention, and that the intention of the Act which has been suggested must be wrong. I submit it was intended to cover things which are usually sold by chemists—chemical goods and medicines, and things of that sort—preparations in that sense, containing a poison in its original condition, and preparations in a medicinal shape. All those cases which have been cited to your Honour are purely cases of medical preparations—*Powell's* balsam of aniseed and chlorodyne—which are ordinarily sold by chemists. Therefore with regard to those things, it was not unreasonable to hold that they were within the Act. But what you are asked to do now is to hold that a dry article of this kind, which is not used as a medicine but which is an ordinary commercial article, which has been sold for years, ever since the Pharmacy Act was passed, in every grocer's shop in the United Kingdom for fifty years and more, shall now suddenly be held to be illegally sold if sold by anybody but a qualified person, and sold with all the ceremonies which are attendant upon the sales of poisons. Take for example this well-known fact, that ordinary wall-papers contain arsenic in quantity; stockings contain arsenic in quantity—people have been poisoned by wearing them: people have been poisoned through living in rooms where the walls were papered with paper containing arsenic. They have had severe colds, and that is only another form of poisoning. Is it to be said that all these matters are to be within the Act? Take the 17th Section. Are you only to sell wall-papers if you put them into a box, or bottle, or vessel, or wrapper, or cover, and labelled poison; and you are not to sell it to anybody except to a person you know, and all the ridiculous minutiae which are utterly inapplicable to the sale of wall-papers and commercial articles of that sort. And similarly you must say that wall-paper shall only be sold by chemists. It will be a very fine thing indeed for chemists, and it will be an excellent thing for the Pharmaceutical Society, because I suppose the commercial people of this country will all have to be qualified chemists. It is a ridiculous result, I submit, and therefore the Act could never have been intended to apply to this case. There is no decision which warrants your Honour in so extending the words

of the Act to the sale of ordinary articles sold every day in commerce, and I submit that therefore your Honour ought to dismiss this action.

Mr. Grey: In the first place I submit that in a case of this kind we ought to look at what the Act was intended to put a stop to. Now, I will just quote a few words of Mr. Justice Hawkins in the well-known case of the *Pharmaceutical Society v. Wheeldon*, which is reported in the 24th Queen's Bench Division, page 683. He says: "Nothing to our understandings can be clearer than that the object of the Act was beyond all other considerations to provide for the safety of the public, and to guard, as far as possible, all members of the community from the disastrous consequences, so frequent in occurrence, arising from the sale of poisons by persons inadequately acquainted with their baneful properties, and the whole object of the Act would be frittered away, and the Act itself become a dead letter were we to declare by our judgment that an unqualified assistant can lawfully and with impunity sell any of the poisons to which the Act applies, unless upon each occasion of such sale he acts under personal superintendence of a qualified employer or a qualified assistant." He further says: "The object of the Act under discussion is, however, to prevent the occurrence of such mischief, and that can only be done by rigidly enforcing its provisions. Our judgment, for the reasons above given, is for the respondents." In that case the poison was contained in "Battle's vermin-killer," not a medicine at all. With regard to my learned friend's first argument as to compounds, he seems to base his argument on the fact that only arsenite—

The Judge: I do not think you need labour that. I think it was elicited from Mr. Thompson and Mr. Bevan that this really was a preparation of arsenic.

Mr. Grey: Clearly.

Judgment.

The Judge: As this case is not to rest here, I do not think it really necessary to wait to deliver a considered judgment in this matter. If I thought that would help at all I would have done so, but it seems to me the case is so absolutely clear upon authority that it is unnecessary to do more than decide it without any reservation of judgment at all.

As to the first objection, that the Act does not apply to things unless they are preparations and are dealt with as medicines, that is disposed of by the case that was decided by Mr. Justice Hawkins with regard to the vermin-killer. The vermin-killer case is on all fours with this. If that is so, that disposes of that part of the argument.

Then as to whether it is reasonable or not, and whether or not difficulties may some day arise I really have nothing to do with that. As the world progresses, as the Pharmaceutical Society gets on, and as the trade of the country increases, possibly other preparations will come under the penalties of this Act. I have nothing to do with that or with the possibility that wall-paper may be sold containing poison. First, I have not in evidence that these wall-papers do contain anything, because I would not allow that to be given in evidence. I have quite enough to do to deal with these fly-papers. Well, it is proved to me abundantly with regard to these fly-papers that the pores of these papers are filled up with arsenic, or a preparation of arsenic. One gentleman calls it by one name, and another calls it by another, but what it comes to is, that it is arsenic—what is commonly called white arsenic—and that it is a preparation of arsenic is clear from the fact that one of the chemists told me how he could make it. You boil arsenic in caustic soda, and you get this compound, which is in effect a preparation, or I do not know what it is. To say that Nature may do it sometimes does not take it out of the Schedule of the Act; it is a preparation of arsenic. It is sold by an unqualified person, and I think he comes under the penalty of the Act. Judgment for the plaintiffs, that is, for one penalty.

Mr. Grey: One penalty. This is, as your Honour has heard, a test case.

Mr. Danckwerts: I must ask for leave to appeal.

The Judge: Certainly. I think the authorities lead me to that conclusion. What do you ask for Mr. Grey?

Mr. Grey: As the defendant put it, it is a question of great importance, not only to one class of persons, but to the whole world, and it is a case of great public interest. I would ask you to allow us higher costs in this case, owing to the evidence it has been found necessary to bring.

The Judge: Do you say anything about that, Mr. Danckwerts? Is it difficult in law, or of interest to any class of the community; it is both, I think?

Mr. Danckwerts: It is of interest to the whole of the commercial community, because the consequences of your Honour's decision will be that we shall have to be chemists if we have to sell anything in future.

The Judge: I think you must have costs on the higher scale on the ground that it is a case of public interest.

Mr. Danckwerts: It is a case of a penalty, your Honour, and I think a person who prosecutes for a penalty is not to be considered. He must take what the law gives him, and no more. It is a mere penalty.

Mr. Grey: I submit we are entitled to the full costs.

The Judge: What have I done on a former case?

The Registrar: Given the costs on the amount recovered.

The Judge: Then I will follow that course. There will be costs of counsel and three witnesses.

THE ILLEGAL SALE OF PAREGORIC.

The Pharmaceutical Society v. Ager.

This case also came before the Judge of the Bloomsbury County Court on Tuesday, January 21, Mr. Grey appearing for the plaintiff.

When the case was called, Mr. Moore, solicitor, representing the defendant, said he could not contend, after the decision just given, that paregoric, which his client was charged with selling, was not a preparation of opium, but he was a man who had held positions in two hospitals, and he would have been entitled if he had been in business at the time of passing the Pharmacy Act, to have registered himself as a chemist, and he was an old man.

The Judge said the defendant had either contravened the Act, or he had not. If he had he (the Judge) had no dispensing power, he must give judgment against him notwithstanding he was an old gentleman and had been in two hospitals.

Mr. Moore went on to complain of the defendant being sued for two penalties, and after a little further discussion asked leave to withdraw his consent to the judgment.

Mr. Grey thereupon opened the case. The defendant, who is not on the Register, keeps a shop at St. James's Road, Holloway, where on July 8 and 29 last purchases were made of paregoric elixir, which were analysed and found to contain in one case one-fifth of a grain, and in the other one-sixth of a grain of morphine.

The defendant admitted the sale, and Mr. E. J. Eastes proved the analysis. There was practically no defence, and judgment was given for two penalties and costs, including counsel's fee.

THE ALLEGED NECESSITY OF LATIN IN PHARMACY.

Again and again is it asserted that a thorough knowledge of Latin is essential to a proper pharmaceutical education. This is but another striking illustration of the remarkable power of rooted habit contrary to reason. If it were claimed that the study of the Latin language is a necessary part of the course of mental training which should constitute the preparation for the pharmaceutical education, we might answer that while it is not necessary it is one of the very effective and useful means available for that purpose. But that is not the argument advanced in support of the claim that pharmaceutical students should have a good knowledge of Latin; it is, instead, insisted that the knowledge of Latin is necessary to the understanding of the Latin names used in pharmacy. The answer to that statement is that very few of the latinic names of drugs, chemicals, and preparations, in the pharmacopœias or out of them, are really Latin, and that the most intimate knowledge of the Latin language and literature affords no material aid to their proper interpretation. Less than one-third of all the latinic titles in our Pharmacopœia are of Latin derivation, and a great majority of those that are cannot be understood from any knowledge of the meaning of the words from which they are derived. Prospective students of pharmacy should know that a reading acquaintance with German will be of far greater value to them than any Latin, because our most valuable reference works in chemistry, pharmacy, and pharmacognosy are in the German language. They should know, further, that the study of English, German and mathematics will afford as thorough preparation for the special courses in pharmacy, chemistry and materia medica as can be derived from the study of Latin, and that the correct use of the latinic terms employed in pharmaceutical nomenclature can be easily mastered in a very short time without any previous knowledge of the Latin language or grammar, for all there is of Latin in these terms consists of their terminations, which are latinic in form and declined accordingly.—*Bulletin of Pharmacy.*

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THE SALE OF POISONOUS FLY-PAPERS.

A VERY important point under the Pharmacy Act, 1868, was decided by his Honour Judge BACON at Bloomsbury County Court last Tuesday, viz., that fly-papers containing arsenic must be regarded as poison within the meaning of the Act. As notice of appeal against this decision has been given, it would not be fitting to comment upon the matter at the present stage. It may be well, however, to point out that the effect of this decision is that arsenical fly-papers can only be sold in accordance with the provisions of the Pharmacy Act, 1868, and consequently chemists and druggists selling them must carry out all the formalities prescribed in regard to poisons contained in Part I. of Schedule "A."

THE SALE OF SEIDLITZ POWDERS.

A FULL report appears in this week's Journal (p. 77) of a case under the Sale of Food and Drugs Act, in which the defendant was fined for supplying seidlitz powders "not of the nature, substance, and quality of the article demanded," the argument for the prosecution being that such powders are official in the British Pharmacopœia, and must therefore invariably be compounded in accordance with the formula therein provided. The real position of affairs is that "effervescent tartarated soda powder" was rendered official in the additions to the British Pharmacopœia (1890), a footnote stating that "Effervescent Tartarated Soda Powder is commonly known as 'Seidlitz Powder.'" But seidlitz powders were not in any sense rendered official preparations thereby. Neither the formula nor the footnote have any value whatever as a definition of a legal standard for anything else than the official preparation above mentioned. When that is asked for by the designations adopted in the Pharmacopœia, it must be supplied in accordance with the formula given as in all similar instances. But the theory apparently guiding the prosecution is that in regard to seidlitz powders nothing else than those prescribed in the Pharmacopœia can be lawfully sold. This is an extreme view that can scarcely be supported, whatever other reasons there may have been for the charge that the seidlitz powders were not correctly prepared. As the defendant will probably not allow the case to rest where it is, those circumstances need not be referred to here, and our remarks may be confined to the more general question

whether chemists should be debarred from selling seidlitz powders differing from those of the Pharmacopœia.

It is probably not far short of a century since seidlitz powders came into use, and the following formula for them occurs in the edition of GRAY'S 'Supplement to the Pharmacopœia,' published in 1821: "Soda tartar, ʒij.; sodæ carb., ʒij., in one paper; acid. tart., gr. xxxv., in the other. For half a pint of water." Assuming that this is the original formula, and it was certainly widely followed until quite recently for ordinary seidlitz powders, the B.P. formula for effervescent tartarated soda powder does not exactly represent what many pharmacists have been accustomed to dispense as seidlitz powders. But apart from that aspect of the question, it would be manifestly absurd to make the actual quantity of powder employed for a single dose a standard under the Sale of Food and Drugs Act, yet, as one correspondent points out, the result of the case now recorded is tantamount to a decision that not only must chemicals be pure, but no one must take any but a B.P. dose. He says chemists frequently sell seidlitz powders stronger than the B.P. form, and some customers will not have the mild ones. The quantities of active ingredients are accordingly increased, in relative proportions, to meet a demand which the public is entitled to have satisfied.

Whilst not granting, therefore, that the Pharmacopœia is a general standard for seidlitz powders, it may be added that it would be distinctly inadvisable to make it an offence against the law to supply any medicament in other than one fixed dose. It may, at some future date, be found desirable to introduce the term "Seidlitz Powder" into the B.P. as a synonym, and to fix the relative proportions of the ingredients used, but even then it would be unreasonable to punish chemists and druggists for supplying what their customers desire when they ask for extra strong powders. If the B.P. formula, as it stands, were a legal standard for seidlitz powder, it must be so in its entirety, and penalties should await any heterodox dispenser wrapping the separate powders in other than blue and white papers respectively. Parchment paper or waxed paper, for protecting the powders from damp, would equally be debarred. The next step might then be to fine the purchaser if he dissolved his dose in more or less than "half a pint of cold or warm water." But the contention is altogether too absurd on the face of it. "Seidlitz powder" has been a well-understood term for a hundred years; the preparation is not official, and customers must be free to purchase whatever quantity of it they deem necessary or desirable. Public authorities should suggest to their inspectors and analysts the exercise of a little more discretion and "sweet reasonableness," else they may find themselves a general laughing-stock. Magistrates, too, may find it advantageous to know something of the laws they are required to administer.

MORE ABOUT ARGON.

ON page 74 will be found a report of Lord RAYLEIGH'S lecture at the Royal Institution on Friday, January 17, when he related to a highly interested and fashionable audience the latest information about argon. There was little that is absolutely new to relate, but the facts already known were marshalled in somewhat better order than was formerly possible. The investigation serves as a striking example of the infinitely greater difficulties that now accompany researches into the exact composition of the atmosphere than in the days of PRIESTLEY and LAVOISIER. At the same time, the early investigators

whilst satisfactorily determining the nature and proportions of the more prominent constituents of the air, gave little or no attention to the minute residues which have served to make the work of RAYLEIGH and RAMSAY famous.

OPINION V. LAW IN SCOTLAND.

IN studying the reports of several cases under the Pharmacy Act, heard recently in Scotland, it is difficult to avoid the impression that certain judges are strongly prepossessed in favour of law breakers who infringe Statutes involving the status of professional men. Another instance of this kind is afforded by the proceedings at Dundee Sheriff Court, on Monday last, when an individual was proceeded against for a breach of the Dentists' Act, in that he had unlawfully called himself a dentist. The sheriff appeared to consider it necessary to betray a strong animus against what he was pleased to term the fencing-in of monopolies, other than those of law and of medicine. He was ready to admit that the practice of law and medicine should be restricted, "because a special education and standard of attainment are expedient in the public interest to protect bodily health and organic structure from the experiments of rashness and of ignorance."

He expressed himself, however, as being less certain that the teeth of human beings should be so protected, and thought that the statutory "consecration" of a word like "dentist" to the exclusive use of "the institute of registered dentists or any other trade union, however educated and genteel its membership, was an interference with the free use of the English language, which had no proper justification." The result of such legislation as the Dentists Act, he continued, was to set aside certain professions for certain people, and just as the word "dentist" was "rendered sacred" and reserved for the use of the members of a registered body, a man might be qualified to act as a professor of chemistry, and yet be liable to prosecution if he were to sell goods upon the representation that he was a chemist. Such legislation had for its purpose the preservation of innocent and gullible members of the public from believing misrepresentations that were made, and from trusting themselves to the skill (?) of persons who pretended to be doctors, chemists, and dentists, but who had no proper skill or qualification, and might do a great amount of mischief.

The arguments employed by the Sheriff, when thus divested of extraneous remarks, seem almost to lead him in the opposite direction to that he inclines to. Moreover, the lack of sound logic displayed in the assumption that, though the acquirement of a special education by lawyers and medical men tends to secure the safety of the public, it counts for nothing in the case of dentists and pharmacists, is nothing short of marvellous. The expressions of opinion, too, were quite irrelevant, and the reader is constrained to wonder whether the frequent recurrence of such "preachments" may be taken to indicate that some, at least, of the Scottish judges have missed their true vocation. The ethical displays on such occasions are brilliant to confusion, and one wonders whether the "kirk" has suffered or gained by the loss of such ardent propagandists and advocates of individual freedom. Fortunately, even judges are bound by the law, and must administer it; if not always quite as it ought to be administered, at any rate to the detriment of offenders, though it is remarkable how Scottish caution and economic principles tend to minimise penalties.

ANNOTATIONS.

THE PHOTOGRAPHY OF THE INVISIBLE.—Thus, the *Daily News* styles Professor Röntgen's work, in referring to some confirmatory experiments performed by Dr. Spiess in the "Urania," Berlin, before a large audience. A key and some coins were enclosed in a purse, which was then wrapped up in black paper and laid on a photographic plate. A thick board was placed on top, yet after fifteen minutes' exposure to the so-called "x" rays, the plate on development bore clear representations of the keys and coins. A photograph of a man's hand revealed the presence of a piece of glass that had been imbedded in the flesh for years, and a metal plate that had been broken and welded so that the join was not apparent gave an impression that showed the fracture quite distinctly. M. Poincaré has informed the Paris Academy of Sciences that photographs received by him from Professor Röntgen appeared to afford palpable proof of a theory that traverses present idea on the propagation of light. At Vienna, again, Professor Mosetig is said to have utilised the new process with success in operations. One photograph showed with the greatest clearness and precision the injuries caused by a revolver shot in a man's hand, and the position of the projectile. Another enabled him to ascertain definitely the position and nature of a malformation in a girl's foot. Finally, Mr. J. W. Gifford, of Chard, has exhibited to the Royal Photographic Society a number of photographs taken by Röntgen's process, and these may be seen at the Society's rooms, 12, Hanover Square, London.

ASBESTOS IN THE MANUFACTURE OF BOOTS.—It is proposed to use asbestos in the soles of boots, a preparation of asbestos wool being compressed into thin sheets by hydraulic pressure, the sheets waterproofed on one side by a special solution, and portions inserted into the boots as middle soles. It is assumed that asbestos being a non-conductor of heat, its interpolation into the fabric of boots and shoes, in conjunction with a waterproof material, will have the effect of counteracting the influences of heat, cold, and moisture. It is said also that asbestos-lined boots cannot creak in wear, and are, besides, many times more flexible than boots made in the ordinary manner. In addition, asbestos being a non-conductor of electricity, persons wearing boots thus made may possibly be able to walk over live electric wires in perfect safety.

THE BURNING TREE OF BURMAH.—There has lately been added to the collection of plants at the Botanic Gardens, Madras, a tree, bearing on the under side of its leaves, stings which leave no outward sign when they pierce the skin, though the sensation of pain persists sometimes for months, and is especially keen on damp days, or when the place which has been wounded is plunged in water. The natives in the parts of Burmah where this tree grows are said to be in such terror of it that they fly in haste when they perceive the peculiar odour which it exhales, and if they happen to touch the tree they fall on the ground and roll over and over on the earth shrieking meanwhile. Dogs and horses touched by it run wildly about, biting and tearing the parts of their bodies that have been touched.

SCIENTIFIC ADVISER TO THE TRINITY HOUSE.—Readers of the biographies of the immortal Faraday will remember how much valuable scientific work was performed by him in connection with his duties as scientific adviser to the Trinity House. The post was subsequently held by his successor in other fields, Professor Tyndall, but has been in abeyance since his resignation. It is now, however, to be revived, and the announcement is made that the appointment has been accepted by Lord Rayleigh, of argon fame.

NEW METRIC STANDARDS.—The three new metric standards deposited at the Standards Office, 7, Old Palace Yard, Westminster (see *Ph. J.*, March 9, 1895), are now available for use in the verification of ordinary metric standards, or for the purpose of science or manufacture. They are a "line" standard metre measure (*mètre-à-trait*), a kilogramme weight, and an "end" standard metre (*mètre-à-bouts*). The standards were verified at the Bureau International des Poids et Mesures (Sèvres, near Paris), which was established under a metric convention now maintained by twenty-one different states, including Great Britain. The English representative on the committee which is responsible for the maintenance of the international accuracy of metric standards throughout the world is Mr. H. J. Chaney, Superintendent of the British Standards Department.

SUGAR AND THE TEETH.—In his paper on "Sugar as a Food," read before the British Medical Association, Dr. Vaughan Harley opposes the popular view that sugar ruins the teeth; this, he states, is not borne out by observation. He finds that people who take large quantities of sugar are not more liable to bad teeth, but, on the contrary, have in many cases exceptionally fine ones. He quotes the case of the negroes of the West Indies, who are in the habit of taking large quantities of sugar.

DISTRIBUTION OF SEEDS BY THE WIND.—Bolley records some interesting facts on the distribution of seeds by the wind (*Pop. Sci. News*, xxx., 18). In two square feet of a three-week old and three-inch deep snowdrift, on the ice of a pond ten yards from any weeds, he found nineteen weed seeds, and, in another drift, similarly situated, thirty-two seeds representing nine distinct species. While the wind was blowing twenty miles an hour he poured out a peck of seeds upon the snow crust, and ten minutes after one hundred and ninety-one wheat grains, fifty-six flax seeds, forty-three buckwheat seeds, and ninety-one (American) ragweed seeds were found in a trench thirty rods distant from where they had been poured out.

TITLE FOR MR. THOMAS HANBURY.—Mr. Thomas Hanbury, of La Mortola, Italy, who has formerly borne the title in that country of Commendatore (Commander), has recently been further honoured by the King of Italy, who has conferred upon him the title of Marchese (Marquis). The *Gardeners' Chronicle*, which announces this fact, publishes in the same issue (January 11) a list of plants in flower at the Hanbury Garden, La Mortola, on New Year's Day. This list numbers about four hundred distinct plants.

THE NECESSITY OF PHARMACEUTICAL RESEARCH.—Professor Henry Trimble hits the nail on the head when he suggests in the *American Journal of Pharmacy* that if the time wasted in writing long articles on "Pharmaceutical Education—Degrees and Requirements," and the "Past, Present, and Future of Pharmacy," were turned into the proper channel, and the time lost by pharmaceutical bodies in listening to such "stuff" were otherwise occupied, "the cause of pharmacy would be materially advanced." As he points out, it is quite certain that there is as much necessity for pharmaceutical research work as ever there was. Education is a suitable topic for short papers and brief discussions, but with regard to long dissertations on the past, present, and future of pharmacy, they are distinctly out of place. "Of the past, it may be said, let it be past; of the present we know; and of the future we know nothing, and volumes of theory about improbable possibilities will not help us to know it any better. More laboratory facts and less writing-table theories are the crying necessities of the hour in pharmaceutical science."

ELECTRICITY FOR DENTISTS.—As a source of electricity for motive power and illumination, W. A. Bryson and H. B. Ezard (*Journ. Brit. Dent. Assoc.*) recommend the Poggendorff battery, which shows 2827.5 British thermal units for the consumption of 1 lb. of zinc, as against the Daniell, 1419 B.T.U., and the Grove or Bunsen, 2772.4 B.T.U. Each cell should contain two cut (not compressed) carbon plates, each 5 in. by 1½ in. by ¼ in., and one rolled (not cast) zinc plate, 5 in. by 3 in. by ⅜ in. The zinc should be amalgamated by rubbing with diluted sulphuric acid (1 in 10) and mercury until bright. The solution should be prepared as follows:—Dissolve potassium bichromate, 8 ozs., in water, 120 ozs., and add strong sulphuric acid, 6 fl. ozs. A battery of 10 cells in series will give 15 to 20 volts, but it is more economical to make up a battery of 30 cells—3 in parallel and 10 in series—and alter the connections at the switchboard according as motive power or light is required. It is estimated that such a battery will last without re-charging for 320 to 350 hours, at a cost of about one halfpenny per hour. The initial cost of ten home-made cells is given as fifty shillings. The carbons are, of course, permanent, and the zinc plates will last nine months with ordinary wear and tear.

'ANNALES DE L'INSTITUT COLONIAL DE MARSEILLE.'—A second volume of this work has just been issued, and contains detailed accounts of the natural history, chemistry, and physiological action of the following plants:—*Robinia nicou*, *Adansonia gregorii*, *Quassia africana*, *Pancovia heckelii*, *Tinospora bakis*, *Cocculus leæba*, and *Psidium guava*. These papers are, indeed, monographs upon each plant, and form valuable contributions to the science of medicine, as well as to that of botany. They are, in fact investigations that have been carried out in imitation of the valuable contributions by Dr. Greshoff from the botanical and research laboratories of the Buitenzorg Botanical Gardens in Java, but are even more full in detail.

PHARMACEUTICAL EXAMINATION FIGURES.—At the last examination for chemists and druggists in Great Britain, out of 352 candidates who presented themselves, 122 passed, that is, 34.65 per cent. It is interesting to compare with these figures those recording the results of recent examinations for registered pharmacists at Philadelphia and Pittsburg, Pa., U.S.A. At Philadelphia 11 only out of 87 passed (12.64 per cent.), whilst at Pittsburg the proportion was slightly higher, 9 candidates out of 56 being successful (16.07 per cent.). At this rate, as the Editor of the *American Journal of Pharmacy* remarks, the State of Pennsylvania will not very soon be overrun with registered pharmacists.

GINGER OR ACONITE?—A somewhat remarkable poisoning case, which points the moral that medical practitioners would do well to depute their dispensing to pharmacists, is reported on page 75. Apparently the surgery bottle, supposed to contain essence of ginger, had been filled with a preparation of aconite, and the individual primarily responsible for the error has suffered for the inadvertence of himself or his servant. It may be suggested that another lesson enforced by this melancholy incident is that one should never experiment upon one's self. From the patient's point of view, however, the nemesis in this case was probably both just and complete. It is a distinct misfortune that the accident should have occurred, but the results would have been infinitely more disastrous if a number of patients had died from the effects of similar medicine. In this particular instance the patient was almost as well served as those Eastern monarchs who insist on their medical attendants being the first to try their own remedies.

PROCEEDINGS OF SOCIETIES.

ROYAL INSTITUTION.—The Friday night lectures of the Royal Institution recommenced on the 17th inst., when Lord Rayleigh's lecture "More About Argon" drew a large audience. At the outset the lecturer reminded his hearers that when dealing with the same subject last year, special reference was made only to the isolation of argon by passing "atmospheric" nitrogen over red hot magnesium, which absorbs the nitrogen and leaves a residue of argon. Afterwards, when a modification of Cavendish's old method had yielded a gas which seemed to be identical with the former, it was thought a further step in advance could be taken, which would enable the isolated gas to be directly weighed. This was not done, although mixtures of oxygen and argon had been so treated, which enabled him to get at the weight of the argon by difference, but it was considered advisable, in order to conclusively prove the identity of the two gases, to devise some method of weighing them, and by that means to confirm the conclusions which had already been arrived at by means of spectrum analysis and other methods in this country and abroad. When it was considered that there is only 1 per cent. of argon present in "atmospheric" nitrogen, it would be readily seen that the isolation of the three litres of argon necessary for the research was a serious matter, involving as it did the absorption of 800 litres of the mixture.

Last summer Lord Rayleigh succeeded in reducing this 800 litres of the mixed gases to 10 litres in the laboratory of the Royal Institution, and then took the residue with him to his country house for the purpose of purification. This was found to be very difficult, and many delays were caused by breakage and leakage of the apparatus, and ultimately a modification was rendered necessary, in order to get satisfactory results. It will be remembered that the process described last year consisted in passing alternating currents through a Ruhmkorff's coil, high potential transformers being used, and thence through bent glass tubes filled with mercury and fitted with platinum points, into a large glass globe which contained the mixed gases. Here arrangements were made by which absorption takes place by strong caustic alkali after sparking, until the residue resists the prolonged action of the current, but it was found that it was necessary to use a spray of alkali, instead of a jet as before, so that a thin layer of liquid was formed over the whole inner surface of the globe, which, by intervening between the light of the electric arc and the glass, obviates the liability to fracture. This modification was found to work satisfactorily so long as care was taken to keep the fountain of alkali working steadily clear of the flame, which otherwise became coloured for several minutes. It had been proposed that space might be economised by working with a large arc light in a small globe, but experience showed that under that condition the rate of absorption was very inferior. After working for about two months continuously, the sparking being carried on for six hours daily, it was found that the weights of the gas were practically constant. Calculation of the density then gave 19.940, as compared with 19.941, the figures obtained by Professor Ramsay by means of the magnesium process. The absolute weights and dates of Lord Rayleigh's research are given below:—

May 22	3.2710	
June 4	3.2617	
" 7	3.2727	
" 13	3.2652	
" 18	3.2750	} mean = 3.2746
July 2	3.2741	
" 25	3.2748	
Oxygen = 16		Argon (Rayleigh) 19.940
		Argon (Ramsay) 19.941

The remarkable identity of these figures, obtained by methods which are entirely dissimilar, goes a long way towards proving that the theory of argon being a compound gas is not tenable.

Lord Rayleigh then made some allusion to a process which has recently been described in the *Comptes rendus*, by means of which argon is isolated by heating magnesium and lime together, and passing "atmospheric" nitrogen over the red hot mixture. The advantage claimed for this method is that the calcium attacks the nitrogen more easily than magnesium does, and experience has shown that it may prove more satisfactory than that originally described by Professor Ramsay.

The form of apparatus used for determining the refractive index of argon and helium is a modification of Michaelson's, and consists

of a telescope, in front of which is placed a screen perforated by slits. In order to see the band an eye-piece of very high power is necessary, and in this case a compound microscope was used. The results obtained by the method, which answered very well after some practice, showed that, taking the refractive index of air as 1.000, argon is .961 and helium .146, and from these it has been deduced that the theory of argon being simply an allotropic modification of nitrogen as N_3 cannot be sustained, seeing how nearly the figures for air and argon coincide. Professor Gladstone goes further, and is of opinion that it points to argon being diatomic rather than monatomic, but this suggestion is by no means proved.

Helium is remarkable in being less refractive than hydrogen, although its density is higher, and in the course of his lecture Lord Rayleigh made several statements in regard to the occurrence of this element which are of considerable interest. For some time it had been noticed that after the removal of oxygen from Bath springs there was less argon left in the residue than in "atmospheric" nitrogen, and it was thought possible that this fact was due to the presence of helium in considerable proportion, and recently this idea has been entirely confirmed. To a certain extent the result came as a surprise, seeing that Bath gas which had been previously examined had yielded no trace of helium, but the discrepancy was attributed to the fact that the previous sample had been kept for a year before being examined, and hence the helium might have escaped. Gases from the "thermal" springs at Buxton have also been examined, and it has been shown that they contain as much as 2 per cent. of argon, but the proportion of helium is less than in Bath gas. The experiments demonstrating the spectrum of argon and helium were very striking, the former consisting of an alternating change of blue to red and red to blue, which is characteristic of the substance, whilst that of helium shows a brilliant line D. Efforts have been made to determine the presence of helium in the atmosphere, of which one would expect to find traces, seeing that it must bubble up and escape from some of the hot springs, but, so far, it has not been detected even to the extent of 1 part in 20,000. In this portion of the research Lord Rayleigh's son had done a large amount of work, the method being to work with 60 C.c. of the supposed argon by boiling it down with water to 1.5 C.c., which is then examined by means of the spectroscope after enclosure in vacuum tubes. Determinations of the viscosity of argon and helium have also been made by allowing the gases to flow through capillary tubes under pressure, the relative time occupied being noted, the results obtained showing that argon has a viscosity of 1.21, helium of .96, as compared with air as 1.

A large number of experiments were conducted, and models of the physical and chemical apparatus by which the researches have been conducted were exhibited.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.—On Wednesday, January 15, at Exchange Rooms, Birmingham, the first half of a paper on "Coal in Relation to Pharmacy" was read by H. Jessop. The paper, which dealt more especially with the manufacture of coal gas, and described minutely the principles involved and the apparatus used, was of a most interesting nature. The second portion of the paper, which will have a more direct bearing upon pharmacy, will be read on February 19.

WESTERN CHEMISTS' ASSOCIATION (OF LONDON).—A smoking concert was held at the Westbourne Restaurant, Craven Road, W., by the members of this Association and friends, on Wednesday last. The chair was taken by the President, Mr. J. C. Hyslop, and an attractive programme was offered. A humorous sketch was contributed by the President, and songs, etc., were ably rendered by Messrs. Richardson, Andrews, Clarke, and Trueman. Mr. E. J. Eastes, Secretary to the School of Pharmacy, officiated at the piano.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.—The chemists of the Three Towns and their friends to the number of two hundred and sixty took part in the annual ball held in the Town Hall, Stonehouse, on Wednesday, January 15. Dancing took place in the large hall, where exotics, fairy lamps, and other examples of the decorative art were set off to good advantage. The staircases were draped with crimson cloth and shrubs, and these, commingling with flowers and electric lights, presented a fine effect. Supper was laid in the small hall, Messrs. Risdon and Sons, of George and Bedford Streets, catering with even more than accustomed satisfaction. To Mr. F. W. Pascoe, of Chapel Street, Stonehouse, was entrusted the main idea of decoration, and music was supplied by Mr. Acland's band. At 2 a.m. the company dis-

persed, and all agreed that the hosts had done all things exceptionally well. During the evening there was an interchange of compliments between the local executive and Mr. Michael Carteighe, the President of the Pharmaceutical Society and Chairman of the Committee of the Chemists' Ball, which was being held in London at the same time.

MANCHESTER PHARMACEUTICAL ASSOCIATION.—At the meeting held on January 15, a paper was read by Mr. Wm. Lane on the sale of poisons and of poisonous preparations. He explained how the Pharmaceutical Society came to be entrusted with authority to control the sale and dispensing of certain poisons, and also how many difficulties and trade prejudices had tended to prevent the carrying out of the Pharmacy Act, 1868, in its entirety. It was pointed out, however, that of late the Society has not hesitated to perform fully the duties imposed upon it by the Legislature. The following extract from a recent number of the *British Medical Journal*, on the "Negligent Sale of Poisons," was read with approval:—

"The steps taken during the last two or three years by the Pharmaceutical Society, and also by the police authorities, to enforce observance of the law relating to the sale of poisons cannot fail to be productive of benefit to the public by lessening the danger of accidental poisoning, and even helping to prevent the misuse of poisons for suicidal or other unlawful purposes. The propriety of restricting the sale of poisons, and even of potent medicinal preparations to the hands of persons possessing special knowledge of their dangerous nature is so obvious that the argument against this restriction on the ground that it confers a monopoly of the supply of poisonous articles is not worth consideration. It is not for the benefit of chemists and druggists that the sale of poisons has been placed exclusively in their hands, but solely for the public good. At the same time it is essential that the persons who are authorised by law to sell poisons should be scrupulously observant of the precautions which the Legislature has held to be requisite in dealing with poisons. Labelling and the registration of sales in the poison book ought always to be strictly carried out by them. That this is not always done appears from the evidence given at two recent inquests held by Dr. Danford Thomas and Mr. Braxton Hicks. In one case cyanide of potassium was sold, and in the other a vermin-killer containing strychnine, but neither of the sellers kept a poison book or registered the sales in the manner directed in the Pharmacy Act. This is negligence of a kind that the Pharmaceutical Society would do well to take cognisance of, not only because of the danger attending it, but also because it might be made use of as an argument against the restriction of the sale of poisons to chemists and druggists. Fortunately neglect of this kind constitutes an offence which can be dealt with by the police authorities independently of the Pharmaceutical Society, and it is highly desirable that the provisions of Section 17 of the Pharmacy Act should be made use of when occasion arises."

In conclusion, it was pointed out that the recent decisions in Edinburgh under the Pharmacy Act are of great importance. They bear upon the title of "Chemist," it being decided that this title cannot be used in any retail way of trading or keeping open shop unless the holder of the title be qualified under the Act. The prefixing of a qualifying adjective, as for instance, "Technical" chemist, or "Photographic" chemist does not take the person using such title out of the statutory prohibition. It was also decided that no one but a qualified chemist under the Pharmacy Act may legally sell scheduled poisons. The poisons sold by the defendants in these cases were poisonous chemicals used in photography and included in the schedule of poisons under the Pharmacy Act. Chemists should, therefore, see that in supplying any of these chemicals, which for the safety of the public are under their sole control, that all the regulations as to Part I. or Part II. of Schedule "A," as the case may be, are strictly and regularly carried out. This applies to the poisons in their simple state, in solutions, and in combination with other chemicals.

CAMBRIDGE PHARMACEUTICAL ASSOCIATION.—The annual dinner of the above Association took place on Friday, January 10, as announced, and the assistant honorary secretary, Mr. S. F. Barker, intimates that it was a great success.

ENGLISH NEWS.

POISONING BY HYOSCYAMUS.—The Bournemouth coroner on Monday, January 13, held an inquest on the body of Bessie Jane Childs, 20 years of age, lately in the service of Dr. Turner, of Poole, who died at Role's Hotel on the previous Saturday. Dr. Alfred James Turner, Lynden House, St. John's Wood Road, deposed that he found deceased in bed apparently in a deep sleep. There was no positive sign of poisoning except the partial dilation of the pupils, which might either be caused by a blow or by a drug. He found no trace of poison in the room. He administered restoratives, and deceased apparently revived. The heart recovered its tone, and she breathed much more easily. This continued till six o'clock in the evening, when a change for the worse in her breathing took place. He sent for Dr. Moynan, who could suggest no different treatment. He gave hypodermic injections when he could not administer restoratives between her clenched teeth, and saw her every hour until she died. He made a post-mortem examination with the assistance of Dr. Moynan. The body was fairly nourished, and thoroughly healthy except the general anæmia. There was no trace of pregnancy, nor apparently any cause for natural death. They discovered in the intestines a mass of substance which was either belladonna (deadly nightshade) or hyoscyamus (henbane). He himself thought it was most probably hyoscyamus. The poison must have been self-administered. It could not have been taken at one mouthful. It was probably swallowed in separate lumps. It would take two or three hours before it took any effect. Hyoscyamus or belladonna was sometimes given in small doses to relieve pain or produce sleep, but deceased had taken enough to kill several people. He did not administer an emetic because there was no symptom of poisoning. Had he suspected poisoning he would have given an emetic. The jury returned a verdict that the deceased died from taking a poison, which she knew to be a narcotic poison, but how that poison came into her possession there was no evidence to show. The coroner said that the verdict must read, "That the deceased died from the effect of poison administered to herself as narcotic."

CURIOUS POISONING CASE.—The *Yorkshire Post* reports an inquest held at the Bridlington Police Station on January 17—before Mr. J. M. Jennings—relative to the death of Mr. John Robinson, surgeon, which took place at his residence, Quay Road, on Wednesday. It appeared from the evidence that deceased, who had been in practice at Bridlington for about forty years, left home on Wednesday morning and visited some of his patients, one of these being a young man named Proctor, at Hilderthorpe. This patient he had on Monday supplied with a bottle of medicine, but owing to the agonising effect produced after taking one dose he declined to take any more, and deceased, being sent for, said he would take it away and supply him with some weaker medicine. He sent a second bottle, and, on taking a small dose on Tuesday night, Proctor was again similarly affected, and again declined to take any more. Calling on Wednesday morning, deceased expressed his surprise, as he said the prescription was one he made up every day, and he dare take the whole bottle. As a proof he asked for some water, and took a dose, asking Mr. Priestley (Proctor's father-in-law) to taste it also. They had not taken it long before it became evident that something was wrong with the medicine. Deceased hastened home, and, calling to his housekeeper for some hot water, said, "I have been tasting some medicine outside, and taken poison by mistake." Mr. Webster (next-door neighbour) and Doctors Kirby and Magoris were speedily in attendance, and everything possible was done, but after suffering severe paroxysms for upwards of two hours, Mr. Robinson died. At first deceased told the medical men that it was an extra strong essence of ginger that was in the medicine, but as the symptoms became more marked, his professional knowledge evidently indicated to him what the poison was, as he said, "It was aconite. I am dying." A verdict of "Death from misadventure" was returned. Deceased was 64 years of age, and unmarried.

TO REMOVE INK AND RUST STAINS.—Ink stains: Tartaric acid, 10 parts; alum, 10 parts; water, *q. s.* to dissolve. Rust Stains: A mixture of 2 parts of powdered cream of tartar with 1 part of powdered oxalic acid will remove stains from cotton and linen. The poisonous character of the acid must be noted to avoid accidents in using (*Pharm. Era*, xiv., 174).

IRISH NEWS.

THE DECISION IN THE CLELAND CASE. — Intending chemists, says the *Cork Constitution*, are specially interested in the case of Cleland v. the Pharmaceutical Society, which was decided by the Court of Appeal (see *Ph. J. Supplement*, January 18, p. ix.). "It illustrates at once the technicalities and the anomalies of the law. The appellant had served his full time as an apprentice and assistant to the well-known firm of Gratton and Co., chemists, of Belfast, and complied with the requirements of the Society as regards certificates and other forms in applying to be admitted to a preliminary examination in order to obtain his licence. The Council, however, who seem to keep a sharp look-out for technical flaws, objected to his being admitted on the ground that the establishment was a limited company, whereas the regulations of the Society required that the term should be 'in the sole employment of a firm of legally qualified pharmaceutical chemists.' The court upheld the legal view and dismissed the appeal. This is very hard upon the applicant, who is not charged with being incompetent, and he most probably is as well taught an apprentice as any to be found in the country. But an establishment which is allowed to supply chemicals to the public, through the hands of assistants, is held to be incompetent to grant a certificate which the Society will recognise, although we have no doubt that it employs a qualified chemist to conduct its business. The law as now interpreted amounts to a practical prohibition of limited companies, although, as far as the protection of the public is concerned—and this is the ostensible object of the Pharmaceutical Act—it is more likely to be secured in such an establishment than in a very large number of chemists' shops in the country which are owned by individuals."

MR. JAMES NORTH HARDY, M.P.S.I., had a fire last week in his establishment, known as Beater and Company, 17, Lower Sackville Street, Dublin. It broke out in the oil and colour department, but having been discovered before it had laid a firm hold on the inflammable materials about, it was extinguished before any great injury was done.

THE PRELIMINARY EXAMINATION under the dual examinership was an interesting feature in Irish pharmaceutical affairs this month. The number of candidates, twenty-three, was not as large as usual, many, no doubt, being desirous of seeing the style of questions set before venturing. The feeling about new examiners being more searching than the old, curiously enough appears to have received justification by the result, nine, or about 39 per cent., having been rejected, compared with 23 per cent., according to Dr. Duffey, rejected last year. As in October last, a lady again took first place, while another was also high in the list. It is noteworthy that in each of these cases the candidate was the sister of a pharmaceutical chemist.

FOREIGN NEWS.

ILLEGAL SALE OF MEDICINES.—During the annual tour of the Government Inspectors of Foods, they found, on visiting a grocer's shop at Mezières (Ardennes), a quantity of pharmaceutical preparations, the right of sale of which is solely restricted to pharmacists. The offender was prosecuted, and his plea that the medicines were kept for the convenience of the public (there being no pharmacy in the vicinity) was not considered sufficient justification. A fine of 500 francs was imposed for usurping the privileges of pharmaciens.

THEOBROMINE IN LARGE DOSES.—At the last meeting of the Société de Thérapeutique, Dr. Huchard gave a lengthy account of his experience of theobromine, which he considers has a diuretic action far superior to caffeine in the treatment of cardiac affections. His observations were based on the use of over 2 kilogrammes of the substance, administered without any admixture in the course of his clinical practice at the Hospital Necker, to more than 200 patients. He found that the diuresis was more rapidly produced than with digitalis, commencing after the first few doses, and lasting for three days after the last dose. According to Dr. Huchard, it is not cumulative, does not cause any accidents, not being toxic its use can be prolonged with safety, and it frequently succeeds when all other diuretics have been unsatisfactory. In only a very few cases of albuminuria was the amount of albumin increased. The mode of

administration recommended is in cachets, commencing at 3 grammes daily and increased to 5 grammes. Sometimes a larger quantity (8 grammes) has been given without bad effects. The intolerance occasionally observed can be overcome by beginning with smaller doses and gradually augmenting. It was also found of great service in eliminating the toxic principles by the kidneys in pneumonia and hepatic cirrhosis. In the course of his communication Dr. Huchard expressed his condemnation of the natio-salicylate of theobromine (known as diuretin), which he said is liable to cause serious complications, and possesses toxic properties not to be ascribed to the theobromine. The discussion on this subject, which the members esteemed of great importance, was deferred until the next *séance*.

BETWEEN SCYLLA AND CHARYBDIS!—A pharmacist of a market town in Calabria in the Gerace district has lately had a hard time in trying to fulfil the demands made upon him in his capacity as a pharmacist and as a citizen. He was summoned to the chief town to attend the assizes in the rôle of jurymen, and this causing his absence for some fifteen days, he had to close his pharmacy, as the services of a qualified assistant could not be obtained, and if he had left an unqualified man in his place he would have been liable to a penalty under Article 67 of the Sanitary Law. The chief justice declined to excuse him when appealed to, because there were two other chemists in his native town who could look after the interests of the people in his absence. On his return home, at the close of the Assizes, the pharmacist found that the doctor charged with the inspection of pharmacies had visited his pharmacy, and finding it shut up had sent him a summons to appear before the magistrates on the charge of contravening article 26 of the Sanitary Law, which requires every holder of a pharmacy "to remain in it continuously," and article 67, the latter portion of which says that "anyone who has opened a pharmacy must not shut it without fifteen days' previous notice to the Prefect." Fortunately for him the magistrates were possessed of more common-sense and justice than the pharmacy inspector, and remitted the fine of 100 lire to which the pharmacist had made himself liable in his attempt to satisfy the requirements of Italian justice.

COMPULSORY INSPECTION OF PRESCRIPTION REGISTERS IN SPAIN.—The recent order that pharmacists were to submit their prescription books to the Revenue officials so that it could be ascertained whether the medical men had complied with the law making them write their "recetas" on 10 centimos stamped paper, has been recalled, thanks to a very vigorous agitation instituted by our contemporary, *El Memorandum*, of Barcelona, against inflicting upon pharmacists such an indignity. Most of the other pharmaceutical papers of the Peninsula supported the *Memorandum* in bringing this to pass, amongst others *La Farmacia Española*, *El Boletín-Médico-Farmacéutico*, and *El Restaurador Farmacéutico*.

A NEW MINERAL WATER.—A Royal Decree in the *Gaceta* recognises as of public utility the sulphurous water rich in chlorides, issuing from the spring of Don José Roquetas, in San Andrés de Tona.

A PRINCELY SALARY!—The Municipal authorities of Sitges have thrown open to competition the post of Municipal Pharmacist, whose by no means light or well-defined duties are to be paid for at the munificent rate of 1000 pesetas (£38) per annum, payable in quarterly instalments.

MARAGLIANO'S ANTI-TUBERCULAR SERUM.—The *Gazetta Ufficiale* announces that as Maragliano's serum cannot be freely sold or used until it has received the official sanction of the Superior Council of Health, and as the experiments with it are as yet not completed by the Council, permission is granted in the meantime for its employment and sale, provided that these are under the direct control of Professor Maragliano himself, who is responsible for the correct distribution and employment of the remedy.

NEW DENTIFRICE.—A new paste and powder for the teeth is recommended by the professor of dentistry at Geneva, in cases when the gums recede. The formulæ are, for the powder, strontium carbonate, 15.0 Gm.; flowers of sulphur, 15.0 Gm.; otto of rose, 4 drops; for the paste, strontium carbonate, 6.0 Gm.; flowers of sulphur, 3.0 Gm.; powdered soap, 13.50 Gm.; mucilage or glycerin, *q.s.* to make a paste.

TRICHLOR-ACETIC ACID IN CHRONIC CYSTITIS.—The *Gazzetta Medico di Torino* prescribes 5 or 6 drops thrice daily of a 1 in 5 solution of trichlor-acetic acid to counteract the alkalinity of the urine in chronic cystitis.

IMPURE ICE AND INFECTION.—Another instance of infection conveyed by means of ice has lately been reported from the garrison town of Rennes. It appears that at a regimental banquet the officers seated at one only of the tables partook of ice with their wine, and all of these were subsequently attacked by typhoid fever, resulting fatally in two cases. A journal, the *Bulletin Medical*, investigated the causes of the outbreak, and it now transpires that the ice was procured from a river polluted with a considerable quantity of sewage. Formerly, when the town derived its water supply from this river, enteric fever was very prevalent, but since the introduction of a source of pure water from a neighbouring stream, no epidemic has been recorded.

A SIMPLE PROCESS FOR THE DETERMINATION OF URIC ACID.—The urine to be examined is first treated with excess of carbonate of soda, and filtered to get rid of phosphates. Any quantity (say 20 grammes) of the filtered liquid is then taken and titrated with the following solution:—sulphate of copper, 1.484 gramme; Rochelle salt, 40.0 grammes; hyposulphite soda, 20.0 grammes; distilled water to 1 litre. One C.c. of this solution precipitates 1 milligramme of uric acid, which falls as a white flocculent powder. Care should be taken to add the solution drop by drop, and to stop immediately no further precipitate forms.

THE KEEPING PROPERTIES OF ANTI-DIPHTHERITIC SERUM.—Some hesitation having been lately shown by medical men in using the anti-diphtheritic serum, on account of doubts arising as to its possible deterioration, an application has been made to Dr. Roux by the French Pharmaceutical Association, in order to obtain the inscription of the date of fabrication on each phial of fluid supplied by the Institut Pasteur. Dr. Roux has informed the Association that although no difficulty will be made for exchanging doubtful specimens, he is in a position to state that, as an outcome of recent experiments, the serum now prepared will keep indefinitely, and a notice to this effect will be enclosed with each bottle.

LEGAL REPORTS.

PROCEEDINGS UNDER THE SALE OF FOOD AND DRUGS ACT.

THE SALE OF SEIDLITZ POWDERS.

On Saturday last, at Brentford Petty Sessions, before General Tremeneere, in the chair, and other justices, a long hearing took place of a case involving an important point with regard to the preparation of seidlitz powders.—Mr. Ernest Frank Strickland, chemist and druggist, of the Broadway, Ealing, trading as "Bruce's Drug Stores," was summoned under the Food and Drugs Act for having sold to Walter Tyler, an inspector under the Act, seidlitz powders not of the nature and substance demanded.—Mr. F. Walker, solicitor, defended.

On the 18th ult., Wm. Randall, an assistant to the inspector, asked for and was served with seidlitz powders, for which he was charged 10½d. He handed them to the inspector, who put the usual questions to the defendant as to division of the sample. Defendant refused to have it divided, and it was sent in its entire state to the analyst, who certified that the blue packet analysed contained 204 grains of a mixture of Rochelle salt and bicarbonate of soda, while the proper quantity, by the formula of the British Pharmacopœia, should be 160 grains. One packet contained 210 grains. The white packet contained an average of 46 grains of tartaric acid, the proper quantity being 38 grains.

For the prosecution it was urged by Inspector Tyler that the British Pharmacopœia was intended by law to contain the formulæ for all medicinal compounds, and was to be regarded by all chemists as the standard they must observe. He contended that the Pharmacopœia must be taken in conjunction with the Sale of Food and Drugs Act, and cited *White v. Bywaters*, 51 J.P., 821, as proving his contention.

Evidence of the purchase having been given,

Mr. Edward Bevan, official analyst to the County of Middlesex, was called to prove his certificate. He considered that any one

asking for seidlitz powders should have them prepared according to the formula of the British Pharmacopœia.

Cross-examined, he admitted the words "seidlitz powder" were not applied to the formula. The words "effervescent tartarated soda powder" were, and a foot-note in the Pharmacopœia stated this was commonly known as seidlitz powder. He considered any deviation from the formula would be wrong. He found the ingredients pure. There was nothing injurious, but if he were ordered to take a grain of anything, and a chemist gave him two grains, he should think that would be wrong, even if the substance were not injurious. He received the whole packet of powders, and divided it into two, taking six of those in blue papers and six of the others.

Mr. Robert Watts, of the Apothecaries' Hall, was also called. He considered the purchaser was prejudiced if he obtained the powders in question as seidlitz powders.

Cross-examined: If chemists sold two or three or more kinds of seidlitz powders that was wrong. He would not consider he was committing an offence in supplying stronger powders if asked for them. Nor would he regard it as an offence to supply seidlitz powders made up with flavourings of any kind. If, however, a man asked for seidlitz powders, he should get those in accordance with the British Pharmacopœia. If a man wanted extra strong seidlitz powders he would not regard it as an offence if the chemist went outside the formula.

Mr. Walker submitted that no criminal offence had been disclosed and that the prosecution was only an attempt to make the British Pharmacopœia a standard under the Sale of Food and Drugs Act, which was contrary to the recommendation of the Royal Commission. He submitted, further, that seidlitz powders were not mentioned in the Pharmacopœia. That term might mean the effervescent tartarated soda powders official in the Pharmacopœia, or something different, and unless the chemist were asked for this compound, he was not bound by the Pharmacopœia. His client, in common with other chemists, had two kinds of seidlitz powders, sold at 7d. and 10½d. per box, and he asked the inspector's assistant if he would have the best, to which an affirmative reply was received. He was therefore asked for a special article and got it, and it was in evidence that a chemist did no wrong in supplying a special article when asked to do so. Further, he submitted the analyst had not complied with the directions of the Act as to dividing the samples. He should have halved each separate packet, so that the defence might have had a chance of analysing the remaining half of the actual packet dealt with. As he did not reserve any of the contents of the blue and white papers analysed, the defence had no chance of checking the analyst's results.

The defendant, sworn, said he had two kinds of seidlitz powders one kind being labelled "Hygienic." Randall asked for the best, and witness concluded he wanted the higher-priced.

Mr. Sharpe (on the Bench): But how did he understand the word "best"? He might have thought it meant newest or freshest drugs?—All my drugs are fresh. It is usual to have two strengths.

Cross-examined: If a medical man sent to him for seidlitz powders he should send the strongest, because they were the most asked for.

Mr. Tyler: In the face of the British Pharmacopœia?—If a doctor wanted one of those he would use the official Latin term.

Evidence was given as to the different strengths of seidlitz powders made up to order by the Viking Food and Essence Company, who supplied the defendant.

Dr. Wm. Hy. Symonds, past examiner to the Pharmaceutical Society, stated that the term seidlitz powder was not an official one. He considered a variation of 5 grains would have no appreciable effect on a patient. An extra wineglass of water with a seidlitz powder would do as much.

Mr. Allen Brown (on the Bench): Do you consider an excess of 44 grains would make a difference in a young person?—It would then be less than a dose of tartaric acid.

Further evidence in support was given by Dr. Herbert Neville, and Mr. David Peters, chemist and druggist.

The witness Randall, re-called, swore no question was asked him as to the quality of the powders he wanted.

The Bench, after deliberation, found that the inspector's assistant did not ask for "best" powders. They had great doubt as to the meaning put on the word best, which need not necessarily mean the strongest, but might have implied the purest. On all the other points they agreed, and they fined the defendant 5s., and £2 2s. costs.

Mr. Walker asked for a case, and was directed to put his points into writing.

THE PRESENCE OF COPPER IN PRESERVED PEAS.

At Southwark Police Court, on Wednesday afternoon, the case of A. A. Grist, Sanitary Inspector of St. Savion's District Board of Works, against Mr. H. C. Summers, trading as George Mence Smith, at High Street, Borough, and also many other places, for selling preserved peas mixed or coloured with an ingredient injurious to health, viz., 8/10ths of a grain of copper per pound of peas, whereby the defendant became liable to a penalty of £50, again came on for hearing.

The previous hearing of this case was fully reported under the above heading in our last week's issue (see *ante*, p. 59).

Mr. Frank Dodd, barrister, again appeared to prosecute, and Mr. Bonsey, barrister, defended.

Dr. Fredk. John Smith, called for the defence, stated that he had had considerable experience in relation to the adulteration of food and toxicology. He had been informed of the quantity of copper in the peas. In the first place, it would not render the food injurious to health. He knew of no case of recorded poisoning through the constant use of such peas. He had looked up all the records of the London Hospital, where they get a large number of cases of lead poisoning, but had failed to find a single case of copper poisoning. Copper is used medicinally in cases of diarrhoea. It is used as an emetic. It has also been given as a tonic. He thought that $1\frac{1}{2}$ grains of copper sulphate per day, given in three doses of $1\frac{1}{2}$ grain each, could be taken without fear for a considerable period. Copper taken even in a soluble form would pass off by the bowels a good deal, and in a very short time. If a person took one-fifth of a grain in 4 ounces of peas, as in this case, a large portion of the copper would pass off and not get into the system.

Cross-examined by Mr. Dodd: Witness agreed that copper sulphate was poisonous, but only in large doses. He was aware that the United States Government prohibited preserved vegetables being sold containing copper equal to more than 3 grains of copper sulphate per pound, and that in such a case a printed label signifying the same was required to be attached on the bottle. Regarding the quantity of copper that would not be injurious to health, witness said what he meant was that the amount in these peas was certainly not injurious to health. He could not suggest any purpose of putting copper in preserved vegetables other than that of preserving their green colour.

Dr. Biss, Physician to the Middlesex Hospital, stated that in the whole of his experience he had never seen a case of chronic copper poisoning. He thought it quite possible that if a person were to eat a pound of the peas he might have feelings of discomfort afterwards, but not as the effect of the copper present. The witness had searched the *Lancet* and also the *British Medical Journal*, in which he had found a large number of cases of poisoning, but failed to find one single instance of chronic copper poisoning or of injury from preserved peas.

Dr. Hime, of Bradford, corroborated both the previous witnesses as to the non-poisonous qualities of the copper in preserved peas. During the whole of witness's experience he had neither heard, nor read of a case of injurious effects from such peas. He had examined the authorities with regard to chronic copper poisoning, but had found nothing whatever that was evidence to show there had been any such thing. He had also looked through several medical journals with the same result. With regard to the introduction of copper into preserved peas he was of opinion that it was merely done to fix the original green colour and not to give them the colour, but was, in any case, perfectly innocuous.

In cross-examination the witness was taken through a number of books written by gentlemen whom he admitted were eminent medical men, whose opinions were different from those of the witness, and he stated that the quotations were either copied from other books, or founded upon misconceptions.

Evidence was also given by Dr. Walter Winter, in corroboration of the evidence given by the previous witnesses, and by Mr. Rowson, an importer of preserved vegetables.

The inquiry was again adjourned until Wednesday next, Mr. Bonsey intimating that he had one further witness to call before addressing the Court for the defence.

WHITE FABRIC AND FRUIT STAINS.—For white cotton or linen use fumes of burning sulphur, warm chlorine water. For coloured cotton or woollens, wash with tepid soap-suds or ammonia. For silks the same with gentle rubbing (*Pharm. Era*, xiv., 174).

BOTANICAL NOTES.

FERMENTS IN THE MANUFACTURE OF ARRACK.—F. A. F. C. Went and H. C. Prinsen have investigated the nature of the organisms of the substance known as "raggi," which is used in Java for the fermentation of arrack from rice-starch. Among other microbes they find an interesting organism, which they name *Chlamydomucor oryzae*. It consists of a much branched but unseptated mycelium, and possesses the property of converting amylo-dextrin and ordinary dextrin into dextrose. It is aerobic, coagulates milk, does not invert saccharose, and does not ferment cogluse. It may be obtained either from rice-meal or from the sugar-cane. The authors suggest that it may be a stage in the cycle of development of *Rhizopus oryzae*. In the same material was found also another new organism, which they name *Monilia javanica*. It has the power of fermenting dextrose, saccharose (which it first inverts), raffinose, maltose, and levulose, but not lactose. A true *Saccharomyces*, to which they give the name *S. vordemannii*, was also found, and this appears to be the principal agent in the manufacture of arrack (*Med. van het Proofstat.*, in Snikerriet, West Java, 1894; from *Bot. Zeitung*, 1895, 2te. Abtheil, p. 143).

FORMATION OF CHLOROPHYLL AND STARCH.—A very extended series of observations on the mode of formation of starch grains and chlorophyll bodies in plants has led M. E. Belzung to the following general conclusions. The first process which takes place in the embryo is the formation of starch, the result of the activity of the protoplasm, the chlorophyll body being a secondary formation. With but few exceptions the chlorophyll pigment is diffused through the protoplasm of the young embryo. The substratum of the future chlorophyll body—leucite or plastid—is always fully formed by the time the seed arrives at maturity; the protoplasm has always a reticulate structure; it is the protoplasm of the amyloferons vacuoles which constitutes the chromatophore or leucite. Those starch grains which are destined to constitute the reserve food material in the ripe seed are an exception to this rule, and increase in the meshes where they are originally deposited. In proportion as the embryo becomes green and the mass of green corpuscles more abundant, the starch grains are resorbed; they form a part of the material for building up the green chlorophyll grains. In adult green organs, especially leaves, the starch grains which are formed in the light in the chlorophyll bodies are a result of the assimilating power of these latter, being one of the products of the substance itself of the chlorophyll bodies, a kind of secretion from the green substance. The resorption of the chlorophyll, which in leaves takes place only at the period of the autumnal fall, is, on fruits, effected almost entirely before they ripen. The two essential phases in the life of a plant—the embryonal phase, during which the green cell is built up at the expense of materials which it has not elaborated, and the adult phase, in which its formative activity is manifested by new embryonal conditions—constitute a remarkable example of organic reversibility (*Morot's Journal de Botanique*, vol. ix., 1895).

PROTEIDS OF WHEAT.—Miss M. O'Brien has an exhaustive paper in the *Annals of Botany* (vol. ix., 1895, p. 171) on the distribution and the functions of the aleurone-grains in wheat. She supports the theory of Weyl that gluten is formed by the action of a ferment on the myosin, which is the chief proteid of wheat. The aleurone-grains do not, in the Gramineæ, present that degree of differentiation in which the mineral matters are sharply separated off as a globoid from the proteid constituents of the grain, only the membrane is here differentiated. The theoretical view is advocated of there being in flour one mother-substance which readily undergoes hydration, giving rise to gluten.

THE GERMINATION OF OILY SEEDS.—According to M. Leclerc du Sablon, the reserve substances of oily seeds, whether they are stored up in the embryo or in the endosperm, consist chiefly of oil and aleurone; starch is but rarely found in them. In the species examined the proportion of oil decreases regularly during the period of germination. By the action of a diastase the oil is transformed into fatty acids without any separation of glycerin. During germination these fatty acids, instead of accumulating, are themselves transformed into carbo-hydrates, especially into those belonging to the group of saccharoses. This saccharose is again converted, by the action of a diastase, into glucose, which is directly assimilated by the plant. Starch is also temporarily present as an intermediate product between oil and glucose. Starch and oil, as reserve substances, give rise to the same assimilable products during the germination of the seed (*Bonnier's Revue Générale de Botanique*, vol. vii., 1895).

NEW REMEDIES.

[The notes given under this heading embody recent suggestions in therapeutics. They cover both new drugs and preparations, and old ones under new aspects. The word "parts" is used to represent parts by weight, both for solids and liquids.]

CREOSOTAL OR CREOSOTE CARBONATE.—Chaumier confirms the favourable reports of others on the non-irritant action of creosotal and its value in the treatment of the earlier stages of tubercule. He attributes the usefulness to the fact that, being deprived of irritant properties, it may be given in large doses, up to as much as 20 grammes per diem. He gives it mixed in milk or in cod-liver oil, or else in capsules (*Rev. de Thérap. Méd.-Chirurg.*, lxii., 768).

CUTOL IN SKIN AFFECTIONS.—Under the name of cutol, a combination of alumina, boric acid, and tannin, has been introduced for various affections of the skin. It forms a brownish insoluble powder, which, however, becomes soluble when combined with tartaric acid, and is then called "soluble cutol." Cutol is of great service in the treatment of moist eczema and pruriginous affections. It is prescribed in the form of an ointment; Cutol, 4 parts; olive oil, 10 parts; wool-fat to produce 40 parts. When the secretion has disappeared, the following dusting powder is substituted:—Cutol, zinc oxide, and talc, of each equal parts. Soluble cutol is useful in burns, and a 15 per cent. solution may be used in catarrhal metritis. Hæmorrhoids are treated with an ointment containing 15 per cent. of cutol, and for chilblains the following application is recommended. Cutol, 3 parts; oil of sweet almonds, lanolin, of each 15 parts; orange flower water, 10 parts (*Rev. de Thérap. Méd.-Chirurg.*, lxii., 769, after *Therap. Monatse.*).

EUROPHEN AS AN IODOFORM SUBSTITUTE.—Saalfeld finds that europphen is preferable to iodoform for the dressing of varicose ulcers; for this purpose he uses a mixture of 1 part europphen and 2 parts boric acid. In intertrigo of infants a powder of talc with 5 to 10 per cent. of europphen, and sometimes also 5 per cent. anhydrous wool-fat, effects a rapid cure, even where the usual remedies have failed. Excellent results also follow its application to soft chancres, the powder being applied three or four times a day. Ulcerated gummata are rapidly modified under the influence of the following ointment: Europphen, 3 to 6 parts; olive oil, 3 parts; wool-fat, 30 parts (*Rev. de Thérap. Méd.-Chirurg.*, lxii., 770, after *Therap. Woch.*).

TANNIGEN IN INFANTILE DIARRHŒA.—Tannigen is recommended as acting both as an astringent and as an intestinal antiseptic. Moncorve has given it in doses of from 25 centigrammes up to 2 grammes in twenty-four hours, divided into four or five doses. It has proved equally serviceable in chronic as in acute cases (*L'Union Pharm.*, xxxvi., 548).

PICRIC ACID COTTON AS A DRESSING FOR BURNS.—Delpech has prepared a picric acid cotton-wool for conveniently applying that body to the surface in the case of burns. It is simply made by steeping absorbent cotton in a saturated solution of picric acid and drying. In dressing burns the wool is damped with water and applied wet; the moist dressing should be renewed from time to time. As Thiery has previously recorded, solution of picric acid at once relieves the pain of a burn and promotes rapid healing (*L'Union Pharm.*, xxxvi., 552).

TRIFORMOL AS AN INTESTINAL ANTISEPTIC.—Under the name of triformol, trioxymethylene has been introduced as an intestinal antiseptic. It is a light white substance, soluble in boiling water, and in alkalis. It is stated to be as active an antiseptic as β -naphthol. It large doses of 3 to 4 grammes it has a purgative action, but in small doses it produces constipation (*L'Union Pharm.*, xxxvi., 534, after *Schw. Woch. fur chim., pharm.*).

BELLADONNA EXTRACT IN DENTAL NERVE PASTE.—Diack considers morphine in nerve paste ineffective, likewise tannin, aristol, cocaine, and clove oil. He uses extract of belladonna, 2 parts; arsenious acid, 1 part; made into a paste with glycerin. The belladonna acts on the sensitive nerves, and no pain follows the application of the paste (*Brit. Journ. Dent. Sci.*, xxxviii., 1089).

NOTES AND QUERIES.

[The information given in this column includes both notes of practical interest to pharmacists, and replies to queries which seem to possess sufficient interest to readers generally. Readers requiring working formulæ for special preparations should intimate their wants to the Editor, who will be pleased to assist them to the best of his ability. The word "parts" invariably indicates parts by weight.]

BLEACHING BONES AND IVORY.

To make bones a good white colour, the process adopted for bleaching ivory should be adopted. First treat them with strong solution of washing soda to remove grease and open the pores. Then immerse in hydrogen peroxide solution, to which one-twentieth part of strong solution of ammonia has been added, and maintain at a moderate temperature for as long as may be found necessary (24 to 36 hours or more). On removal from the liquid be careful to dry slowly to prevent cracking. [*Reply to J. T. Davy.*]

HAY'S WASH.

The formula for this preparation is as follows:—R, Zinci sulph., gr. ij.; aq. rosæ, \mathfrak{z} i.; tinct. lavand. co., q.s. to colour. Mr. A. McKellar, who sends this information, does not know the origin of the preparation, but states that it is in common demand in Glasgow. [*Reply to Lavender.*]

DISPENSING DIFFICULTY.

Several correspondents point out that "Puzzled" has probably misread the prescription he wrote about (*ante*, p. 60). The third ingredient should probably read "Solut[io] solv[entis] miner[alis]." The dose ordered in the prescription should afford some corroboration if this solution of the problem be correct. [*Reply to Puzzled.*]

REMOVAL OF FACE WRINKLES.

You might try anointing the face with wool-fat, then holding for some time over the vapour given off from boiling water. Keep the head and vessel containing the water covered with a woollen blanket, and gently knead the muscles with the fingers during the operation of steaming. Finally, after wiping the face, apply the following wash:—Alum, 30 grains; glycerin, 2 ozs.; perfumed spirit, $\frac{1}{2}$ oz.; water to 10 oz. Subsequently employ this three times a day and always use a little after washing, applying before the skin is quite dry. [*Reply to Ajax.*]

TO SILVER GLASS.

The surface of the glass is thoroughly cleansed, and then rubbed with chamois skin and bole, all dust being afterwards removed. To 100 C.c. of a 10 per cent. solution of silver nitrate add, drop by drop, solution of ammonia until the precipitate is just dissolved, taking care to avoid a large excess of ammonia. Dilute this solution to 1 litre. Then a 10 per cent. solution of formaldehyde is prepared (the commercial formalin being about 40 per cent.), and one volume mixed with two volumes of the silver solution (*Pharm. Era*, xv., 14). The mixture is poured at once on the glass surface, which is kept at from 15° to 19° C. In from five to ten minutes the silver will be deposited in a bright metallic film. This may be protected by a transparent varnish.

TO CATCH EARTHWORMS.

According to *La Nature*, earthworms may be obtained in any quantity without the labour of digging, by watering the ground with a solution of sulphate of copper of a strength of 1 per cent. This will bring the worms to the surface almost immediately. Soap suds are said to produce the same effect.

ARSENIC FOR SUBCUTANEOUS INJECTION.

Von Ziemssen states that Fowler's solution is not suitable for hypodermic use, since it causes pain and inflammation. He recommends a 1 per cent. solution of arsenic in the form of sodium arsenite, prepared by boiling 1 gramme of arsenous acid with 5 C.c. of normal sodium hydrate solution until completely dissolved. The liquid is then diluted to 100 C.c., filtered, sterilised, and kept in small tubes with cotton-wool stoppers, each containing 2 C.c. The initial dose is 0.25 C.c., once daily; after a few days two injections are made daily, and the dose is gradually increased until the whole syringeful is injected twice daily (*Quart. Med. Journ.*, iv. 187, after *Deut. Arch. Klin. Med.*).

NOTICES TO CORRESPONDENTS.

All Articles, Letters, Notices, and Reports intended for publication in the Journal, Books for Review, and communications respecting Editorial matters generally, must be Addressed "Editor, 17, Bloomsbury Square, London," and not in any case to individuals supposed to be connected with the Editorial Staff. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

ANY INSTRUCTIONS from Members, Associates, and Students of the Pharmaceutical Society, with reference to the transmission of the Journal, should be sent to the Secretary—Mr. Richard Bremridge,—17, Bloomsbury Square, London.

BUSINESS communications—including advertisements, orders for copies of the JOURNAL, and instructions from Subscribers respecting transmission of same—must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London. Cheques and money orders should be made payable to "Street Brothers."

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

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

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

QUERIES addressed to the "Editor" will be replied to in the Journal as early as possible after receipt; answers of sufficient general interest being given under the heading "Notes and Queries." The Editor cannot undertake to reply to queries through the post.

REPRINTS of articles cannot be supplied unless authors communicate with the Editor before publication.

LETTERS.

WHITE WINE VINEGAR AND ACET. DEST.

MR. ARTHUR DECK, of Cambridge, writes as follows:—"Notwithstanding Mr. B. S. Proctor's scientific lecture on 'Vinegar' in the Journal, I still maintain Mr. Octavius Corder is quite correct in his remarks (*vide Ph. J.*, January 11). When white wine vinegar is asked for, diluted acetic acid (made by destructive distillation of wood) ought not to be sold for it, but distilled malt vinegar, or French wine vinegar, is the correct thing. There is an article distilled from malt vinegar sent out by the wholesale pickle makers, quite white, perfectly pure, free from wood acid, of a nice aroma, and an elegant ingredient in salad with only plain oil. White malt vinegar is certainly more of a vinous product than diluted pyroligneous acid, which is only fit for external use, and should not be used for dietetic purposes. I cannot help thinking the magistrate's decision in the white wine vinegar case was a very wise one."

COMPOUND COLOCYNTH PILLS AND PHARMACOPŒIA REVISION.

MR. THOMAS DUNLOP, of Glasgow, says Mr. Wm. Lyon, in his note on compound colocynth pills, published in the Journal of January 18, confirms the statement he made a year ago (*Ph. J.*, January 19, 1895) as to "the suitability of aromatic spirit of ammonia as a massing agent." He differs from him, however, in his opinion that because "the B.P. pill is very frequently (!) prescribed along with calomel," that "constitutes an argument against it"—"sal volatile as a massing agent"—"being included in a new Pharmacopœia." He continues, "The Pharmacopœia has to deal with official, not with private formulæ, and the pharmacist when called upon to dispense pil. coloc. co. c. calomel must show his intelligence by doing so *sec. art.* During the past twenty-five years I have not once dispensed this combination, so that if it is 'very frequently prescribed,' my experience must have been very exceptional. Moreover, the 'usefulness' of all pill excipients is restricted."

ANSWERS.

JAMES HOWORTH.—Please address all communications intended for publication in the Journal to the Editor, according to instructions printed every week at the head of this page.

W. J. DODRIDGE, JUNR.; H. LUCAS.—Ordinary advertisements must not be sent to the Editor. See instructions at head of page.

GRIMBLE AND KENT.—Paper received, with thanks.

W. SIMONSON.—The general indexes to the *Pharmaceutical Journal* that you possess are the only ones that have been published. The fact that there is no general index to the last seventeen volumes of the third series is felt by many to be an inconvenience, and though work is now being done in connection with the preparation of such an index for those volumes, no arrangements have been made for printing and publishing it. Possibly it might be published by subscription, but everything will depend upon the number of readers requiring it.

H. GOHRT.—See reply to J. T. Davy on page 79.

W. H. D.—Many thanks for your suggestion.

LIN. SAPONIS.—The "anti-ferment" for preserving cordials, etc., is a strong aqueous solution of sodium salicylate, containing a large proportion of acetic acid but no boric acid.

OBITUARY.

AMES.—On January 1, at Bloemfontein, O.F.S., South Africa, John Charles Ames, Pharmaceutical Chemist. (Aged 27.)

DAVIDSON.—On January 11, William Davidson, Chemist and Druggist, Aberdeen. (Aged 65.)

HOLLOWAY.—On January 13, Joseph Holloway, Chemist and Druggist, Sheepshed. (Aged 59.)

HOLMES.—On January 16, Joseph Holmes, Chemist and Druggist, Leeds, at his residence, Claremont, Garforth. (Aged 53.) Mr. Holmes devoted much time to public business, and for some years past had filled the office of Alderman in the West Riding County Council.

PUBLICATIONS RECEIVED.

THE POISONOUS PLANTS OF THE VICINITY OF NEW YORK CITY.

By PROFESSOR HENRY H. RUSBY, M.D. Being a report of a lecture delivered to the Alumni Association of the College of Pharmacy of the City of New York. Pp. 19. From the Author.

MINUTES OF THE GENERAL MEDICAL COUNCIL, AND OF ITS COMMITTEES, from November 25, 1895, to December 2, 1895, with thirteen appendices. Pp. 481. (London: Spottiswoode and Co., 54, Gracechurch Street, E.C., 1895.) From the Registrar.

THE PHYSIOLOGY OF THE CARBOHYDRATES. An Epicriticum. By F. W. PAVY, M.D., LL.D., F.R.S., F.R.C.P. Pp. 141. Price 3s. 6d. (London: J. and A. Churchill, 11, New Burlington Street, W., 1895.) From the Publishers.

TWENTY-SIXTH ANNUAL REPORT OF THE STATE BOARD OF HEALTH OF MASSACHUSETTS. Pp. 892. From the State Board of Health, State House, Boston, Mass., U.S.A.

ESSENTIALS OF VEGETABLE PHARMACOGNOSY. By HENRY H. RUSBY, M.D., and SMITH ELY JELLIFFE, M.D. Pp. 149, with 560 illustrations. Price \$2.50. (New York: D. O. Haynes and Co., 1895.) From the Publishers.

POISONING CASES AND INQUESTS.

Cyanide of Potassium.—William Christison, aged 32, of 155, Eglinton Road, Plumstead, died from the effects of cyanide of potassium, supposed to have been taken by deceased in mistake for his medicine. At the inquest held on January 1, the jury returned a verdict to the effect "that deceased died from the effects of poison, but that how the poison was administered there was no evidence to show."

Laudanum.—Mary Tolley, aged 42, of 42, Newcastle Street, Nottingham, died on January 2, from the effects of inadvertently drinking an overdose of laudanum. Verdict: "Deceased died from an overdose of laudanum taken by misadventure."

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs. Allen, Alder, Adams, Ames, Bramley, Blythe, Browne, Barry, Bienvenu, Bindloss, Bayley, Bird, Burge, Blinkhorn, Bellamy, Blackburn, Bentley, Capit, Carter, Cracknell, Cooper, Clarke, Dunlop, Davy, Deck, Dyer, Davis, Dispenser, Elliott, Eastman, Ekins, Ellis, Forrester, Fragner, Fletcher, Gohrt, Hearn, Holmes, Hill, Henry, Johnston, Keech, Kerr, Line, McKellar, Maiden, Maish, Peck, Pryse, Randall, Reynolds, Stratton, Sedge, Smith, Thomas, Thompson, Tully, Williams, Westmacott.

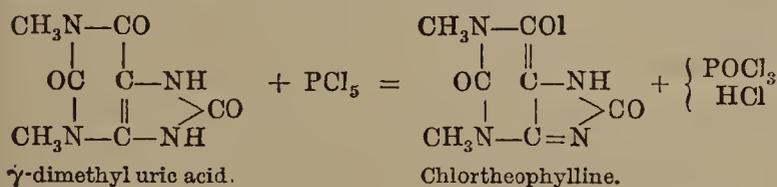
“THE MONTH”

Synthesis of Caffeine.

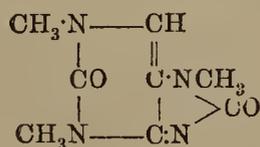
Since the discovery of caffeine in 1821 by Runge and Pelletier, its subsequent identification with theine by Berzelius and Dobet, and its analysis by Liebig, the relation of this substance to uric acid was indicated by Rochleder, and more recently Strecker showed its relation to theobromine. E. Fischer then established the relation between these two bases and xanthine. Since that time theobromine has been represented as dimethyl xanthine, and caffeine as trimethyl xanthine. But notwithstanding the evident close relation of uric acid to xanthine, all attempts to convert uric acid into that substance have been unsuccessful. Professor Fischer now points out that this is due to constitutional differences which are shown by the following formulæ:—



The difference between these two compounds consists not only in the number of oxygen atoms, but also in the situation of the double linkage and of the hydrogen atoms. In the methyl derivatives of uric acid hitherto known, the structure of the carbon chain has remained unaltered, while hydrogen and oxygen have been removed from the alloxan nucleus. Fischer and Ach have now succeeded in replacing both hydrogen atoms of the alloxan nucleus by methyl and have thus obtained γ -dimethyl uric acid, convertible by means of phosphorus oxychloride and pentachloride into the chlorine derivative of theophylline, as shown below:—



By reduction with hydriodic acid chlortheophylline is converted into theophylline, and this yields by methylation caffeine:—



At present this synthesis does not admit of practical application, as it involves too many operations. But if it should prove possible to methylate uric acid directly, so as to substitute two methyl groups in the alloxan nucleus, the case will be different, and the synthetic production of caffeine may become of technical value (*Berichte*, xxviii., 3135).

Action of Alkalies on Sugars.

Loboy de Bruyn and van Ehenstein, in studying the behaviour of glucose, fructose and invert sugar towards alkaline salts of weak acids, have found that very minute proportions of alkalies affect the rotation of several carbohydrates very materially. The influence thus exercised indicates a certain degree of transformation, for glucose

and fructose give as a result syrups which are almost inactive, and galactose one for which the value of $[\alpha]_D$ is about $+30^\circ$, while the respective normal values for $[\alpha]_D$ are $+53^\circ - 91^\circ$ and $+81^\circ$. As the general result of a large number of experiments, it has been ascertained that this change is due to a reciprocal transformation of the different sugars into each other. This has been established in the case of glucose, fructose, and mannose. Each of these sugars is changed under the influence of hydroxyl ions, alkalies, etc., into the other two (*Berichte*, xxviii., 3078).

Production of Ozone.

Brink has shown that oxygen prepared from potassium chlorate and manganese peroxide in the ordinary way contains ozone. When oxygen gas is passed over manganese peroxide heated to 400°C ., or even to redness, ozone is also formed and the oxides of cobalt, silver, nickel, mercury, lead, chromium, uranium, and gold, act more or less in the same way. Lead peroxide heated to 400°C . yields ozone even in a stream of carbonic acid gas (*Zeitsch. Anorg. Chem.*, 1895, 222).

Absorption of Nitrogen by Lithium.

In preparing argon by means of lithium, Deslandres observed that hydrogen was evolved, and he heated lithium in a vacuum in order to separate it. The metal became dark at the surface and showed fissures. After cooling, nitrogen gas was passed over the metal and was slowly absorbed, showing that lithium combines with nitrogen even at the ordinary temperature. The amount of the absorption depends upon the extent of bright metallic surface (*Comp. rend.*, cxxi., 886).

Determination of Albumin in Urine.

When albumin is associated with peptone or albumose in urine, asaprol or the calcium salt of β -naphthol-sulphonic acid precipitates all the albuminous substances from the acidified urine, but on boiling the peptone and albumose precipitates redissolve, while the albumin precipitate remains unaltered. This precipitate is soluble in dilute caustic potash, and Riegler finds that the albumin may be determined in such a solution by means of the refractometer (*Ph. Centrallh.*, xxxvii., 19).

Urine Testing.

Zeehuisen points out the importance of diluting urine, before applying tests, until its specific gravity is reduced to at least 1.005. In that condition most satisfactory results are obtainable with the nitric acid test for albumin, with Fehling's test for sugar, and in testing for the pigments of bile (*D. Med. Wochenschr.*, through *Ph. Zeit.*, xli., 22).

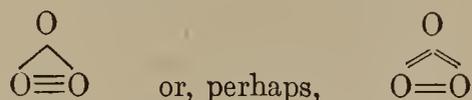
Hydrogen Peroxide.

By a series of chemical, physical, and especially spectrometric investigations, J. W. Brühl has been led to the conclusion that hydrogen peroxide must be looked upon as containing tetratomic oxygen, and that its constitutional formula is $\text{H}\cdot\text{O}\cdot\text{O}\cdot\text{H}$. The theory of the tetratomicity of oxygen is in accord with the views of H. Rose as to the compounds termed by him *quadrantoxides*, as Ag_4O , etc. The behaviour of the compound of HCl and methylic-ether, $\text{HCl}(\text{CH}_3)_2\text{O}$, lately discovered and studied by H. Friedel, furnishes further argument in support of the tetratomicity of oxygen in a free state. In support of his theory the author refers to the electrolytic formation of H_2O_2 from nascent hydrogen and molecular oxygen, and its instantaneous decomposition by nascent oxygen. Further evi-

dence is furnished by the easy decomposition of H_2O_2 into water and molecular oxygen, which may be represented as taking place in two phases.



The intense reducing property of H_2O_2 is especially characteristic, and is probably due to the very loose attachment of the atoms of hydrogen by means of supplementary valencies. It is also probable that ozone has a similar constitution. Its formula would then be—



A further hypothesis is suggested by the author in the case of carbonic oxide, the only compound in which uncombined carbon-valencies have had to be admitted hitherto. This would no longer be necessary if the tetratomicity of oxygen can be assumed. The old theory of uncombined carbon-valencies is inconsistent with the spectrometric behaviour of CO, as well as with its small faculty of combination with chlorine or with the other halogens. These facts are more in accord with the constitution, being $C : O$. Such an hypothesis involves, of course, the existence of unsaturated oxygen-atoms in all other organic compounds which contain an odd number of oxygen-atoms. There is no reason why this should not be admissible, as triatomic phosphorus, and nitrogen-atoms, and diatomic sulphur-atoms, which undoubtedly are unsaturated, are often met with in organic compounds (*Berichte*, xxviii., 2842).

Constitution of Water.

J. W. Brühl points out that, according to the constitutional formula suggested for hydrogen peroxide in the preceding note, the analogous formula of water would be $H \cdot \dot{O} \cdot H$. Water would thus be an unsaturated compound, and, in fact, no other chemical compound possesses the criteria of unsaturation in such a high degree as water. Most compounds combine easily with water and are hygroscopic, hydrates containing crystal water combinations are very numerous, and, finally, water is the most general and powerful solvent. Such a constitution of water would also agree with the high power dissociation which water exercises upon several organic compounds in separating their molecular aggregates. Alcohols, ethers, esters, ketones, phenols, and other solvents which are capable of causing dissociation, and are analogous to water in this respect, contain oxygen, whilst hydrocarbons, etc., which have not that capacity, do not contain oxygen. Water contains the largest amount of oxygen, and its dissociation power is the highest; then follows methyl-alcohol, and the dissociation power of the higher homologues of methyl-alcohol gradually decreases (*Berichte*, xxviii., 2866).

Solanine in Potatoes.

In various works statements have been published as to poisonous effects caused by the solanine present in potatoes, and, with the view of ascertaining the normal amount contained in potatoes before and during germination, a series of determinations have been carried out by G. Meyer in the pharmacological laboratory of Strassburg, under the

direction of Professor Schmiedeberg. Sound potatoes were found to contain 44 parts of solanine in a million parts. When peeled the amount was only half as much. Young potatoes contained, between July and August, from 201 to 236 parts in a million; Malta potatoes only 50 parts per million. During sprouting in a cellar, between March and July, the amount of solanine increased from 90 to 112 parts in the million, and the sprouts contained from 2.72 to 5 per cent. of solanine, according to their length. Shrivelled potatoes were found to contain 144 parts per million, and rotten potatoes covered with black fungus contained as much as 1340 parts per million. Schmiedeberg's experiments as to the toxic effects of solanine on rabbits showed that, when continuously administered in considerable doses insufficient to cause vomiting, the mucous membrane of the stomach and intestine may be affected without augmenting the tendency to acute poisoning. Consequently potatoes cannot have toxic effects unless the amount of solanine becomes unusually large under special conditions, but it is evident from the results above quoted that such an influence may possibly be exercised (*Arch. exp. Path. Pharmacol.*, 1895, xxxvi., through *Apoth. Zeit.*, xi., 11).

Chinosol.

This substance is described as a neutral compound of an oxyquinoline. Trials made at the hygienic institute in Munich have shown that it has a powerful antiseptic action, and is comparatively innocuous. Professor Kossmann, who has used it in place of sublimate and carbolic acid, confirms the antiseptic and non-poisonous action. Chinosol does not attack the hands, though it is said to be forty times as effective as carbolic acid, a solution containing 25 parts in a million being sufficient to hinder the development of staphylococcus pyogenes aureus, the most resistant of the pus-micro-organisms (*Ph. Centralh.*, xxxvii., 40).

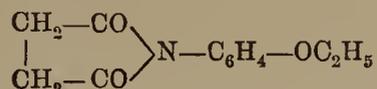
Mercury in Mercurous Tannate.

C. Glücksmann finds the methods usually recommended for determining the quantity of mercury in this preparation to be unreliable, and, guided by experiments made with the view of improving them, prefers to dissolve the preparation in nitro-hydrochloric acid, dilute with water, reduce with a solution of pure barium hypophosphite acidified with hydrochloric acid, and filter off the precipitated mercurous chloride. This is then dissolved in a measured quantity of $\frac{N}{10}$ solution of iodine with the aid of a little potassium iodide, and the excess of iodine removed by a measured quantity of $\frac{N}{10}$ solution of sodium hyposulphite, the excess of which is determined by titrating back with the iodine solution. This method is said by Glücksmann to yield quick and reliable results. (*Oesterr. Zeitschr.*, l., 147).

Pyrantin.

This name is given to a product of the reaction of succinic acid with derivatives of *p*-amidophenol, obtained by Professor A. Piutti and described by him as possessing properties analogous to phenacetin and methacetin, and as being free from the disadvantages of analogous antipyretics. It is prepared by melting together *p*-amidophenetol hydrochloride or phenacetin with succinic acid and extracting with alcohol. It is colourless, crystallises in needles melting at 155° C., is insoluble in ether, but soluble in 83.6 parts boiling water, and in 1317 parts of water at 17° C. Pyrantin has been found especially useful in rheumatic fever, by Professors Renzi, of

Naples, and De Giovanni, of Padua. It is said to be without action on the heart or respiratory organs, and not to cause disturbance of digestion. Pyrantin is *p*-ethoxyphenyl succinimide—



Alkalies convert it into salts of *p*-ethoxyphenyl succinamic acid, which are soluble in water. Both forms are manufactured by Messrs. Meister, Lucius, and Brüning, in Höchst (*Chemiker Zeitung*, xx., 54).

Glycerose or Glyceric Aldehyde.

Fonzes-Diacon has obtained this compound in considerable quantity by the action of mercuric chloride upon glycerin. A mixture of these substances gradually heated to 150° or 160° C. in a very capacious retort yields a distillate containing the aldehyde, acrolein and chlorinated products; this is neutralised with soda and shaken with benzene to remove some oily substances. The clear, yellowish liquid remaining consists for the most part of glyceric aldehyde. The substance has great reducing power, and is applicable for silvering glass, as well as for photographic purposes, as a developer. It forms with phenylhydrazine an osazone soluble in alcohol, very sparingly soluble in water, and melting at 131° C. (*Bul. Soc. Chim. de Paris*, xxiii., 862).

Detection of Nitrates in Water.

Alessandri and Guassini mix the evaporated residue of the water while warm with a few drops of a solution of carbolic acid in strong hydrochloric acid, and on heating an intense reddish-violet coloration is produced if the least trace of nitrates is present. On addition of ammonia the colour changes to emerald green. Water containing very minute traces of nitrates gives the violet colour, and the green colour is produced when the amount of nitrate is still smaller (*Bollet., Chim. Pharm.*, 1895, 490).

Lithium Sub-Chloride.

By heating a mixture of molecular weights of metallic lithium and lithium chloride to a red heat, a sub-chloride, Li₂Cl, is formed. It is described by M. Guntz as forming a greyish, very hard, and homogeneous mass, resembling fused sodium chloride. In the presence of water it decomposes energetically, hydrogen being evolved, and lithium chloride and hydrate formed (*Comp. rend.*, cxxi., 945).

Strontium and Calcium Iodides.

M. Tassilly has obtained strontium iodide in crystals, corresponding to the formula SrI₂·7H₂O, thus differing from those described by Croft, which contained a molecule of water less. Similarly, by slowly evaporating a concentrated solution of calcium iodide at the ordinary temperature, Tassilly has obtained crystals of the composition CaI₂·8H₂O (*Comp. rend.*, cxxii., 82).

Mydriatic Drugs.

The Australian correspondent of the *Lancet* reports that Dr. Joseph Lauterer, of Brisbane, has been investigating the active principles of *Duboisia myoporoides*, introduced into medical use by the late Dr. Bancroft, and some other mydriatic plants. He finds that the old leaves and twigs of *D. myoporoides* contain hyoscyamine, the fresh young leaves scopolamine. When the flowers commence to bud the leaves are richest in alkaloid, containing then 0.3 per cent. In

winter the amount is much smaller, and may fall to 0.03 per cent. Dry leaves contain 0.97 per cent. alkaloid, and are much stronger than belladonna leaves. *Duboisia leichardtii* is richer in alkaloid, and contains chiefly amorphous scopalamine. The leaves of *Brugmansia arborea*, and *B. knightii*, natives of South America acclimatised in Queensland, contain less alkaloid, consisting of two-thirds hyoscyamine and one-third atropine.

Characters of Spermaceti.

The United States Pharmacopœia requires spermaceti to possess a specific gravity "about 0.943, and a fusing point near 50° C.," but L. F. Kebler has obtained data on examining several samples which do not correspond with those stipulated by that authority. Reference to different publications showed that the figures recorded ranged from 41°·6 to 47°·7 C. for the melting point of spermaceti (cetin—48°·9 to 55°·5), whilst the specific gravity approximated generally to 0.943 at 15° C. A table is given, showing the result of the examination of seventeen specimens by Kebler, who concludes that the melting point of spermaceti varies from 42° to 47° C., and that of cetin from 48°·9 to 55°·5; the specific gravity of spermaceti ranges from 0.905 to 0.945 at 15°, and its saponification number from 125.8 to 134.6, whilst the acid number varies with the age of the sample. The requirements of the U.S.P. would appear, then, to correspond with the figures for cetin rather than for those of spermaceti (*Am. Journ. Pharm.*, lxxviii., 7).

Conversion of Casein into Albumose and Peptone.

The action of *Bacterium peptofaciens* in effecting this change has been applied to the treatment of milk by Alex. Bernstein under a patent for producing a liquid containing soluble albuminous substances, together with the milk sugar and salts of the milk. By subsequently fermenting with suitable ferments an alcoholic liquor containing peptone is also produced. The peptone bacterium is chiefly found in milk; it is rod-shaped, occurring generally in pairs, and shows very active motion (*Milchztg.*, 1895, 942, through *Ph. Centralh.*, xxxvii., 21).

Alteration of Milk by Boiling.

Professor Rubner points out that when milk is boiled the albumin is coagulated, but not the casein, and that the question whether sterilised milk has been boiled can be determined by separating the casein by addition of salt and warming to 30° or 40° C., then filtering and heating the clear filtrate to the boiling point. If the milk had been previously boiled this filtrate would not contain albumin, but otherwise it will coagulate on heating to the boiling point (*Hygien. Rundschau*, through *Ph. Centralh.*, xxxvii., 18).

Carissin.

A new glucoside, isolated from the bark of *Carissa ovata*, R. Br., var. *stolonifera*, by J. H. Maiden and H. G. Smith, has been provisionally named "carissin." It is described as very poisonous and exceedingly bitter, causing nausea and headache. The taste is also persistent. The purified glucoside is totally insoluble in petroleum spirit, ether, or chloroform; slightly soluble in absolute alcohol in the cold, much more on boiling. Dilute alcohol and hot water dissolve it readily, but it is not readily soluble in cold water. The substance could not be obtained in crystals, but formed an amorphous, slightly deliquescent mass when purified by treatment with amylic alcohol. It is readily decomposed by all acids, and somewhat resembles strophanthin, differing from that glucoside in

being precipitated by basic acetate of lead and by tannic acid. It also gives a precipitate with KI+I solution, and produces a yellow colour, changing to yellow-brown and then purple, when dissolved in concentrated sulphuric acid. The most characteristic reaction of carissin, however, is the beautiful emerald-green colour produced when a portion of the dry substance is dissolved in concentrated sulphuric acid, and a minute fragment of potassium bichromate added.

Assay of Ergot.

H. Beckurts has determined the percentage of alkaloid present in a variety of samples of Russian, Austrian, Spanish, and German ergot. It was found that by percolation with petroleum spirit the fixed oil but no alkaloid was removed. Twenty-five grammes of each sample were therefore freed from oil by that means, dried and shaken with 100 grammes of ether and 1 gramme of magnesia, previously suspended in 20 C.c. of water; 60 grammes of the ethereal solution are freed from alkaloid by repeated agitation with .5 per cent. hydrochloric acid, from which the alkaloid was then removed by ammonia and ether. The latter liquid on evaporation left a yellowish-white crystalline residue of alkaloid. The determinations agreed with those previously made by Keller. Russian and Austrian were the best, the richest samples containing .20 per cent., whilst the best German yielded only .15, and Spanish .14. Drying by artificial heat diminished the yield of alkaloid by about 10 per cent. (*Oesterr. Zeitschr.*, l., 31).

Urea as a Diuretic.

Dr. Klemperer draws attention to the solvent action of urea upon uric acid, and states that he has found urea very useful as a physiological diuretic and solvent of uric acid, even more efficacious than piperazine, lysidin, etc. It is given in solution (5 to 10 per cent.) in doses of a tablespoonful hourly. It is important that the urea should be pure, and the best criterion of this is the melting point, which is $132^{\circ}\cdot5$ C., and not 120° , as stated in most text-books. So far back as 1870 Lubavin showed that the melting point of artificially prepared urea was 132° C. (*Berlin Klin. Wochenschr.*, through *Pharm. Zeit.*, xli., 30).

Polygonin.

Full details of the examination of the root of *Polygonum cuspidatum*, a plant originally introduced into the Leeds district by Mr. Richard Reynolds, are now published by A. G. Perkin. The glucoside extracted, for which the name "cuspidatin" was formerly proposed (see *Ph. J.* [4], i., 445), is now termed "polygonin," $C_{21}H_{20}O_{10}$. It was obtained in the form of orange-yellow needles, which softened when heated to 200° , and melted at 202° - 203° . From its solution in boiling alcohol, in which it is but sparingly soluble, it is deposited in a gelatinous condition if rapidly cooled, but when the solution is left to cool slowly the glucoside separates as a mass of hair-like needles. It is only sparingly soluble in boiling water or ethylic acetate, and almost insoluble in ether. Orange-red liquids are formed by treating it with cold dilute alkalies or baryta water, and the potassium derivative occurs in the form of red, flat, microscopic needles. Polygonin yields emodin on hydrolysis, but the root also yields free emodin, an emodin monomethyl ether, and a wax, $C_{18}H_{28}O$, melting at 134° - 135° , and consisting of beautiful, colourless leaflets which resemble phenanthrene in appearance. The presence of emodin shows a chemical connection with rhubarb root, whilst the bark of *Rhamnus frangula* and root-bark of *Ventilago madraspatana* both contain emodin

methyl ether. There is also a connection with *Morinda umbellata*, which contains an identical wax (*Journ. Chem. Soc.*, lxvii., 1084).

Caffeine in Kola Nuts.

As the result of a comparative examination of African and West Indian kola nuts, Dohme and Engelhardt find that the former are richer in caffeine than the higher-priced Jamaica product. Two methods of extraction were employed. In the first the powdered nuts were exhausted with chloroform, and in the second, which extracted the caffeine more completely, $33\frac{1}{3}$ per cent. alcohol was used. The results were as follows:—

	African Nuts.	Jamaica Nuts.
Method I.—Caffeine.....	2.04 per cent.	1.75 per cent.
„ II.— „	2.24 „	1.93 „

The extract from the Jamaica nuts was lighter in colour than that obtained from the African nuts, the two resembling in colour tea and coffee infusions respectively (*Am. Journ. Pharm.*, lxviii., 5).

Production of Storax.

After much trouble J. Moeller has succeeded in following the secretion of storax in the stem of *Liquidambar orientalis*, and he has published a detailed account of his investigations, fully illustrated with drawings and photographic reproductions. Moeller shows that storax is a pathological, not a physiological product, and that it is formed after slight injury only to the stem; too extensive an injury appears to be followed by the production of but little storax. In the pith there occurs normally a circle of schizogenous ducts, the secretion in which, however, bears no resemblance in odour to storax. But if the stem is gently beaten, secretion-ducts are formed at the point of injury in the young wood and there only, though the secreted balsam may find its way to the exterior of the stem, through fissures, etc., and saturate portions of the bark. Extremely interesting is the fact that the secretion-ducts are of schizogenous origin, and subsequently only become lysigenous. In the production of storax, the probability is that the stems are hacked, and after some time, during which secretion of balsam takes place, the bark and young wood are removed, and the hacking is repeated on another portion of the stem. From the chips and bark thus obtained the balsam is separated by boiling in water. The secretion of sweet gum in the stem of the American *L. styraciflua* appears to have a similar origin (*Oesterr. Zeitschr.*, l., 19).

Cinnamon Chips.

T. F. Hanausck has lately observed in powdered cinnamon the presence of white particles, which proved to be due to admixture of the wood of the cinnamon tree; the powdered cinnamon consisted principally of powdered cinnamon "chips." To determine that point the wood of the cinnamon tree (*Cinnamomum zeylanicum*) was examined. The chief distinctive characters were found in the medullary rays, the vessels, and wood-parenchyma. The medullary rays are two-rowed, the cells usually radially elongated, but sometimes nearly square or axially elongated, in which case they frequently contain a dark brown mass; the walls are always thickened and porous. The vessels vary considerably; spiral vessels 30μ wide are occasionally found, which are derived from the primary wood and indicate that whole twigs have been powdered. The vessels of the secondary wood have sometimes large oval pores, sometimes oval or

hexagonal bordered pits, sometimes scalariform perforations. The cells of the wood parenchyma are frequently so thickened and lignified as to be true stone-cells, and not unfrequently contain a dark brown mass. All these characters must be identified before the wood can be pronounced to be that of the cinnamon tree (*Oesterr. Zeitschr.*, l., 34).

Source of Dammar.

J. Wiesner has investigated the source of the dammar resin of commerce. From the examination of specimens of the branches (without flowers or fruit) sent from Padang in Sumatra, Wiesner concludes that the tree yielding this resin does not belong to the natural order Coniferae at all, but to Dipterocarpaceae, and will in all probability prove to be an undescribed species of Burck's genus *Hopea*. *Dammara orientalis* (Coniferae) yields a resin totally distinct from commercial dammar, but closely resembling Australian dammar or kaurie gum (from *Dammara australis*, Lamb). Much confusion has apparently been introduced by the changes in the names of certain genera of the two orders (*Oesterr. Zeitschr.*, l., 14).

Powdered Allspice.

E. Spaeth has repeatedly observed in powdered allspice a foreign powder, which he has determined to be powdered pimento stalks. These are frequently present in the commercial drug in not inconsiderable quantity, and when powdered can easily be recognised microscopically by the small, thick, one-celled hairs, by the long colourless or pale yellow bast fibres, and by the sclerenchymatous cells, which are smaller and paler than those of the powdered fruits. Clove stalks, which are a common article of commerce, both whole and powdered, have no hairs, their bast fibres are thicker and more deeply coloured, the sclerenchymatous cells are yellow and more numerous, and portions of the epidermis are frequently discernible (*Forschungs-Berichte*, ii., 419).

Calumba Root.

A. Hilger contributes a review of the three active principles of calumba, viz., columbin, columbic acid, and berberine. Columbin is represented by the formula $C_{21}H_{24}O_7$, and is converted by dilute acids and alkalis into columbic acid, of which it is to be regarded as the anhydride. In calumba root it occurs in combination with berberine. During the conversion of columbin into columbic acid, especially by the action of 15 per cent. hydrochloric acid, the columbin is changed into a yellowish-brown mass, whilst the solution assumes a bluish-green fluorescence, and slightly reduces Fehling's solution. From the details given it would appear that this fluorescence is not due to columbic acid, but to some other body that has not yet been isolated (*Oesterr. Zeitschr.*, l., 8).

Structure of Bacterial Cells.

H. Wager is of opinion that in a bacterial cell there are two different substances to be recognised—a nuclear substance and a cytoplasmic substance. The nuclear substance has a definite structure, which is found in principle in all bacterial cells and plays an important part in the division of the cell, but it is simpler in structure and form than the nucleus of the higher plants and animals. In the protoplast of one short bacillus examined a central rod was distinguished, which stained

deeply in fuchsine and other aniline dyes, and fairly deeply in Delafield's hæmatoxylin. This rod was not digested by pepsin. In connection with it occurred a substance which stained but slightly. Division of the cell was found to be preceded always by division of the central rod. Other bacteria have a more complicated structure, though always referable to the above as a type. In *Spirillum undula* numerous deeply-stained bands were seen crossing the cell transversely, after treatment with fuchsine. They were in close contact with the cell wall, and connected with one another by a layer of less deeply stained substance (*Annals of Botany*, ix., 659).

Proteids of Wheat.

Wheat flour is derived entirely from the endosperm of the wheat grain, the germ or embryo being removed before the grain is ground. Dr. M. O'Brien has previously shown that the proteids of the flour are two globulins (coagulating at about 55° C. and 75°-80° respectively); proteose, not coagulated by heat; and the mother-substance of gluten. He is now able to show that the proteids of germ and of flour seem to correspond, so far as the globulins and proteoses are concerned, but in the remaining proteid-matter they differ widely—the insoluble gluten of the endosperm being replaced by albumin in the germ. The supposed albumin obtained from flour by Osborne and Voorhees, and named by them leucosin (see *Ph. J.* [3], xxv., 171), is thought by O'Brien to be rather a globulin (*Annals of Botany*, ix., 543).

Structure of Jaborandi Leaves.

A. Vogl has described the structure of the leaflets of *Pilocarpus trachylophus*, Holmes, and compared it with that of true jaborandi leaves derived from *P. jaborandi*, Holmes. The following are the principal differences observed:—In the leaflets of *P. trachylophus* the palisade cells are much more slender, and occupy about one-third of the mesophyll, whilst in *P. jaborandi* they occupy only one-fourth or one-fifth; the outer walls of the epidermal cells of the under surface are arched so as almost to form papillae; in nearly all the epidermal cells of the upper surface spherograins and aggregated crystals of hesperidin are of regular occurrence; on the under surface there are numerous hairs. The latter is also the case with a number of leaves that are always to be found amongst the jaborandi leaves of commerce, but the question whether these are derived from a different species, or from a variety produced by change in the environment, must for the present be left an open question (*Oesterr. Zeitschr.*, l., 1).

Proposed Substitute for Saffron.

Heim proposes to employ the dried perianth of *Tritonia aurea*, Poppe (*Crococoma aurea*, Pl.) as a substitute for saffron. In a preliminary note on the subject, he states that the dried petals give when boiled with water an intensely yellow solution of even finer colour than that obtained from the ordinary saffron. On prolonged boiling the infusion loses its characteristic odour, due probably to the loss of a trace of volatile oil. The yellow colouring matter is more soluble in dilute alcohol and in alkaline solutions than in water, but it is insoluble in absolute alcohol and in benzol. The partly dry aqueous extract gives with sulphuric acid a blue coloration, passing to violet, similar to that obtained from saffron. *Tritonia aurea* is a handsome bulbous plant, indigenous to

Southern and Tropical Africa, where it is roughly cultivated as a dye stuff. The fact that the whole flower, and not the stigmas only, contain the colouring matter, indicates that the plant might prove worthy of extended cultivation. Further chemical examination is promised (*Nouv. Rém.*, xii., 217).

Autumnixanthin. Staats finds that the yellow coloration of leaves in autumn is due to the presence of a substance soluble in alcohol, and differing from the phylloxanthin produced together with phyllocyanin from chlorophyll by the action of hydrochloric acid gas in not showing the red fluorescence of chlorophyll when dissolved in alcohol. Fremy, Hoppe-Seyler, and Schunck have attributed the yellow coloration of leaves in autumn altogether to the conversion of chlorophyll into phylloxanthin (*Berichte*, 1895, 2807).

Effects of Heat on Pepsin. F. A. Thompson finds that dry insoluble pepsin can stand more heat than the soluble form. The United States Pharmacopœia (1890) states that dry pepsin can be heated to 100° C. without injury, and this statement appears to be more than borne out by the following results of experiments, which show the respective digestive powers before and after heating for one hour to the temperatures indicated (*Bulletin of Pharmacy*, ix., 539):—

Variety of Pepsin.	Original Digestive Power.	D.P. Temp. 250° F. (121°·1 C.).	D.P. Temp. 280° F. (137°·7 C.).	D.P. Temp. 330° F. (154°·4 C.).
Insoluble.....	4000	4000	1000	200
Soluble (Scale)	4000	4000	200	—
„ (Powder) ...	Abt. 2000	Abt. 2000	No action	—

Superfatted Soap. F. Edel points out that whilst superfatted soaps have been recommended as ointment bases, they are not advisable for general use, though peculiarly adapted for ointments containing sulphur, ichthyol, tar, resorcin, etc. He finds, however, that the most carefully prepared superfatted soaps on the market are more or less irritating when applied to inflamed surfaces, and recommends the following formula as producing an excellent soap of the kind:—Dissolve caustic potash, 2 oz. in water 16 ozs.; melt together lard, 5 oz., and coco nut oil, 5 oz., and add the lye with constant stirring. Heat moderately and continuously until saponification is complete. The process may be hastened by adding alcohol, 3 ozs. Then add wool-fat, 3 ozs.; lard, 2½ ozs.; coco-nut oil, 2 ozs., and glycerin, 4 ozs. Mix thoroughly and heat for ten or fifteen minutes, afterwards stirring constantly until cold. If more glycerin be desired, replace part of the potash by soda (*Bulletin of Pharmacy*, x., 7).

Repairing Platinum Apparatus. Small holes in platinum laboratory apparatus may be stopped by melting a trifling amount of gold chloride around the edges by the application of gentle heat, then turning on the oxy-hydrogen blow-pipe flame. The reduction of the chloride causes a plug of gold, or an alloy of gold and platinum, to fill the hole. Larger openings may be closed by means of suitable pieces of platinum foil, using gold chloride as a flux, and soldering the foil to the vessel by the heat of the blow-pipe flame as before (*National Druggist*, xvi., 10).

SHORT NOTES ON THE PREPARATIONS AND FORMULÆ OF THE BRITISH PHARMACOPŒIA.

WINES.

The use of wine as a menstruum or vehicle for the administration of drugs is an old-fashioned custom, the origin of which is probably due to the fact that wine was formerly the most convenient, and generally available, alcoholic fluid. Preparations made with wine had therefore the character of permanence which the presence of alcohol imparted, beside the collateral advantage of pleasant taste and odour, which serves to mask the nauseous qualities of many drugs. At the present time the use of wine as a menstruum or vehicle for any particular drug requires to be justified by both the following conditions:—

1. The drug must be easily and thoroughly susceptible of exhaustion by weak alcohol.
2. The wine must have the property of masking the taste or modifying the character of the taste so as to make the preparation palatable.

Even the strongest wines, which contain about 18 per cent. of alcohol, are obviously unsuitable menstrea for certain drugs, and nothing further need be said under this head. If the second condition be not fulfilled, then the preparation of a "vinum" is not justified, because alcohol in the form of wine is more expensive than alcohol as plain rectified spirit. A further point which militates against the use of wine is the great variation in character to which a wine—sherry, for example—is liable. If the character of the wine serves to mask the taste and odour of the drug, then the variations of the wine will be reproduced in the "vina" prepared from it. The stimulant properties of wine tend to encourage its use particularly in connection with tonics.

Vinum Aloes.—This wine is very seldom used. The taste of the aloes is very imperfectly masked, and the proportion of aromatics—2 grains each of cardamoms and ginger in the fluid ounce—cannot be expected to exert an appreciable carminative action.

Vinum Antimoniale does not require any special reference.

Vinum Aurantii.—No mention is made in the Pharmacopœia of the necessity of removing tannin, particularly when the wine is used as a vehicle for iron preparations. A well-made orange wine is much to be preferred to the cheap sheries commonly used for pharmaceutical purposes, the latter costing even then about twice as much as the former.

Vinum Colchici.—This is a respectable old-fashioned preparation, which is extensively used. This probably indicates that its medical effects are satisfactory. The small quantity of wine contained in a medicinal dose cannot, however, have much influence on the flavour of a "mixture," in which form colchicum wine is nearly always administered.

Vinum Ferri.—This is a most unsatisfactory preparation. Published statistics show that it is liable to great variation in the quantity of iron contained in it, these variations being chiefly due to variations in the wine which do not easily admit of rectification. In short, the iron seems chiefly to serve the purpose of spoiling the sherry. The small quantity of iron it does contain probably exists in a form nearly related to the iron in ferrum tartaratum.

Vinum Ferri Citratis.—This is a very satisfactory preparation of iron for administration to children. It is pleasant, easily made and of definite strength.

Vinum Ipecacuanhæ.—A good deal of controversy has raged around this preparation, in which form ipecacuanha is chiefly administered as an expectorant. The "acetum" at present

contained in the Appendix of 1890 is no doubt a very active preparation, but ipecacuanha is so frequently prescribed with alkalis—ammonium carbonate, *e.g.*, that a neutral preparation is still required. The evaporation of the percolate in the official wine damages the alkaloidal contents, and unless it is carried down to dryness, acetic acid will be present in the finished product. It seems, therefore, desirable to modify the wine by adding to sherry a strong fluid extract, as has been suggested, or to replace it altogether by a fluid extract or some similar preparation. The retention of a "wine" of ipecacuanha can only be desired on sentimental grounds, since wine is not a suitable menstruum for the drug, and the small amount contained in an expectorant dose is not worth consideration either as a stimulant or flavouring agent. The solution of ipecacuanha alkaloids in wine could not be called vinum ipecacuanhæ any more than vinum quininæ could be regarded as vinum cinchonæ.

Vinum Opii.—This only requires mentioning to suggest its removal from the official formulæ. It is little used, and we already possess a tincture and fluid extract, the latter being also little used.

Vinum Quininæ.—This is a popular form for the administration of quinine as a tonic and appetiser, and no alteration is obviously required.

Vinum Rhei.—Another obsolete preparation. Its removal from the Pharmacopœia would cause the deletion of canella from the list of official drugs.

Vinum Xericum.—The Pharmacopœia simply describes this as "a Spanish wine." There is no doubt that a large proportion of the sherry used in pharmacy is quite innocent of the juice of the grape, and is made in Germany. The palate of an expert easily distinguishes the Spanish from the Hamburg variety, but it is not so easy to devise tests for the same purpose which could be introduced into the Pharmacopœia. The weaker sherry which is admitted under the 1s. duty is also unsuitable for pharmaceutical purposes, the percentage of alcohol not being high enough to render its preparations stable. The percentage of alcohol—seventeen—given in the B.P. characters of course excludes this weaker wine. Part of the extreme variability and unsatisfactory behaviour of vinum ferri is no doubt due to the use, in many cases, of Hamburg sherry or natural sherry of low alcoholic contents.

DISTRIBUTION OF MUCILAGES IN PLANTS.—J. A. Guiraud has investigated the distribution of the mucilages in the officinal Malvaceæ, especially in *Malva sylvestris* and *Althæa officinalis*. He states that the receptacles are not of lysigenous origin, as has usually been stated. The mucilage is formed in all the organs, and results from the gelatinisation of the walls of special cells found only in the secondary parenchyme. It may remain in enclosed cells, or may flow out into passages or receptacles formed by a dissociation of the tissues. In the root the formation of the mucilage coincides with that of the secondary structures. In the stem of *Malva* the mucilage cells appear first in the pith, then in the cortical parenchyme and the hypodermal parenchyme; it is most abundant in the periphery of the stem, where it arises partly in the cells, partly in the intercellular spaces. In the leaf its formation follows a similar course to that in the stem, occurring both in the cells and in special receptacles; it abounds especially in the leaf of *M. sylvestris*. Mucilage is very abundant in the flowers of *Malva* and *Althæa*, but its distribution very variable; in *M. sylvestris* it occurs in large quantities in the epiderm of the calyx and epicalyx, and in the fundamental parenchyme of the petals (*Du développement et de la localisation des mucilages chez les Malvacées officinales*, Toulouse, 1894. From *Bot. Centralblatt*, vol. lxi., 1895, p. 376).

FERMENTATION.*

BY JOHN WELSH, PH.CH.

Although for many years scientists have held various opinions regarding the nature of fermentation, nowadays they are almost unanimous in holding that it is caused by the living processes of minute bodies (micro-organisms), so minute as to require the most powerful microscopes, in order to investigate their structure, yet endowed with natural power, power which, when exercised, results in good or ill effects to every living being. These organisms live upon organic matter, and in so doing split up the organic matter into matter possessing entirely different properties.

The minuteness of these organisms is so excessive that their dimensions baffle description in the ordinary terms of measurement; thus we find, as a common length, one twenty-thousandth of an inch; and thus one writer remarks very popularly, "Four hundred millions of these organisms could be spread over one square inch in a single layer; and, therefore, we could have four times the population of London on an area of a square inch, without any complaint of overcrowding, the one four-hundred-millionth of a square inch being quite adequate for a citizen in the commonwealth of micro-organisms.

We must have all noticed the scum which appears on putrefying liquids; this scum is a colony of organisms held intact by mucus. These organisms are very often reproduced at this stage, known technically as the zooglea stage. The reproduction takes place by the formation of "spores," and it is to these spores I wish to draw your attention. They cling to life so tenaciously that the cold of an Arctic winter or the heat of tropical summer has little or no effect upon them. The organisms themselves would be destroyed, but their spores appear to be almost immortal; little wonder, then, that fermentative processes make their appearances almost everywhere, that the morning's milk is sour before nightfall, that the ointments in our pharmacies so readily become rancid.

I do not intend, in this brief abstract, to say anything regarding "yeast," the plant which causes that kind of fermentation known as alcoholic, so very much matter having already been written upon the subject. With regard to alcoholic fermentation itself, it is necessary to note that—

The *Saccharoses* (sugars of the grape sugar type) ferment immediately, whilst the "disaccharoses" (sugars of the cane sugar type) will not ferment with pure yeast, but with ordinary yeast, owing to its containing another ferment which first converts the "disaccharose" into a "saccharose," fermentation will take place. Upon these two points depends the fact that the production of beer involves two distinct fermentations: 1. Diastasic, *i.e.*, the converting of the starchy matter in the seed into "maltose" and "dextrin" by the ferment "diastase," which is formed in the seed during germination. 2. True alcoholic, *i.e.*, the converting of the "maltose" into alcohol and carbon dioxide.

We are not dependent entirely upon yeast for alcoholic fermentation, the spores of several fungi, notably "*Mucor mucedo*," and "*Penicillium glaucum*" having this power. It is said the presence of fousel oils in alcohol produced by yeast is due to these fungus spores.

Acetic fermentation, another well-known matter, I shall pass by, simply remarking that it differs entirely from "alcoholic," in that the "oxygen" of the air becomes a factor, as seen in the equation: $C_2H_5OH + O_2 = CH_3COOH + H_2O$.

It is also interesting to note that the organism which produces this fermentation appears to be the only one at all partial to alcohol,

* Abstract of a paper read before the Liverpool Pharmaceutical Students' Society on November 14, 1895.

this being quite an exception in members of the lower creation, and even this organism is so particular as to have absolutely nothing to do with solutions which contain more than 10 per cent. of alcohol; another writer very wittily remarking "that the wisdom of such an aversion could be developed in man, the sole consumer of alcohol, were indeed a consummation devoutly to be wished."

Lactic and Butyric Fermentation.—These two are so closely allied that I have grouped them together. "Lactic" is caused by a ferment contained in sour milk; free acid is formed during the process, which would destroy the ferment were it not that chalk is added to neutralise the acid as it is formed. "Butyric" fermentation takes place as a second stage if "sour cheese" be added to the sour milk, the "lactic acid" first formed being transformed into "butyric acid" by the ferment contained in the cheese.

The equation illustrating the formation of "lactic acid" also illustrates the fact that many of these organisms act as "hydrolytics," *i.e.*, they add water to the body acted upon, thus:—



Fermentation has been found to be the fact wanted for years to account for two very important agricultural questions. The one, how is nitric acid formed in the soil? The other, can the free nitrogen of the air be absorbed and assimilated as food by plants? I will conclude with very few remarks about the first.

Nitric acid is one of the most important of plant foods in the soil, if absent it is stated that, to grow even the apology of a crop of corn or roots, though all other conditions be perfect, would be impossible. In 1877 two French chemists found that the power of converting the nitrogen of nitrogenous substances was the property of micro-organisms, but since then it has been found that this organism only transformed the nitrogen into nitrous acid, an acid very rarely found in soils. How, then, is the nitric acid produced? This question has been answered by the discovery of another organism, whose special work is to convert the "nitrous" into "nitric" acid, and thus the "nitrification of soils," it is clear, depends upon fermentative processes set up by two distinct organisms, the one converting the nitrogen into nitrous acid, the other, the nitrous acid into nitric.

From this we find a solution to that strange fact over which many a thoughtful student must have wondered. I refer to the presence of those immense deposits of Chili saltpetre found in the rainless districts of Chili. One can scarcely credit that such minute organisms could produce such a vast amount of a commercial article. What countless ages ago? and what myriads of these minute organisms must have been at work? are two questions well worthy the exercise of our imagination. "There is romance in Science."

The uses of fermentation to pharmacy, as seen in the action of ferments upon glucosides and other organic bodies; the splitting up of complex organic bodies into entirely different and simpler bodies, helping investigators to arrive at correct conclusions as to the relations and formulæ, etc., of such bodies; the preparation of new compounds artificially, by means of ferments, as the result of Emil Fischer's work shows; the physiological effects of ferments are all most interesting and instructive. In fact, our knowledge of "fermentation" is in its infancy, as all other knowledge is, as compared to the vast districts of the unknown yet untraversed, and there is interest and romance saturating every point of this subject, a fairy tale, indeed, yet more reliable and, shall I say, more interesting and wonderful.

REVIEWS AND NOTICES OF BOOKS.

MACHINERY AND APPARATUS FOR MANUFACTURING CHEMISTS.

By JAMES C. SHEARS, Assoc.M.Inst.,C.E. Pp. 93. Price 3s. 6d. (London: E. Marlborough and Co., 51, Old Bailey, E.C. 1895.)

The author of this book has been for many years engaged in the manufacture of plant for pharmaceutical laboratories, and has now thought fit to record his experience in a permanent form. He describes and briefly explains the use of steam boilers, evaporating pans, vacuum pans, stills, stirrers, condensers, drug mills, emulsifiers, percolators, hydraulic presses, and other forms of apparatus used by manufacturing chemists. The matter is illustrated, and suggestions are given as to the best forms of apparatus to be used for special purposes.

A LABORATORY MANUAL OF ORGANIC CHEMISTRY. By Dr. LASSAR-

COHN, Professor of Chemistry in the University of Königsberg. Translated, with the author's sanction, by Alexander Smith B.Sc., Ph.D. (London: Macmillan and Co. 1895.)

This work is of a nature entirely different from other books on organic chemistry. Instead of the descriptions of individual compounds as to physical characters, composition, constitution, etc., which make up the bulk of most manuals dealing with this subject, the methods actually followed in the prosecution of laboratory work are described and illustrations given of their application so as to show their relative fitness for producing the results desired. By the adoption of this plan a very serviceable deviation has been made from ordinary routine, affording most valuable assistance to students and even to advanced workers. A vast mass of information has been gathered together in a concise form from the multitude of publications in which original communications have appeared, and copious references are given to the sources whence it has been taken, to provide for the possibility that the original papers may have to be consulted.

The matter is arranged in chapters with headings descriptive of the several operations, by means of which particular chemical changes are effected, and under sub-heads the relative applicability of different reagents made use of for that purpose is treated of. The general methods described in the nine chapters forming Part I. include the application of heat by means of baths, crystallisation, decoloration, distillation, drying, extraction, filtration, determination of melting points and molecular weights, operations with sealed tubes, and sublimation. Eleven chapters in Part II. describe special methods, including condensation, preparation of diazo-compounds and esters, fusion with caustic alkalies, preparation of halogen compounds, oxidation, reduction, saponification, and the preparation of sulphonic acids, while in the twelfth chapter the methods of determining the elementary constituents of organic compounds are briefly described.

The publication of an English translation of Professor Lassar-Cohn's work will serve a useful purpose in directing attention to the various methods by which the chemical transformation of organic compounds may be effected. Text-books very generally give little information on this point, and often convey an impression that there are no difficulties in the way of obtaining products in the full proportions indicated by the equations given. The preparation of an ester from an acid and an alcohol with elimination of water appears extremely simple from a theoretical point of view, but the student soon finds that the yield indicated by an equation cannot always be obtained in the laboratory unless certain definite conditions are observed. It is to assist students in overcoming such difficulties that this work is intended, and those who have not had

the opportunity of making extensive reference to chemical literature will find collected together for their guidance all that is essential without the necessity of having recourse to memoirs scattered through numerous chemical publications. On that account the work will be a most valuable companion to assist students engaged in the prosecution of organic chemistry.

FORMULAIRE DES MÉDICAMENTS NOUVEAUX FOR 1896. By H. BOCQUILLON-LIMOUSIN, with an introduction by Dr. H. Huchard. Pp. 306. Price 3 francs. (Paris: J. B. Baillière et fils, 19, rue Hautefeuille. 1896.)

The seventh annual edition of this most useful little compilation appears in its usual style, and contains detailed references to aïrol, apolysin, argonin, cannabindone, caseinate of iron, cotarmine, cuprohemol, eudoxin, ferripyrin, gallicin, glycerophosphates, hemo-gallol, hemol, lysidin, nosophen, phosphergot, pixol, salipyryne, salithymol, sublumo-phenol, tannigen, and numerous other remedies of comparatively recent introduction. It is almost needless to say that the book is cordially recommended to all English pharmacists who desire to have in a handy form the latest information concerning the novel medicaments that seem to invade pharmacy unceasingly.

A PHARMACOPŒIA FOR DISEASES OF THE SKIN. Edited by JAMES STARTIN, Senior Surgeon to the London Skin Hospital. Fourth edition. Pp. 53. Price 2s. 6d. (Bristol: John Wright and Co. London: Simpkin and Co., Ltd. 1896.)

In the words of the editor, this pharmacopœia is published for the use of students and medical practitioners engaged in active practice. It is small enough to go into the waistcoat pocket, yet besides containing concise directions for the preparation of numerous baths, mixtures, ointments, lotions, and caustics, space is found for rules of diet, a classification of skin diseases, and a therapeutical index.

ANATOMISCHER ATLAS DER PHARMAKOLOGIE UND NAHRUNGSMITTELKUNDE. By Dr. A. TSCHIRCH and Dr. O. OESTERLE. Parts VII. and VIII. Price 1s. 6d. each nett. (London: Williams and Norgate. 1895.)

These two parts of the anatomical atlas of Tschirch and Oesterle include the description of cassia, cinnamon, canella alba, taraxacum root, cardamoms, nux vomica, hemlock leaf and fruit, henbane and insect flowers. They complete the first volume of this excellent work, and in them, as in the previous parts, many new observations are recorded, to a few only of which attention may here be directed.

In the description of the anatomy of cassia bark the development of the oil cells and of the mucilage cells is of special interest. In early stages they cannot be distinguished from one another; in those destined to secrete oil either one of two things happens, either a resinogenous layer is formed from the inner layer of the cell wall, in which oil is produced, or several layers of mucilage are first deposited, and on the innermost of these the resinogenous layer is formed and secretion of oil takes place; in the mucilage cells no oil is formed, and in this manner Dr. Tschirch explains the occurrence of oil and mucilage in separate cells or in the same cell, a fact that has often been noticed in cassia and cinnamon bark. During the preparation of the drug from the fresh plant the cinnamic aldehyde which can be detected in the oil cells of the latter, diffuses almost completely into the surrounding tissue. According to the author, cinnamon bark is characterised by the formation of bast fibres at a much earlier period than cassia, but there is no reliable means of distinguishing powdered cinnamon from powdered cassia, a statement at direct variance from the

accepted utterances of other eminent histologists. In taraxacum root the development of an anastomosing network of laticiferous vessels is facilitated by the mucilaginous nature of the intercellular substance, by which branches can be pushed between cells at points where it would otherwise be impossible. Extremely interesting is the anatomy of the cardamom fruit and seed, which is illustrated by an excellent plate; in the form of powder, the pericarp is distinguished by its bast fibres, whilst Ceylon wild cardamoms are characterised by the thick walls of their epidermal cells. The development of the nux vomica seed from the ovule is closely followed. Here only one seed coat is present, the epidermal cells of which develop into the characteristic hairs; the remaining cells at first fill with reserve material, which, however, is subsequently absorbed, the cells collapsing to form a narrow layer under the epidermis. The micro-chemical detection of the alkaloid is best effected by sulpho-vanadic acid, which colours the oil-globules and proteld granules of all the endosperm cells deep violet.

In Part VIII., the anatomy of hemlock leaf and fruit first calls for attention. For the micro-chemical detection of the alkaloid coniine, sulpho-vanadic acid again appears to render good service. In the leaf the alkaloid is localised principally, if not entirely, in the epidermis; in the fruit, on the other hand, it is not confined to the layer known as the coniine layer, but occurs in the layer exterior to that, in the epidermis and in the intervening parenchyma. The plate illustrating the anatomy of the fruit is a masterpiece of clearness, to which the colour of the ink used for this, but not all plates, contributes not a little. In the description of insect flowers, attention is drawn to the difficulty of distinguishing the Persian from the Dalmatian powder; the detection of turmeric, mustard and other powders said to be used to impart the bright yellow colour demanded by pharmacists can be effected with facility.

The care that has evidently been bestowed on these two parts places them on the same high level as the previous parts, which have already been noticed in these columns.

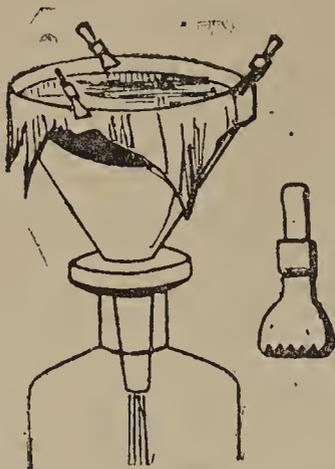
GUY'S HOSPITAL REPORTS. Vol. LI. 1894. Edited by E. C. PERRY, M.A., M.D., and W. H. A. JACOBSON, M.A., M.Ch. Pp. 272. Price 10s. 6d. (London: J. and A. Churchill. 1895.)

This volume as usual contains much useful information. The majority of the papers are surgical, and include an interesting communication from Mr. Thomas Bryant on temperature after operation. A valuable statistical paper, furnished by Mr. G. B. Smith, on the question of amputation in senile gangrene, based on a study of forty-eight cases. Mr Newland-Pedley contributes two articles, one on the treatment of suppuration of the maxillary antrum; the other is a very critical review of the treatment of congenital cleft palate, which well deserves attentive consideration. Dr. John Fawcett gives the results of an investigation of piperazin undertaken with the view of determining (1) the solvent power it possesses in urine upon uric acid calculi; (2) the value of it in gout; (3) the effect of the drug when given to birds, uric acid deposits having been produced in them by injections of potassium chromate. In regard to its effects in gout, Dr. Fawcett's conclusions are these: "The drug neither relieves the pain, nor does it increase the uric acid elimination. It is also very expensive, and so, as it does not appear to possess any greater value, but rather less, than the drugs already recognised in the treatment of gout, I can see no indication for continuing its use further." Dr. Silk gives a paper on the administration of gas and ether and Dr. Pye-Smith relates cases of bilateral paralysis of the facial and auditory nerves. The volume concludes with the customary information relating to the school, museum, and pupils.

NOVELTIES IN PHARMACEUTICAL APPLIANCES.

SIMPLE FUNNEL CLIP.

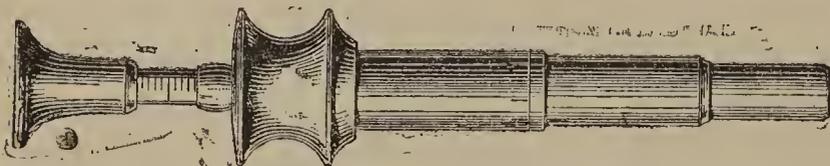
A very simple metal clip has been recommended for fastening a calico strainer on to a funnel so that the contents may, if



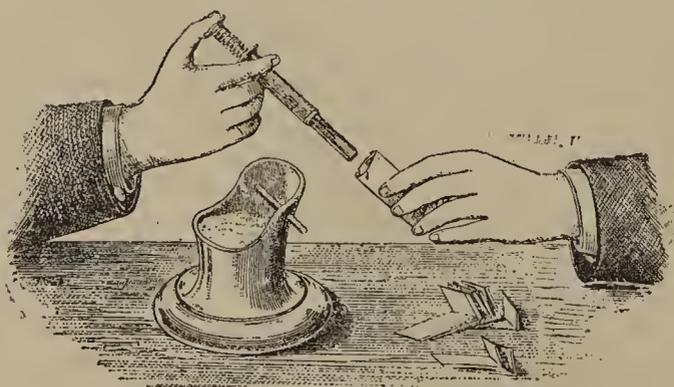
necessary, be stirred, or the strainer left without fear of its slipping; they are easily fixed in position, and should prove very useful (*Pharm. Zeit.*)

CONVENIENT POWDER MEASURING APPARATUS.

The immense amount of valuable time consumed by the tedious weighing of powders has led to the invention of various means by which powders can be measured instead of weighed. One of the most convenient appears to be that of Fr. Hausmann (*Pharm. Centralh.*), which consists of an adjustable piston working by a spring in a cylindrical tube. It is made in two sizes, the smaller for powders weighing about 0.1 to 0.5 gramme, the larger for those between 0.5 and 2.0 grammes. The quantity of powder taken up by the apparatus can be delicately regulated by a coarse



and fine adjustment, each of which carries a scale, so that a position once ascertained for any powder can be registered for future reference. A small porcelain cup contains the powder, and is provided with a glass rod by which excess is removed. A skilled workman is said to be able to weigh just 1000 powders from the



exact calculated quantity; in unskilled hands a difference of at most 10 powders in 1000 is to be expected, part of which is undoubtedly due to loss by dust, or increase of weight by absorption of moisture, according to the nature of the powder. This little piece of apparatus has been in daily use in the pharmacy of its inventor for many years.

CORRESPONDENCE.

[Letters to the Editor should be written as concisely as possible, on one side of the paper only, and preferably with name and address for publication.]

THE USE OF BORIC ACID AS A PRESERVATIVE.

Sir,—The possibilities of mischief ensuing upon the use of boric acid as a preservative of milk and other articles of food seem not to have received the attention they deserve. Since 1891, when the Kensington Vestry sought the advice of Sir A. Clark, Sir Henry Thompson, and Dr. Lauder Brunton on the subject, no further step appears to have been taken. The opinions of those eminent men were cautiously expressed, *vide Pharm. Journ.* [3], vol. xxi., p. 865, but they concurred in pronouncing the use of boric acid in large doses, or over prolonged periods, to be dangerous to health.

During the exceptionally hot weather which prevailed last September some milk was delivered to a household here, which is believed to have had boric acid added to it by the dairyman. In ignorance of this the cook used "glacialine" to preserve it, and ultimately it was made into blanc-mange.

The ladies to whom this was served up were attacked with vomiting and other symptoms of gastric irritation, and were for several days seriously ill. The remainder of the blanc-mange was given to the fowls, with the result that six out of the nine died, apparently from exhaustion, being unable to take food. An examination of the stomachs made by the medical officer of health, Dr. M. K. Robinson, revealed organic lesions, penetrating below the inner surface of the stomach, and apparently caused by an irritant poison.

If this was really caused by boric acid, such a result is strangely at variance with the generally accepted belief that it can be safely applied, not only as a dusting powder to the tender skin of an infant, but also to the eye, to mucous membranes generally, and even to open wounds.

Dr. Robinson referred to the experience gained in a public institution by using boric acid as a remedy for epilepsy in lieu of bromide of potassium; which pointed to the risk of serious injury to the kidneys, as well as to the stomach.

This should put the chemist on his guard against the possible evil effects of this preservative when used both by the dairyman and the consumer; although unfortunately it is more than probable that he will lack the opportunity of exercising his vigilance.

In the case I have described, the customer obtained the "glacialine" from the grocer; and too often the curious perversity of the public in seeking their supplies of drugs and chemicals from those who are necessarily ignorant of their properties, deprives them of a valuable safeguard. I may add that "glacialine" responds to the tests for boric acid.

Dover, January, 27, 1896.

J. F. BROWN.

RUSSIAN PETROLEUM may, according to Riche and Halpen, be distinguished from American by the relative solubility of fractions of the same density in a mixture of equal parts of chloroform and 93 per cent. alcohol. The specific gravity is taken, and then 4 grammes of the oil are weighed into a flask, and the chloroform-alcohol mixture added until the opalescence produced disappears. The result is compared with the figures obtained from genuine petroleum, and given by the authors. The lighter portions of both varieties of petroleum consist of derivatives of members of the methane series, and so do the medium and heavier portions of American oil, whilst in the Russian these latter are mostly isomers of olefines (*Monit. Scientif.*, and *Ph. Centralh.*, xxxvi., 313).

PHARMACEUTICAL JOURNAL.

A Weekly Record of Pharmacy and Allied Sciences.

FIFTY-FIFTH YEAR OF PUBLICATION.

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LONDON: SATURDAY, FEBRUARY 1, 1896.

PROFESSIONAL UNIONISM.

THE lack of union amongst British pharmacists is notorious, and is being continually commented upon, various remedies being suggested from time to time, but the ideas of the promoters of the suggestions receiving little support generally from the rank and file of the craft. It is interesting, therefore, to observe that the medical profession in this country, which is a much better consolidated body, is afflicted by a similar trouble, not so marked in its effects perhaps, but yet tending to impede progress. The British Medical Association, a purely voluntary combination with sixteen thousand members, does not include half of the total number of practitioners on the Medical Register. Whilst, therefore, it compares favourably with the Pharmaceutical Society, which does not include quite one-third of those registered under the Pharmacy Acts, it is, nevertheless far from being in a position to pose as the representative of the whole medical profession. But even if such an almost impossible position were attained, either by the British Medical Association or the Pharmaceutical Society, so that the whole profession in either case could act as one individual, there would yet remain many problems which the action of the representative body would probably fail to solve, inasmuch as its organisation would prove too cumbersome, and its machinery be too difficult to set in motion, to deal satisfactorily with matters of comparative minor importance. Such matters, in fact, would require a devolution of authority, and they can be much more promptly and satisfactorily dealt with by local medical and pharmaceutical associations in the districts affected.

The necessity of some such differentiation of duties and division of labour is plainly manifest to leading medical practitioners, strong evidence of this being afforded by two addresses published in the *Lancet* for January 18 last, and by the editorial comments thereupon in the same number of that publication. The text of both addresses is the same, and, to paraphrase the words of our contemporary, in both cases is shown a personal grasp of the subject in all its bearings, with a thorough fulness of detail as to the evils under which the medical profession labours, and the remedies that must be applied to save it from degradation and possible destruction. In the address delivered by Mr. W. G. DICKINSON before the South-West London Medical Society,

he raises the question, What is meant by unionism in the profession? and proceeds to discriminate between trades-unionism and what he happily terms "professional unionism." Disclaiming all sympathy with the methods of trades-unionism, and insisting that all dissentients from the main body should be treated as gentlemen, he yet urges that moral pressure should be brought to bear upon those who incline to sacrifice the honour of their profession, and in cases where remonstrances have no effect the delinquents should be left severely alone. No man, it is pointed out, is altogether insensitive to the opinion of his fellows, but to bring a sufficient amount of moral pressure to bear, local professional unions should be established, which should be free from exclusiveness and place no limitations on individual freedom of action, unless this should be in violation of recognised ethical principles. Care must also be taken to protect the interests of the public. The objects of the unions would be to establish freedom of action in all questions between the members and the public, to render the profession more self-governing, and to cultivate that *esprit de corps* which is so frequently lacking. The address of Mr. FRANK STURGESS, to the Beckenham Medical Society, proceeded on similar lines, and whilst devoting greater attention to ways and means, the speaker insisted upon the paramount necessity of forming local unions all over the country, and by that means enforcing the principles of professional unionism.

The scheme of protection thus ably propounded by two equally skilful exponents of the merits of self-aid seems distinctly feasible, and there is little reason to doubt that in the present temper of the medical profession it may soon become an accomplished fact. Its chief recommendation is its simplicity. No special legislation is required, no unwieldy organisation, but simply the means available in every place where half-a-dozen or more members of a profession are established in practice. The special needs of every locality can be studied, and the procedure of the local union adapted accordingly. Nothing need be done that will clash with the interests of the public. Indeed, the unions would be likely to receive popular sympathy rather than censure, and in that would reside a great part of their strength. The question suggests itself, therefore, why should not pharmacists also seek to support this principle of professional unionism? In many instances the means are ready to hand in the local associations that have done such good work in the past, and may be expected to do still better in the future. Perhaps not to the same extent, but yet to some extent, the majority of the pharmacists in any particular district could bring moral pressure to bear upon unprofessional competitors in their own ranks. The results could not fail to be good, and would improve with the growth of experience, consequent upon the passing of years filled with records of useful work.

UNQUALIFIED ASSISTANTS.

MR. W. L. CURRIE, of Glasgow, has once more drawn attention to the employment of unqualified assistants in branch shops (*vide* p. 96), and pointed out that for pharmacists to raise themselves above suspicion "they must boldly face the question and give their dignified but united support to the Pharmaceutical Council." There is reason to believe that the practice referred to is surely, if slowly, dying out. Certainly the time that has elapsed since the matter first received attention ought to have sufficed to put an end to the practice of leaving pharmacies in charge of unregistered persons. Strictly, no pharmacy ought ever to be without a

registered individual in charge, and in the public interest, no less than in that of pharmacy, the application of this principle ought to be extended rather than restricted. The day of unqualified assistants is passing, in pharmacy as well as in medicine. In the latter connection it is noteworthy that a correspondent of the *British Medical Journal* suggests the issue by the General Medical Council to the profession of some warning to the effect that "the era of unqualified assistants must come to an end"; that after a given period (say three or four years) their employment will no longer be sanctioned, but regarded as "infamous conduct in a professional respect." Such a rule would work hardly, less so in medicine than in pharmacy, but it may at any time be found necessary in the public interest, and is best guarded against by fulfilling the requirements of the law with regard to qualification at the earliest possible opportunity.

ADVICE TO CONTRIBUTORS.

ONE of the greatest difficulties editors experience at the present day is to persuade contributors that, other things being equal, conciseness of expression conduces more than anything else to render articles and letters generally attractive. Nothing tends to destroy the interest of readers in a subject more than a diffuse style of writing, and the following advice from *Merck's Market Report* should be acted upon by everyone concerned:—"Life is short. Time is precious. We ask our contributors to write every paper as they would a telegram that they have to pay for by the word. Verbosity kills many a good article. Few care to take the pains to get the meaning of a verbose writer. Go over your papers again and again, cutting out every word and sentence that adds nothing to the meaning. Try and give in ten words the same idea that when first written took twenty. Every good writer is such because his finished sentences contain only the ten and not the twenty words. Do not string out your sentences with conjunctions. Make them all short and pithy. We ask you to do this for your own sake and the sake of your readers. They will the better understand and be more willing to render to you the meed of appreciation." Whilst, however, the advice of our contemporary is excellent, his style is somewhat too intermittent and aphoristic to suit the taste of English readers. Correspondents should therefore act upon the advice but not necessarily copy the style, for even the much-abused conjunction is useful and ornamental in its place.

PROFESSOR STANISLAS CANIZZARO.

It has been felt by Italian chemists that it would be a graceful act to present to Professor CANIZZARO some little recognition of his services to science on his 70th birthday, which occurs on July 12. To this end a committee has been formed, and a circular has been issued, which is being sent not only to Italian chemists, but also to those in foreign countries, who know what work has been done by Professor CANIZZARO and might possibly wish to thus join in recognising its value. Subscriptions should be sent to the treasurer, DOTT. VICTORIO VILLAVECHIA, Al Laboratorio, Centrale delle Gabelle, Piazza Mastai, Rome, before the end of April.

COLOUR PHOTOGRAPHY.

At a special meeting of the Royal Society of Edinburgh, on Monday last, Mr. F. E. IVES gave an interesting demonstration of his method of recording colour by photography. The reproduction of colours was beautifully illustrated by

throwing on the screen, by means of an electric light lantern, the three slides produced by three negatives, one of which had been exposed to the rays from that portion of the spectrum associated with the red, another with the green, and the third with the blue-violet colour sensations. The three slides consisted of three uncoloured photographs of a plate of fruit consisting of apples, oranges, bananas, and grapes, and they differed in no respect from one another in appearance. By introducing suitable coloured glass screens, one slide was illuminated with red light, another with green light, and the third with blue-violet light. Then by a simple mechanical adjustment the three pictures were exactly superimposed on the screen, with the result that the dish of fruit stood out on a perfectly white ground, and the different fruits showed brilliantly, each in its rich natural colours, these being reproduced so accurately as to make it difficult to believe one was not looking at the actual fruit. The stereo-photo-chromosome, as the novel apparatus employed is termed, is in appearance like an ordinary stereoscope. When a series of three pairs of uncoloured photographs similar to those shown on the screen are viewed in the stereo-photo-chromosome, the dish of fruit is seen as in a stereoscope, with the addition that it appears in all its natural colours, and the effect is extremely realistic. Several practical applications of this ingenious instrument have been suggested, one of which is that it might be valuable for preserving colour records of skin diseases, which would be useful to the physician for diagnostic purposes. The perfected stereo-photo-chromosome seems to bring this method of making colour records within the sphere of practical utility.

A NEW BLACK AND WHITE PROCESS.

PROFESSOR HUBERT HERKOMER, R.A., has invented a new method of preparing artistic printing surfaces, in which chemical and electrical means enable blocks to be prepared for printing without the intervention of the engraver. On Tuesday last, at the rooms of the Fine Art Society, London, he gave an exposition of the process, the details of which are as follows:—A picture is painted upon the surface of a copper plate, which is covered with a thin coating of silver cyanide, the medium employed being a special ink resembling printing ink. This ink practically never dries, however, and after using it for the sketch, a specially prepared copper-brown powder is shaken thickly over the picture, the surplus powder being afterwards removed. This powder granulates the ink and gives it the conductivity which is required for the next stage—electro-plating. An electrotype negative is then prepared in the ordinary way, and from the negative copies can be struck off by the press. The inventor claims for his process that it enables a painter to come before the public in black and white without the intervention of the engraver, without having himself to learn another art, and without reversing the picture; he has merely to paint in this black ink just as he would paint ordinarily, and he can see the effects that he produces. The artist does his work, in fact, in the same way as it should appear when printed. The specimens that have been exhibited bear out Prof. HERKOMER's claim that the new process is capable of indicating every subtle variation of tone. The granulation of the inked surface has the peculiarity that the coarser particles of the powder go where the ink is thicker, while the finest particles only are received where there is little ink—that is, for grey and light tones.

ANNOTATIONS.

EVENING MEETING IN LONDON.—At the next evening meeting of the Pharmaceutical Society, which it should be specially noted is fixed for Tuesday evening, February 11, instead of the time-honoured Wednesday, the following papers are announced to be read:—(1) "The Detection of Aconitine," by Professor Wyndham R. Dunstan, M.A., F.R.S., Sec. Chemical Society, and Francis H. Carr, Salters' Research Fellow in the Research Laboratory of the Pharmaceutical Society; (2) "Essential Oils of Black and White Peppermint," by John C. Umney. The chair will be taken by the President of the Society at 8 o'clock precisely. Before the reading of the papers the formal transfer of the Burroughs' Memorial Fund will be made to the President, it having been decided that the Memorial shall take the form of a scholarship. Subscribers to the Fund are invited to be present.

DEATH OF AN OLD-TIME DRUGGIST.—The *Liverpool Post* publishes an interesting paragraph in connection with the death of Mr. Edmund Jackson, of Castle Park, Lancaster, who died on Monday last, in his ninetieth year, having been born on April 16, 1806. He was formerly in business as a chemist in Lancaster, but was never registered under the Pharmacy Act. He is said to have been the first tradesman to introduce plate glass into his windows (? at Lancaster). It appears that young Jackson attended the same school at Lancaster as the late Professor Owen, Professor Whewell having just left at the time he entered. He has lived under four sovereigns—George III., George IV., William IV., and Victoria—and was present at Westminster Abbey on the occasion of the coronation of the Queen. He was the oldest freeman of the borough of Lancaster, and has only one surviving son, the Rev. Edmund Jackson, Rector of Gilmorton, Leicestershire.

THE MANUFACTURE OF POISONOUS SHEEP-DIP.—The *West Ham Herald* refers to the conditions under which the manufacture of a new kind of sheep-dip is alleged to be carried on in certain East London factories. The sheep-dip is composed of caustic soda, sulphur, and arsenic, and the *Herald* states that in spite of every precaution—the use of overalls, silk handkerchiefs for the face, proper ventilation and washing arrangements—the deadly powder penetrates to the skin, works into the finger-nails, and clogs the men's eyes. It seems to be impossible for work on such materials when used wholesale to be conducted without certain injury to the workers, and a doctor has given it as his opinion that no one can survive more than four or five years' constant work at the trade. The *Daily Chronicle* asks if this is not a case which the Home Secretary should ask the Departmental Committee now inquiring into dangerous trades to look into at once?

ENLARGEMENT OF THE "ANALYST."—It is satisfactory to note that the Society of Public Analysts finds itself able to further extend the usefulness of the *Analyst* by increasing the number of pages. Commencing with fourteen pages of matter in each number, it now contains twenty-eight. Arrangements have been made to collect more systematically than hitherto everything in chemical literature that the modern scientific analyst should know.

EDINBURGH CHEMISTS' BALL.—Scottish readers are reminded that this Ball will be held on Wednesday, February 5, in the Masonic Hall, Edinburgh. The arrangements are under the auspices of the Trade Association. Mr. Peter Boa, 119, George Street, Chairman of the Association, is convener of the Ball committee, and tickets can be had from him and other members of committee.

THE NEW PHOTOGRAPHY.—Further practical applications of photography by the new "x" rays are reported from Paris, several negatives representing human limbs having been exhibited to the Academy of Sciences on Monday last by Professor Lannelongues. One photograph of a diseased thigh-bone confirmed the theory that the destruction of the bone spreads from the interior to the surface. The second specimen threw some light upon the diseased bones in a child's hand, and the third showed the effects of tubercular decay of the wrist. At a meeting of the Royal Photographic Society on Tuesday, Mr. J. W. Gifford, of Chard, exhibited some further specimens, one especially noticeable being a representation of a human foot, showing that the cause of deformity was the enlargement of the metatarsal, pushing the other toes on one side. This gives clearly the diagnosis of the malady. Another photograph, of a lady's hand, shows clearly the slender bones and all the joints, and a gold ring on the middle finger is brought out prominently in very dark colour. Some faint traces of the flesh enwrapping the bones sufficiently indicate the outer forms of the fingers, but there appear no visible traces of the nails. The absence of finger nails is also marked in the photograph taken of the hand of Mr. C. Bayley, the Assistant-Secretary of the Society, in which some whitish patches at the ends of the fingers may at first sight be mistaken for those appendages; but they are really due to the moisture of the hand when pressed down upon the sensitive photographic plate. Besides these remarkable examples of photographing through the flesh, there were numerous photographic representations of metal discs and other objects, from which some information may be ultimately derived as to the nature and action of the remarkable force by which these mysterious photographic changes are effected. In some instances there appeared to be evidence of sparking. One other remarkable photograph was that of the Crookes' radiant-matter tube itself, displaying the concentration of its luminosity and other details. This was taken with a pin-hole camera. In taking the lady's hand the sensitive plate was put in a cardboard box and the hand on the sensitive plate. A lid of cardboard was then put over the box and covered with an inverted porcelain dish, the whole arrangement being finally put inside a thick black bag, and the Crookes' radiant-matter tube placed three or four inches above the bag. A report of an interesting lecture on the "Röntgen" rays, delivered before the Liverpool Physical Society, by Prof. Oliver Lodge, is unavoidably held over until next week.

AMERICAN COMMITTEE ON SCIENTIFIC RESEARCH.—A committee has been appointed by Prof. Alfred Dohme, chairman of the Scientific Section of the American Pharmaceutical Association to direct investigations in the pharmacognosy, chemistry, biology, histology, etc., of drugs. It consists of Prof. A. B. Prescott, of Ann Arbor, president; Prof. Edward Kremers, University of Wisconsin; Prof. L. E. Sayre, University of Kansas; Prof. John U. Lloyd, president of the Cincinnati College of Pharmacy; Prof. Samuel P. Sadtler, Philadelphia College of Pharmacy; and Dr. Charles Rice, chairman of the National Committee on the Revision of the United States Pharmacopœia.

"PEDIATRICS."—The diseases of children are to have an illustrated semi-monthly publication devoted to them, which will appear simultaneously in New York and London. The first number of *Pediatrics*, edited by Dr. Geo. A. Carpenter, assisted by a large editorial staff, contains an article on infant feeding, by Dr. A. Jacobi, practical notes, abstracts, and several other special articles. The paper is published by Messrs. John Bale and Sons, Great Titchfield Street, London, W., and the subscription price is eight shillings per annum.

PROCEEDINGS OF SOCIETIES.

CHEMICAL SOCIETY.—A special meeting of this Society was held on Thursday, January 23, when Professor G. F. Fitzgerald, F.R.S., delivered a memorial lecture on the life and work of the late Professor von Helmholtz. The lecture dealt mainly with very abstruse questions of the physical constitution of matter, viewed in relation to theories enunciated by Helmholtz, and the lecturer proceeded to show some of the difficulties inherent in Lord Kelvin's suggestion, based on Helmholtz's theories, that atoms are vortices in a perfect fluid, and went on to consider some of the applications of thermodynamics to chemical theory as worked out by Helmholtz. Passing to the discussion of some of the problems of capillarity, solution, and electrolysis, he concluded by saying that Helmholtz, by his physiological, chemical, and physical researches, had brought us measurably nearer to an ultimate dynamical explanation of the universe. In proposing a vote of thanks Sir Joseph Lister, President of the Royal Society, said he recollected with pride that Helmholtz was a medical practitioner. He would have done enough to claim the gratitude of physicians and surgeons if he had done nothing else than explain the accommodative power of the eye to varying distances and invent the ophthalmoscope. Dr. Frankland seconded the resolution, and among the subsequent speakers were Lord Rayleigh, Sir Henry Roscoe, Professor Armstrong, and Professor Poynting. In adjourning the meeting the President, Mr. A. G. Vernon Harcourt, mentioned that Helmholtz was half an Englishman, seeing that his mother was a Miss Penn, connected with the family of the founder of Pennsylvania.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.—On Wednesday, January 22, at Exchange Rooms, Birmingham, Mr. T. C. Clarke gave a description of his "Personal Experiences of the Minor." The meeting, which was arranged more especially for the junior members, was well attended.

In his opening remarks the speaker reminded those present that in detailing his experiences it was his intention to give prominence to those points in connection with which he had encountered difficulty rather than otherwise, and by showing some stumbling-blocks in a candidate's path, set up a few danger signals which he hoped might at least serve as a safeguard to those candidates present against becoming a prey to these particular pitfalls. The speaker then proceeded to detail his difficulties in preparing for undergoing examination. In conclusion, he urged all those who had still to pass to start study at once, to start seriously and work earnestly; above all, he desired them to pay no heed whatever to those disparaging remarks directed either at the examiners or the examination which, he was sorry to say, one heard only too frequently. He assured them that they would find almost invariably that alleged severity or want of courtesy emanated from those who were least worthy of success. When they had covered the course set out in the curriculum by steady, honest work he advised them to go up to the examination with confidence, and in few instances would that confidence be misplaced; to go up with the knowledge that they had done their work well; and should any latent feeling of uncertainty come over their minds, to think of the words:—

"He either fears his fate too much
Or his desert is small
Who fears to put it to the touch
And win or lose it all."

At the termination of his remarks, which proved instructive to most, and certainly of interest to all, Mr. Clarke was accorded a hearty vote of thanks.

SCHOOL OF PHARMACY STUDENTS' ASSOCIATION.—A meeting was held on Thursday, January 23, Mr. E. J. Eastes, Vice-President, in the chair.

A paper entitled "Flowers and Their Visitors," by Mr. A. Lander, was read in the absence of the author by the Honorary Secretary, Mr. Ernest Goulding.

The paper dealt with the structure and habits of a number of flowers, and after describing the arrangements to secure pollination among flowers not dependent on insects, proceeded to describe those which employ insects to carry their pollen and the methods they use. The attractions which flowers offer to visiting insects were enumerated. Among these colour and odour play a prominent part, together with the supply of honey.

It was shown that a certain species of yucca, if introduced into a new country, is not reproduced unless the particular moth which carries its pollen is imported together with it. The arums imprison insects for the time, lasting from the maturity of the stigma to that of the anthers supplying them with food meanwhile. Only certain insects, which are favourable to the plant, are skilled in effecting entrance to such flowers as the snapdragon and toadflax. Some Composites harbour and supply with food a number of ants, who in return defend the plants from the insects whose attacks would destroy it. One of the orchids of Australia is provided with a sensitive lip, which, when stimulated by the weight of an insect, tilts the insect inside, and closing upon it compels it to effect its egress by an opening where it becomes loaded with the pollinia.

The paper was illustrated by diagrams kindly lent by Professor Reynolds Green.

A discussion followed in which the Chairman, Messrs. T. A. Henry, and R. Payne, took part. A vote of thanks to the author was proposed by the Chairman, and carried with acclamation.

The amendments to the rules of the Association proposed at the previous meeting were discussed and voted upon *seriatim*, and were in each case carried *nem. con.*, the Chairman, Miss Gair, Messrs. Brown, Goulding, Henry, Jowett, Lean, and Umney, taking part in the discussion.

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY.—On Thursday the 23rd inst. the first general meeting of 1896 took place in the University College under the presidency of Mr. T. S. Wokes, who was supported by a good attendance of members.

As usual, the miscellaneous communications were productive of much that was interesting, as well as valuable, some of the specimens shown being entirely new to the majority of the members present.

Mr. Mitchell read a letter he had received from the Tasmanian Eucalyptus Oil Company, drawing attention to a specimen of unguentum eucalypti made by them from the fresh leaves of the eucalyptus growing in Tasmania. The ointment was of good consistence, excellent odour, and of very attractive appearance, being of a light green tint, about that of well-made unguentum sabinæ. The proportion of essential oil in it, judging by the action of the ointment when rubbed into the skin, was such as to cause no irritation, whilst being sufficient to act as an effectual and pleasant antiseptic. Such an ointment, however, was thought by Mr. Mitchell and the members generally to be unsuitable for use in English pharmacy, or for including in the ranks of the B.P. ointments, from the fact that fresh eucalyptus leaves were not obtainable here except in very small amount.

A series of specimens were then shown and described by Mr. P. H. Marsden, pharmacist to the Liverpool Royal Infirmary, many of them being obtained by him during a period he spent in a French pharmacie. Among them were true "Crab's Eyes"—*Cancerorum oculi*—or Yeux d'Écrevisses, concretions of carbonate of lime shaped somewhat like a small mushroom, found among the membranes in the stomach of the fresh-water crayfish, *Astacus fluviatilis*, Crustacea, order Decapoda, just before the period of moulting or ecdysis sets in. They consist of a membranous skeleton and pure calcium carbonate, this latter is gradually used up by the crayfish in the formation of its new shell. Crab's Eyes were in great repute in the past as an antacid, and entered into the composition of many of the peculiar compounds of the ancient pharmacopœias which are even now sometimes prescribed on the Continent. Nowadays creta preparata in small nodules is sold as Crab's Eyes, but as this entirely dissolves in excess of dilute hydrochloric acid, leaving no membrane or skeleton as the genuine would do, the fraud is easy of detection. A tube of dried "Cloportes," or wood lice, was then passed round. These insects, the *Oniscus asellus*, class Crustacea, order Isopoda, contain a small quantity of nitrate of potassium, and were given for asthma and as a diuretic in the shape of a soup or bouillon, or their expressed juice was administered in half-ounce doses. A tincture of the living insect is official in the American 'Homœopathic Pharmacopœia.' Mr. Marsden likewise exhibited some Æthiopian pepper, the dried carpels of *Unona æthiopia*, natural order Anonaceæ, also called *Uvaria æth.*, *Xylophia æth.*, *Habzelia æth.*, or *Xylophia aromatica*, used by the natives of Central Africa as a condiment, and known in France as "poivre de singe." A fine set of the beans of *Mucuna urens*, sometimes met with among Calabar beans, some roasted acorns of various species of *Quercus*, used instead of coffee by the peasants of Southern France, and two varieties of eucalyptus flowers from Nice completed the series.

Dr. J. R. Logan, M.B., then proceeded with a lecture illustrated by means of numerous experiments on "Albumin and its Allies." The lecturer remarked that the importance of albumin and its occurrence in the animal world was only equalled by that of cellulose in the vegetable kingdom, the great distinction between the two lying in the fact that whereas cellulose as a tissue is practically dead, albumin, on the contrary, plays a very active part in the animal tissues generally. The representative albumin upon which most of the experiments were performed, was egg albumin, of which the composition was discussed, and the action of various reagents towards it explained. Plant albumin was not so definite as that of animals, that is, it varied with different plants. Other closely allied bodies might be mentioned, such as proteids or albuminoids, which, in the case of those termed "albumins," always contained sulphur with phosphorus, and were invariable constituents of the very active parts of animal tissue, such as the nuclei of cells. Blood contains two albumins, fibrinogen and fibrinoplastic substance, which react when the blood is drawn from the body and clot, leaving the clear serum, which gives the same reactions as egg albumin, and which is used in the arts for the same purposes as white of egg. The red colouring matter of the blood is hæmoglobin, which owes its colour to the presence of iron.

The value of foods is mainly judged by the amount of albuminoids they contain, though their absolute nutritive worth must be regarded as dependent on the quantity of readily available or extractable albumins, which varies considerably in animal and vegetable foods. The action of the gastric juice, which may be approximately represented by an acidulated solution of pepsin, is to produce from the albumins submitted to it bodies termed peptones, which are isomeric with albumins but are not coagulated by heat and belong to the class of substances termed crystalloids, from their power of passing through membranes by osmosis. Albumin, on the contrary, is a colloid body, so that before it can be used by the animal economy for reconstructive purposes it must be rendered soluble by means of digestion, which may be done not only by pepsin, but by pancreatine, by vegetable diastase, by such ferments as papaine, and by the action of bacteria. The products of its digestion are ultimately peptones, but many intermediate bodies are formed termed albumoses, the first being uncoagulable and not giving the biuret reaction, the second giving the biuret reaction as peptones do, but otherwise similar to a globulin, being precipitated by a saturated solution of sulphate of magnesium. Many of these albumoses are of an extremely poisonous nature when injected into the circulatory system, most serpent poisons belonging to this class, as does also abrin, a toxic albumose from the jequirity seeds. The biuret reaction referred to is given by peptones to which a small amount of cupric sulphate and excess of an alkaline hydrate have been added in the cold, and is the development of a pink colour. Another test for proteids shown by the lecturer was the xanthoproteic, a yellow-brown colour produced by boiling the substance with nitric acid and adding excess of ammonia. A peculiarity of the digestion of egg albumin by means of pepsin and a dilute acid in test tube experiments was that a point was reached at which peptone ceased to be formed, the pepsin seeming to be inhibited in its work by the quantity of peptone formed. There is an analogy in this to the accumulation of alcohol in alcoholic fermentation when it reaches the proportion of 20 per cent. by weight, preventing the further action of the yeast. The peptones, as soon as they are formed in the stomach, pass by osmosis into the cells forming the walls of that organ, in some of which the peptone becomes regenerated, and appears again as an albumin.

The action of pepsin on gelatin, or the cartilaginous portions of animal food, is to give peptones also, but these differ from those of albumins, in being useless for the building up of new tissues. The effect of cooking foods was touched upon by the lecturer, who held the view that, broadly speaking, cooking made most foods less easily digested, but that it served one good purpose—that of killing the spores or bacteria, by which such diseases as tuberculosis are propagated. In milk we have a typical albumin, the casein, which was an alkaline albumin not precipitated by boiling, but readily coagulated by the addition of acids or of the rennet ferment. Milk may not be exactly improved by boiling, except so far as sterilisation is concerned.

After recapitulating the classification and reactions of the albumins he had touched upon, the lecturer brought his remarks to a close.

A good discussion ensued, and a vote of thanks was passed to Dr. Logan for his kindness in lecturing before the Society, special

attention being drawn to the successful manner in which the experiments illustrating the lecture were performed.

MIDLAND PHARMACEUTICAL ASSOCIATION.—A meeting of the above was held at Mason College on January 21, when a paper was read by Mr. F. Smith, entitled "The Sun and His Attendant Family." There were present Messrs. Gibbs (President), Prosser, Allcock, Poole, Jarvis, Mackenzie, Reedman, and others. The lecturer gave a brief review of the Ptolemaic system, and an epitome of the Copernician system, upon which all modern systems are founded, the rules of the solar system and source of light and heat were touched upon, also the theory of solar contraction, physical constitution of the sun, photospheres, chromospheres, prominences, corona, and sun spots. The size and distance of the moon, influence of moon upon the tides and eclipses of the moon, the planets and their satellites, possibilities of Mars being inhabited, asteroids, comets, were also described, as also was the description of the motion of the solar system in space. The lecture was illustrated by limelight views, and proved of much interest to those present. A short discussion took place at the conclusion of Mr. Smith's paper, and the customary votes of thanks were then passed.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION.—At the meeting held on Friday, January 24, at 9.15 p.m., Mr. J. Mackintosh Cameron in the chair, the minutes of last meeting were read and approved, and in the absence of the author, Mr. Hill read a paper by Mr. Alexander Sutherland, entitled "The Irreducible Minimum": A Study. In this it was pointed out that when a man starts on the business of life, he must be properly equipped before that business can in any way be a success. The tendency of the present day is to reduce that equipment more and more, but if reduction be carried below a certain point, the equipment proves inefficient and the result is disastrous. This particular point may be called "The Irreducible Minimum."

The goal towards which most students of pharmacy are wending their ways is the Minor examination. Many seem to look on the Preliminary examination as an excuse for extorting a fee permitting them to enter the pharmaceutical race. This idea is erroneous. The Preliminary examination is a test of a small portion of the student's equipment, and no one until he has passed it is "a fit and proper person" to go much further into the pharmaceutical contest.

The minimum of preliminary education in English should include an elementary knowledge of etymology, at least as far as the meaning of the principal terms used in pharmacy. In arithmetic there should be a thorough knowledge of weights and measures in common use, as well as of the metric system. There are few who enter pharmacy who do not seem to be muddled over the difference between a troy and an avoirdupois ounce. This should have been inculcated at school. When one shows a tendency to "mix up" our present weights it is unlikely he would be much better even with such a model system as the metric. Ignorance, joined to want of practice, or, what is much worse, careless practice, will make even the simple seem complicated and ridiculous.

The requirements in Latin should be extended so as to include a book of Celsus. Cæsar is excellent, but even a slight acquaintance with a man who actually used Latin to tell us of the drugs of his day would have a wider influence. In history the student should be able to sit down and give a short and intelligent sketch of "the rise and progress" of the calling he proposes to adopt. A knowledge of geography, with a view to habitats, should be required, and more stress laid on that. Everybody connects opium and tea with China and India, but more than that is required. A Chinese student in the same manner when asked the source of whisky might answer "Europe."

Possibly these things may seem to be beyond the scope of the Preliminary examination, but why not divide the Minor into two and increase the scope of the examination, taking matters of more general knowledge and reading first, and then after an interval the practical test? It might possibly be a better plan to arrange the examinations something as follows:—

1. *General Knowledge Examination*.—Subjects: Latin and English—as at present in the First examination; arithmetic; and elementary mathematics.

2. *Preliminary Examination* (at least two years after First examination).—Subjects: Latin—translation from some work bear-

ing on drugs; etymology—a knowledge of the meaning and derivation of some of the principal names and terms used in pharmacy; history—an outline of the history of medicine and pharmacy; elementary pharmacy.

3. *Minor Examination* (three years after second examination).—Subjects as at present, but examination to be divided into two parts. An interval of at least six months to elapse between the two portions. A high percentage (say 95 per cent.) having been obtained in any single subject, the candidate be held to have passed in that subject. Were this the rule the standard might be raised with advantage all round, I believe.

4. The Major examination must remain the goal for the would-be pharmaceutical chemist. To many of us the practising and reading for the Major is the one green spot of our lives. We may never muster up courage nor think ourselves fit to go up and astonish the examiners with the variety (or scarcity) of our knowledge, yet the goal remains ahead, and we exercise ourselves on the race-course hoping to get past some day. It might be thought that the “irreducible minimum” had become a “maximum,” but, if anything, the foregoing was rather low in standard.

What was termed an “invidious distinction,” occurring in Section 20 of the Pharmacy Act, 1868, was here referred to. It was suggested that the words “being in business on his own account” ought to be repealed. There is no such stipulation made after one has passed the Major, and there should not be any after the Minor has been passed, as it is not the opening of a shop, but the passing of an examination that gives a man his legal status in the first place.

After becoming legally qualified it is necessary to remember that the public does not restrict itself to the Pharmaceutical Society's examination schedules, therefore, young pharmacists should not be afraid of knowing too much. They will always find somebody in the Pharmaceutical Society who know at least as much as they do, and plenty of the general public who fancy they know more.

Thorough observation and then classification of observed facts form the bases of all knowledge of material things, and must underlie the work required in every curriculum and by every examination schedule. The trouble many suffer from is this, that having been unaccustomed to the thinking and observing processes in the beginning, they have swallowed “patent pharmaceutical foods” until now, and, suffering from partial atrophy they think there is only one food suitable for all because it agrees with them. Its name is “A Minimum of Study.”

Having cultivated the observing faculty and begun to classify, students should learn to think logically and to infer, and to state their inferences and facts in plain and orderly language, carefully distinguishing between the facts and the inferences. A language or two would help to widen one's horizon, and by ascertaining the meaning, original and acquired, of the name of everything used, one could obtain an amount of information which would stand in good stead. With human interests getting enlarged, the next step would be to seek to know more of the countries around, and from the constitution of *materia medica* specimen to the country which yielded that specimen, there was a course of study and of pleasure which would drive out of head all ideas of a “minimum” of education.

In conclusion, it was urged: First, that the minimum of education allowable must be that sufficient to meet the business of our daily life, and not merely what may prove sufficient to pass the Minor examination as at present constituted; secondly, that the Major examination in most respects more nearly approximates to the actual requirements; thirdly, that additional knowledge to that scheduled is required, and may possibly be best introduced by re-arrangement of the present examinations if the Minor is to remain as the qualifying standard; fourthly, that there are many things which it is to one's interest to know, which do not come strictly within an examination schedule, and not the least of these are accurate thinking and reasoning. In conclusion, students should not strive too much after an “irreducible minimum,” and not in their quest for knowledge forget the other necessary graces of life. Then, some time in the future it might be said of each one—

“I would the great world grew like thee,
Who grewest not alone in power
And knowledge, but by year and hour
In reverence and in charity.”

The reading of the paper was followed by a discussion, which was taken part in by Messrs. Cameron, Dey, Hay, Hill, McBain,

Macpherson, Sinclair, and Thwaites; and on the motion of the chairman, it was unanimously agreed to send a letter to Mr. Sutherland at Burra Firth, Unst, Shetland, thanking him for his interesting paper, and expressing a hope that he would soon be restored to his usual health.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION.—A meeting of this Association was held on Thursday evening last in the Rooms, West Regent Street, Glasgow, Mr. W. L. Currie, President, in the chair.

Mr. Currie, who is also Local Secretary of the Pharmaceutical Society, read a paper on—

UNQUALIFIED ASSISTANTS IN BRANCH SHOPS.

The immediate reason, he said, which had impelled him to bring this subject more directly before their notice was the reference made by the President of the Pharmaceutical Society (Mr. Carteighe) at the Council meeting, held on January 8. No one who had carefully read what was said, and studied it, could have any two opinions as to the meaning and value attached thereto. In his opinion, the President felt called upon to make some official statement after the recent prosecutions and the remarks which they called forth in the public press, and no better method than that could have been adopted. If they were to raise themselves above suspicion in that matter of unqualified assistants in branch shops they must boldly face the question and give their dignified but united support to the Pharmaceutical Council. He was not so sure of the method to be adopted in persuading any erring brother in trade, and there were some, to fulfil the legal and common-sense requirement, because the matter was a difficult one although it should not actually be so. But the interference in the conducting of another man's business might be construed with a wrong meaning. It might be a neighbourly act to discuss the question, but every man conducts his own affairs in his own way, and any movement in that direction might be resented. It might be the duty of the local secretary, if such breaches of the laws were within his actual knowledge, to communicate with the offender, pointing out the fault and suggesting it to be reminded to prevent publicity. If one could set aside the friendly capacity, and for the time being assume the official, with the assurance that no ill-feeling would be engendered as an after consequence, good and well. But when a strained feeling was likely to result, then other means would require to be adopted. He didn't mean by this that the local secretary should shirk his duty, but he would require to be careful not to give offence. What he thought should be done was, that the Pharmaceutical Society through its officials should send to every drug shop in the country a printed copy of the President's remarks on this very important subject, and if after such plain speaking there should still be those who ignored the demand to comply with the law, then there need be no hesitation, either by neighbour or local secretary, in reporting the offender to the proper authorities. That question of branch shops and their management was no new one, but was one of wide importance in view of the present day requirements. Even yet there were those who went the length of saying that the qualified chemist was entitled to have as many branch shops as he liked provided he put competent men in charge. There was a vast difference between competency and qualification, and while the private individual thought he was the best judge as to the capacity of the manager of a branch, the law did not recognise anything but qualification. The assistant might be a thoroughly reliable dispenser, a dependable man in every way, but he should give evidence of his competency by qualifying. Why was it that in the case of a widow carrying on a business she had to engage the services of a qualified man? Simply because he believed the Legislature intended that every shop should be in charge of a qualified person, and what was the difference between the branch shop and the widow's shop? None! Moreover, at the earliest opportunity the operation of the “widows' clause” should be cancelled. It had been a powerful argument against them during recent years. They, in Glasgow, had a very great evil to contend with in the case of the drug shops owned by doctors and by unqualified owners, covered in some way by doctors, where business was carried on in most cases without regard to Pharmacy Acts or any other Act; and recent prosecutions, which showed a deplorable state of affairs, instead of stopping the growth of such premises, seemed to have the opposite purpose, for they were on

the increase. And what he would say in that connection was that pharmacists should take a strong stand in that matter. They should make it their duty to conduct their business on strictly legal as well as moral lines, and also see that others did so. If doctors' premises were to be kept open for the purpose of retailing drugs of all kinds to the public, as was done at present, then he thought they should come under the category of branch shops and be in charge of qualified men, instead of, as was done at present, boys and girls. The doctor could not attend to two businesses at one time, and if he was exercising his profession outside he could not be supervising inside. Chemists should exercise a wise discretion in the sale of poisonous commodities (whether in small or large quantities) to persons they had no knowledge of, and, in conducting such sales, hedge them round with every legal difficulty. He did not say that the sale of poisons by qualified men only would prevent people from taking their own lives if they very much wished to do so, but when such an emergency arose, and inquiry resulted in the procedure being shown to be according to law, then they had done their duty. They must never forget that the public safety had strong claims on them, and they should see that every possible means was used to preserve and protect their prerogative. No more powerful evidence could be produced of the desire of the Pharmaceutical Council to improve the position of pharmacy than that on which he had been speaking, and the best reward the Society could have would be to receive the support of every qualified man throughout the country.

In the discussion which ensued,

Mr. Laing said he thoroughly approved of President Carteighe's proposals. He looked, as the ultimate result, for the advent of a new Bill to make it impossible for any drug shop to have a manager or anyone who was not a qualified chemist.

Mr. Robertson remarked that it was but fair that chemists with unqualified shops should be prosecuted as well as doctors.

Mr. Dunlop thought that Mr. Carteighe's proposal would involve rather much on the local secretary, and pointed out that it was a very delicate matter for a local secretary to inform on a neighbour.

Mr. Watson spoke as to the delicacy of such work being put upon the local secretary, and he stated that this move on the part of the Society would do much to raise the status of pharmacy.

Mr. Yates suggested that, although it might be a more expensive way, the Society should engage inspectors for England and Scotland, who would find out the condition of shops throughout the country, and that would take the burden off the shoulders of the local secretary. Offenders against the Pharmacy Act should be treated in the same way as offenders against the Food and Drugs Act, or any other nuisance.

Mr. Taylor said that in the past the Society had not carried out the provisions of the Act as the trade had been led to expect. They had not been sufficiently grasping in the past.

Mr. Bruce said that the great trouble in Glasgow had been doctors' shops, and there was the further objection in connection with them that doctors wrote out their prescriptions in cipher which it was impossible to decipher generally.

Mr. Mackenzie suggested the passing of a Bill in which all B.P. drugs, either alone or in preparations, could be dispensed only by qualified chemists.

Mr. Russell said the plan he proposed two or three years ago should be adopted in a Bill, that a census should be taken by the Society of all drug shops in the country, either by the local secretaries or by inspectors specially appointed. The census would show the condition of each shop as far as the qualification of the persons engaged in that shop was concerned.

Mr. Laing moved, "That that Association thoroughly approves of the views of the President of the Pharmaceutical Society in regard to unqualified managers in branch shops and concurs in his remarks; and we think that copies thereof should be sent from the Registrar of the Society to all druggists and drug shops throughout the country."

Mr. Russell moved, as an amendment, that the matter should be remitted to the Standing Orders Committee with powers, in order that the view suggested by him of taking a census of drug shops should be embodied in the motion.

On a division, 9 voted for the motion and 7 for the amendment.

Mr. J. A. Russell, secretary of the Association, then read the following paper on—

PROPRIETARY MEDICINES IN THE MEDICAL SERVICE.

The suggestion of proprietary medicines in connection with our

medical service stirs up feelings of great bitterness in the minds of dispensing chemists as each one recalls his own associations therewith. To enquire into the causes of this bitterness and to define the elements of its constitution would form a study at once complex, interesting, instructive, and, in some respects to our prouder selves, humiliating. It does not follow, however, that a display of such a study at this particular stage would prove profitable, and it is to be borne in mind that the aim of this Association is towards the practical rather than towards the merely theoretical, no matter how brilliant that might be.

Setting aside, therefore, for the time being the aggravating circumstances of the multiplicity of preparations similar to each other, but by different makers, which we are required to handle, the accumulation of bad stock upon our shelves consequent upon the growth and decline of successive fads, and the question of "cutting prices," or, to be more accurate, cut profits to the retailers of proprietaries, all painful facts with which we are only too familiar, I ask you to look beyond into the position of medical men in regard to proprietaries.

Consideration of the prescribing of medical men is quite within our sphere as chemists; indeed, it is a duty required of us if we are to accomplish our share in the work of applied medicine. It is unfortunately the case that on this borderland between us so many jealousies have developed and so much acrimony exists between the rank and file of the two bodies that the one does not receive more than the fraction of the true service it might receive from the other, and the fullest opportunity is furnished to the enterprising advertiser of nostrums.

These conditions attracted my attention with special force in connection with parish work. Reduced from a matter affecting the whole country to one within the confines of a parish and the administration of a Parish Council, this question, so far as the aspect now under consideration is concerned, becomes easily analysed. Yet do I make bold to say, the principles which have guided and controlled action in the one case are equally applicable to the other. In the Glasgow City Parish this question applies to medicine dispensed in five chemists' establishments, and supplied to a population of between five and six thousand poor persons (very sickly, about 40 per cent. being on the sick list), and it applies to services rendered by twelve medical men. The principles apply equally, irrespective of the area or numbers involved. It was found in this instance that proprietaries, including an emulsion of cod-liver oil, a combination of chloral and potassium bromide, one of santal oil and cubebs, a petroleum emulsion, and a wine of cod-liver oil with peptonate of iron, were being prescribed. The absurdity of such a procedure is apparent when we know that in none of these instances was the prescriber cognisant of all the ingredients in the preparation which he prescribed, though probably those specified as contained in them, and on the action of which he, no doubt relied for results, were the important ones. Still he was working in the dark, he was at the mercy of advertising manufacturers, having no check upon them, and for all he knew he might be administering something having an action differing very materially from that which he believed himself to be prescribing. In contra-distinction to this are the circumstances that qualified chemists were at his service who were quite capable and prepared to compound the drugs prescribed in the form desired with this advantage, that he would know exactly all he was giving to patients, both active drugs and combining adjuncts. In addition to this the important question of economy comes in. In regard to the emulsion of cod-liver oil, around which preparation the discussion chiefly waged, it was shown the compound desired could be furnished at about one-fourth the cost of the proprietary. You will notice I do not oppose myself to proprietaries because they are proprietaries, but because of the conditions connected with their production and administration. The conditions I have attempted briefly to delineate are attached more or less and with but little exception to all of them. Any of them to which these conditions are not attached necessarily do require to be regarded in accordance with their peculiarities. It was pushed forward as a justification and reason for their use that they were prescribed in other parishes without objection, in the public hospitals also, and by men undeniably eminent in their profession. Of course that was met then by pointing out that although objectionable practices might be followed in other institutions and by persons in high places, they remained none the less objectionable, and were to be regarded accordingly. The fact of such an argument being put forward, however, reveals something in connection with our public hospitals deserving of the gravest consideration by those in the

medical profession who strive for the suppression of abuses and the realisation of its highest ideals.

Public hospitals are schools for medical teaching, and their physicians occupy the van of medical progress. If through thoughtlessness they fall into bad habits it is to be expected these bad habits will be propagated and spread throughout the country in the persons of their pupils and followers. I say through thoughtlessness on their part, because upon inquiry I have learned on good authority that in some hospitals at least these teachers—whom it is a very delicate matter to correct—very frequently are requested and do alter prescriptions for proprietaries to their equivalents compounded by the hospital dispensers. This does not appear to be generally known, and another example of the same thoughtlessness is that they speak of preparations by proprietary titles instead of by the drugs of which they are composed, so that proprietaries get the credit of therapeutic qualities which should be attributed to the drugs composing them. The evil influence of such a practice must be very far reaching. It would be altogether unjust to say anything against pharmacists or others for endeavouring to meet the increasing requirements of physicians, or who are endeavouring to improve upon the modes of administering medicine, but there are different ways of doing things, and all are not good.

It is much to be feared that physicians are permitting themselves to be led a little blindly by enterprising individuals into experimenting with novelties without having mastered what has been made known regarding substances no longer novelties. This phase of the question is one falling to be dealt with by the medical profession, and we need do no more than refer to it. Another side falls to our consideration. It was said by a medical man—somewhat rudely, I think—"But chemists cannot make these preparations properly." That contention was at once completely rebutted by the chemist present volunteering personally to give satisfaction in the matter. Now, there is this difficulty to be met. Medical men are not prepared to work out for themselves good formulæ to take the place of proprietaries; if the combination be left to chemists they have no standard to go by. The consequence is good results may be obtained here, bad results there, and when we consider the competition which exists, and efforts made to undersell each other, this is less surprising.

We would not desire that medical men should be confined to the B.P. in their prescribing, but I would suggest that official formulæ for popular preparations be compiled and published. The General Medical Council is the authority for the Pharmacopœia, let the Pharmaceutical Council through the facilities within its power attend to the other. This would be a standing work for it to accomplish, and the fruits of this work would render future compilations of the Pharmacopœia much more easy.

The discussion on Mr. Russell's paper was adjourned till a future meeting.

LIVERPOOL CHEMISTS' ASSOCIATION.—The annual general meeting of this Society was held on January 23 at the Royal Institution, Colquitt Street, Mr. M. Conroy presiding.

Mr. Wardleworth exhibited a specimen of Ceylon coca, very similar to the usual Huanuco variety, but better grown and dried.

The annual report was then read by the Secretary, Mr. A. S. Buck, showing a membership of 127. A proposal to admit as associates of the Association, at a nominal subscription of 1s., such apprentices or students as were not on the Register of Chemists and Druggists was agreed to, and it was intimated that for their benefit the library and museum would be overhauled and brought well up to date by the purchase of new works of reference and fresh specimens.

The Treasurer's report was passed as very satisfactory, a balance of £16 9s. 3d. being the result of the year's working. Of the recent edition of the price-lists 978 copies had been sold, only 22 remaining on hand. After the usual votes of thanks had been passed, the scrutineers, Messrs. Cowley and Dutton, proceeded with the collection of the voting papers issued for the election of the new council, with the result that after the counting, Dr. Symes, Messrs. T. F. Abraham, J. Hocken, A. H. Samuel, F.C.S., and Wellings were re-elected, together with two new members, Messrs. C. J. S. Thompson and H. Wyatt, jun., to fill the seven vacancies.

The President on this occasion departed from the time-honoured precedent of a presidential inaugural address, and instead Mr. Edward Davies delivered an interesting address upon the "Illuminating Power of Hydrocarbons." He showed experimentally how calcium carbide, when placed in water, yields

acetylene. This gas, when ignited, gives a flame of greater illuminating power than ordinary gas, and has a peculiar odour, not unlike that associated with gunpowder. Added to ordinary gas in the proportion of 10 per cent., it gives almost equal illuminating results without the pungent odour. It was thus shown how acetylene could be utilised for enriching ordinary gas, and also how useful it might become for magic lantern and other purposes. After dealing with the various theories as to the cause of the luminosity in gas, Mr. Davies finally gave an interesting exposition of the lighting power of the various components of gas separately ignited.

He was warmly thanked at the close of the lecture and a brisk discussion ensued.

INSTITUTE OF CHEMISTRY.—At the examination for admission to the membership of this institute, held from January 7 to 10, the following candidates were successful:—G. H. Appleyard, Yorkshire College, Leeds; J. H. Coste, Finsbury Technical College; G. George, Merchant Venturers' Technical College, Bristol; F. Hudson-Cox, School of the Pharmaceutical Society, and University College, London; P. C. H. Hunt, Mason College, Birmingham; and E. J. Parry, B.Sc. (London), Guy's Hospital. Of the candidates for the intermediate examination the following satisfied the examiners:—P. G. Jackson, University College, Nottingham; E. J. Read, B.A. (Cantab); and H. S. Shrewsbury, University College, Nottingham. The examiners were Professor W. R. Dunstan, and Mr. Otto Hehner. The members of the institute now number over 900, and there are over 200 registered students.

LEGAL REPORTS.

PROCEEDINGS UNDER THE SALE OF FOOD AND DRUGS ACT.

THE PRESENCE OF COPPER IN PRESERVED PEAS.

At Southwark Police Court on Wednesday afternoon the case of A. A. Grist, Sanitary Inspector of St. Saviour's District Board of Works, against H. C. Summers, trading as George Mence Smith, at High Street, Borough and also many other places, for selling preserved peas mixed or coloured with an ingredient rendering them injurious to health, viz., 8/10ths of a grain of copper per pound of peas, whereby the defendant became liable to a penalty of £50, again came on for hearing.

The case has already been reported in our columns (see *ante* pp. 59, 78.)

Mr. Frank Dodd, barrister, again appeared to prosecute, and Mr. Bonsey, barrister, defended.

Dr. B. H. Paul, Fellow of the Institute of Chemistry, etc., stated he was aware of the result of the analysis, and had specially considered it with regard to this case. It was a common statement that the copper was put into the peas to give them a green colour, but that was quite incorrect. Dr. Paul then put forward two liquids—showing that the green colour of preserved peas is not given by the copper-salt used in the process of preserving—one, containing about $3\frac{1}{2}$ grains sulphate of copper, was colourless, and the other containing the natural colouring ingredient of the peas, was dark green. In contact with the peas the copper salt used in the process of preservation decomposed, the copper becoming insoluble. The quantity of copper in a pound of peas would not make them injurious to health. The witness had never heard of a case of injurious effects from the use of preserved peas. Copper was only an acute poison in large quantities. It was very doubtful whether chronic copper poisoning existed. The greater part of copper, even if taken in a soluble form, passed away from the system. The witness had made personal experiments, and would not hesitate to take himself peas containing three times as much copper as those in this case, although it would be unwise to put that amount in the peas, as it might cause them to have a metallic taste. Dr. Paul further emphatically stated that the copper was not employed to give the peas a green colour, but simply to "fix" their original green colour.

The witness, in cross-examination, was taken through a number of authorities, whom it was admitted were eminent and well-known men; but he emphatically stated that their opinions as to the alleged injurious effect of preserved peas were decidedly wrong, and remarked that when once an error got into a book it was passed on into others and was very difficult to get rid of it.

Mr. Bonsey then addressed the magistrate for the defence.

After a few remarks on the difference between the experience and qualification of the medical gentlemen called for the prosecution and

for the defence, he remarked that in order to prove an offence the article of food must be shown to have been rendered injurious. It was not enough to assume that a certain ingredient might be injurious in itself when administered in considerable quantity, and then to infer that its use, in small proportion, in the process of preserving peas would render them injurious: that was begging the question, for the compound formed might be harmless, as was maintained in this case. He contended that the prosecution had been unsuccessful in the endeavour to show that the peas were rendered injurious. They might perhaps be indigestible, but even if that were proved, the Legislature could not protect the public against indigestion. No doubt copper was poisonous in large doses, but the quantity here in evidence was so infinitesimal as to make the prosecution appear a very trivial affair. The onus of proof that the peas were injurious to health rested upon the prosecution, but he submitted there was an absolute failure of such proof. The prosecution had fallen into the error of supposing and representing that because copper salts in large doses might be poisonous, therefore—under all circumstances of chemical combination and in however minute proportion—the presence of copper must be regarded as rendering any article of food injurious to health. The fact that twenty million cans of preserved peas are annually consumed, and that during thirty-six years no case of injury has occurred, was enough to show the harmless character of these goods. The matter had been exhaustively investigated by the Board of Health in France, and the result arrived at was that no injury resulted from the small amount of copper in preserved peas, etc. The prosecution had suggested that peas are preserved with copper only to be exported to this country, and that they are not allowed to be sold in France. However, the fact was that no restriction existed upon the sale of coppered peas in France any more than in this country; and in proof of that he produced a certified copy of a decree of the Minister of the Interior, addressed to the various Prefects throughout France. He submitted that the prosecution was ill-judged and vexatious, and on behalf of the defendant he asked for substantial costs.

Mr. Fenwick said it was an important matter, and he would adjourn the case for a week in order that he might consider his decision.

THE SEIDLITZ POWDERS CASE.

In connection with the prosecution of Mr. E. F. Strickland, chemist and druggist, of Ealing, for selling seidlitz powders not prepared according to the formula of the British Pharmacopœia, and reported at length in our last issue, Mr. F. Walker, solicitor for the defendant, applied to the Brentford Justices on Saturday last to state a case for the consideration of the High Court of Justice. The grounds on which he based his application were (1) whether the summons issued against the said E. F. Strickland disclosed any offence: (2) whether the public analyst duly complied with Section 16 of the Sale of Food and Drugs Act; (3) whether the person requiring the article to be analysed duly complied with Sections 13 and 16 of the said Act; (4) whether the evidence adduced at the trial of the said case proved any offence under the said Act; and (5) whether there was any sufficient legal evidence to show that the article purchased by the complainant was delivered to the public analyst?

Mr. Sharp (one of the justices) said there was little or nothing in the points. The great point had been missed. It was whether chemists should be confined within the B.P. and never be allowed to sell compounds not made according to its formulæ.

Mr. Walker submitted that he raised that very point. The grave question was whether a man in selling, as Mr. Strickland did, a similar thing as one prescribed in the B.P., but in larger proportions, was committing an offence.

The Chairman said that the justices considered the points frivolous, but at the same time they would be willing to give all the help possible.

Subsequently Mr. Walker renewed his application in the following terms:—I ask the Bench to grant my application, on the ground that a chemist does not commit any offence under the Sale of Food and Drugs Act if, on being asked for a box of seidlitz powders, he supplies powders of the same ingredients and in similar proportions to the effervescent tartarated soda powders of the British Pharmacopœia, but containing a larger quantity of such powder than the quantity there specified.

The Bench granted a case.

Mr. Walker asked that he might include the grave point whether Section 16 was complied with, but the Bench replied in the negative,

NOTES AND QUERIES.

[The information given in this column includes both notes of practical interest to pharmacists, and replies to queries which seem to possess sufficient interest to readers generally. Readers requiring working formulae for special preparations should intimate their wants to the Editor, who will be pleased to assist them to the best of his ability. The word "parts" invariably indicates parts by weight.]

SODIUM IODIDE IN PILLS.

According to R. van Gool (*Journ. de Pharm. d'Anvers*), sodium iodide can be easily and quickly made into pills by adopting the following formula:—Sodium iodide (anhydrous), 4 Gm.; powdered sugar, 40 Mgm.; distilled water, 1 Gm.; starch powder, 60 Mgm. Triturate the iodide and sugar together, add the water, then the starch, and incorporate thoroughly. The pasty mass is covered with starch powder, and left awhile, then rolled whilst still soft. They should be dried by rolling them in a slightly warmed capsule, and finally sugar-coated.

RESINATE OF COPPER.

By dissolving copper sulphate, 50 parts, in water, 1000 parts, heating the solution to 100° C., and then adding ordinary resin, 100 parts, *résinate de cuivre*, a new veterinary remedy, is formed (*Ann. de Met. Vet.*). The resulting product is greenish, and described as insoluble in essential oils or alcohol. To prepare it for use, dissolve green or black soap (? soft soap), 100 parts, in amylic alcohol, 100 parts, and to the warm solution add the resinate, 60 parts.

PREPARATION OF BONE MARROW.

Barr's method of preparing this (*vide B. M. J.*, 1895, i., 358) is to make fresh bone marrow, 3 oz., into a paste with port wine, 1 oz.; glycerin, 1 oz.; and gelatin, 5 dr. Soak the gelatin in sufficient water to soften it, then melt with the glycerin. Mix the marrow and wine separately in a mortar, and finally add the mixed gelatin and glycerin.

ANTI-ASTHMATIC CIGARETTES.

Dried leaves of belladonna, 50 parts; hyoscyamus, 20 parts; stramonium, 30 parts; tobacco, 40 parts; jaborandi, 10 parts; sage, 20 parts; and water drop wort (*Phellanium aquaticum*), 12 parts. Cut fine, sift to remove dust, moisten with 40 parts of cherry-laurel water well distributed, and then make into cigarettes of the usual size. One should be used before and after each attack, the smoke being deeply inhaled.

MEDICATED PASTILLES FOR HOARSENESS.

Mix cocaine hydrochlorate, 5 Mgm.; morphine hydrochlorate, 5 Mgm.; tincture of aconite, 2 drops; marshmallow flowers in powder, 150 Mgm.; and powdered sugar, enough to make one pastille. From 6 to 8 should be used daily.

SOPHISTICATION OF CODEINE WITH SUGAR.

Elievant reports (*Répert.* [3], vii., 491) having met with a sample of codeine which was adulterated with sugar candy; the crystals of saccharose and codeine being closely alike in appearance, the fraud would be likely to pass unless chemical tests were applied.

A PREPARATION OF MILK FOR DIABETIC PATIENTS.

Following the suggestion of Dr. Sydney Ringer, Martindale prepares a solution of caseinogen thus: Thirty ounces of milk are mixed with an equal volume of water, and the caseinogen thrown down by the addition of about 90 C.c. of 10 per cent. acetic acid. The curd is allowed to settle, the clear liquid syphoned or decanted off, and the precipitate washed on a calico filter. The caseinogen is then rubbed up in a mortar with calcium carbonate, and water added, when the organic compound is again dissolved, and the calcium carbonate allowed to settle down, the milky fluid being decanted off. In this way what is essentially milk without lactose is obtained; if desired, it may be sweetened by the addition of about 2 per cent. of glycerin (*B. M. J.*, 2, 95, 1412).

APPLICATION FOR CHAPPED HANDS AND CRACKED LIPS.

Compound tincture of bee-zoin, 1; absolute alcohol, 15; rose water, 15; glycerin, 60 parts. To be rubbed on the chapped surfaces at night after bathing the parts with warm soap and water (*Rev. de Thérap. Med. Chirurg.*, lxii., 740).

NOTICES TO CORRESPONDENTS.

All Articles, Letters, Notices, and Reports intended for publication in the Journal, Books for Review, and communications respecting Editorial matters generally must be Addressed "Editor, 17, Bloomsbury Square, London," and not in any case to individuals supposed to be connected with the Editorial Staff. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

ANY INSTRUCTIONS from Members, Associates, and Students of the Pharmaceutical Society, with reference to the transmission of the Journal, should be sent to the Secretary—Mr. Richard Bremridge,—17, Bloomsbury Square, London.

BUSINESS communications—including advertisements, orders for copies of the JOURNAL, and instructions from Subscribers respecting transmission of same—must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London. Cheques and money orders should be made payable to "Street Brothers."

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

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

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

QUERIES addressed to the "Editor" will be replied to in the Journal as early as possible after receipt; answers of sufficient general interest being given under the heading "Notes and Queries." The Editor cannot undertake to reply to queries through the post.

REPRINTS of articles cannot be supplied unless authors communicate with the Editor before publication.

LETTERS.

SEIDLITZ POWDERS.

A.P.S. says "I believe it is a very common practice with chemists to stock three strengths of seidlitz—one practically identical with the official soda tart. efferv.; a small seidlitz, containing a smaller quantity of both 'blue' and 'white'; and a strong seidlitz, popularly asked for as a 'double-strong seidlitz powder,' consisting of the ordinary powder with the addition of about a quarter of an ounce of Rochelle salt. It is to be hoped that the case referred to in your editorial of 25th inst. will determine whether or not such practice is legitimate."

SPT. AMMON. AROM. AS A MASSING AGENT.

MR. W. LYON explains that he was not aware Mr. Dunlop had, a year ago, made a communication on aromatic spirit of ammonia as a massing agent. He says, "Had I known of his paper I would not have brought the subject forward. I do not think his other remarks call for comment, but I may say it seems to me the Revision Committee would be taking a poor view of their duty if, in considering the pill formulæ, they merely took into consideration the massing of the ingredients, and overlooked the possibility of the pill being frequently prescribed along with some chemical which was incompatible with the official massing agent."

ANSWERS.

"ASPIRANT."—You cannot do better than procure the latest edition of Thorpe's 'Inorganic Chemistry' (Collins, 2 vols., 5s. 6d. each).

"BALSAM."—It is probably the so-called "French or German mustard" you refer to. That is prepared by mixing mustard flour with salt, olive oil, and vinegar in which various flavouring materials have been macerated, such as garlic, tarragon, thyme, parsley, etc.

"NUX VOMICA."—We are unable to give advice in the matter. Your case seems peculiarly one for a medical practitioner.

"CARBON."—We do not know where you could get the loan of specimens of anthracite and other varieties of coal, but you might apply to Mr. T. D. Russell, 78, Newgate Street, London, E.C., Mr. Samuel Henson, 97, Regent Street, W., or Messrs. J. R. Gregory and Co., 1, Kelso Place, Stanford Road, Kensington, W., who are the leading dealers in collections of minerals, etc.

G. NIND.—We are endeavouring to obtain the information you ask for.

G. W. BLYTHE.—The process by which you state you can easily and directly prepare pure anhydrous hydrocyanic acid, though interesting, is unlikely to be of any practical use, and any such process must of necessity be extremely dangerous to work.

"J. C."—You must protect the article before offering it for sale. Apply to the Comptroller of Patents, Patent Office, Southampton Buildings, Chancery Lane, London, W.C., for information how to proceed. Perhaps your best plan would be to secure the services of a good patent agent, or you might apply to the manager of *Invention* Patent Department, Mitre Court, Fleet Street, London, E.C. Having properly protected the article, you should then send specimens and particulars to the wholesale firms likely to be interested.

QUERIES.

"KAPPA" asks (1) "would any correspondents kindly say whether they have tried the depilatory liquid, the formula for which was quoted in the Journal of August 24, 1895 (p. 174) from a French source. It contains iodine, oil of turpentine, collodion, etc. I made some strictly according to formula, and experimented on my arm. The result was not satisfactory, though it certainly removed a hair here and there. I should be glad to know if anyone else has had the same experience? (2) What is the best agent for removing the stain caused by picric acid? In using a solution, as recently recommended for burns, it is almost impossible for the dresser to avoid his hands being stained. Even after well washing the hands, the flavour of the picric acid is imparted to bread, etc., for hours afterwards."

MR. D. WALKER asks if any correspondent can favour him with information as to the composition of the black liquid used for the sights of guns.

OBITUARY.

YOUNG.—On January 5, W. F. Young, Chemist and Druggist, Kilmarnock. (Aged 29.)

WALKER.—On January 20, Benjamin Walker, Chemist and Druggist, Tetbury. (Aged 45.)

HUNTER.—On January 22, Thomas Hunter, Chemist and Druggist, North Shields. (Aged 71.)

BANKS.—On January 23, at his residence, Enfield, John Banks, manager of the surgeons' instrument department of the firm of Messrs. S. Maw, Son, and Thompson, druggists' sundriesmen, of Aldersgate Street. Mr. Banks was in his sixtieth year, and had been with the firm forty-four years, commencing his career in the service as a boy in 1852. He had conducted with signal ability and success the business of the department over which he presided, and was greatly respected by a large circle of business and other friends.

HEADLEY.—On January 25, Morris Headley, Pharmaceutical Chemist, Filey. (Aged 89.)

PUBLICATIONS RECEIVED.

MACHINERY AND APPARATUS FOR MANUFACTURING CHEMISTS. BY JAMES C. SHEARS, ASSOC. M. INST. C. E. Pp. 93. Price 3s. 6d. (London: E. Marlborough and Co., 51, Old Bailey, E.C., 1896.) From the Publishers.

A SECOND NOTE ON THE DISCOVERY OF THE SNAKE BITE CURE. BY DINSHAH ARDESHIR TALEYARKHAN. From the Author.

HISTORY OF THE CHOLERA CONTROVERSY. BY SIR GEORGE JOHNSON, M.D. Lond., F.R.C.P., F.R.S. Pp. 78. Price 3s. (London: J. and A. Churchill, 11, New Burlington Street, W. 1896.) From the Publishers.

AARHUS LOVEAPOTEK, 1596-1896. Et Festskrift ved 300 aars Jubilæet. Af E. Dam, Udgivet paa Foranstaltning af Apotheker D. M. C. Reimers. Pp. 106. Aarhus, 1896. Fra Udgiveren.

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs. Ames, Ansterberry, Ashford, Barker, Bates, Bindloss, Bird, Blythe, Boa, Brearley, Brown, Clark, Cribb, Davies, Daybell, Dryden, Dyer, Forrett, Griffin, Gunn, Harris, Heron, Hill, Idris, Jarvis, Johnston, Last, Line, Linstead, Lyon, Mander, Morgan, Mumbray, Muratowsny, Oliver, Phillips, Pike, Pryse, Reynolds, Robinson, Scamler, Shattock, Sinclair, Smalley, Stephenson, Thompson, Tocher, Vogl, Walker, Wart, Wells, Whitaker, Williams, Wilson, Wyatt, Zimmerman.

**SCROPHULARIA NODOSA, L.,
ITS SPHÆROCRYSTALS AND SOME ALLIED BODIES.**

BY DR. AUGUST E. VOGL,

Professor of Pharmacology, etc., to the University of Vienna; Honorary Member of the Pharmaceutical Society.

In all the green parts of the knotty figwort, *Scrophularia nodosa*, L., unusually beautiful sphærograins, or sphærocrystals of an organic compound occur, which are specially interesting on account of their being present in the living plant itself, and not produced by drying or by the action of certain reagents. At present I am not able to give any information as to their nature, but in many respects they resemble the sphærocrystals found in buchu leaves, in the leaves of *Conium maculatum*, and other umbelliferous plants, and considered to be hesperidin. They are most easily seen in the stem-leaves, the structure of which may be briefly detailed.

The leaves of the figwort are shortly petiolate, somewhat oblique, ovate or elongated-ovate, acute, contracted at the base, and unequally crenate-dentate; in structure they are

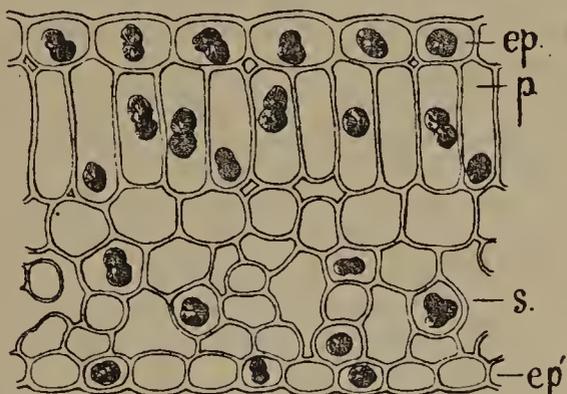


Fig. 1.—*Scrophularia nodosa*, L. Portion of transverse section of leaf; *ep*, epidermis of upper surface; *ep'*, epidermis of under surface; *p*, palisade tissue; *s*, spongy parenchyma. In most of the cells a single or double sphærograin.

dorsi-ventral (Fig. 1). The upper epidermis (Fig. 2) is composed of tabular cells with sinuate walls, those of the lower epidermis, on which alone stomata occur, being very wavy. Here and there on the veins are very small capitate hairs, with a short, one-celled, thin-walled pedicel, and a two, three, or four-celled head, which in section is almost reniform. The palisade tissue occupies about one-half of the mesophyll, and consists of a single row of somewhat slender

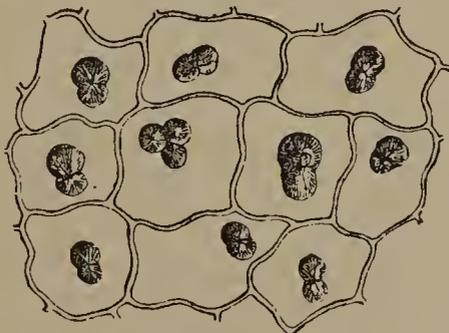


Fig. 2.—*Scrophularia nodosa*, L. Epidermis of upper surface.

cells, which are connected, by a row of absorbing cells, with a spongy parenchyma about three cells wide. The chloroplasts are relatively large, disc-shaped, or pointed-elliptic, and contain abundance of starch.

In transverse and in surface sections of the fresh leaves, either without any preparation at all or after the action of water, alcohol, glycerin, or chloral hydrate, comparatively

large spherical or double spherical masses (resembling a compound starch-grain) the brightness and yellow colour of which renders them at once conspicuous, can be observed in some or many of the cells of the epidermis and mesophyll. A high power shows a radiate and occasionally concentric formation, the former being characterised by fine radial striae and sometimes fissures. Usually the sphærograins occur singly in the cells, but in the cortical tissue of the stem numerous small ones are to be found crowded into a single

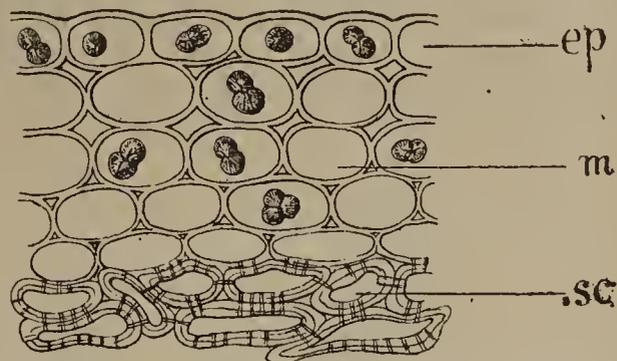


Fig. 3.—*Scrophularia nodosa*, L. Transverse section of carpellary wall; *ep*, epidermis; *m*, central tissue; *sc*, sclerenchymatous tissue.

cell. They lie in colourless, or, in the peduncle, in red cell-sap, and are accompanied by a few microsomes, by one or two oil-globules, and in the green parts of the plant also by chloroplasts. As far as could be determined, these sphærograins are insoluble in water, glycerin, chloral hydrate, alcohol, acetic, and hydrochloric acids even when warmed; caustic potash and ammonia dissolve them. Ferric chloride shows the presence of iron-greening tannin in all cells containing chlorophyll and in isolated groups of epidermal cells, but does not affect the sphærograins, or at most changes their colour to a brownish green.

The sphærograins are present in variable number, not only in the leaves of the figwort, in which they occur in the green

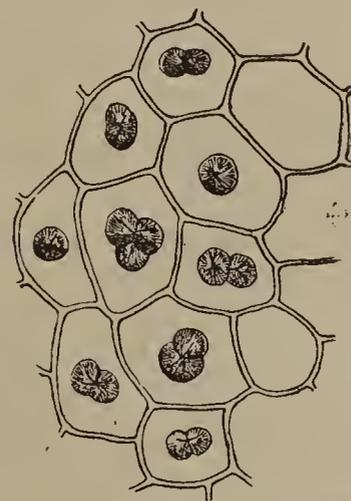


Fig. 4.—*Scrophularia nodosa*, L. Epidermis of carpellary wall—surface view.

cells of the mesophyll, and are more numerous in the epidermis of the upper than of the under surface, but also in the epidermis and cortical parenchyma of the stem, and in the tissue of the calyx and of the carpellary wall (Figs. 3 and 4). The last named is the easiest object in which their presence in the living plant can be demonstrated, for the chlorophyll-cells, suspended in their own cell sap, show the sphærograins.

As far as I am aware this is the first observation of the kind that has been made. Zimmermann in his excellent

work, 'Die Morphologie und Physiologie der Pflanzenzelle,'* draws particular attention to the fact that such sphaerocrystals never occur in the living plant, but make their appearance only after the action of certain reagents.

The commonest, and to a certain extent, typical form of the sphaerograins of the figwort is the double sphere already alluded to. Large and small simple spherical grains also occur as well as disc-shaped. Sometimes the small grains grow together in masses resembling tubers, glands, or bunches of grapes. Sometimes the larger ones seem hollow in the centre. In the comparatively large, axially elongated cells of the chlorophyll tissue of the stem there sometimes occur great numbers of sphaerograins, usually small in size and of

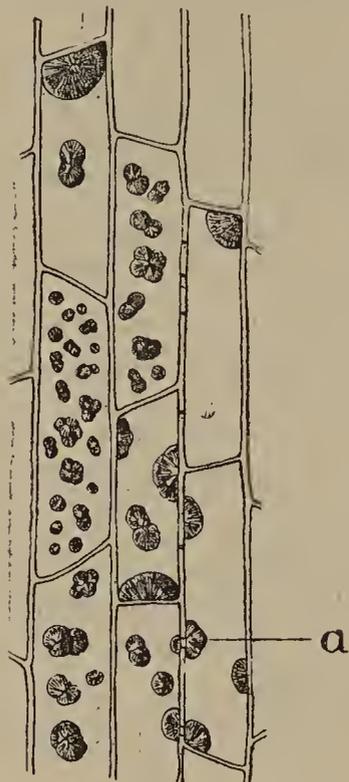


Fig. 5.—*Scrophularia nodosa*, L. Sub-epidermal tissue of stem.

typical shape, or in spherical grains, or warty, tuberous, glandular, or grape-like aggregations, and frequently, like other well-known sphaerograins, attached to the cell wall. In the latter case the cell wall is thickly covered on both sides with such grains, which appear then to be connected one with another through the pores in the wall.

Glycerin seems to promote the separation of sphaerocrystals. If the cortical tissue of the stem be treated with that reagent, small, usually radiately aggregated crystals will make their appearance, sometimes in whole rows of cells; these are probably substantially identical with the sphaerograins.

As far as my investigations during the vacation this and last year in South Tyrol extend, the sphaerograins described are of regular occurrence in *Scrophularia nodosa*. I have examined plants from very varied localities for sphaerograins, and have never failed to detect them, although sometimes but few were to be found. They often occurred, however, in considerable number, and in some specimens, gathered in a vineyard after flowering, every epidermal and mesophyll cell contained a sphaerograin. The influence that the period of vegetation has upon the sphaerograins has yet to be decided; I have been able to ascertain that the leaves of non-flowering shoots also contain them sometimes in large

numbers. They could not be detected in the root or tubercles, the parenchymatous cells of which are filled with somewhat large-grained starch, nor in the wood or pith.

In conclusion, I should like to draw attention to the extremely elegant capitate hairs on the flowering stem and its branches; they are accompanied by the small capitate hairs already alluded to, and consist of a pedicel composed of two cells of unequal size bearing a compressed hemispherical, or almost disc-shaped, or, if seen from the side, lens-shaped head. The lower of the two pedicel cells is comparatively very large, inelegant, and abruptly conical; the upper, short and disc-shaped. The head consists of numerous (40 to 50) club-shaped cells filled with violet sap and enclosed within a cuticle, thus recalling to a certain extent the glands of kamala (from *Mallotus philippinensis*). Warmed with solution of caustic potash the cuticle bursts or is dissolved, and the mass of cells is set free. As these trichomes perish the head collapses, the edge bends over and downwards, and the hair then resembles a delicate fungus.

Allied to the sphaerocrystals of buchu and, perhaps, identical with them, are the sphaerites, which occur in large numbers in the epidermal cells of a species of jaborandi (*Pilocarpus trachylophus*, Holmes, Ceará jaborandi).* The latter possibly correspond to the roundish balls that may be observed in the epidermal cells of the official jaborandi leaves (*Pilocarpus jaborandi*, Holmes); they are brown, and dissolve with production of a lemon-yellow colour in caustic potash.† Different in their nature are the sphaerocrystals that I found in the hairs on the anthers of *Verbascum* (Flores Verbasci)*; they are present in the drug, that is, in the dried flowers, and separate from the fresh plant on the addition of glycerin.

Very similar sphaerocrystals occur in the beard-like hairs on the lateral petals of the pansy, *Viola tricolor*, L.; these hairs are club-shaped, one-celled, thin-walled, and filled with colourless, yellow, or (in the garden variety) blue cell sap. They separate easily and invariably when a preparation of the fresh plant is placed in glycerin. In the course of two or three hours, or frequently sooner, yellowish-brown sphaerocrystals make their appearance. Possibly the similar yellow bodies in the well-known scales on the leaves of *Elæagnus angustifolia*, L., belong to this class of sphaerocrystals.

The sphaerocrystals that I had an opportunity of observing in the vacation of 1894 in the leaves of the purple loose strife, *Lythrum salicaria*, L., more nearly resemble hesperidin. As these leaves are interesting from another point of view also, I propose describing them a little more fully.

The leaves of the purple loosestrife are elongated lanceolate in shape, bluntly pointed, cordate at the base and dark green in colour, the under surface being paler. The structure is dorsi-ventral, the palisade tissue being composed of a single row of cells occupying about one-half of the mesophyll, its cells are slender and large, as are also those of the spongy parenchyma, of which there are about three rows. The epidermis of the upper surface is composed of sinuate polygonal cells, that of the under surface of wavy cells, on the side walls of which there are knot-like thickenings. Stomata occur on both sides, and there are also hairs which consist of one or two thick-walled cells, and are pointed, erect, or some-

* *Pharm. Journ.*, xxiv., 1065.

† Compare A. Vogl, 'Pharmakognosie,' p. 93.

‡ Vogl, 'Pharmacognosie.'

what oblique and finely striated. Numerous rosette-crystals of calcium oxalate, sometimes of considerable size, are present in the mesophyll. The chloroplasts are relatively large and contain abundance of starch. In the epidermis of both surfaces there are irregularly distributed groups of two, three, or more cells containing a homogeneous, strongly refractive mass, and conspicuous by reason of their projecting into the mesophyll beyond the other cells.

If a portion of the epidermis is separated and placed in glycerin, the contents of these cells contract, with indication of stratification, and folds are formed in the cell walls. Alcohol acts more quickly. Doubtless the cell contents consist principally of mucilage (and sugar). Caustic potash colours it almost gamboge-yellow, whereas the contents of the other epidermal cells assume a yellowish-red colour, whilst those of the collenchymatous cells in the veins and of the chlorophyll cells turn deep orange-yellow. If transverse sections are soaked in alcohol and then treated with caustic potash, the chlorophyll cells are coloured brownish-yellow, all the cell walls, including those of the hairs, pale yellow, whilst the contents of the guard cells turn orange-red. Iron blueing tannin is abundantly present in all the parenchymatous elements of the mesophyll, with the exception of the crystal cells, in the collenchyma of the veins, in isolated as well as groups of epidermal cells, and in many hairs, particularly in the terminal cell of pluri-cellular ones. It is, however, present in greatest quantity in the palisade, and spongy parenchyma. In the cells of these tissues iron salts produce a deep indigo-blue coloration; even the cell walls are tinged, at least transiently, blue. Chlorzinc-iodine colours all cell walls, except those of lignified elements of the vascular bundles, blue.

If sections of fresh leaves be examined in water, glycerin, alcohol, or chloral hydrate, small prismatic or acicular, colourless, or sometimes yellow sphaerocrystals or groups and

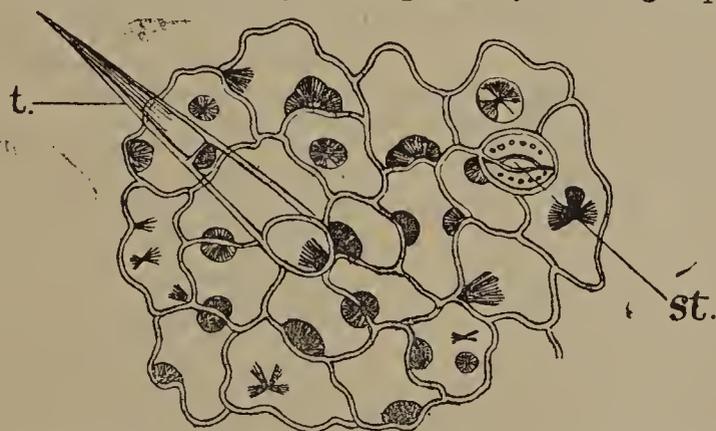


Fig. 6.—*Lythrum salicaria*, L. Epidermis of upper surface of leaf after the action of alcohol; sphaerocrystals in almost all cells, as well as in hairs (*t*); *st*, stoma.

tufts of crystals will make their appearance in the epidermal cells and in the hairs; in the latter they are often situated on the cell wall or the septum, or radiate in long needles from the apex. This separation of crystals takes place most abundantly after treatment with alcohol, but maceration in glycerin for several hours also results in the production of beautiful sphaerocrystals and tufts of needles. Dilute caustic potash dissolves them. They are not present in the living plant, but, as is the case with buchu, conium and jaborandi leaves, separate only in consequence of the evaporation of their solvent, or after treatment with dehydrating reagents (alcohol, glycerin). Whether these crystals consist of hesperidin remains to be determined.

I have recently observed bodies resembling the sphaerograins of *Scrophularia nodosa*, in the dried leaves of *Vicia faba*, and in the fresh leaves (collected in September) of *Calamintha acinos*; in the latter they occur in the epidermis, and, together with chloroplasts, minute wedge-shaped crystals of calcium oxalate and globules of oil in the cells of the mesophyll.

Mucilage cells resembling those in the epidermis of *Lythrum salicaria* are found, as is well known, in plants belonging to many other orders, as, for instance, in the epidermis of the upper surface of the leaves of *Reseda odorata* and other species, of *Viola silvestris*, *Viola hirta*, and doubtless other species of *Rhamnus frangula*, *Lavatera trimestris*, *Hibiscus trionum*, etc., etc.

Mucilage cells also occur in the epidermis of the leaves of various species of *Cytisus*, whilst in the leaves of *Onobrychis sativa* mucilage is found in enlarged cells of the palisade tissue, in *Chrysanthemum leucanthemum* in the large tongue-shaped terminal cell of pluri-cellular hairs. It is interesting here to note that in other Compositæ, e.g., *Matricaria chamomilla* (peduncle), *Leontodon hastilis* (leaves and stem), similar hairs occur in which the terminal cell secretes no mucilage.

MEDICATED GRANULES.

BY M. MANSIEB.

A short time since this novel form of exhibiting medicines was introduced to the notice of therapists, and seemed to please both doctors and patients, not because the use of the granules was more convenient than that of preparations of the old "armamentarium," but because they represented a pharmaceutical novelty. The granules are obtained by saturating specially broken sugar with medicated solutions, and allowing the solvent to evaporate. As far as is possible, the liquid used to make the solution should have as its base, alcohol, ether, or chloroform, so as not to dissolve the sugar. Then to reduce this to the granular form it must be gently triturated in a marble mortar so as to avoid the formation of powder, and afterwards sifted through a metallic sieve of five meshes to the centimetre. The sugar from this first sifting is now freed from adherent sugar dust by means of a sieve, either of hair or covered with gauze such as is used for surgical dressings with about twelve meshes to the centimetre.

As a typical example of such granular medicaments, I will now give the method of producing "granulated kola" (*kola granulée*), which is at present very much in vogue on the Continent: Take of hydro-alcoholic extract of kola, 7.50 grammes, granulated sugar, 150 grammes. Dissolve the extract in half its weight of alcohol at 60° by means of a water bath; pour the solution on the granulated sugar placed in a marble mortar, mix well by means of a stirring rod, place on a thin sheet of paper, and dry between 20° and 30° C. f. taking care to separate from time to time the adhering masses of granules. When dry, preserve in wide-mouthed bottles. Each teaspoonful of these granules weighs 4 grammes, and contains 0.20 gramme of extract. Not only medicinal extracts but almost any medicine can be made to lend itself to this way of preparation. The glycerophosphates of the alkali metals being very soluble in water, but only very slightly so in alcohol, may be dissolved in their weight of water, and then an equal quantity of alcohol at 60° added before pouring over the sugar. As for the glycerophosphate of lime, now so much prescribed, this is rather insoluble in water (1-15); a way out of this difficulty is, however, found in dissolving the salt (previously mixed with twice its weight of alcohol at 60°) with the aid of lactic acid. When this is done a solution is certainly formed but it is not of glycerophosphate of lime, but consists of lactate of lime and free phosphoglyceric acid. — *Répertoire*.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

MEETING OF THE COUNCIL.

WEDNESDAY, FEBRUARY 5, 1896.

Present:

MR. MICHAEL CARTEIGHE, PRESIDENT.

MR. JOHN HARRISON, VICE-PRESIDENT.

Messrs. Allen, Atkins, Bottle, Corder, Cross, Gostling, Grose, Hampson, Hills, Johnston, Martin, Martindale, Newsholme, Savory, Schacht, Warren, and Young.

The minutes of the previous meeting were read and confirmed.

THE LOT FOR THE NEXT COUNCIL.

The lot having been taken in the usual way to determine the seven members of Council who shall retire in May next, the following names were drawn:—Carteighe; Corder; Harrison; Hills; Martindale; Newsholme; Savory.

The following who remained in by lot last year now retire by rotation:—Messrs. Cross, Gostling, Johnston, Martin, Schacht, Storrar, and Warren.

The following seven remain in office another year:—Messrs. Allen, Atkins, Bottle, Grose, Hampson, Southall, and Young.

DIPLOMAS.

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

Armitage, Nathaniel Newborn.	Dyson, Thomas Hatfield.
Arrowsmith, George Micklem.	Lamb, William Henry.
Arundel, Edmund.	Lucas, Harry.
Boorne, Herbert Edward.	Taylor, Charles Ludlow.
Cocker, Lewis Alexander.	Udale, George William.
	Walker, John Robert.

ELECTION OF MEMBERS.

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

Pharmaceutical Chemists

Armitage, Nathaniel Newborn, Leeds.	Highfield, Henry, Sheffield.
Arrowsmith, G. Micklem, Whitstable.	Lamb, William Henry, Whitby.
Arundel, Edmund, Manchester.	Lilly, Arthur, Chelsea.
Blissett, Francis Howman, London.	Taylor, Charles Ludlow, Brinkworth.
Boorne, Herbert Edward, Bristol.	Udale, George William, London.
Cocker, Lewis Alexander, Ripponden	Walker John Robert, Cockermouth.
	Young, James Clements, Manchester.

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

Chemists and Druggists.

offhouse, James, Fleetwood.	Roberts, Robert B., Llanfairfechan.
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ELECTION OF ASSOCIATES IN BUSINESS.

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

Minor Examination.

Anning, James John, Leeds.	Mitchell, Robert Harry, Liverpool.
Colley, Herbert William, Grimsby.	Rees, Rice William, London.
Davies, John, Herne Hill.	Sanders, Francis Theodore, Sutton.
Day, John Robert, Liverpool.	Slinn, Albert Edward, Nuneaton.
Jackson, Frederic, Bawtry.	Stone, G. P. R., Burnham Market.
Leins, Heinrich, London.	Vinden, Frederick William, Exeter.
Lowther, Herbert Reginald, Mumbles.	Vogt, George, Kendal.
	Williams, John, Bala.

Modified Examination.

Felix, David Lewis, Mold.

ELECTION OF ASSOCIATES.

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

Minor Examination.

Adams, John, Uxbridge.	Hopkins, William Edward, Llandoverly.
Alder, Sydney Frank, Cheltenham.	Howell, Ellen May, London.
Alexander, Ernest Glover, Sheffield.	Johnstone, John, Selkirk.
Barlow, Samuel, Truro.	Kellam, Edward Henry, Stamford.
Barnes, Victor Geo. Harry, Tillington.	Knight, William Arthur, Leicester.
Beachell, John, York.	Latham, Hugh, Kirkcaldy.
Blyton, John Henry, Manchester.	Lewis, Richard Rice, Barmouth.
Bonnar, William, Glasgow.	Littlefield, Robert Dexter, Ventnor.
Caldwell, John, Kirkinvillech.	Littler, John, jun., Frodsham.
Currie, Archibald, Leith.	Melville, John, Edinburgh.
Daybell, Samuel Maltby, Ilkeston.	Michie, Alexander, Hawick.
Dewdney, A. Victor, Newton Abbot.	Morrell, John G., Stockton-on-Tees.
Duncan, James George, Turriff.	Nicholson, John Gordon, Carnoustie.
Fowler, Frank, Little Lever.	Scott, George Baty, Belford Station.
Francis, John, Merthyr Tydvil.	Smith, Ernest Edward, Bristol.
Hammond, Wm. H., West Burton.	Sykes, Richard Alfred, Manchester.
Harris, Abraham, Sheffield.	Tindale, Joseph Edward, Whitby.
Hendry, Simon, Belfast.	Turner, Walter Frederick, Norwich.
Hickman, Fredk. Stanley, London.	Walker, William Henry, Willenhall.
Holman, Henry, Silverton.	Westley, George Ernest, Walsall.

Wilson, Harold, Bridlington.

Modified Examination.

Burn, Thomas, Hartlepool.

ELECTION OF STUDENTS.

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

Andrews, Silas Fred., Chatham.	Moore, Herbert Richard, Bath.
Buttress, Henry James, Portsmouth.	Nursaw, Edward, York.
Chambers, Charles Ward, Goole.	Nuttall, Maurice William, Alfreton.
Clegg, Aldhelm, Manchester.	Phippen, Harry Garnet, Newbridge.
Cleworth, John, Leigh.	Pratt, Edward Adams, Bridgnorth.
Coverdale, Arthur E., Kennington.	Prescott, John, Butterwick.
Davies, Emlyn Holt, Aberystwith.	Purdie, Percy Wilfred, London.
Dean, John, Ashbourne.	Purves, William James, Hartlepool.
Dixon, William, Kendal.	Robinson, John L., Bournemouth.
Hickes, Charles Edward, Pocklington.	Robson, Harold, Huddersfield.
Jewson, John Robert, Wisbech.	Smith, Alfred, Derby.
Johnson, George Sheriff, Istock.	Spear, Frederick Augustus, Plymouth.
Johnson, Wm. Danily, London.	Stewart, William N., Glasgow.
Jones, John, Llanfagan.	Summers, George Edward, Derby.
Kemish, Luther, Downham Market.	Truscott, Gilbert Edgar, Southampton.
Kennard, Lilian Sarah, Lambourn.	Venn, Samuel Ernest M., Devonport.
Kingdon, Arthur J., South Molton.	Walters, John, Llanboidy.
Knight, Thomas, Reading.	Wherly, Charles, Stockton-on-Tees.
Leech, Peter, Ulverston.	White, David, Upper Weston.
Linnett, Louis John, Sevenoaks.	Whitehead, Thomas, Northallerton.
Mattock, William Henry, London.	Williamson, John Stanley, Liverpool.
Medley, William T., Newport (I.W.).	Woods, Benjamin A., King's Lynn.
	Wright, Arthur Childs, Bury-St.-Edmunds.

RESTORATIONS TO THE REGISTER.

The names of the following persons, who have severally made the required declarations, and paid the restoration fee, were restored to the Register of Chemists and Druggists:—

Clode, Charles, 64, Corbyn Street, Hornsey Rise, N.
Marsden, John, 65, Shaw Road, Oldham.
Prowse, Frederick, Swain Street, Watchet.

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

Mr. CORDER asked if a member who had not paid his subscription for many years was eligible to be restored to membership on payment of one year's subscription or had he to pay the arrears.

The PRESIDENT said he was only required to pay a small fee and the current year's subscription. Formerly he had to pay the arrears, but the bye-law was altered some years ago.

REGISTRAR'S REPORT.

The Registrar's report on the numerical strength of the Society was laid on the table. It is printed at pp. 106 7.

The PRESIDENT moved that the report be entered on the minutes and published in the *Pharmaceutical Journal*.

Mr. BOTTLE said he should like to express his regret at finding that their brother chemists did not rally around the Society as they might and, he thought, ought, to do. He said this as an old member of the Society, who felt that chemists had here a nucleus around which all could rally, and why so many of them were blind to their own interests he could not understand. He noticed with gratification that what he might call the younger element—the associates, were increasing, and he trusted the day was not far distant when the Council would be able to see its way to elect a goodly number of them as members of the Society.

Mr. ALLEN said the real question was whether or not the larger proportion of the younger men who passed the examination at the present time were joining the Society. It was only to be expected that a considerable number of the pharmaceutical chemist members would drop off from time to time, as many of them were amongst the older men. Enquiries had been made several times within recent years, and it appeared that of those passing the Major examination by far the larger proportion joined the Society, or were attached to it even before passing.

Mr. HILLS remarked that the present report showed that during the year there had been 68 successful Major men, and 57 had joined the Society.

The PRESIDENT thought it was very gratifying to find that the associates in business were so loyal to the Society, and that a number of chemists and druggists in business who had not previously joined were now coming to them.

The resolution was then adopted.

FINANCE COMMITTEE.

The SECRETARY read the report of this Committee, which recommended the payment of certain accounts.

The PRESIDENT (as Chairman of the Committee) moved the adoption of the report and recommendations. With regard to the General Fund Account, the receipts included subscriptions, examination fees, ground rents, and advertisements. The payments were of the usual character, excepting the half-yearly solicitors' bill, which amounted to upwards of £400. With regard to the Benevolent Fund, the Treasurer had been obliged to draw all the money in hand; but money was coming in, and he hoped would come in still more. They could do with as much as their friends would give them, and the Committee would be happy to vote it away to deserving cases. Two donations of ten guineas each had been received from old friends—Mr. John Thistleton Davenport, a former President, and Mr. Burden—in addition to those gentlemen's regular subscriptions, for which the Council was very grateful.

The resolution was adopted.

BENEVOLENT FUND COMMITTEE.

The report of the Committee included the recommendation of the following grants:—

£10 to a former member (67), who has been unsuccessful in business, and is without present means of support. (Oxford.)

£10 to a registered chemist and druggist (63), who has been unable to work for some time past, on account of bronchitis. He failed in business in 1890. (Hornsey.)

£10 to a registered chemist and druggist, whose stock and fixtures were sold up for rent in 1894. Has since been unable to find regular employment. He has a wife and three children to support. (New Cross.)

£10 to the widow of a former member and subscriber. Has had three previous grants of £10 each. She suffers from rheumatism, and can only do a little needlework occasionally. (Brixton.)

The SECRETARY had reported that one of the applicants for assistance had died since the receipt of the application. Two cases had been declined, and one had been deferred pending receipt of certain particulars.

The SECRETARY had also reported the death on January 15 of Mrs. Julia Johnson, of Hammersmith, aged 83, who had been an annuitant on the Benevolent Fund since 1885.

The VICE-PRESIDENT (as Chairman of the Committee), in moving the adoption of the report, reviewed the seven cases which came before the Committee. Of these one applicant had since been

removed by death, and as to the remaining six, grants were made in four cases, three of them to men. The effect of this, they hoped, would be far more than the temporary help afforded, as assisting them to earn their own livelihood in the future was the best form of assistance, it seemed to him, that they could make to those overtaken by distress; it helped to place them on their feet, and put them in a position to help themselves. A grant was also made to a lady who had been relieved on two previous occasions, her circumstances remaining much the same as they were on the occasion of her first application. Two other cases received very careful and long consideration, and as the result the Committee unanimously came to the conclusion that the applications did not come within the sphere of operations of this Fund.

The report was then adopted.

LIBRARY, MUSEUM, SCHOOL, AND HOUSE COMMITTEE.

Library.

The report of the Librarian had been received, including the following particulars:—

	Attendance.	Total.	Highest.	Lowest.	Average.
December ...	Day	392	29	3	16
	Evening.....	127	11	2	8
Year 1895 ...	Day.....	4148	32	0	14
	Evening.....	1465	16	1	7
Circulation of Books.					
	Total.	Town.	Country.	Carriage paid.	
December	175	101	74	19s. 0½d.	
Year 1895.....	2176	1119	1057	£13 6s. 1½d.	

Donations to the Library had been announced (*Pharm. Journ.*, Jan. 18, p. 47), and the Committee had directed that the usual letters of thanks be sent to the respective donors.

The Committee had recommended the purchase of the under-mentioned works:—

For the Library in London:—

Allen, Chemistry of Urine. A second copy.

For the Library in Edinburgh:—

Kelly's Directory of Chemists and Druggists.

Museum.

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

Donations to the Museum had been received (*Pharm. Journ.*, Jan. 18, p. 48), and the Committee recommended that the usual letter of thanks be sent to the respective donors.

	Attendance.	Total.	Highest.	Lowest.	Average.
December ...	Day.....	463	37	3	20
	Evening.....	36	9	2	2

Specimens had been distributed to Professor Tschirch, and to Professor G. Planchon.

The Exeter Association of Chemists and Druggists had also been supplied with specimens for their materia medica cabinet.

The report of this Committee included a recommendation that a grant of £20 be made to the Liverpool Pharmaceutical Students' Association for the purchase of a cabinet and specimens of materia medica, the cabinet to be placed in the Liverpool University College and to bear an inscription stating that it was the property of the Pharmaceutical Society of Great Britain.

There was also a recommendation passed at a special meeting of the Committee with regard to the Burroughs' Memorial Scholarship.

The PRESIDENT moved the adoption of the first portion of the report, as the latter portion would form the subject of a separate resolution. In addition to the usual routine business, the Committee had further considered the application from Liverpool for a cabinet and specimens of materia medica, for the purpose of promoting pharmaceutical education in Liverpool, especially in connection with the University College, Liverpool. As the Council was aware, the authorities of that College proposed to adapt their scheme of education, so as to fit in with the wants of students of pharmacy, and the College was equipped with the necessary apparatus for the teaching of chemistry and botany, but materia medica was not provided for. After careful consideration, the Committee thought it would be well that the cabinet should be placed in that College, but remain the property of the Society. There was sometimes a difficulty in connection with local Associations, and, at all events, this cabinet being held in trust by the authorities of the College for special purposes would be as available for pharmaceutical students as it could be in any other way. The

REGISTRAR'S REPORT.

MEMBERS, ASSOCIATES, AND STUDENTS OF THE SOCIETY FOR THE YEAR 1895.

	Life Compounders.			Annual Subscribers.				
	Members.		Associates in Business.	Members.		Associates in Business.	Associates not in Business.	Students.
	Pharm. Chemists.	Chem. & Druggists.		Pharm. Chemists.	Chem. & Druggists.			
Number in 1894	241	7	25	1398	603	1594	...	...
„ restored, 1895	1	...	...	10	3	14	...	...
„ elected, 1895	10	...	2	51	15	159	...	...
Deaths, Secessions, etc.	252	7	27	1459	621	1767	...	...
	5	...	...	102†	39	115	...	...
Total Strength of the Society	247	7	27	1357	582	1652	961	802
Summary:—								
1894	241	7	25	1398	603	1594	980	819
1895	247	7	27	1357	582	1652	961	802
Increase	6	...	2	...	...	58	...	...
Decrease	...	...	...	41	21	..	19	17

COMPARATIVE STATEMENT OF THE NUMERICAL STRENGTH OF THE SOCIETY FOR 5 YEARS: 1891-95.

MEMBERS.—PHARMACEUTICAL CHEMISTS.

	1891	1892	1893	1894	1895
Restored to Membership	14	21	12	6	10
Elected	76*	72	62	62	51
(Total additions)	90	93	74	68	61
Deaths, Secessions, etc.	84	135†	89†	76†	102†
Increase	6	...	...	...	...
Decrease	...	42	15	8	41
Total Number of Annual Members	1463*	1421	1406	1398	1357

ASSOCIATES IN BUSINESS.

	1891	1892	1893	1894	1895
Restored	12	36	19	11	14
Elected	146	175	182	165	159
(Total additions)	158	211	201	176	173
Deaths, Secessions, etc.	84	108†	100†	126†	115
Increase	74	103	101	50	58
Decrease	...	...	...	...	...
Total Number of Annual Associates in Business	1340	1443	1544	1594	1652

MEMBERS.—CHEMISTS AND DRUGGISTS.

	1891	1892	1893	1894	1895
Restored to Membership	4	4	1	6	3
Elected	9	62	37	21	15
(Total additions)	13	66	38	27	18
Deaths, Secessions, etc.	27	31†	35	30	39
Increase	...	35	3	...	...
Decrease	14	...	...	3	21
Total Number of Annual Members	568	603	606	603	582

ASSOCIATES NOT IN BUSINESS.

	1891	1892	1893	1894	1895
Increase	161	...	...	...	...
Decrease	...	11	24	15	19
Total Number of Associates not in Business	1030	1019	995	980	961

STUDENTS.

	1891	1892	1893	1894	1895
Increase	52	...	14	8	...
Decrease	...	140	...	...	17
Total Number of Students	937	797	811	819	802

LIFE COMPOUNDERS.

	1891.	1892.	1893.	1894.	1895.
Members:—Pharmaceutical Chemists	186	222	232	241	247
Increase	...	36	10	9	6
Decrease	9	...	...	...	...
Members:—Chemists and Druggists	2	6	6	7	7
Increase	...	4	...	1	...
Associates in Business	...	14	23	25	27
Increase	...	14	9	2	2

* One of these paid as an Associate in Business, but afterwards passed the Major examination, and was elected a Member.
 † Some of these paid the life composition fee.

ANALYSIS OF EXAMINATIONS FOR THE YEAR, 1895.

FIRST EXAMINATION.

Number of Candidates during the Year.	Number of successful Candidates during the Year.	Number of Rejections during the Year.	Number of Examinations during the Year.	Average number of Candidates at each Examination.	Average number of Rejections at each Examination.	Percentage of Rejections.
1430	677	753	4	357.50	188.25	52.65

Number of Certificates received in lieu of the First Examination 106

MAJOR, MINOR, AND MODIFIED EXAMINATIONS.

ENGLAND AND WALES.

Examinations.	Number of Candidates during the Year.	Number of Successful Candidates during the Year.	Number of Rejections during the Year.	Number of Examinations during the Year.	Average Number of Candidates at each Meeting.	Average Number of rejections at each Meeting.	Percentage of Rejections.
Major.....	130	60	70	4	32.50	17.50	53.84
Minor.....	819	245	574	4	204.75	143.50	70.08
Modified	<i>One Candidate presented himself and passed.</i>						

SCOTLAND.

Examinations.	Number of Candidates during the Year.	Number of successful Candidates during the Year.	Number of Rejections during the Year.	Number of Examinations during the Year.	Average Number of Candidates at each Meeting.	Average Number of rejections at each Meeting.	Percentage of Rejections.
Major.....	16	8	8	4	4.00	2.00	50.00
Minor.....	485	202	283	4	121.25	70.75	58.35

THE REGISTERS OF PHARMACEUTICAL CHEMISTS AND CHEMISTS AND DRUGGISTS, 1895.

Additions during the year:—

Number of persons who have passed the—		
Minor	“	447
Major	“	68*
Modified	“	1
Number of persons restored to the Register on payment of a fine.....	}	25
Number of persons registered on payment of the registration fee, having been in business before August 1, 1868.....	}	2
		<u>475</u>

Erasures during the year:—

Deaths	219
Erased at the request of registered persons themselves	3
Erased by the Registrar in pursuance of the provision set forth in Section 10 of the Pharmacy Act, 1868, after sending two registered letters, to which no answer has been received.	11
Increase of numbers on the Register	242
	<u>475</u>

* These having already been included in the number who passed the Minor, do not increase the numbers on the Register.

Number of Pharmaceutical Chemists on the Register, December 31st, 1895	...	2,278
“ Chemists and Druggists	...	12,800
		<u>15,078</u>

Committee felt that some question might be raised as to the propriety of handing over to another educating body a cabinet of this kind, but after full consideration it was felt that it was the duty of a corporate body like that to assist in every way to promote education in its widest sense. It must be to the distinct advantage of the rising generation of chemists and druggists that they should be taught elementary chemistry, botany, and other branches of pharmaceutical education in classes or lecture rooms and laboratories side by side with other students, and the fact that such a system of education could not be self-supporting, induced the Committee to make this recommendation with regard to the special subject of *materia medica*. In a certain sense it was furnishing the teacher or lecturer the necessary material with which he could, in conjunction with his colleagues, give a complete course of pharmaceutical education.

Mr. BOTTLE asked if any information was furnished as to the fees to be charged.

The PRESIDENT said the fees were not yet fixed, but it was understood they were to be moderate.

Mr. BOTTLE said he put the question because a very handsome public building had recently been erected at Dover for promoting technical education, and he regretted to hear that the scale of fees was rather prohibitive. In all cases where the Society assisted such institutions in any way it should take care that the fees were not too high.

Mr. SCHACHT expressed his gratification that this experiment was being made in Liverpool. Once or twice before he had expressed the idea that assistance should go rather in the direction of subjects not usually taught in such schools. Chemistry and botany were generally very well and systematically taught, and there was no difficulty in an ordinary student reaping all the advantages offered, and sometimes even *materia medica* was taught in medical schools affiliated to these colleges; but there still remained the one subject of pharmacy. Many thought, as he did, that this subject could be best learned in a well-appointed master's establishment, but that opportunity did not always occur, and many young men completed their pupilage without gaining that instruction in practical pharmacy which they ought to have. If the grants made by the Society could take that direction, he thought they would go where they were most needed. He found by experience that there was not sufficient demand for that class of teaching to justify the Council of a University College in appointing a teacher. General science teaching drew pupils from a much larger area, and even in the case of *materia medica* there were a considerable number of medical students to appeal to, but for pharmacy proper there was but a very narrow field. In that direction he thought, therefore, the Society might assist local organisations so that in the end they might have a complete curriculum, not only for their own pupils, but for those members of the medical profession who wished really to qualify themselves in all branches of the art of medicine. The Liverpool College was on a much larger scale than any other provincial institution, and fortunately, owing to private munificence, each chair was endowed to the amount of £10,000, so that the authorities were in a position to be generous to the students, but other places were not so fortunate. He was very glad to see so good an example set in Liverpool, and hoped it would be followed, as it would tend to great general good as well as to the special advantage of pharmacy.

Mr. MARTIN had great pleasure in expressing his approval of the scheme, and congratulated the Society upon being connected with such a plan to be carried out in an important centre. He thought there was a tendency sometimes to underrate the difficulties of teaching practical pharmacy and the various manipulations which it should be the aim of every practical pharmacist who was thorough in his work to teach his students during their apprenticeship; that this proposal was well calculated to meet some of the difficulties encountered. With regard to fees he did not think there should be any discouragement of students in that direction. At Newcastle they supplied a course of thirty lectures for a guinea, and for these somebody had actually suggested the sum of 5s. only should be charged, a preposterous sum as it seemed to him. So far from complaining of the moderate fees which had to be paid he felt they should encourage their being raised rather than lowered. If students were so poor that they really could not afford to pay the modest fees now universally charged, he thought they should take to some other calling than pharmacy.

The PRESIDENT pointed out that the scheme was based on precisely the ideas that had been given expression to, and expressed

his opinion that it would be a valuable means of supplementing the training students in practical pharmacy and in some other points of training of general interest and concern to them all as chemists.

Mr. CORDER said he was sorry to hear that pharmacy was to be introduced as a subject at Liverpool, believing as he did that the chemist's shop was, if not the only, certainly the chief and foremost place in which to learn practical pharmacy, and that masters had no business to take premiums for apprentices without teaching something more than mere shopkeeping, and including practical pharmacy in their curriculum.

Mr. ATKINS was afraid his friend had rather an ideal than a practical state of things in view, and he only wished that practical end more closely approached the ideal than his own experience led him to believe was the case. His own views rather tended towards the idea indicated by Mr. Schacht that a more complete course of education for our students was wanted, especially as regarded practical pharmacy and *materia medica*. It was all very well to talk about what the master ought to do. The whole conditions of apprenticeship had altered, and were being altered. Frequently the master no longer resided on the business premises, but lived away, and any who had carefully watched the Society's examinations would know how largely students came from the country untrained and unfitted for the work which they aspired to do. He was exceedingly glad to find an effort was being made to remedy this state of things, and by means of institutions at Liverpool and other centres to give their students opportunities of perfecting themselves in their profession.

Mr. HAMPSON pointed to the examples of France, Germany, and other countries in this matter as calling for increased facilities for practical training being encouraged, and especially to the attention which was being paid to cookery in England, as the public recognition of a need for more practical and thorough training in all matters bearing on the health and happiness of the people.

Mr. CROSS, whilst sympathising with Mr. Corder's views, pointed to another side of the advantage of teaching pharmacy, in the comparative ignorance of the present race of medical men with the practical side of that subject, which too often was left to them to pick up after they had entered on practice. He believed many medical practitioners would be among the first to deplore the present methods of their training, and that very much good might result from medical students and their own students being brought to work side by side in an institution of the kind they were considering. He thought the Society was to be congratulated on the opportunity afforded it of aiding and recognising schools of this description, and he was still more gratified to think that pharmacy would be taught there.

Mr. MARTINDALE, as having been a teacher of pharmacy both to medical and pharmaceutical students, whilst agreeing with the advantages of shop teaching in practical pharmacy, pointed out that there were certain things not there obtainable, but which would be covered by the lectures and teachings at an institution like that they were considering.

Mr. HILLS, considering pharmacy was an applied science, and that the application of the science ought to be taught during apprenticeship, yet was glad to hear of the pharmacy classes, believing as he did that their influence must be for good, and that they need not interfere with, but should be regarded as valuable aids to, the teaching of their apprentices in pharmacy.

Mr. GROSE said his experience of late years had been that whenever he took a junior assistant he had to teach him many things that he might reasonably have expected would be learnt during his pupilage, and he spoke of a case, which he supposed was not exceptional—where everything sold in a so-called chemist's shop, down to the ointments, was bought in London—as showing the altered condition of things to which reference had already been made.

Mr. ALLEN supported the view to which expression had been given of the great advantage of having pharmacy taught in an institution where medical and pharmaceutical students sat side by side. Such teaching, however elementary might be the subjects, must result in advantage to both classes of student. A great fault of the present day was an imperfect knowledge of pharmacy and *materia medica* generally, resulting from the prevailing methods of training both as doctors and chemists. He could not help thinking both of these classes would be materially benefited if it should be found possible to teach them successfully side by side.

Mr. MARTINDALE said a pharmacist must know a great deal more about pharmacy than a medical man.

Mr. ALLEN said it had been found possible in other countries.

The PRESIDENT said the discussion was no doubt valuable, but as practical men they had to deal with students as they found them. The evils referred to had been known for years, but until a curriculum was enforced he feared all that could be done was to endeavour to aid the student in any department in which he was weak. Unquestionably, many of them were partly responsible for the fact that pupils were not well trained. Some would not take pupils, and he was not sure that there ought not to be a statutory enactment compelling them to take a certain number of pupils. The difficulties in connection with the learning of the business in many parts of the country were very great, and no doubt it often happened that parents when they apprenticed their sons did not really know what was before them, and what they would have to learn in order to qualify themselves to carry on the business. Often it was only towards the end of his term that the pupil discovered what he had to learn before he could pass his examination. On the whole he thought they might congratulate themselves on the fact that there was now a higher standard of education throughout the country; perhaps they had not gone ahead so much at the upper end of the scale, but the average assistant was certainly a much better man than he was thirty years ago. Seeing the difficulties assistants had to face, they must not expect too much from them. It was a serious thing to take an assistant of full age who was not registered, and the tendency was, as it was in medicine, for a young man to get his qualification as quickly as he could, though he still had a good deal to learn with regard to practical work. The old plan suggested by the founders of the Society was that when a youth was 21 he should pass an assistant's examination, and then after a few years' more practice in pharmacy go in for the pharmaceutical chemist's examination. No doubt that plan was an excellent one, but practically it had been upset by the Pharmacy Act of 1868, and they must now deal with things as they were. Sympathising as he did with what Mr. Corder had said, he must say that their paramount duty as a public body was to do their best for students as they found them.

The resolution having been carried,

The PRESIDENT said the Committee had held a special meeting on the previous day to consider the question of the Burroughs' Memorial Scholarship, when a letter was read from the Secretary of the Memorial Fund Committee—saying the opinion of that Committee was that the Scholarship should be an annual one for secondary education, open to pharmaceutical chemists who desired to advance their knowledge of chemistry and pharmacy. The Committee adopted that suggestion, and recommended that regulations should be drawn up in due course. That suggestion was made after the Memorial Fund Committee had had an interview with Messrs. Allen and Martindale, the feeling being that more good would be done in that way than if a scholarship were founded for primary education. The Library Committee thoroughly endorsed that suggestion, and he now moved that the recommendation of the special meeting of the Library, Museum, School, and House Committee, held on February 4, with reference to the Burroughs' Memorial Scholarship, be adopted, and that the Committee be requested to draw up the regulations under which the Scholarship may be competed for and held. The income would not be immediately available, probably not until July in next year. It was proposed to formally hand over the Fund at the evening meeting on Tuesday next, when the Council would be glad to see any subscribers to the Fund present.

Mr. ATKINS asked if the Fund was closed.

The PRESIDENT said no. They were anxious to raise £1000, but only £850 had as yet been received.

The resolution was carried.

DIVISIONAL SECRETARY.

The PRESIDENT moved that Mr. J. T. De Peare, of 14, Highbury Park, be appointed Divisional Secretary for the parliamentary division of East Islington in place of the late Mr. Howard Hall, who died a few weeks ago after a long illness. Mr. De Peare had taken a considerable interest in the Society.

The resolution was carried.

RESEARCH COMMITTEE.

The following interim report was read by the President:—

“The Committee has met once a month during the past half year, and has received periodical reports from the directors.

“The Committee has to report that the educational and research work of the Research Laboratory has made satisfactory progress.

“The investigation of the aconite alkaloids has been continued. With the approval of the Committee, a grant having been made for the purpose to the Director by the Royal Society, several important results have been obtained.

“These and the results of other experimental inquiries as to the constituents of podophyllum and of Indian opium, which have been prosecuted during this period, will be published in due course.

“Papers on the determination of aconitine, by the Director and Mr. Tickle; and on detection of aconitine, by the Director and Mr. Carr, will be read at the Evening Meeting on February 11.

“Pure specimens of new substances and of specially purified drugs have been supplied to five different investigators for the purposes of physiological and therapeutical inquiries.

“In October last the Committee nominated Mr. Francis H. Carr for re-election to the Salters' Company's Research Fellowship in chemistry, and the nomination has been approved by the Court of the Salters' Company.

“Mr. T. A. Henry, formerly Redwood scholar, is continuing his work in the Research Laboratory with the aid of a grant from the Manchester Scholarship Fund.

“Including Mr. Jowett, the Demonstrator, and Mr. Harold Brown, the Redwood Scholar, there are six workers in the Research Laboratory at the present time, of whom five are pharmaceutical chemists.”

The PRESIDENT moved that the interim report of the Research Committee be received—there was nothing in it to adopt. The Committee believed that these six gentlemen were doing valuable work. Of course, there were new comers every year who for the first few months were simply being educated, but he had repeatedly expressed the view that the educational portion of the work of the Research Laboratory was of great value, quite apart from the question of the results of the investigations which were conducted. He held that from the Director down to the last comer, each and all were doing useful work, and were pervaded by the true spirit of research.

Mr. SCHACHT had much pleasure in seconding the resolution, and was glad of the opportunity of saying that he believed the work being done was thoroughly genuine, and worthy the sympathy of the Council and all interested in scientific investigation. Of course the task of investigating in the regions of the unknown must always be carried on with more enthusiasm on the part of the worker than results for a long time might seem to justify. It was not every day that argon or helium was discovered; it was only by patient work for many years that anything turned up worth the consideration of the world. He believed that in the Research Laboratory they were working on the right lines. The Director was most enthusiastic, and he was glad to hear that the young men around him were showing corresponding enthusiasm, and were working energetically, steadily, and hopefully. Before the end of the year they would all probably be able to judge by the published papers that certain results might be expected. Some had come already, and more were coming. Whether the subjects treated were of the greatest importance to pharmacy might be an open question, but that they were of very great importance he thought was undoubted, and he was satisfied that the lines of work were such as reflected credit on the Society in the eyes of the whole scientific world.

The resolution was adopted.

CERTIFICATE IN LIEU OF EXAMINATION.

It was resolved that the Board of Examiners be empowered to accept in lieu of the First examination a certificate granted by the University of Turin, to D. O. Dompé, of Milan.

REPORT OF EXAMINATIONS.

January, 1896.

	Candidates.		
	Examined.	Passed.	Failed.
England and Wales:—			
Major	24	10	14
Minor	187	57	130
Scotland:—			
Major	4	1	3
Minor	165	65	100
First Examination	383	189	194

Thirty-three certificates by approved examining bodies were received in lieu of the Society's First examination.

CORRESPONDENCE.

The PRESIDENT read a letter from Mr. J. Anderson Russell, Secretary of the Glasgow and West of Scotland Pharmaceutical Association, forwarding a resolution that had been passed, thoroughly approving of the views of the President of the Pharmaceutical Society in respect to unqualified managers of branch shops, and whilst concurring in his remarks, expressing a hope that a reprint of them might be made and sent by the Registrar of the Society to all druggists and druggists' shops throughout the country.

GENERAL PURPOSES COMMITTEE.

The Council then went into committee to receive and consider the report of this Committee, which included the usual letter from the Solicitors, dealing with cases which had been placed in their hands. Upon resuming, the report and recommendations were adopted, and a special resolution was passed authorising the Registrar to take proceedings against the persons reported upon, in accordance with the provisions of the Pharmacy Act.

FIRST EXAMINATION RESULTS.

A meeting of the Board of Examiners for England and Wales was held on Wednesday, February 5.

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

Baker, Charles B., Nuneaton.
Eggleton, Eric H., Streatham.
Johnson, William Danily, London.
Kent, Charles Wesley, Louth.

Pearson, George Ernest, Wakefield.
Rotheray, Harry, Rawdon.
Sarjeant, Herbert William, Holloway.
Shaw, Henry Woolhouse, London.

The report of the College of Preceptors on the examination held on January 14 was received.

383 candidates had presented themselves for examination, of whom 194 had failed.

The following 189 passed, and the Registrar was authorised to place their names upon the Register of Apprentices and Students:—

Alexander, Robert, Fraserburgh.
Allan, David, Houldsworth, Govan.
Arnott, William John, Topcliffe.
Audsley, Benjamin, Horbury.
Barclay, J. Williamson, Dunfermline.
Barron, Jn. Lancelot, West Hartlepool.
Baxter, James Robert, Whitby.
Beech, E. Jos. Worthington, Balsall H.
Bell, Frederick Alexander, Llangollen.
Bellingham, Edg. Silvalus, Blackburn.
Beveridge, John Paton, Edinburgh.
Bisset, William, Aberdeen.
Bonner, Charles Ernest, Totnes.
Bottomley, Py. Kingdom, Gt. Horton.
Bowen, John, Carmarthen.
Braham, Alice D., Birmingham.
Brand, Arthur, Wallsend.
Bremner, Robert Storrar, Dundee.
Broughton, Robert Price, Wilmslow.
Brown, Thomas Frederick, Gravesend.
Browne, Henry Charles, Eastbourne.
Bullock, Charles Henry, Cirencester.
Bullock, Edmund Rayner, Gloucester.
Burt, William, Wishaw.
Cairncross, Hugh L., Edinburgh.
Campbell, Arthur George, Thirsk.
Chalmers, Edward, Willesden.
Chapman, Edward John, Hull.
Chinchen, Charles Joseph, East Cowes.
Christie, Andrew Ewing, Crieff.
Cleobury, George, Birmingham.
Correy, Alexander, Edinburgh.
Dalton, Tom Sydney, Wilmslow.
Dealve, Louis Norman, Tavistock.
Delaney, Joseph, Fulham.
Derrick, Thomas, Lanark.
Dick, James, A. R., Forfar.
Douthwaite, Percival Few, Newport.
Downing, Thomas, Macclesfield.
Duffield, George Alfred, Leeds.
Duncan, James, Newcastle-on-Tyne.
Dunn, James, Newton-Stewart.
Dyson, Harry, Waterloo.
Endicott, William Bassett, London.
England, Herbert, Scarborough.

Evans, Frederick Watkins, Cardigan.
Evans, Harvey Atkins, Birmingham.
Evans, Jessie Maria, Lampeter.
Fardell, Edgar Cooper, Leicester.
Faulds, Horace Wilson, Fenton.
Ferry, Thomas Robson, Wallsend.
Firth, John Naylor, Mansfield.
Fisher, Percy, Bradford.
Flamank, Arthur, Stafford.
Ford, John, Edinburgh.
Ford, Maggie Grace, Kirriemuir.
Fowke, Valentine Hamand, Stafford.
Fox, Albert T., Strathpeffer-Spa.
Furness, Tom Edgar, Chesterfield.
Garvie, William Charles Hogg, Leith.
Gateley, Stephen W., King's Norton.
Georde, John, Aberdeen.
Goodyear, Cyril J., Wakefield.
Gray, Albert Edward, Landport.
Green, Charles H., West Hartlepool.
Hackett, John, Shepherd's Bush.
Hackforth, John E. Swithin, Leyland.
Haddock, John, West Bromwich.
Hague, Samuel William, Lincoln.
Hall, Stanley Mayne, Newcastle-on-T.
Hallgarth, Arthur, Thorne.
Halloway, Ernest, Maryport.
Hamilton, George A., Gatehouse.
Harbinson, John, Glasgow.
Harris, John, Neath.
Haswell, Robert, Cambois.
Hawley, John P., Winchcombe.
Heaton, Thomas, Accrington.
Henderson, James Gall, Aberdeen.
Henderson, Robert Allan, Fraserburgh.
Hockin, Arthur William, Dartmouth.
Hodges, Edward Henry, Southsea.
Houlson, George, Abergavenny.
Hunter, John, Maybole.
Hunter, Thomas, Cumnock.
Irving, Eldred, Liverpool.
Isaac, William, Kidwelly.
James, Arthur, Narberth.
James, Ernest Henry, Guisboro'.
Jefferies, Fred., Colwyn Bay.

Jeffery, John Augustus P., Gateshead.
Jeffrey, John Edwin, London.
Jenkin, Baldwin Henry, Camborne.
Jones, John, Llandyssil.
Kay, James William, Caistor.
Kember, George Norman, Pittenweem.
Kendall, Joseph Pattinson, Maryport.
Knight, Frank Robert P., Dartford.
Kossick, Joseph, Newcastle-on-Tyne.
Lamont, Harry, Fortrose.
Lawrence, John Henry, Nottingham.
Legge, Henry George B., Norwich.
Lightbourne, James, Glasgow.
Lockwood, Arthur, Worksop.
Lusher, George James, Norwich.
McGinlay, Joseph C., Greenock.
McHattie, James Reith, Edinburgh.
Mack, George, Edinburgh.
Magan, Frances, Hampstead.
Mansley, Thomas Henry, Chorley.
May, E. D. Gasson, Hollingbourne.
Metcalf, John Mason, Hexham.
Milner, S. Hannah, Poulton-le-Fylde.
Mitchell, Alfred, Liverpool.
Morris, David, Llanelly.
Morris, Henry, St. Clears.
Morris, John Lewis, Whitland.
Morton, J. Lamont, Ramsbottom.
Mungall, Allan, Bathgate.
Negus, Irvin Thomas, Northampton.
Oxendale, T. T. Ranson, Edinburgh.
Pailing, Amos Heron, Paddington.
Palmer, Collis Unwin, East Molesley.
Palmer, Peter E. A., Altrincham.
Parker, Walter John, Grantham.
Paterson, G. Frederick, Southampton.
Paterson, William Dougald, Dumoon.
Paterson, G. R., Corbridge-on-Tyne.
Phillips, Albert Bertram, Blaenffos.
Phillips, Arthur Thomas, Narberth.
Phillips, Horace Stock, Wigan.
Phillips, William Arthur, Tenby.
Pimm, William Robinson, Leicester.
Pinfold, Arthur H., Sheffield.
Pinson, Percy J., Willenhall.
Plenderleith, John Wm., Edinburgh.
Powell, John Edward, Devizes.
Quinn, Gerald, Portsoy.
Read, Henry Kirk, Preston.

Reidford, William G., Aberchirder.
Ridge, Percy Littlewood, Selby.
Robb, Frederick C. Cameron, Elgin.
Roberts, John Lloyd, London.
Roberts, John Owen, Towyn.
Robson, Wm. T., Newcastle-on-Tyne.
Rogers, Benjamin George, Carmarthen.
Rogerson, Austin Edward, Bradford.
Rolfe, Harry, Northampton.
Ross, Roderick, Glasgow.
Royston, Reginald Allott, Barnsley.
Salisbury, Thomas Frdk., Nottingham.
Senior, Herbert Clare, York.
Shepherd, William, Huntly.
Shuttleworth, Alfred Joseph, Wakefield.
Smith, Charles Fraser, Ventnor.
Smith, Edgar, Easingwold.
Smith, Henry George, Grimsby.
Smith, James W. M., Alexandria.
Smith, Mary Ellen, Accrington.
Stephenson, John Harry, Nuneaton.
Stevens, Horace, Rugby.
Stewart, Jeanie, Dumbarton.
Sweet, Samuel Henry, Dowlais.
Swift, Herbert Henry, Barnsbury.
Syme, George, Edinburgh.
Taylor, Ryley Websdale, King's Lynn.
Teiffel, Leonard John, Newcastle-on-T.
Thomas, J. Amry, Weston-super-Mare.
Thompson, John, York.
Tocher, William, Lossiemouth.
Torr, James William, Hull.
Turner, William, Bedford.
Walker, William Towler, Settle.
Wallis, Arthur Gladstone, Manchester.
Ward, Reginald Mark Hall, Bedale.
Webster, Christina McKenzie, Buckie.
Webster, David Norman, Newtown.
Webster, Magnus Herd, Buckie.
Weir, John, Dumoon.
West, Sydney William, Nottingham.
Whitehouse, Alexander, Nottingham.
Wilcockson, William, Doncaster.
Williams, Ernest, Chester.
Williams, Owen Stanley, Narberth.
Willis, Ernest, South Shields.
Willox, Leonard S., New Pitsligo.
Wood, Isaac, Aspatria.
Wood, Septimus Reginald, Edinburgh.

Wyllie, Alexander D., Kinghorn.

The questions set at this examination were published in the *Pharmaceutical Journal* for January 18, p. 49.

The following is a list of the centres at which the examination was held, showing the number of candidates at each centre, and the result.

	Candidates.				Candidates.		
	Exam-ined.	Passed.	Failed.		Exam-ined.	Passed.	Failed.
Aberdeen	18	12	6	Lancaster	6	5	1
Birmingham	23	11	12	Leeds	22	8	14
Brighton	6	1	5	Lincoln	5	2	3
Bristol	11	3	8	Liverpool	14	7	7
Cambridge	3	0	3	London	32	12	20
Canterbury	2	0	2	Manchester	30	9	21
Cardiff	5	2	3	Newcastle-on-T....	24	12	12
Carlisle	8	3	5	Northampton	5	4	1
Carmarthen	20	15	5	Norwich	4	3	1
Carnarvon	4	1	3	Nottingham	16	9	7
Cheltenham	3	2	1	Oxford	2	0	2
Darlington	5	4	1	Penzance	3	1	2
Dundee	6	3	3	Peterborough	1	0	1
Edinburgh	36	16	20	Plymouth	2	1	1
Exeter	4	2	2	Sheffield	7	5	2
Glasgow	24	15	9	Shrewsbury	3	2	1
Hull	9	5	4	Southampton	9	5	4
Inverness	3	3	0	York	8	6	2

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LONDON: SATURDAY, FEBRUARY 8, 1896.

THE COUNCIL MEETING.

At the opening of the meeting last Wednesday the PRESIDENT mentioned that apologies for non-attendance had been received from Mr. SOUTHALL and Mr. STORRAR, the latter being prevented by a cold.

On taking the lot for the seven Members of Council who are to retire next May, the names drawn were Messrs. CARTEIGHE, CORDER, HARRISON, HILLS, MARTINDALE, NEWSHOLME, and SAVORY. Those who retire by rotation are Messrs. CROSS, GOSTLING, JOHNSTON, MARTIN, SCHACHT, STORRAR, and WARREN.

The additions to the Society comprised fifteen members, fifty-eight associates, and forty-five students.

The annual report of the Registrar, showing the numerical strength of the Society, statistics of the examinations in 1895, and the state of the Registers of pharmaceutical chemists, and chemists and druggists, was presented, and will be found at pp. 106-7. It shows that 475 persons have been registered during the past year and that, after allowing for erasures, there has been an increase of 204 in the number of registered chemists and druggists, and of 38 in the number of pharmaceutical chemists.

The number of members of the Society is 2193, that of Associates, 2613. Mr. BOTTLE expressed regret, as an old member of the Society, that the number connected with the Society does not increase as he thought it ought to do, since chemists have in the Society a nucleus round which they could rally to promote their interests. The fact that so many of the younger members of the body are becoming Associates he regarded with satisfaction, and hoped the day was not far distant when the Council would be able to elect them as members. Mr. ALLEN suggested that the more important question was as to the proportion of examined men that joined the Society, and in reference to this, Mr. HILLS pointed out that last year most of the successful Major men had apparently joined the Society.

The report of the Finance Committee showed nothing unusual in regard to receipts or payments, excepting the solicitors' bill, amounting to more than four hundred pounds and showing that the administration of the Pharmacy Act is by no means so profitable as it is sometimes supposed to be. The available resources of the Benevolent Fund have been

exhausted, but the PRESIDENT anticipated more money would come in to enable the Committee to assist deserving cases. Mr. JOHN THISTLETON DAVENPORT and Mr. BURDEN have each sent a donation of ten guineas.

On the recommendation of the Benevolent Fund Committee, four grants of ten pounds each were ordered to be paid. The death of Mrs. JOHNSON, who had been an annuitant since 1885, was announced, and the Vice-President, as Chairman of the Committee, pointed out the beneficial influence of temporary help in enabling those overtaken by misfortune to help themselves.

The report of the Library, etc., Committee, in addition to the usual records relating to the Library and Museum, contained a recommendation that a grant should be made to the Liverpool Pharmaceutical Students' Association for the purchase of a materia medica cabinet, to be placed in the University College. The object in view is to promote pharmaceutical education in connection with the local University College, and also to take advantage of the disposition of its authorities to adapt their scheme of education to the wants of pharmaceutical students. The Committee was also influenced by consideration of the benefit resulting from the association of such students with others being taught chemistry, botany, etc., with different objects. Mr. BOTTLE suggested that in making such grants there should be some stipulation that the fees should not be too high. Mr. SCHACHT expressed gratification that this experiment is to be made in Liverpool, because the College is so liberally endowed that it can be generous to students. He suggested that the Council might also give assistance in a similar direction for the teaching of pharmacy, for though it is best to be learnt by practice under a master in a well-appointed establishment, that opportunity does not always offer. Mr. MARTIN concurred in the opinion that some of the difficulties of teaching pharmacy might be overcome in the way suggested, and while fees should not be too high it is desirable that they should not be unreasonably reduced. Mr. CORDER on the contrary expressed regret that pharmacy was to be made a subject of class teaching at Liverpool, as he believed that the chemist's shop is the chief, if not the only, place to acquire a knowledge of the art of pharmacy, and that it is a master's duty to teach his apprentices that as well as the business of shopkeeping.

Mr. ATKINS was of opinion that Mr. CORDER took a too ideal view of the matter. His own observation showed that the majority of masters do not teach their apprentices, as appears from the fact that so many candidates for examination are untrained and unfitted for the employment they aspire to. The discussion was continued by Messrs. HAMPSON, CROSS, MARTINDALE, HILLS, GROSE, ALLEN, and the PRESIDENT, all of whom agreed that the association of pharmaceutical with medical students would be attended with much mutual advantage, and that class teaching need not interfere with the practical teaching of apprentices.

Another recommendation in the report of the Library Committee related to the application of the Burroughs' Memorial Scholarship for the purposes of secondary education of pharmaceutical chemists; this was adopted by the Council, and the Committee was requested to draw up regulations, under which the Scholarship is to be competed for and held.

Mr. J. T. DE PEARE was appointed Divisional Secretary for East Islington, in place of the late Mr. HOWARD HALL.

The interim report of the Research Committee was read and received on the motion of the PRESIDENT, who expressed the belief of the Committee that the workers engaged in the Research Laboratory are doing valuable work, and his own opinion that each and all, including the Director, are pervaded by the true spirit of research. Mr. SCHACHT, in seconding the motion, expressed a similar belief, and predicted that future results would enable a judgment to be formed that the work reflected credit on the Society.

A letter from Mr. ANDERSON RUSSELL was read containing a resolution passed by the Glasgow and West of Scotland Pharmaceutical Association approving of the views expressed by the PRESIDENT at the last Council meeting on the subject of unqualified managers of branch shops.

The report of the General Purposes Committee gave the usual account of progress made with cases placed in the Solicitors' hands, and on the recommendation of the Committee a resolution was passed authorising the Registrar to take proceedings against persons reported to have infringed the Pharmacy Act.

THE UNQUALIFIED DENTIST CASE AT DUNDEE.

THE *British Medical Journal* observes that Dundee would appear to be almost a paradise for the unqualified dentist, judging from the result of the recent prosecution under the Dentists' Act (see *ante*, p. 72). After quoting the fantastic summing-up of Mr. Sheriff CAMPBELL, and his remarks to the effect that he convicted unwillingly and should therefore impose a nominal penalty, though the offence was clearly proved, our contemporary remarks that it is difficult to comment upon such a travesty of justice. "It is often impossible to set the law in motion without finding sooner or later that penalties are withheld or inflicted in homœopathic doses by the presiding magistrate. In the Dundee case the magistrate went out of his way, and by no means added to the dignity of his position, by treating all qualified men as simply monopolists." The necessity is also pointed out of the law recognising that the Dentists' and Medical Acts—and, it may be added, the Pharmacy Acts—were especially framed to distinguish between "the qualified and the unqualified, the properly educated and the ignorant"; not for the purpose of promoting monopolies, but for the safety of the public from uneducated and untrained pretenders to skill and knowledge that they do not possess.

THE DANGER OF WEED-DESTROYERS AND VERMIN-KILLERS.

A REMARKABLE instance of the danger accompanying the storage of poisonous weed-destroyers in private houses is afforded by a case at Tockington, reported on page 117 of this week's Journal. The arsenical solution was kept in the same cupboard apparently as materials used for cooking purposes, and when some "grape wine" was required to make "tipsy cake," the contents of the weed-destroyer jar were inadvertently used. Some of the supposed wine was drunk at the same time, and as a result the person drinking it died in a few hours' time. Fortunately, the cake was destroyed as soon as it was apparent from the taste of the liquid that something was amiss; otherwise more fatal cases might have had to be recorded. The facts reported seem to indicate that the jar of weed-destroyer was not plainly marked, if at all, so as to indicate the nature of its contents, but whether this were so or not it is a distinctly reprehensible

practice to store such dangerous preparations anywhere in a private house, and especially in cupboards where articles in everyday use in the household are also kept. The *Lancet* records another case, at Silvertown, in which a little girl died suddenly with all the signs of irritant poisoning, after eating a piece of cake. Several other children who shared the cake became ill with similar symptoms. The poisonous cake had been sold for destroying vermin and was found by the children in what was supposed to be a safe place, where it had been placed as a bait for mice. As the *Lancet* remarks, the custom of poisoning household vermin is not the best means of destroying them, on account of possible subsequent putrescence in hidden places, and poisons ought most certainly not to be used for the purpose, except in such a form that their presence is clearly indicated to children, as well as to others into whose hands they may fall. It may be noted here that the Ballikinrain Ant-Destroyer, which recently figured in a Pharmacy Act case, at Glasgow, is a solution of white arsenic and sugar, resembling honey in appearance. The danger of such a preparation is manifest, yet it is reported that Mr. ALEX. CROSS, M.P., intends to endeavour to persuade Parliament that its sale by seedsmen and others should be allowed, that is to say, without restriction of any kind. In view of the two cases noticed above, the mischief of such retrograde legislation should be apparent to everyone.

INTERNATIONAL PHARMACEUTICAL EXHIBITION AT PRAGUE.

FURTHER information has been received as to the arrangements made by the Executive Committee for the celebration of the twenty-fifth anniversary of the Pharmaceutical Society of Prague (see *ante*, p. 33). Dr. EMANUEL KUSÝ, Dr. IGNAZ PELC, A. VON WALDHEIM, Dr. A. HELLMANN, Dr. A. BĚLOHOUBEK, F. SCHNÖBLING, and J. DITTRICH have been appointed honorary presidents, and the exhibition, which is to take place between August 15 and September 15 next, will be arranged under the following sections:—

- I. Scientific apparatus, etc., used in Pharmacy.
- II. Literature of Pharmacy and the Allied Sciences.
- III. Machines and apparatus for production of pharmaceutical preparations.
- IV. Arrangement and fittings of pharmacies.
- V. Materials, drugs, and pharmaceutical preparations employed for pharmaceutical purposes.
- VI. Documents, books, statistics, apparatus, vessels, and appliances illustrative of the history of pharmacy.
- VII. Pharmaceutical corporations and societies.
- VIII. Hygiene and the care of the sick.

The State departments and officials as well as the local professional corporations, and the medical faculties of the two universities have promised their support, and numerous applications from intending exhibitors have already been received. The general meetings of the Austrian Apotheker Verein and of the Pharmaceutical Society will take place at the time of the exhibition, and many of their members are expected to be present on the occasion. Altogether it is thought that there is a prospect of the exhibition surpassing anything of the kind that has hitherto been attempted. Attention is especially directed to Section VII., and pharmaceutical organisations are invited to assist in making it complete by supplying descriptive information as to their nature, history, etc.

ANNOTATIONS.

EVENING MEETING IN LONDON.—Tuesday next, February 11, is the date of the next evening meeting of the Pharmaceutical Society, at 17, Bloomsbury Square. The President is expected to take the chair at eight o'clock precisely, and the first business will be the formal transfer of the Burroughs' Memorial Fund, subscribers to which are invited to be present. The following papers will then be read:—(1) "Estimation of Aconitine," by Professor Dunstan and Mr. T. Tickle; (2) "The Detection of Aconitine," by Professor Dunstan and Mr. F. H. Carr; (3) "Essential Oils of Black and White Peppermint," by Mr. J. C. Umney.

"THE DISCOVERY OF OXYGEN."—A short series of articles appeared in the last volume of the third series of the *Pharmaceutical Journal*, dealing with the life and work of Scheele, Priestley, Cavendish, and Lavoisier, special reference being made to their connection with the discovery of oxygen and its immediate results, including the overthrow of the phlogiston theory. At the conclusion of the series it was thought desirable to reprint the articles as a slight memorial of the chemists whose work had been briefly summarised, the more especially as the one hundred and fiftieth anniversary of the birth of Scheele, and the centenary of the death of Lavoisier had quite recently been celebrated in various ways. After careful revision of the matter this has been done, and it is now proposed to offer copies of the reprint for sale at a nominal price of one shilling each, post free. It forms an attractive octavo book of sixty pages, and is illustrated with portraits of Scheele, Priestley, Cavendish, and Lavoisier, together with sketches of the apparatus employed in their experiments. It will be ready for distribution shortly, and applications for copies should then be sent to the publishers, Messrs. Street Bros., 5, Serle Street, Lincoln's Inn, London, W.C.

DEATH UNDER PENTAL.—A fatal case, in which pental was used to produce anæsthesia in a case of dental operation, is reported from the Chorlton-on-Medlock Dental Hospital. The patient was examined previous to operation by the anæsthetist of the hospital, and appeared to be in a fit condition. At the fifth extraction the respiration ceased, and all attempts to restore the patient were successful. At present the opinion of experts seems to be divided as to the safety or danger of pental, and the *Lancet* suggests that further investigation of this fatal case would seem to be desirable.

POISONING BY ANTIPYRIN.—A correspondent of the *British Medical Journal* calls attention to the danger attending the amateur administration of antipyrin, and describes a case in which a dose of 10 grains produced very alarming effects. The writer remarks that since antipyrin is undoubtedly a dangerous drug, the careless and casual way in which the recommendation to "take an antipyrin powder" is often made by irresponsible persons cannot be too strongly condemned. He expresses a decided opinion that antipyrin ought to be scheduled as a poison, and dispensed only on a written order from a qualified medical practitioner being produced.

ROYAL INSTITUTION.—A General Monthly Meeting of the members of the Royal Institution was held on the 3rd inst., Sir James Crichton-Browne presiding, and the following were elected members:—Mrs. Montagu, Mr. Robert R. Tatlock, F.C.S., and Mr. Ernest Westlake. We are asked to announce that Professor H. Marshall Ward, F.R.S., Professor of Botany in the University of Cambridge, will begin a course of three lectures on "Some Aspects of Modern Botany" at the Royal Institution on Thursday next, February 13.

PROFESSIONAL UNIONISM.—As bearing upon this subject, which was specially referred to in last week's Journal (p. 91), the following emphatic resolution passed at a crowded meeting of medical men, recently held at Nottingham, is of interest:—"That in the opinion of this meeting it is unprofessional and undignified for any medical man to accept the post of medical officer of any institution, promoted by and for the pecuniary benefit of men outside the profession." The example of this meeting may be commended to local pharmaceutical associations, which should pass and do their utmost to enforce similarly salutary resolutions, bearing especially on the aid afforded by legally qualified pharmacists to carry on drug stores for the pecuniary benefit of non-pharmacists. In places where no local association exists, there should be no difficulty in calling meetings of the chemists and druggists in the district to take similar action.

NEW VOLATILE OILS.—A new volatile oil for use in perfumery, soaps, etc., is described under the name of "frejar oil" in Haensel's quarterly report on essential oils and fruit essences. It is made from a fragrant wood, and in the crude state is somewhat thick, having a specific gravity of 0.9293. On rectification, it loses 20 per cent. of resinous matter, and is then colourless, and has a specific gravity of 0.9065 at 15° C. "Nagkesar oil" is a volatile oil distilled from the flowers of *Mesua salicina*, Planch., and Triana (*Mesua ferrea*, Linn.) has been introduced to the notice of perfumers by Mr. Haensel, who has prepared it from imported dried flowers. So little is obtainable from the dried flowers, that its present price is prohibitive. The perfume is spoken of as very fragrant, somewhat allied to that of the violet, but not exactly comparable with that of any known oil. It might therefore possibly be worth the while of planters in the East Indies to produce the oil on the spot from fresh flowers.

KELLY'S 'LONDON MEDICAL DIRECTORY' FOR 1896.—The eighth edition of this useful reference book has just been published by Messrs. Kelly and Co. It contains twenty-three pages more than the volume for 1895, the increase being mainly due to the greater fulness with which the contributions to medical literature, by individual members of the medical profession, are recorded. A number of new societies, institutions, and publications are also treated of in this volume, whilst the information regarding many older ones has been amplified. The price of the book remains as formerly (6s. 6d.), and the office of publication is 182, High Holborn, London, W.C.

THE USE OF INDIGENOUS DRUGS IN INDIA.—The Indigenous Drugs Committee is reported to have held its first meeting in Calcutta on January 3, when all the members were present, and Dr. King, as President, occupied the chair. The proceedings were of a preliminary character only, Dr. Watt being elected Secretary, and other business of a formal nature transacted.

THE CHEMISTS' CLUB.—The Committee of this Club intimates that the premises at 10 and 11, Stonecutter Street and 2, Farringdon Avenue, will be open for inspection to all chemists and chemists' assistants on Thursday, February 6. A smoking concert will take place in the evening at 8 p.m., to which all chemists and assistants are cordially invited. Tickets can be had on application to the honorary secretary, Mr. H. T. Butler, at the above address. The Committee hopes that a large number of visitors will take this opportunity of seeing for themselves the arrangements made for the comfort and convenience of members.

JUNIOR PHARMACY BALL.—On Wednesday next, February 12, the fifteenth Junior Pharmacy Ball will be held at the Portman Rooms, Baker Street, W. Mr. Mortlake Mann's Orchestral Band will be in attendance, and the first dance will commence at 9 p.m. precisely. Inclusive tickets (7s. 6d. each) may be obtained of the honorary secretary, Mr. H. Arliss Robinson, 29, Chapel Street, Belgrave Square, S.W., and application should be made for them without delay.

NEW WORK ON PHARMACOLOGY.—The New Sydenham Society is publishing a translation of the second edition of the 'Lectures on Pharmacology for Practitioners and Students,' by Dr. A. Binz, Director of the Pharmacological Institute in the University of Bonn. This is a most important work, and the translation by Mr. A. C. Latham, M.A., M.B., represents practically a new edition, a considerable amount of fresh matter having been added by Professor Binz, who has also revised the whole of the proof-sheets. The work will be published by subscription, and Volume I. is about to be issued immediately to the subscribers for 1895. This volume deals with anæsthetics: ether, etc.; chloroform, etc.; morphine and allied drugs; some more recent hypnotics; the bromides, coniine, curare; aconitine and allied drugs; the nitrites; iodine and its preparations; artificial sleep; atropine, caffeine, and digitalis; secale cornutum; Calabar bean; pilocarpine; nicotine; strychnine; the ammonium salts; alcohol; the ethereal or essential oils. For the convenience of intending subscribers, it may be stated that the annual subscription—one guinea—should be remitted to the New Sydenham Society's agent, Mr. Lewis, 136, Gower Street, London.

A NEW INDUSTRY AT DRONFIELD.—A new industry in this town has been commenced by Mr. H. Walker, who has laid out works for the manufacture of fuller's earth. The works cover an area of an acre and a half, and are situated at Cliffe Sidings, on the Midland Railway Company's system. The works have been fitted up with the most modern type of machinery, the whole plant being automatic throughout, and the material being handled once only by the men up to its finishing point. Mr. Walker is reported to have brought his fuller's earth under the notice of Her Majesty's Government for use in the manufacture of dynamite, nitroglycerin, and other explosives, the idea being that the earth should take the place of the German infusorial earth, kieselguhr. He is also suggesting its use for the filtration of all kinds of liquids, including drinking water.

THE HOPES OF PUBLIC ANALYSTS DEFERRED.—In the annual report of Dr. Sedgwick Saunders, the public analyst for the City of London, recently submitted to the Commission of Sewers, it is remarked that the hope entertained by public analysts throughout the kingdom that by this time the Legislature would have effected improvements in the working of the Acts relating to the adulteration of food and drugs, had not been realised. Some attempt has been made in that direction by a Select Committee of the House of Commons, which is described as having taken voluminous but not exhaustive evidence upon the subject. Dr. Saunders proceeds to say that it would be useless to reiterate the objections to the present anomalous arrangements under which the chemical authorities at Somerset House are enabled to over-ride the decisions of the most eminent analysts upon data they have never formulated, or to dwell further upon the extraordinary and discordant decisions given by magistrates throughout the country. Such decisions are alleged to be nearly always in favour of the dishonest trader, and more in accordance with the idiosyncrasy of the individual functionary than the requirements of science and common sense.

PROCEEDINGS OF SOCIETIES.

ROYAL SOCIETY OF EDINBURGH.—At a meeting of the Royal Society of Edinburgh, held on January 20, Professor Crum Brown, M.D., described an experiment illustrating the modern theory of salt solutions. He said there is a well-known instance in the case of chloride of zinc, which is not precipitated on the addition of sulphuretted hydrogen from a solution acidified with hydrochloric acid, the reason being that the zinc sulphide, if formed, would be immediately decomposed by the hydrochloric acid, which has a stronger affinity for the base. If, however, potassium acetate be added to the solution, there is an immediate precipitation of zinc sulphide. This is usually explained by saying that the potassium acetate is decomposed by the free hydrochloric acid, with formation of potassium chloride and free acetic acid, which, being a weaker acid, does not prevent precipitation of the zinc sulphide. This is the old explanation, and it is perhaps correct, so far as it goes, for the above instance. There is another case, however, in which such an explanation does not apply where we have the same acid throughout. The lecturer had a solution of ferrous acetate, to which he added a considerable excess of acetic acid. He now added sulphuretted hydrogen, but there was no precipitation of ferrous sulphide. On adding neutral or faintly acid potassium acetate, an immediate precipitation of black ferrous sulphide was observed. It is quite obvious that there must be some other explanation in this case. It is here that the modern theory of salt solutions is of service. The non-precipitation of ferrous sulphide in a solution of ferrous acetate containing much free acetic acid, is due to the great concentration of hydrogen ions, the effective acidity of the solution being due to this high concentration. The addition of potassium acetate has the effect of reducing the concentration by ionisation of the hydrogen, thus weakening the effective acidity of the solution. Under these conditions we have immediate precipitation of ferrous sulphide, although titrametrically the solution contains the same quantity of free acetic acid as it did previous to the addition of the potassium acetate. This reduction of effective acidity by ionisation of the hydrogen may be easily shown by adding an alkaline acetate to a quantity of acetic acid. Such a solution only turns blue or red litmus paper purple, and thus behaves very like a neutral solution, although on titration it will be found to contain as much free acid as it indicated previous to the addition of the alkaline acetate.

SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY.—Under the auspices of this Society, a lecture, entitled "From Mont Blanc to the Matterhorn," was delivered in the Montgomery Hall, Sheffield, by Mr. W. Lamond Howie, F.C.S., on Wednesday evening, January 29. Sir Henry Stephenson presided, and the lecture was illustrated with 120 magnificent views, photographed by the lecturer, and thrown on a 16-ft. screen by powerful limelight lanterns. At the outset, the lecturer said a more well-worn theme, or a district more thoroughly exploited than that from Mont Blanc to the Matterhorn, could scarcely have been selected for a lecture. The earliest, as well as the greatest, climbers have said that no matter how often they are visited, or however long the traveller may remain, the overpowering grandeur of these marvellous mountains must continue to fascinate. Magnificent views were shown of the peaks and tributary glaciers of the Mer de Glace, near Chamonix, obtained on a visit to the "Jardin," a grassy oasis under the peak of the Aiguille Verte, surrounded on all sides by the weird desolation of limitless rock and glacier. Several views of Chamonix followed, leading up to an ascent of the Brevent, which commands Mont Blanc, much like looking across a street from an upper window, only the street is more than three miles wide, and the pavement about 5000 feet below. The monarch of mountains in sunshine and storm was illustrated by impressive photographs and graphic description. Then followed a series of interesting glacier views, depicting faithfully the various aspects of one of these great ice rivers from the collecting fields of everlasting snow to the extremity, where the ice frozen some half a century before on the mountain top is finally melted in the hot sun. The views of the crevasses and transparent icy walls of the glacier grotto being most realistic. The three days' journey round Mont Blanc to Courmayeur was of the most varied and charming description. At burning noon resting in the shady piazza of a mountain inn within touching distance almost of the great snow peaks and glaciers, then zig-zagging the steep, pine-clad slopes, or traversing

the alpine pastures, the long grass almost invisible beneath a waving wealth of blossom, crossing snow slopes, through rocky gorges, by brawling glacier streams, whose murmur lulls to sleep in the quaint out-of-the-world rest houses, where the nights are passed; not the least of the pleasures being the ever-varying, magnificent cloud scenery, great white masses, crisp and shining, against the deep, ultra-marine of the alpine sky. Mountain mules, the Italian customs guard, the glaciers and tremendous peaks of the Allée Blanche and Val Veni followed, culminating with the famous Giant's Tooth, which overlooks Courmayeur, contrasted with the summits of Mont Blanc according to Mr. Whymper and a nervous lady; the latter being provocative of great laughter and applause.

The antiquities of Aosta were next dealt with, dating from the time of Augustus Cæsar. At one point impressive evidences of three great eras in the world's history in juxta-position were pointed out. The "pagan," represented by the old wonderfully preserved city wall, of date 43 B.C.; the "Christian," by a shrine to some saint built between two of the archways; and the "scientific," by the electric street lamps. From this old pagan world a rapid journey was made to Milan, and the sunlit marbles of the famous cathedral, shown in a series of slides of marvellous fidelity and beauty, which repeatedly evoked warm marks of appreciation. Views of Lakes Como and Maggiore, the quaint architecture and tropical vegetation of the district, and the mountains surrounding the lakes bring us by the Rhone Valley and Zermatt to the foot of the Matterhorn, which formed the conclusion and *pièce de résistance* of the lecture.

The wonderful views obtained from the hut on the north-east ridge of the Matterhorn from the Gabelhorn and Gorner Grat were singularly interesting and impressive. Piquancy was given by climbing incidents and examples of the humours of alpine guides and artists. The last slides, representing the great peak in several striking aspects—in sunshine, then cloud-enveloped, and, in conclusion, clear in the moonlight, cold, majestic, terrible in its stately magnificence, soaring to the very heavens as it keeps its nightly silent watch with the pole-star over a sleeping world—neither curtain nor the allurements of softest pillow can blot it out. Sleeping or waking, the Matterhorn remains to all who have felt the influence of its matchless yet fearful beauty a never-fading and glorious memory.

BRISTOL PHARMACEUTICAL ASSOCIATION.—The annual meeting of this Association was held at University College, on January 29, Mr. Allen, the President, in the chair. The Hon. Sec. read the following report of the Council:—"The membership of our Association shows a slight increase of numbers as compared with last year. The library and the materia medica cabinet are still housed in the buildings of University College. The Council regrets that the library is not made more use of by the students of the neighbourhood. This, it is thought, must be due to the fact that they are not aware of its existence or of the facilities afforded by the Association for lending the volumes. In accordance with the wish of the Council, the Hon. Sec. took steps in the autumn to ascertain how many students were likely to attend a pharmacy and materia medica class if it should be resumed, and finding there was a probability of getting ten or twelve members, the class was begun again in October with eleven students, who have attended the weekly meetings with very fair regularity. As most of the students were fresh members, the Council thinks this number justifies the class being resumed. The class, by permission of the Executive, meets in one of the class-rooms of University College." The Treasurer also read his report, showing a balance in hand of £10 17s. 9d. The President moved the adoption of both reports, which was unanimously agreed to. A conference followed, discussion being invited on the recent development of company pharmacy in the neighbourhood. Mr. Schacht explained the position of the Council of the Pharmaceutical Society in the matter, and ultimately the discussion was adjourned to February 26, in order to obtain a still larger attendance of members of the trade in the district.

LIVERPOOL PHYSICAL SOCIETY.—A meeting of this Society was held in the Physics Theatre, University College, on Monday, January 27, 1896, for the purpose of listening to a lecture on "Professor Röntgen's Discovery," by Dr. Lodge, Professor of Physics at University College. There was an extraordinarily large attendance, all the seats, gangways, and even behind the lecture table being filled with persons who were interested in the subject, among them being a very large proportion of ladies. Many persons were unable to get into the room, and filled the passages outside. The Chairman called upon Professor Lodge amid prolonged cheering.

The lecturer said that the greater part of what Professor Röntgen had now found out was already known in 1894, but as he was lecturing to an audience who desired to know something of the subject, he would first of all speak about the electric conductivity of metals, liquids, and gases. With regard to metals, nothing very definite is known, with liquids it is a procession of molecules, each molecule communicating its charge to its neighbour farther on, the charge traversing the whole distance. Gases are not conductors ordinarily but are generally broken down, undergoing electrolysis.

The history of the vacuum tube divides itself into three principal epochs. The tube of 1850, which was exhausted to about 1/100th of an atmosphere, on the passage of the electric discharge glowed throughout its entire length, but the light showed no definite structure. The appearance of the discharge in the 1860 tube was very different owing to the improved means of producing high vacua. The electricity on being passed in at both ends travelled towards the centre, the + at about half the velocity, the - much slower, and met at Faraday's dark space when the glow resolved itself into striæ, and a second dark space was seen round the cathode. This phenomenon was first discovered by Crookes, and shown to the British Association in 1879. With higher vacua the cathode dark space fills the whole tube, driving the positive column before it, leaving a black space. With these high vacua, when the electric current is turned into the tube, the glass phosphoresces, German glass giving a green, and English a blue; it seeming as if the whole space were full of electrically-charged particles, which start from the cathode and impinge against the inside of the glass.

These different conditions were then practically illustrated:—

(1) A strong electric current was passed through a moderately rarefied vacuum-tube, when there was a blueish glow, which was without structure.

(2) A current was passed through a tube containing some barium sulphide; the glow was blue as before, but on stopping the barium sulphide, gave a green phosphorescence.

(3) The current was now passed into a higher vacuum, when the division into striæ took place, but no dark space around the cathode was visible.

(4) The current was now passed into a vacuum tube with two anodes and one cathode, when the cathodic dark space was immediately seen, then being full of cathode or invisible rays.

(5) The electric current was now passed into a tube of German glass, in which the cathode was cylindrical, when the glass had a green phosphorescent glow.

To show that glass was not the only substance transparent to the rays, the lecturer had five minerals, including Iceland spar, held in a glass claw. The cathode in this case was at the top of the vertical tube, and when the rays were passed through the minerals they were rendered luminous, their luminescence being greater than that of the glass.

Professor Lodge next took a hollow glass ball, fixed the cathode at one side in a plate, and then moved the anode about. In this case the vacuum was not very great, and consequently there was a glow at each place to which he fixed the anode. He then took another ball in which the vacuum was 1/1,000,000th of an atmosphere. In this case also he had the cathode fixed, and moved the anode to three different places. The cathode rays went straight across the ball making the glass green and hot; the fixing of the anode made no difference, and the phosphorescence could be moved by a magnet. The rays were afterwards allowed to impinge upon a phosphorescent screen, but in their passage they formed a red bar of light which could be deflected in any way by means of a magnet. The lecturer incidentally remarked that the speed of the particles could be calculated by this deflection.

He then went on to speak about the energy of these cathode rays, their heating and mechanical effects. To illustrate their heating power a piece of platinum foil was placed in a high vacuum tube, and exposed to the path of the rays, the foil became quite hot, but cooled again if the rays were deflected by means of the magnet. Their mechanical power was not so great as their heating power, but still sufficient to turn a small windmill. This was thrown on to the screen by the lantern. The rays met with an obstacle in the glass, were deflected, and then the windmill revolved at a great speed.

All these experiments were performed with Crookes' vacuum tubes, which had been kindly lent by Mr. L. Higgins.

The next stage described was the discovery of Hertz in 1890, who found that these cathode rays can pass through metals, aluminium being almost transparent, but platinum and other dense metals were opaque to the rays. Philip Lennard, assistant to Hertz, in 1894 passed the cathodic rays into the outside atmosphere by means of a tube with a disc-shaped cathode at one end, and the other closed by an aluminium plate or window of sufficient strength to withstand the high external atmospheric pressure, the tube being highly exhausted. By interposition of opaque substances between this aluminium window and photographic plates shadow-thrown photographs were obtained.

A photographic plate, the right hand half of which was covered with aluminium foil, and the lower part with a plate of quartz, was exposed to the rays, with the result that the uncovered part was totally affected, that covered by aluminium alone not so much, that by aluminium and quartz scarcely, and the part covered with quartz alone only slightly more so. Incidentally Professor Lodge said that Professor Lennard had been asked to come to last year's meeting of the British Association and lecture upon his discovery, but being a shy, retiring man, had declined. However, he had as good as promised to come this year, and they hoped to persuade Professor Röntgen to come too.

The lecturer went on to say that, scientifically, Professor Röntgen had not done much more, but practically he had made great improvements, as he had been able to cause the rays to come through the glass in far greater quantity, and with better penetrating power. Professor Lodge was inclined to think that they were the same as those obtained by Lennard, but on this point there was difference of opinion. The rays pass easily through vacua, but not so easily through material substances.

The practical application of the discovery was accidental: Professor Röntgen had some fluorescent paper of barium platinum cyanide near; this in the rays gave a greenish hue, and when the hand was in the way gave the outline of the bones in the hand. After using the paper, Professor Röntgen then tried photographic plates. He found that the rays passed through a heavy German treatise of 1000 pages, and that rays usually pass through substances in proportion to their densities, some being more turbid than others to the light, just as milk is turbid to ordinary light.

In speaking about the alleged difference between the Lennard and Röntgen rays, whether the latter consisted of electrically charged particles, or whether they are part of the ether and analogous to light, Dr. Lodge said that, as was shown, Lennard's rays are deflected by a magnet, and those of Röntgen are apparently not; the reason, Röntgen says, being that Lennard's rays are moving slower than his. But if, as Röntgen asserted, and Lord Kelvin is inclined to believe, they are ether waves, then this will be the greatest physical discovery of the age, for they would have as many laws as light.

Professor Lodge then proceeded to describe the various slides which were thrown upon the screen by Mr. Robinson. The first one was of some coins which had been placed in a light-tight box made of wood a quarter of an inch thick, and had an hour's exposure. The coins came out as black round masses, though no inscription was at all visible. The next one was a horse-shoe magnet, the definition being extremely good. Then came one of three sizes of wire gauze; over a corner of each an hour-glass-shaped piece of aluminium was placed. The outline of the aluminium was scarcely visible at all, while the mesh of the gauze was very clear. With intensification the aluminium became slightly more visible. The next was one of a horse-shoe magnet with the rays of light, but owing to the close proximity of the poles of the magnet it was difficult to see whether the rays were deflected or not. Subsequently was shown a photo of a series of superimposed rectangular sheets of tin-foil, each smaller than the one before. The outside rectangle was almost transparent, but as the centre was approached the picture became darker and darker.

The following slides showed some wire wound on a wooden bobbin. The bobbin was quite invisible on the screen, and only the wire was seen. Dr. Lodge mentioned that this would be useful to electricians as they would be enabled to see defects in coils without the tedious labour of unwinding. Then came one of a compass needle which had an aluminium case and lid. When taking the photograph the lid was left on, but on the screen all to be seen were the compass needle, the degrees and the lettering. Dr. Lodge said the fact that the lettering and degrees appeared was probably due to their having been printed with metallic ink. The next was what

Professor Röntgen calls "the profile of a door." On the door was placed a piece of platinum foil, this was rendered dark in the picture, but all around was a blaze of light.

A photo of Professor Röntgen's hand showed the bones and his ring very distinctly, while the flesh was almost invisible, the bones being not so turbid to the light as the metal. Prof. Lodge remarked that if it were possible to photograph so thick a thing as a man's skull, and if a bullet were inside the skull, it could then be seen. The lecturer said that no doubt the greater part of his audience would have seen in the press that applications of the discovery had been made to surgery, but it was also applicable to engineering, since flaws and joints in metal could be seen. This was shown by a slide illustrating a piece of zinc which had been mended by a skilled mechanic, in which the joints were quite distinct. The next one was one of a razor in its case. The case and horn handle were quite invisible in the photograph, only the metallic parts being seen. The next one was Mr. Campbell Swinton's hand. This was not so good as that of Professor Röntgen's, but it showed the bones of the fingers very distinctly; the palm was almost black, being thicker; and the flesh, was visible all over the hand.

For these last two slides he was indebted to Mr. Campbell Swinton, who had used a Tesla arrangement. A current of six or seven e.h.p. from an alternating dynamo was sent round the primary of an induction coil, the secondary of which was attached to two Leyden jars in a teak box, which were connected to the primary of a second coil, and then to a Leyden jar in oil. The secondary terminal was carried to the tube, of which the anode and cathode were of tin-foil. On passing the current, the noise was almost deafening, and on holding a piece of sheet aluminium over the tube, it was bent, owing to the flaws present.

In conclusion the lecturer touched upon the three hypotheses of the nature of this light:—

(1) That the rays were particles of highly charged electrical matter.

(2) That they were ultra-ultra violet rays, high up in the pitch and about the size of atoms. Professors Fitzgerald, J. J. Thomson, and Schuster, the last of whom had lent photographs to Dr. Lodge received from Professor Röntgen, were all of this opinion. Possibly by this means atoms could be photographed, and then the way in which the atoms are arranged in molecules would then be seen to the great joy of all chemists.

(3) That they were longitudinal waves more like sound than light.

Of these three hypotheses Dr. Lodge said that he personally inclined to the first.

PLYMOUTH, DEVONPORT, STONEHOUSE, AND DISTRICT CHEMISTS ASSOCIATION.—The members of the junior section of this Association held a very successful meeting at the Foresters' Hall, Union Street, Plymouth, on Thursday evening (January 30). There was a very good number of members present, amongst whom were Messrs. O. A. Reade, Blackmoor, Vibert, Barber, Downing, Reynolds, Trencer, Waldon, H. O. Westcott, Jas. Cocks, E. A. Hodge, T. Darke, Harris, and the hon. secretary (Mr. G. Fairweather). Mr. E. A. Hodge was voted to the chair, and after some introductory remarks on the importance of the subject, called on Mr. Jas. Cocks (the hon. secretary of the Association) to read his paper on—

"Dispensing Notes, Pill-coating, etc."

Mr. Cocks remarked that there were three methods of coating pills applicable at the dispensing counter: 1st, varnishing; 2nd, pearl coating; and 3rd, gelatin coating. He expressed his opinion that varnishing was not a good way of coating pills, as the varnish was not very soluble in the stomach, although it had the advantage of the other coatings in taking very much less time to do than the other methods. Mr. Cocks uses a varnish consisting of gum sandarach 5 drachms; tinct. tolu, 2 drachms; ether meth. to 2 ounces.

Next, coming to pearl coating, Mr. Cocks said he had been trying for years to obtain a good moistening solution, and thought he had obtained the result at last. His solution consisted of equal parts tinct. tolu, mucilage of acacia, and syrup. He coated some pills with this solution and dropped them into the French chalk, and after a little while turned them out quite as good as factory-made pills, with the advantage of knowing what was inside the coating.

Mr. Cocks then turned to gelatin coating, and said it was undoubtedly the best coating, as the coating was perfectly soluble in a very short time at the temperature of the body and being also transparent, the colour of the pill could be seen and might often prevent mistakes.

The essayist then showed a machine of his own invention for coating from three to six dozen pills. It consisted of a water bath heated by a Bunsen burner and a couple of large corks pierced with needles which could be rotated quickly by means of a large cog-wheel and two smaller ones, the pills were stuck on the needles and dipped into the gelatin solution, and then lifted up and the surplus gelatin allowed to drop off. Then the corks were quickly rotated, and in a few minutes the coating had set. Mr. Cocks coated some pills and passed them around to the members, and all agreed that they were very well done.

Mr. Cocks used the following formula for his gelatin coating:—

French gelatin	ʒiiss.
Boric acid.....	ʒij.
Mucilage of acacia.....	ʒij.
Water to	ʒviij.

The lecturer also mentioned keratin coating and concentric coated pills, but said they were very rarely ordered.

Mr. Cocks then showed some gelatin capsules which he had made. He said he could not very well give any hints as to making them; it was practice that was required.

Mr. Blackmoor proposed a vote of thanks to Mr. Cocks for his interesting and highly instructive paper.

Mr. O. A. Reade, in seconding, remarked that at the Naval Hospital they did not trouble to coat their pills. If the patients did not like them they could not go to the stores next door, but he did see a prescription once which ordered the pills to be coated with collodion. The way they did it was to string the pills on a piece of cotton and dip them into the collodion, and then whirl them about until dry. They then cut off the cotton close to the pills, and the patient got a piece of cotton as well as a pill.

The Chairman, Mr. H. O. Westcott, and Mr. Fairweather also took part in a discussion, and the resolution was carried unanimously, Mr. Cocks replying in suitable terms.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.—A meeting of this Association was held on January 29, at the Exchange Rooms, Birmingham. Mr. T. C. Clarke (President), occupied the chair, and in opening the proceedings said that at previous meetings it had been suggested that some suitable way should be found by which the members could be brought together during the summer months, in the interest of the Association. He asked the members to make what they considered practicable suggestions. A brief discussion followed and suggestions were made that a photographic club should be formed for the summer months, and that country trips should be made for the purpose of collecting botanic specimens. These, it was contended, might serve as the ground work for papers to be read at the meeting in the winter.

Mr. A. L. Taylor then read a paper on "Chemistry, Past and Present." In the course of the paper, he said that he thought the science of chemistry stood at the head of all the sciences in its universal importance and application. Manufactures, arts, and last, but by no means least, medicine were indebted in a greater or less degree to chemistry. He took it that the first chapter of the history of chemistry extended from the fourth to the seventeenth century, ending in 1627 with their illustrious fellow-countryman, Robert Boyle. The chemistry of those 1400 years was really based on the teaching of Aristotle. He thought they might pride themselves on the fact that Boyle completely overthrew the doctrines of Aristotle and of Geber, and inaugurated a new era of chemistry. Boyle was one of the first chemists to advocate the study of chemistry for its own sake. The lecturer dealt briefly with the work of the more recent chemical discoverers, and concluded by stating that he was pleased to have had the opportunity of addressing the members of the Association, even though it had been in the inadequate manner in which he had treated the vast subject he had placed before them. On the motion of the Chairman a hearty vote of thanks was accorded Mr. Taylor for his paper.

ENGLISH NEWS.

SUICIDE OF A SCHOOL TEACHER.—Major Taylor held an inquest at the Great Northern Hotel, Stanningley, on January 31, on the body of Tom Gordon (28), assistant master at the Richardshaw Lane Board School, Pudsey, who had committed suicide by poisoning himself with prussic acid. Deceased's widow said he was usually of a cheerful disposition, but on the previous Thursday night he appeared somewhat despondent. He said he had not been very well lately. He was troubled about his class, and said he had intended having a right good report this time, but the class had not done so well. He was also troubled because he had not passed an examination.—Joseph Thomas Brewer, landlord of the Crown Hotel, Stanningley, said deceased had spoken of this trouble to him. He had threatened to poison himself, and produced a bottle containing poison on Wednesday night, which witness destroyed, but Gordon only laughed and said he could get more. Witness tried to dissuade him, and afterwards he was quite cheerful.—Arthur J. Powell, chemist, spoke to supplying deceased with prussic acid on Wednesday. He said he wanted it to destroy a dog. He was supplied with another quantity the following day, Gordon then stating that he had knocked the first lot of acid over.—A verdict of "Suicide whilst temporarily insane" was returned.

THE CARELESS STORAGE OF POISONOUS WEED-DESTROYER.—On January 31, Dr. E. M. Grace held an inquiry touching the cause of death of Mrs. Susannah Hester Williams, wife of Mr. Alphonso Williams, of The Elms, Tockington.—Florence Edith Lanfear stated that she was a servant of Mrs. Williams. About four o'clock on Wednesday afternoon Mrs. Williams told her she wanted to make some tippy cake, and went to a cupboard to get some grape wine for the purpose. Deceased told witness to get the jar out, and asked her to hold a jug while she poured it out. She asked her mistress if she was sure it was the right jar, and she said it was. The cupboard contained other jars, and was always kept locked, no one having access except Mr. and Mrs. Williams.—Elizabeth Amelia Witts deposed that on Wednesday afternoon the deceased said she would like to make a cake. She went with the servant to get some wine from a cupboard, which Mrs. Williams poured upon some sponge cakes for the purpose. Some time afterwards the deceased, who had gone to lie down, complained of feeling sick and unwell, and said she was afraid she had used some very disagreeable stuff for the cake, and that she had drunk some of it to taste it, and it would be better to throw the cake away and use some wine from a large jar. She continued to feel ill, and about half-past seven witness went to Dr. Irwin's, at Olveston, and told him what had happened. The doctor advised that the deceased should take some brandy and water, and if she did not get better to send again. This they did about nine o'clock, but Mrs. Williams continued to get worse, and died about three o'clock on Thursday morning. The coroner read a letter from Dr. Irwin, which stated that upon arriving to see the deceased he found her in a state of semi-consciousness and also pulseless. A telegram was received yesterday from the makers of the liquid contained in the jar, in answer to an inquiry as to the nature of the contents, and they stated it to be arsenic. A verdict was returned to the effect "That the deceased met with her death by misadventure through accidentally drinking a weed-destroyer containing arsenic."

WELSH NEWS.

FIRE AT A CHEMIST'S SHOP.—The shop of Mr. Thomas Richards, chemist, Station Street, Treorky, was last week completely gutted by fire. About half-past three o'clock a boy named Ellis, apprentice, was awakened by the smell of smoke. The other inmates of the house being roused, it was discovered that the shop was on fire. A minute later the shop windows were blown to atoms with a loud report, and the flames spreading rapidly, gained a complete mastery of the premises in less than half an hour. Strenuous efforts were made by Inspector Gill and half a dozen police constables to extinguish the blaze with a portable hose, and they were successful in so far as the prevention of the flames spreading to the adjoining premises. Some five minutes after the premises were destroyed, the Ystrad Fire Brigade drove up under the command of Dr. James. Although too late to render assistance, the brigade was highly complimented on having turned out with such promptness, Ystrad being six miles distant and the roads heavy. The damage done is estimated at £1000.

IRISH NEWS.

PHARMACEUTICAL PROSECUTION IN BELFAST.—In the Summons Court of the Belfast Police Courts on Friday, January 31, before Messrs. Garrett Nagle, R.M., Thomas M'Clelland, J.P., and Dr. M'Gee, J.P., the Pharmaceutical Society summoned Mathew Ballantine and James C. Carson, trading as J. Lizars, optician, 73, Victoria Street, Belfast, for keeping an open shop for selling and retailing poisons, they not being registered druggists in compliance with the Pharmacy Act. A second summons was issued against the same defendants for selling a scheduled poison, namely, sublimate of mercury.

Mr. S. Channon Millin (instructed by Mr. W. B. Galway) appeared for the complainants, and Mr. E. J. Shaw defended.

Mr. Millin said that the facts of the case were very simple, but the case was one of very great importance to his clients, who were prosecuting in the public interests. The Pharmacy Act was passed to protect the public against the sale of poisons by persons unqualified. Various devices had been adopted to render the object of the Act nugatory; but the means employed in the present case displayed an ingenuity that seemed to be in accordance with the boast once made by a distinguished Irish lawyer, "that he could drive a coach and four through any Act of Parliament." The question which the Court, or, if needs be, a higher tribunal, would have to determine was whether an unregistered person could, under any circumstances whatever, keep an open shop for the sale of poisons. The defendants evidently thought that by employing a registered druggist as their assistant they could evade the penalty imposed by the Statute. He (counsel) urged upon their Worships the necessity of assisting the Pharmaceutical Society in every legitimate way to put down the sale of poisons by unqualified persons.

Andrew Downey gave evidence to having bought from the defendants, on October 7 last, a packet of sublimate of mercury, which he sent for analysis.

Samuel Templeton, A.R.C.S., deposed to the analysis of the packet, which contained a scheduled poison.

Mr. Shaw contended that, inasmuch as the sale of poison was under the personal management of a registered druggist, the defendants were not liable.

The Court held that the defendants were liable to the penalty under Section 30, and imposed a fine of £5 and 20s. costs for each offence.

PROFESSOR TICHBORNE gave a lecture last week at Dalkey on "Atmospheric Air and Recent Discoveries Thereon," illustrated with numerous experiments; in the course of which, through the incautious handling by an assistant of a vessel containing CO₂, the learned professor unfortunately got his right hand somewhat severely "burned."

FOREIGN NEWS.

ACADEMY PRIZE FOR A PHARMACIEN.—The Académie des Sciences has awarded the Prix Jecker to M. Tanret, a pharmacien, with a sum of 6000 francs from the fund attached to the prize, and the title of Lauréat de l'Institut. M. Tanret carries on business in the Rue d'Alger, Paris. Several of his preparations, notably standardised solution of ergotinin, are current articles in French pharmacies. He has for some time past been designated for honours by the Academy as a recompense for his analytical researches. The isolation by him of the active principles of many drugs, such as ergotinin, pelletierine, hesperidin, etc., has earned for him the reputation of being one of the most distinguished analytical chemists in France. The committee complimented M. Tanret on the accuracy of his work and the lucidity of his reports.

NEW ADULTERANT OF SAFFRON.—M. Cesare Chicote, of St. Sebastian, Spain, publishes in the *Journal de Pharmacie* a description of a new adulterant of saffron, to add to the numerous sophistications of that drug. At first sight the specimen appeared genuine, although of inferior quality owing to the presence of a rather larger proportion than usual of the yellow filaments. On pressing a portion between folds of white blotting-paper, numerous reddish-blue lines were distinguished, differing entirely from the stain produced by true saffron. An examination with a lens showed three different structures, the stigmata of saffron, the yellow filaments of the same (often present more or less), and numerous filaments of a bluish-red colour. These last on treatment with cold distilled water gave up their colour and became white. The author was unable to determine the botanical origin of these filaments, but believes them

to be derived from a flower of the Caryophyllaceæ order, resembling the carnation, which grows abundantly in Spain. The colouring matter extracted by water was on analysis found to consist of acid fuchsine, and a certain quantity of glucose (used as a fixing agent for the dye) was also detected. This form of adulteration was considered very ingenious, as on a cursory examination the dyed filaments would escape detection.

ILLEGAL USE OF TITLES.—A pharmacist who had lately acquired a business in the north of France continued making use of the titles of "Pharmacien de Ière Classe" and "ex-Interne des Hôpitaux" belonging to his predecessor. This seems to have caused great annoyance to a rival member of the profession, who invoked the aid of the legal authorities in order to restrain the new comer from assuming qualifications to which he was not entitled, alleging that it was unfair competition, and had prejudiced him in his business, for which he claimed damages. The tribunal considered that no detriment had been proved, but ordered the offending pharmacist to restrict himself to the use of his personal qualifications.

A LITIGIOUS PHARMACIST.—A Paris pharmacien, M. MacAuliffe, has made considerable use of the law courts lately in disputes with his next-door neighbour, Mme. Pouteau, a china dealer. He sued this lady for alleged assault, which was answered by a counter-charge and damages claimed. The tribunal, with evenly-balanced justice, fined both parties 25 francs. Shortly after he was summoned by the lady for striking one of her employés. The pharmacien conducted his defence with much spirit, but the adverse witnesses were numerous. It was elicited, however, that the doctor had given a certificate of injuries inflicted on the lady's statement only, without making any examination, and the defendant protested that he could not have committed the assault, as he was away in the country on the date alleged. Nevertheless, he was found guilty by the Court. M. MacAuliffe appealed, but the judgment was confirmed. Not to be beaten, however, he prosecuted all the witnesses for perjury! The testimony was so conflicting on this case being tried that it was dismissed. One would think this would have finished the affair, but the pharmacien was still unsatisfied, and has carried the matter to a higher Court. A French paper, commenting on this, aptly remarks that it does not know who to commend most—the clients who have waged such persevering legal warfare, or their lawyers who have managed to give their learned assistance without discouraging them.

CURE OF SNAKE-BITES.—Further evidence of the action of anti-venom serum against poisonous snake-bites, the efficacy of which was the subject of a communication to the Académie des Sciences last November, and was mentioned in these columns at the time, is now to hand, and has been placed before that Society. The serum, procured in large quantities from immunised horses by Dr. Calmette, Director of the Institut Pasteur at Lille, has been dispatched for experimental purposes to those countries infested with deadly snakes, such as India, Australia, and the French Colonies. It is estimated that the remedy, when freshly obtained, has an immunising power of 20,000 to 1; for example, 10 centigrammes will render innocuous a deadly dose of cobra venom in an animal weighing 2 kilogrammes. Dr. Hankin, of the Bacteriological Laboratory at Agra, found that his consignment of serum had deteriorated by its voyage during the hot weather, and that it represented about a fifth of the above strength. At Saigon, in Cochin China, Dr. Lepinay, of the Colonial Bacteriological Institute, on studying the action of the serum on animals, found that they resisted the virus when previously immunised. He also relates the case of a native who had been bitten by a "Naja," forming part of a collection of reptiles destined for the Pasteur Institute. A deep wound had been inflicted on the hand, which at once became very painful and much swollen. The sufferer was conveyed to the hospital about an hour afterwards, when an injection was at once given of 12 centigrammes of serum. The next day all dangerous symptoms had disappeared, a certain rigidity of the muscles was the only remaining sign of his mishap. On the other hand, a native who had been unable to receive timely assistance died two hours after a bite from one of the recently-captured reptiles destined for the same collection. Dr. Calmette considers that the anti-venom serum is a certain cure when administered shortly after the bite, and in any case it has no ill-effects on the constitution.

LEGAL REPORTS.

PROCEEDINGS UNDER THE SALE OF FOOD AND DRUGS ACT.

PRESENCE OF COPPER IN PRESERVED PEAS.

At Southwark, on Wednesday, Mr. Fenwick delivered his decision in the case of Mr. A. A. Grist, the sanitary inspector of the St. Saviour's District Board of Works, Southwark, against H. C. Summers, trading as George Mence Smith, at High Street, Borough. The case has already been reported (see *ante*, pp. 59, 78, and 98). Mr. Fenwick said that the case was an important one, but, so far as he was concerned, extremely difficult to decide owing to the conflicting evidence which was given by scientific witnesses, whose ability and eminence were beyond dispute. The defendant was charged under Section 3 of the Sale of Food and Drugs Act with selling an article of food which was mixed or stained with an ingredient that rendered it injurious to health: it was said that the peas having been treated with copper—in such a manner that a bottle or a pound of peas contained eight-tenths of a grain of copper, equivalent to 3·16 grains of sulphate of copper—the defendant in selling those peas had brought himself within the operation of the Act. It was useless for him to go into the technicalities of the evidence. He had brought to bear upon the case his best consideration and attention, having gone carefully through the whole of the evidence on both sides, and considered the authorities put forward by the various witnesses. The conclusion he had come to was that—having regard to the whole of the evidence and to the quantity of copper in the peas—the prosecution had succeeded in establishing a case against the defendant. He should therefore impose a penalty of 40s. and 12s. 6d. costs. Notice of appeal was given by the defendant's solicitor.

NEW REMEDIES.

[The notes given under this heading embody recent suggestions in therapeutics. They cover both new drugs and preparations, and old ones under new aspects. The word "parts" is used to represent parts by weight, both for solids and liquids.]

PHENOL IN SCROTAL PRURITUS.—Brocq recommends the use of phenol dressings, by means of compresses moistened in the following solution:—Phenol, 20 parts; glycerin, 75 parts; alcohol, 25 parts; distilled water, 300 parts; to be diluted with 3 parts of water before use. Internally, he recommends antipyrin, and also phenol, which is given in the following pill:—Phenol, 5 centigrammes; extract of valerian, 10 centigrammes; powdered valerian, 20 centigrammes. From one to four such pills to be taken with food daily (*Rev. de Thérap. Méd.-Chirurg.*, lxii., 766).

ENTEROL A NEW INTESTINAL DISINFECTANT.—According to Foss, there exists naturally in the intestines a mixture of isomeric cresols in definite proportions, to which he applies the name "enterol." He claims to have prepared this body in the form of a whitish transparent liquid, crystallising at ordinary temperatures, but the crystals liquefy when they have absorbed about 5 per cent. of moisture. Enterol has a powerful penetrating odour, and when diluted to 1 in 1000 with water is absolutely harmless in doses of 1 to 5 grammes. It acts as a powerful intestinal disinfectant, and has proved very efficacious in various forms of enteritis. Foss is at present investigating carbonate of enterol, which is odourless and non-irritant (*Rev. de Thérap. Méd.-Chirurg.*, lxii., 767, after *Deutsche Med. Woch.*).

CALOMEL IN TUBERCULOSIS.—Edelheit (in *La Semaine Méd.*) recommends the use of calomel, combined with balsamic and anti-septic substances, such as balsam of tolu, benzoic acid, and creosote. It may be given in all stages of pulmonary tuberculosis or of broncho-pneumonia, except when hæmoptysis is present. He prescribes it in pills thus: Calomel and benzoic acid, of each 30 centigrammes; beechwood creosote, 2 grammes; balsam of tolu, 8 grammes; extract and powder of *Acorus calamus*, sufficient to mass. Mix and divide into sixty pills; six to be taken daily for ten days. For broncho-pneumonia he prescribes calomel, 30 centigrammes; benzoic acid, 25 centigrammes; sugar, 2 grammes. Mix and divide into ten powders; one or two of these to be taken daily (*Rev. de Thérap. Méd.-Chirurg.*, lxii., 759).

NOTES AND QUERIES.

[The information given in this column includes both notes of practical interest to pharmacists, and replies to queries which seem to possess sufficient interest to readers generally. Readers requiring working formulæ for special preparations should intimate their wants to the Editor, who will be pleased to assist them to the best of his ability. The word "parts" invariably indicates parts by weight.]

OINTMENT FOR CHAPPED HANDS.

Menthol, 1 part; salol, 2 parts; olive oil, 2 parts; wool fat, 60 parts. To be applied to the hands twice a day—night and morning (*Bullet. Comm.*, xxiii., 514).

TALCUM DUSTING POWDER.

Finely powdered boric acid, 25; corn starch, 50; powdered talcum, 444; oil of rose geranium, 1 part. Mix and put up in cylindrical sieve-top boxes (*Mod. Méd.*, iv., 259).

BEETLE POWDER.

Wheat flour, 2; powdered borax, 1; unslaked lime, 1; powdered sugar, 4 parts. Mix thoroughly and keep dry. Place on papers about infested localities. (*Pharm. Era*, xiv., 685).

WINTER WASH FOR FRUIT TREES.

Crude potash, 1 lb.; caustic soda, 1 lb.; warm water, 10 gallons; (*Garden*, xlvi., 1256), to be applied warm to every portion of the tree in the form of a spray. All moss and lichen should be removed, as these conceal the eggs of the winter moth, of which there appear to be great numbers this winter.

LEMONADE FOR DIABETIC PATIENTS.

The following, says the *Medical Times*, affords a pleasant beverage for diabetic patients who suffer from thirst, and to whom sugar is forbidden. Citric acid, 5 parts; glycerin, 20 to 30 parts; water, 1000 parts.

DISPENSING DIFFICULTLY.

"MAJOR" has asked for an opinion as to the most correct way of dispensing the following:—

R Hydrarg. biniodid.	gr. ½.
Liq. arsenici chlorid.	ʒss.
Syrup. simpl.	ʒiv.
Glycerin	ʒii.
Aq. chlorof.	ʒij.
Aq. ad.	ʒvj.

Biniodide of mercury is partially soluble in glycerin in the cold, but the biniodide should be well rubbed with hot glycerin, which will easily effect solution. Protect this solution with the syrup, and add the remaining ingredients. The addition of tragacanth (1 grain to the ounce) does not seem to be required. Put a "Shake the Bottle" label on.

CREAMY EMULSION OF COD-LIVER OIL.

Cod-liver oil, 500 parts; finely sifted sugar, 190 parts; powdered gum acacia, 5 parts; powdered gum tragacanth, 5 parts; infusion of coffee, 200 parts; rum or kirsch, 100 parts (*Méd. Mod.*). Mix the sugar and the gums in a mortar, and in the bottle which is to contain the emulsion shake together the oil and the cold infusion of coffee. Pour sufficient of this liquid into the mortar to make a paste, emulsify thoroughly, add the rum to the liquid remaining in the bottle, and gradually mix with the emulsion in the mortar.

RESORCIN FOR CHILBLAINS.

Boeck (*L'Union Pharm.*) recommends the following application for unbroken chilblains. Resorcin, ichthyol, and tannin, of each 2 parts; water, 10 parts; mix. The liquid, after thoroughly shaking up the bottle, should be painted on the affected parts every evening. When applied to the skin it forms a varnish-like layer in a few minutes. Where the staining of the skin produced by the above is objected to, the following formula may be substituted, but it is not so efficacious as the above:—Resorcin, 8 parts; gum acacia, 5 parts; water, 15 parts; powdered talc, 2 parts. A coating of this liniment to be applied every evening after well shaking the bottle.

PREVENTIVE LOTION AGAINST INSECT BITES.

Acetic ether, 5 parts; eucalyptol, 10 parts; eau de Cologne, 10 parts; tincture of *Pyrethrum roseum*, 50 parts (*Journ. des mal. cutan.*). One part diluted with 3 or 6 parts of water to be used as a lotion.

NOTICES TO CORRESPONDENTS.

All Articles, Letters, Notices, and Reports intended for publication in the Journal, Books for Review, and communications respecting Editorial matters generally must be Addressed "Editor, 17, Bloomsbury Square London," and not in any case to individuals supposed to be connected with the Editorial Staff. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

LETTERS.

COMPOUND COLOCYNTH PILLS AND PHARMACOPEIA REVISION.

MR. THOMAS DUNLOP, of Glasgow, writes as follows:—"The object of my previous letter was not, as Mr. Lyon seems to have inferred, to direct his attention to what I had done a year ago. In his reply he says he does not think the 'other remarks,' which were the point of my letter, 'call for comment,' whilst at the same time he expresses his opinion *re* the 'duty' of the Revision Committee. I made a statement of fact in reply to his abstract statement. Now he modifies that—again without saying anything definite—and speaks only of 'the possibility of the pill being frequently prescribed along with some chemical which was incompatible with the official massing agent.' Under such a visionary contingency the Revision Committee would be quite justified, without in any way taking a 'poor view' of its duty, in making official an excipient which Mr. Lyon himself testifies is 'far superior to any agent I have tried.' The duties of the Revision Committee are onerous enough without laying on its shoulders the additional onus of taking into consideration—when compiling the galenical preparations—possible incompatible combinations. It is the 'duty' of the pharmacist to cope with these when they arise."

ACETUM VINI *v.* ACETUM LIGNI.

MR. R. G. MUMBRAY, of Twickenham, says:—"The very practical letter of Mr. Proctor places this vexed question in a new light, and his humorous treatment of it reduces it to the *argumentum ad absurdum*. Our mutual friend, Mr. Corder, does not, however, appear to see the humour of it. The question of adulteration generally is farcical, for there is scarcely an article of domestic utility but can be bought in various degrees of dilution. Margarine with butter in the proportion of 75 per cent. of the former is largely consumed by the discriminating British public. Coffee with chicory, thus designated, passes muster, although some varieties called 'French' possess scarcely a flavour of the Arabian berry; as for a glass of genuine home-brewed malt and hops, it is a matter of history. Bread with potatoes is never interfered with, provided it does not contain alum. A grower informed me he had ten tons of the tuber that were not fit for sale. He got rid of them to the bakers!—honest man. Why should he lose such a pile of money with an open market? But what do doctors say of the prevalence of indigestion and other complaints resulting from injurious food or deficient nutrition? But I submit that all this 'scientific nonsense' about vinegar, etc., is absolutely inane, unless there are some persons, not mentioned, who derive advantage by keeping up the agitation. Let us consider the subject divested of its 'wickedness.' First, we have the old brown vinegar, say the strongest, No. 24—the law allowed the addition of 1/1000th part of sulphuric acid to keep it. Still, even this did not prevent its becoming 'mothery,' so the makers adopted some other plan, with a satisfactory result. But acetic, wood acid or pure pyroligneous acid is pronounced an adulteration, though not injurious to health. It is the Excise that objects. Now, why cannot our enlightened legislators open a way of escape for the trader, who desires a living profit, and to keep honest by permitting a definite quantity of acetic acid to be used, not *ad libitum*, as in the butter, coffee, or beer trades, with their vile substitutes? Many years ago I was in the habit of using that very useful article, acid. acet. fort., manufactured by Beaufoy and Co., the largest vinegar makers of the day (note this); I was in the habit of supplying French vinegar imported by Messrs. Kent and Co., Upton-on-Severn, in 25 gal. casks, but it generated eels, and I found the most effectual cure for these organisms was acid. acet. pur. I dealt with another house for brown vinegar, and in order to improve it, adopted the infamous practice so touchingly alluded to by Mr. Proctor, and

in order to satisfy my conscience (not too flexible I trust) submitted two samples for the decision of an experienced club steward—he decided in favour of the sophisticated article as being more brisk and better flavoured. I made another experiment, having a quantity of grapes that did not ripen—I made them into wine—this wine went off rather sour—so I, still persevering in my evil courses, mingled it with the substitute, and bottled it off as genuine "white wine vinegar," the faintest touch of sacch. ust. completed the deception. This vinegar was praised by my customers—particularly by the French refugees, who were numerous at the time—as of the very best quality, *bien agréable* for salads."

THE USE OF TITLES BY LIMITED COMPANIES.

MR. J. LEACH, of Macclesfield, says "I should be glad to hear opinions as to the legality of limited liability companies having over their premises 'Cash Chemist.' The employment of a qualified assistant can scarcely give them that right, and though we cannot prevent them dispensing and selling poisons, surely we ought to have the power of protecting our title. If something could be done in the matter, I think for once chemists would be united."

QUERIES.

A CORRESPONDENT asks if any reader knows a preparation called "Dryden Ointment," a preparation which is largely used in Holland as a general salve. It is sold in short sticks of a dark brown colour.
"GLUTEN" requires a recipe for making gluten biscuits.

ANSWERS.

G. W. BLYTHE.—Morphine will not dissolve in rectified spirit to anything like the extent you mention. Refer to the latest edition of Squire's 'Companion to the British Pharmacopœia,' which will give you complete and reliable information upon all the points you refer to.

GEO. NIND.—The special peculiarity of "Hovis Bread" seems to be that the flour from which it is prepared is mixed with the ground germ or embryo of the wheat grain. In making the bread, kneading or moulding must be avoided, and it must be baked rather longer than ordinary bread.

ROBT. L. MORRIS.—(1) You will find Muter's 'Short Manual of Analytical Chemistry' a very satisfactory book. (2) Write to the Secretary, 17, Bloomsbury Square, W.C., for a copy of the pamphlet 'Advice to Students,' and read the article on 'Herbaria' in the 'Encyclopædia Britannica,' which should be available at any public library. Hayward's 'Botanist's Pocket Book' is the handiest flora for students' purposes.

T. PRITCHARD.—Your notice is unsuitable.

W. R. FIELDING.—You can obtain stains in powder to mix with spirit varnishes so as to imitate the colours of various woods, from Williams and Co., of Hounslow. The other matter you inquire about is receiving attention.

OBITUARY.

BAXTER.—On January 5, William Baxter, Chemist and Druggist—Liverpool. (Aged 63.)

RAE.—On January 14, John Rae, Chemist and Druggist, Newmarket, (Aged 53)

BROWN.—On January 23, William Brown, Chemist and Druggist, Norwich. (Aged 57.)

JEWELL.—On January 28, John Jewell, Chemist and Druggist, late Liverpool. (Aged 58.)

BROOKS.—On January 30, Owen Brooks, Chemist and Druggist, Llandudno. (Aged 50.)

SAXBY.—On February 2, Henry Saxby, Pharmaceutical Chemist, Lewes. Mr. Saxby was a member of the Pharmaceutical Society and formerly local secretary for Lewes.

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs. Allen, Allenby, Barnes, Bayley, Bentley, Brackenbury, Bray, Davies, Davis, Dryden, Dunlop, Eastman, Elborne, Elliott, Fielding, Fitton, Foster, Gaul, Garrod, Gower, Griffen, Hampson, Hill, Holt, Howie, Kern, Langley, Lawrence, Leach, Leefe, Morris, Mumbray, Northray, Orchard, Peck, Powell, Prichard, Purvis, Reynolds, Rimmington, Smith, Squire, Stokoe, Thompson, Walker, Winter.

CONTRIBUTIONS TO OUR KNOWLEDGE OF THE ACONITE ALKALOIDS.—PART XIII.

THE ESTIMATION OF ACONITINE.

BY PROFESSOR WYNDHAM R. DUNSTAN, M.A., F.R.S.,

Director,

AND

THOMAS TICKLE,

late Redwood Scholar in the Research Laboratory of the Pharmaceutical Society.

[From the Research Laboratory of the Pharmaceutical Society.]

As has been stated in previous papers, for some time we have been engaged in working out in detail a process for the estimation of aconitine, depending on the fact that this alkaloid furnishes on hydrolysis 18·5 per cent. of benzoic acid and 9·25 per cent. of acetic acid, or, if the hydrolysis is partial, as is the case when an aconitine salt is heated with water, only acetic acid is separated, a result which also ensues if the aconitine is heated in the dry state at its melting point. As has been shown in previous papers (*Journ. Chem. Soc.*, 1894 and 1895), there is no difficulty in obtaining accurate results with pure aconitine by analytical processes based on these facts, nor is there any difficulty in estimating the quantity of aconitine in presence of benzaconine or of aconine. We have made determinations with mixtures of these known alkaloids by four different methods. Three of these are direct methods in which the acetic acid is directly estimated either by the dry heating of a known weight of the alkaloid in a small flask at about 190° C. in a current of air, the acetic acid distilling over being titrated in the usual manner, or by converting the alkaloids into a neutral solution of the sulphates, which is heated in a closed tube at 125° for three hours, after which the acidity of the solution is estimated, and the acetic acid thus found reckoned as aconitine. Or the total alkaloid may be completely hydrolysed in alkaline solution, the liquid acidified with dilute sulphuric acid, the benzoic acid extracted with benzene, and the acetic acid then distilled off and titrated. In these cases the acetic acid having been directly determined, the amount found is calculated into aconitine, and if, in addition, the benzoic acid is determined by shaking out with benzene from an acidified solution after complete hydrolysis, the amount of benzaconine may be calculated from the quantity of benzoic acid found over and above that derived from the aconitine present. A fourth and indirect method of getting at the quantity of aconitine present in a mixture containing also benzaconine and aconine consists in hydrolysing with a known volume of standard alcoholic solution of alkali. The amount of alkali remaining is calculated, and from the loss the total acidity is reckoned. If the weight of benzoic acid is found by extraction from the acidified solution, and this deducted from the total acidity the remainder may be calculated as acetic acid. Wherever benzoic acid has to be extracted from a solution containing acetic acid, we find benzene preferable to ether, since the latter solvent also extracts notable quantities of acetic acid.

Numerous experiments with aconitine and with mixtures containing aconitine have been made with these various methods with the view of finding a sufficiently accurate process of estimating the acetic acid. The indirect method in which only the benzoic acid is directly determined, and the acetic acid calculated by difference has not afforded satisfactory results, chiefly owing

to the fact that all the errors of the determination are thrown upon the acetic acid. The principal error arises from the circumstance that in the presence of free alkaloid, none of the usual indicators will sharply define the point at which the alkali has been exactly neutralised. We have, therefore, employed a process in which the acetic acid is directly determined with as high a degree of accuracy as possible. Unless great accuracy is secured it is obvious that no process founded on the principle of estimating the acetic acid can be of any value for pharmaceutical purposes. It has to be remembered that aconitine furnishes less than 10 per cent. of this acid; that in the first calculation of this amount of acetic acid into aconitine any error will be multiplied by more than ten, and, further, having regard to the fact that in dealing with aconite root or galenical preparations made from it the quantity of aconitine actually operated on would probably not much exceed ·1-2 gramme, and, therefore, would furnish less than ·01-02 gramme of acetic acid, it is obvious that no coarse method would be of the slightest use for the practical purpose of defining the dose of this drug. It will be unnecessary for us to give a detailed account of the very large number of experiments which have been carried out in testing the adequacy of various methods, but we may proceed at once to describe the process which has given us the most accurate and concordant results.

It depends on the fact demonstrated by us some years ago, that when aconitine sulphate is heated in a closed tube with water at 125° C. for three hours it undergoes partial hydrolysis with production of one molecular proportion of acetic acid and the separation of a very little benzoic acid. Direct titration of the liquid with standard alkali gives only approximately accurate results with small quantities of aconitine, even when allowance is made for the small amount of benzoic acid liberated. Distillation of the liquid and titration of the acetic acid in the distillate is attended with the difficulty of distilling off the whole of the acetic acid without decomposition of alkaloid, etc., taking place in the concentrated solution. The most satisfactory plan is to make the liquid taken from the tube alkaline with pure soda, and to remove the alkaloid by shaking twice with chloroform, then acidifying with pure sulphuric acid, removing the small quantity of benzoic acid by shaking once with benzene, then distilling the acid liquid until the whole of the acetic acid has come over, and titrating the distillate with standard $\frac{N}{25}$ soda, or better, baryta water. The most suitable indicator for the purpose is phenol phthalein. The accuracy of the method may be illustrated by the results of determinations with pure aconitine. Aconitine taken, ·2228 gram.; $\frac{N}{25}$ baryta required 8·65 C.c.; aconitine found, ·2238 gram., a result which is about ·5 per cent. too high. In another experiment, aconitine taken, ·3054 gram.; aconitine found, ·3061, which is about ·2 per cent. too high. It is doubtful whether much greater accuracy than this can be obtained with such small quantities of alkaloid. The process answers well for the estimation not only of small quantities of aconitine alone, but of aconitine mixed with the other known constituents of the total alkaloid of the plant, benzaconine and aconine.

Being thus in possession of a suitable method of directly determining the acetic acid, we proceeded to apply it to the determination of the quantity of aconitine present in the total alkaloid extracted from the root of *Aconitum napellus*, and in that extracted from the tincture and extract of

aconite. Before the method of estimation based on the determination of the acetic acid can be accepted as valid, it must be shown to be applicable to the total alkaloid of the plant, from which we have so far isolated and defined only the three alkaloids, aconitine, benzaconine, and aconine. Other apparently amorphous alkaloids are present, which it has not so far been possible to separate and characterise, since their salts resist all attempts to crystallise them. To settle the validity of the method for the determination of aconitine in the natural total alkaloid is not easy, since there is no method known of completely separating the aconitine from the mixture, whilst no process is known, except that now under examination, by means of which the amount of aconitine in the mixture may be determined. The proceeding we have followed is to convert the total alkaloid soluble in ether into hydrobromide by solution in dilute aqueous hydrobromic acid. The exactly neutral solution is evaporated, and the aconitine crystallised and removed as hydrobromide. By repeated evaporation and prolonged standing a condition is reached in which nearly all the aconitine and much of the benzaconine have been removed as crystalline hydrobromides. The alkaloid is then regenerated, and the process of crystallising as hydrobromide repeated. Finally, an amorphous resinous mixture is obtained, from which no more aconitine can be crystallised as hydrobromide. A little aconitine, however, still remains, since a solution of the alkaloid produces tingling of the tongue, and by comparison in this respect with solutions of pure aconitine we have been able to form a very rough idea of the percentage of aconitine remaining.

The process for the determination of the acetic acid described above, as well as the various methods previously noticed have been applied to numerous specimens of alkaloid freed from nearly all the aconitine in this manner, and to mixtures of this alkaloid to which a known quantity of aconitine had been added. The result has been invariably the same. The quantity of acetic acid obtained has been largely in excess of the amount derived from the aconitine present, even after a very liberal allowance has been made for the aconitine not removed as hydrobromide. A few results may be alluded to here out of the large number we have obtained. Amorphous "aconitine free" alkaloid taken .5688 gramme; aconitine calculated from acetic acid found .1949 gramme. This quantity corresponds with 34.2 per cent. of aconitine in the mixture, whereas the quantity actually present could not have much exceeded 5 per cent. and was probably far less, since we have found no difficulty in crystallising aconitine as hydrobromide from prepared mixtures containing 5 per cent. of this alkaloid with amorphous bases.

In other similar cases where different specimens of the amorphous alkaloid were employed, percentages of aconitine were indicated much in excess of those actually present. In mixtures in which the quantity of aconitine was not believed to much exceed amounts ranging from 1 to 10 per cent., the amounts calculated from the acetic acid found were in the vicinity of 10, 20, and 30 and 40 per cent. That the acid estimated was, in fact, acetic acid was proved by completely converting that present in the distillate into the silver salt by adding silver oxide, and then estimating the silver in the salt. The result corresponded with that calculated for silver acetate.

We have spent a considerable amount of time in

trying to definitely ascertain the cause of these high results, but so far without complete success. Whatever plan is followed for the determination of the acetic acid, the amount found is much higher than the expected quantity, and the highest results are obtained when any process involving complete hydrolysis by alkali is used. Putting aside as highly improbable and unsupported by facts the possibility that the considerable percentages of aconitine calculated from the acetic acid obtained could be present, the most probable explanation is that there occurs in the plant, and therefore in the total alkaloid, some substance which, like aconitine, furnishes acetic acid on hydrolysis. Attempts to separate this hitherto unknown constituent have not met with any success, since no crystalline base could be separated from the mixture nor any crystalline salt prepared from it. Whatever the explanation of the fact may be, it is clear that at present the determination of the acetic acid furnished by the total alkaloids of *Aconitum napellus* cannot be taken as a basis for the calculation of the quantity of aconitine. Until a satisfactory process for the estimation of aconitine in the total alkaloid has been found, no progress can be made in standardising galenical preparations made from the plant.

CONTRIBUTIONS TO OUR KNOWLEDGE OF THE ACONITE ALKALOIDS.—PART XIV.

THE DETECTION OF ACONITINE.

BY PROFESSOR WYNDHAM R. DUNSTAN, M.A., F.R.S.,

Director,

AND

FRANCIS H. CARR,

Salter's Company's Research Fellow in the Research Laboratory of the Pharmaceutical Society.

[From the Research Laboratory of the Pharmaceutical Society.]

At the present time there is no chemical test for aconitine which is sufficiently specific to be used in qualitative analysis for the detection of small quantities, and on this account in toxicology the physiological action is generally relied on as a proof of the presence of this alkaloid. During the course of some experiments we have been conducting in studying the oxidation products of aconitine, we have noticed a reaction which does not seem to have been observed before, which is sufficiently distinctive and delicate to be of service in detecting aconitine, and may prove of value in toxicology. It depends on the production of a purple crystalline, sparingly soluble permanganate of the alkaloid, which is precipitated when a solution of an aconitine salt is mixed with a very slight excess of a solution of potassium permanganate.

The purple precipitate is fairly stable, especially in presence of a small quantity of acetic acid; in fact a slightly acidified solution of aconitine acetate furnishes a precipitate which darkens only very slowly. In very dilute solutions the micro crystalline precipitate appears after vigorous stirring. Under the microscope the precipitate is seen to consist of pyramidal needles, generally arranged in tufts or rosettes. When the precipitate is heated with the liquid it rapidly darkens, with production of an oxide of manganese. The precipitate dissolves in concentrated sulphuric acid without coloration, and on heating the solution benzoic acid sublimes. When the dried and almost black precipitate is gently heated, acetic acid distils from it. The reaction is extremely delicate; a solution containing 1 part of aconitine

in 4000 (.025 per cent.), gives a distinct precipitate after standing and stirring, whilst a solution containing 1 part of alkaloid in 2000 (.05 per cent.) gives an immediate precipitate. One drop (.05 C.c.) of a solution of this strength gives a distinct purple crystalline precipitate when a drop of permanganate solution (decinormal) is added, which means that .000025 gramme of aconitine has been detected without difficulty.

Whilst the presence of a slight excess of acetic acid conserves the precipitate, anything like a large excess of this acid must be avoided, since the salt is somewhat soluble in it. The precipitation of the aconitine is never quite complete, even in neutral solutions, owing to the slight solubility of the permanganate. The reaction cannot, therefore, be applied gravimetrically for the estimation of aconitine.

The crystalline salt has been collected and analysed. Its composition is represented by the formula $C_{33}H_{45}NO_{12}$, $HMnO_4$, since it furnished 10.89 per cent. of manganese trioxide (Mn_2O_3), the amount required by this formula being 10.31 per cent. When the salt is kept in solution or collected and dried it gradually decomposes, oxide of manganese separating and the aconitine undergoing oxidation to a crystalline nearly neutral substance, which still appears to contain both the benzoic and acetic groups of aconitine. This substance is now under investigation.

The behaviour of the principal alkaloids towards potassium permanganate has been studied by Beckurts, who states that aconitine salts give no precipitate but a brown coloration. We can only suppose that the aconitine used must have been highly impure.

We have re-examined the reaction of the more important alkaloids with potassium permanganate, and have found that the only alkaloids which give a purple precipitate are cocaine, hydrastine and papaverine, but the permanganates of these alkaloids are easy to distinguish from the aconitine salt. Veratrine, it may be noted, decolorises permanganate, forming a brown precipitate. Solutions of cocaine salts are not distinctly precipitated in solutions containing much less than 1 per cent. of the alkaloid. Like aconitine the cocaine salt is crystalline but is very readily dissolved by water. The same is true of hydrastine, and in this case the precipitate is pinker than the aconitine salt and is not crystalline. Papaverine is only precipitated in solutions of about the same strength, and here again the precipitate is distinctly pink and is amorphous. Moreover, aconitine permanganate is not changed by the addition of a drop of bromine water to the mixture, whilst the cocaine salt turns a deep orange and that of hydrastine a bright yellow. These three alkaloids are, however, so readily distinguished from aconitine by other reactions that there is scarcely any possibility of their being confounded with it.

Of the other aconite alkaloids, pseudoaconitine behaves most like aconitine, but this crystalline permanganate is not precipitated readily in solutions containing much less than .5 per cent., and the precipitate is more stable than the aconitine salt. On heating it with the liquid it dissolves, and on cooling separates out in acicular crystals, whilst in the case of aconitine the purple precipitate rapidly darkens when warmed. Aconine salts are not precipitated by potassium permanganate, but they rapidly effect decolorisation of permanganate. In strong solutions, salts of benzaconine furnish a permanganate resembling the aconitine salt, but a 1 per cent. solution of benzaconine (acetate) is not precipi-

tated, so that there is no difficulty in distinguishing this alkaloid from aconitine, nor does the presence of this alkaloid materially affect the recognition of the aconitine in dilute solutions. In isolating aconitine from mixtures (*e.g.*, in toxicology) as a preliminary to applying this test, the slightly acidified extract should be well shaken with ether to remove extraneous substances soluble in ether, the liquid should then be made alkaline with a slight excess of ammonia (never with soda or potash), and the aconitine extracted with ether. The permanganate test should then be applied to a 1 per cent. solution of the ethereal residue made acid with acetic acid, or the ethereal solution may be shaken with dilute acetic acid. As a confirmatory test for aconitine the fact that the base gives off acetic acid when heated to $190^{\circ}C$. may occasionally be of service since the operation can be conducted in a capillary tube.

ESSENTIAL OILS OF BLACK AND WHITE PEPPERMINT.

BY JOHN C. UMNEY.

Peppermint has been cultivated in the district of Mitcham, Surrey, for about 150 years, and during the last thirty years or more, to some considerable extent at Market Deeping, in Lincolnshire; the herb is also grown at Hitchin, Hertfordshire, and in some parts of Cambridgeshire.

The two varieties of the plant (*Mentha piperita*) grown in and about Mitcham are known as black and white peppermint respectively, the black mint occupying the greater part of the acreage under cultivation. The preference given by growers to the black is based chiefly upon the fact that the plant is more hardy than the white variety, and the yield of essential oil is considerably greater.

I learn from Mr. W. Holland, of Market Deeping, and also from Mr. Ransom, of Hitchin, that the cultivation of the white peppermint has been discontinued in their respective districts, owing to the limited demand for the oil derived from this variety. There is, however, a constant demand for certain purposes for oil of white peppermint, notwithstanding its value is considerably higher than that of the black mint oil.

I am aware that some essential oil dealers hold strongly to the opinion that the difference between the oils is more imaginary than real, and also that there is with some a prejudice in favour of oil of white mint based upon "rule of thumb" knowledge rather than upon accurate laboratory observation.

Careful comparison, however, shows an unmistakable difference in the odour of the two oils and in the waters distilled from them by the process of the British Pharmacopœia, and it was in order to determine whether any chemical or physical characters could be found that would correspond to the difference in odour and taste that this investigation was conducted.

The two plants of black and white peppermint are botanically identical, but the difference between the appearance and habit of the two is sufficiently marked to make their characterisation quite distinctive. The black peppermint herb has purple stems, dark green leaves, not deeply serrated, and rarely flowers in this country, except in unusual summers, such as that of 1893. The white peppermint possesses more lanceolate, brighter green leaves than the black variety, the margin being much more

deeply serrated and the stems being green. Its flowers are greyish and easily seen at a distance, the flowering occurring in those seasons when hardly any is observable on the black variety.

It has already been stated that the yield of essential oil from the black is considerably greater than from the white variety, for whilst the former yields in good seasons as much as 8 lbs. per ton of fresh herb, the latter rarely yields more than 6 lbs., and usually not more than 3 or 4 lbs. per ton. The distinction in the odour of the two oils consists in the well-known pungency of that of the black, being agreeably toned down in that of the white variety by a pleasant smell not easily described.

For the purposes of these experiments I have been supplied with oils of last year's (1895) distillation from unmixed black and white plants respectively by Messrs. J. and G. Miller, of Mitcham.

The two oils differed considerably in colour, the black being pale yellowish-green, whilst the white was dark yellow. The two oils were exposed to a temperature of -4° C. and stirred, but although the black oil became pasty, through separation of menthol, the white oil remained quite fluid.

The specific gravities at 15° C. of the oils were—

Black	·9036
White.....	·9058

or somewhat lower than the average I have obtained from many samples of ordinary English oil (black mint), which is ·906.

The optical rotations showed considerable differences, being in a tube of 100 Mm.—

Black	$-25^{\circ}\cdot5$
White.....	-33°

This rotation is explained by the difference in proportion of the optically active constituents of the oil, which will be subsequently described.

Colour Reactions.—Notwithstanding I have avoided the majority of these tests as a means of identification of essential oils, on account of the frequent uncertainty as to which constituents produce the reactions, the adoption of them in the case of peppermint oil by the U.S. and other pharmacopœias, is the reason of reference to them.

The glacial acetic acid test, which consists in mixing 1 part of oil with 3 parts of glacial acetic acid and allowing to stand some hours, shows marked difference—giving an intense greenish-blue with copper fluorescence in the case of the white oil, and only a very pale blue in the black oil; the modified test of the U.S.P., in which nitric acid is employed in addition to acetic acid, at once yielding equally distinctive reactions.

The other reaction of the United States Pharmacopœia consisting in warming a solution of 1 C.c. of the oil in 5 C.c. of alcohol with $\frac{1}{2}$ gramme of sugar, and 1 C.c. of hydrochloric acid, shows equally striking differences.

The finest American oil gives practically the same colour reactions as the white oil, and, as the proportion of esters in the white oil is very similar to that found in the best oils from that country, it seemed possible that the reactions might be dependent upon these bodies, and experiments with the white oil from which the esters have been completely removed strengthen this view. It is noteworthy also that Japanese oil, which contains a low proportion of esters

of menthol, gives no dark blue colour or copper fluorescence by any of the tests referred to.

Fractionation.—Under identical conditions fractionation affords a useful means of making a preliminary comparison of peppermint oils, and in the present instance considerable divergence was found, especially in the proportions boiling below 200° C.

The percentages obtained were as under:—

	White oil.	Black oil.
Below 200° C.....	24 per cent.	5 per cent.
200-205	15 "	27 "
205-210	15 "	31 "
210-215	15 "	22 "
215-220	13 "	7 "
Above 220	18 "	8 "

The fractions boiling below 200° C. in both cases were distinctly acid to litmus, due to the acids produced by the decomposition of the esters present in the oils.

It will be evident when the ester determination of the oils is considered that the difference in the proportions of this fraction is due in great part to the variation in the amount of these bodies present in the two oils.

The percentages obtained by the fractionation of the black oil agree closely with those obtained in the examination of many samples of various distillers, both in Mitcham and the other districts of England referred to.

The fractions from both oils boiling below 200° C. contained phellandrene as indicated by the nitrite test.

The methods suggested by Power and Kleber (*Pharm. Rundschau*, xii., 1894, 157) in their examination of American peppermint oil have been adopted for the estimation of the principal constituents of the oil, viz., menthol, esters of menthol, and menthone.

Menthol Determination.—Although there may be doubt whether in the case of English peppermint oils the total percentage of menthol is by any means the most important factor in the aroma value of the oil, yet the determination of the menthol and esters of menthol is the best starting point for the chemical examination of the oils of both black and white varieties.

By saponification with alcoholic potash the black oil indicated 3·7 per cent. of menthol in the form of esters, whilst the white yielded under similar treatment 13·6 per cent. of menthol in similar combination. The percentage of esters in the black oil is slightly lower than usually obtained, viz., from 4 to 6 per cent.

The total percentage of menthol as such and as esters was determined by the acetylation process, and found to be in the black oil 63·1 per cent. and in the white oil 65·5 per cent. :—

	Menthol as Esters.	Total Menthol.	Free Menthol.
Black ...	3·7 per cent.	63·1 per cent.	59·4 per cent.
White...	13·6 "	65·5 "	51·9 "

I have already suggested (*Ph. J.* [3], xxv., p. 1040) the presence of a different menthol, possibly a liquid one, in English peppermint oil to that contained in Japanese in order to account for the fact that oils of these varieties, although indicating practically the same menthol percentage by the acetylation process, show considerable difference in freezing properties.

This difference is marked in the case of the black and white varieties, for whilst the portion of the black boiling from $210-215^{\circ}$ C. becomes solid immediately on placing in a freezing mixture, the similar fraction of the

white oil did not even perceptibly thicken at -4° C. It is worth recording, however, that the white oil, from which the esters have been removed by saponification with alcoholic potash, readily solidifies at a temperature of 0° C. Either, therefore, the treatment to which the oil has been subjected causes isomeric change in the menthol, or the esters considerably retard its crystallisation.

Menthone determination.—The ready reduction of menthone to menthol forms an easy means for the estimation of this constituent, which has been long known to be present in most peppermint oils. For this purpose a portion of the black oil was saponified with alcoholic potash and the alcohol removed by washing. This oil was divided in two portions, in one of which the menthol was estimated by the acetylation process, and the other dissolved in twice its volume of absolute alcohol and treated at a boiling temperature with metallic sodium. The oil was separated by addition of water, and after thoroughly drying the menthol now present was also estimated by the acetylation process.

The amount present before treatment with metallic sodium was 63 per cent., whilst after reduction of the menthone to menthol, it was found to be 74.5 per cent., or 11.5 per cent. of menthol, equal to 11.3 per cent. of menthone.

The white oil similarly treated indicated 9.4 per cent. of menthol resulting from reduction of menthone equal to 9.2 per cent. of that substance.

Examination of Esters.—In order to determine whether the greater percentage of esters in the white oil was the sole cause of the modification in its odour as compared to the black oil, or whether it was due to different esters of menthol, 100 grammes of the white oil was saponified with excess of alcoholic potash and the alcohol evaporated at a low temperature.

The saponified oil was then washed three times with water to remove the potassium salts of the acids present in the form of esters in the oil. This was concentrated, acidified with nitric acid and shaken with ether. The ether left on evaporation a strong smelling yellow oily liquid which was strongly acid; .328 gramme of the silver salt of this acid yielded .169 gramme of silver as chloride, viz., 51.5 per cent., the calculated yield for valerianic acid being 51.6 per cent.

The boiling point of the acid liberated from the silver salt was found to be 173° - 174° C., and it is evidently isovalerianic acid.

The only other acid that could be detected was acetic acid in the acidified liquid after it had been shaken with ether.

Precisely similar experiments were conducted in the black oil, the acids obtained were in this case both acetic and isovalerianic. It would appear, therefore, that if the odour of the oil is influenced by the esters present, as seems almost certain, the quantity of them rather than a variation in their composition must be held accountable for it.

An attempt was made to determine the proportion of the two esters present in the oils, using a modification of Luck's method for the separation of the lower fatty acids. The acids, resulting from the decomposition of the esters, were removed by distillation, neutralised with baryta water, evaporated to dryness and fractionally extracted with absolute alcohol. The difference in the solubilities of the acetate and isovalerianate of barium in that liquid was not sufficient to render quantitative separation practicable. The

small proportion of esters in the black oil was also a great obstacle to this process.

The principal physical and chemical characters by which the white oil of peppermint may be distinguished from the black may be summarised thus:—

1. In having greater optical activity.
2. In not depositing menthol at a low temperature, possibly owing to the fact that a portion of menthol present exists in a modified liquid form.
3. In containing a greater proportion of esters of menthol (acetic and isovalerianic).
4. In giving intense blue coloration with copper fluorescence, with glacial acetic acid, and the other reactions of the United States Pharmacopœia.

It seems certain, moreover, that the variation in the aroma of the two oils is dependent upon one, if not more, well-defined differences pointed out in the constitutions of the respective oils.

My thanks are due to one of my assistants, Mr. R. S. Swinton, for help in carrying out the experiments necessary for this communication.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

DONATIONS.

At a meeting of the Library, Museum, School, and House Committee, held on Wednesday, the 12th inst., the Librarian presented the following report of donations:—

To the Library (London).

- Royal Society of London:**
Catalogue of Scientific Papers, 1874-83, Vol. 11, Pet-Zyb.
- Miss A. Babington, Tunbridge Wells:**
Prantl, Lehrbuch der Botanik, 8. Auflage, 1891.
- Professor Bradbury, University of Cambridge:**
The Bradshaw Lecture on Some New Vaso-Dilators, 1895.
- Dr. L. Planchon, École supérieure de Pharmacie, Montpellier:**
Observations sur la résistance vitale de l'Argas reflexus, 1895.
- To the Library (Edinburgh).*
- Mr. W. C. Baker, 13, Dundas Street, Edinburgh:**
Cole, Studies in Microscopical Science, 1883-84. Two vols., with plates.
- Mr. A. J. R. Swanson, 9, N.W. Circus Place, Edinburgh:**
Pharmaceutical Journal, August 18, 1894, to April 20, 1895, and July 6 to December 28, 1895.

The following report of donations was presented by the Curator:—

To the Museum.

- Il Marchése Thos. Hanbury, F.L.S., Ventimiglia:**
Specimen of the resins of *Pinus halepensis*, *P. maritima*, and *Cupressus sempervirens*.
- Messrs. Horner and Sons, London:**
A log of Indian sandalwood and a specimen of the oil distilled from the wood; a specimen of oil of juniper berries and of the berries from which the oil was distilled.
- Dr. Wilks, M.D., F.R.C.S., London:**
A specimen of guarana and of guarana seeds, and a model in guarana of the pirarucu fish, the palate of which is used for grating the guarana by the native Indians of Rio Grande do Sul, also a dried palate and three letters relating to the specimens.
- Mr. E. L. N. St. Cyr, Hayti:**
A lilaceous root employed by the natives in amenorrhœa.
- Mr. T. Wardleworth, Liverpool:**
Specimens of Angelica root, and of the rhizome of *Acorus spurius*, from Japan; also a leaf of the Carnauba palm (*Corypha cerifera*).

Messrs. Geo. Curling and Co., London :

Five specimens of medicinal products from Peru.

Messrs. Wright, Layman, and Umney :

Specimens of the oils of "black" and "white" peppermint.

Mr. W. Elborne :

Specimen of cocus wood from Cuba (*Aporosa*, sp.).

To the Herbarium.

Mr. J. Ch. Sawyer, F.L.S., Brighton :

Specimen of the flowering and non-flowering varieties of the patchouli plant from Java.

Professor H. H. Rusby :

Specimen of *Pilocarpus selloanus*.

EVENING MEETING IN LONDON.

On Tuesday, the 11th inst., an evening meeting of the Pharmaceutical Society was held in the large Examination Hall at No. 16, Bloomsbury Square, the chair being taken by the President, Mr. Michael Carteighe, at 8 o'clock.

THE BURROUGHS MEMORIAL.

The PRESIDENT said it had been arranged that the first business of the evening should be the official handing over to the Pharmaceutical Society of the Fund which had been raised to commemorate the memory of the late Silas Mainfield Burroughs. He appeared in the double capacity of Chairman of the Committee which had collected the Fund and President of the Society which was about to receive it in trust, and in the latter capacity he need not say how gratified he was to receive the substantial amount which had been raised. The Honorary Secretary of the Committee and himself had received numerous telegrams from friends of Mr. Burroughs regretting that they were unable to be present, amongst them one from Mr. H. M. Stanley, M.P., whose public duties that evening rendered it impossible for him to attend.

Mr. HELBING (Hon. Sec. to the Committee) was then called upon by the President. He said it was but natural that the late Mr. Burroughs' friends should try to retain his memory fresh amongst them, and endeavour in some way to perpetuate his name. That the friends of Mr. Burroughs were numerous was well known, for everyone who came in close contact with the man was bound to like him. Ever ready to help where help was required, he took friendly interest in the affairs of others, and had always their welfare at heart. The appeal to his friends had not been in vain, and they had been able to carry out the scheme which was first considered a year ago. A substantial fund had been raised, the interest of which would be sufficient to enable every year a pharmaceutical chemist who had talent but not a superfluity of means to continue to advance his studies during another year as a Burroughs scholar. The Fund which the Committee had the pleasure that evening to hand over in trust to the Council of the Pharmaceutical Society had been freely and liberally subscribed to. From all parts of this country, from the Continent, the United States, and even Africa, friends had replied to the appeal, and the list of subscribers was quite an international one. It comprised not only the individual pharmacist, the wholesale druggist, and the chemical manufacturer, but a great number of personal friends of Mr. Burroughs who had no connection whatsoever with pharmaceutical business. Men of science and of literature, politicians and Members of Parliament, medical men and others, had combined together to do honour to their deceased friend. The great majority had expressed their opinions in favour of a Scholarship as the best and most suitable form of memorial, and in asking the Council of the Pharmaceutical Society to become trustee of the Scholarship Fund and to assist the Burroughs scholar by allowing him to make use of the Society's laboratories, the Committee desired to express its assurance that it felt perfectly confident the Burroughs Scholarship Fund would be the means of doing good and of keeping alive the memory of their deceased friend.

Mr. JOHN MOSS (Hon. Treasurer) said the Honorary Secretary had already covered much of the ground which he should have liked to touch upon. This occasion was, no doubt, a formal one, but it was none the less important. In the

thought that beneficent intention was approaching consummation there was a good deal of gratification, but that feeling was overwhelmed and subdued, if not hidden, by the surging recollections of what happened a year ago. It only remained for them now to remember Mr. Burroughs, and to keep his memory green. He was a man who had endeared himself to troops of friends by his frank, genial, loyal, lovable disposition, and it was felt by all that he was a man whose memory the world would not willingly let die. No sooner was a memorial suggested than the idea was caught up with ardour, and the President of the Pharmaceutical Society having expressed his approval, and offered to act as Chairman of the Committee, the success of the movement was assured. It was the man himself they wished to honour. He was of exceptionally attractive character, who seemed to have a genius for discerning capability and worth in those with whom he came in contact, especially the young, with whom he was always a favourite, and whose difficulties he always seemed to understand and appreciate, and to whom he was always ready to accord sympathy, encouragement, and often material help. It was these considerations which led the Committee to feel that the memorial should take the form of a Scholarship for the encouragement of exceptional merit or endeavour; and to further the study of the subjects in which their friend had been educated; and were connected with the calling which he had followed. The question was submitted to the subscribers, who cordially agreed to that suggestion, and they asked the Pharmaceutical Society to take charge of the administration of the Fund, in order that the Scholarship might be held in that institution for the study of the higher branches of pharmacy. It was in the belief that the Burroughs Scholarship would prove of inestimable advantage to future generations of pharmacists, and through them to pharmacy itself, that he had been instructed to ask the President of the Society to take charge of the Fund, which amounted to £850.

The PRESIDENT, on the part of the Council, thanked the donors for the confidence they had placed in it, and in the educational work done by the Society, with which he thought they might all be satisfied, and of which he was proud. Whatever difference of opinion there might be with regard to certain forms of education they were all agreed that since everyone who desired to be a pharmacist was compelled to pass a preliminary and a qualifying examination, it was wise to give opportunities to those who had obtained this qualification to pursue a further year's study, either there or elsewhere, because there was a provision in the draft deed of trust which would under certain circumstances permit the Scholarship to be held elsewhere, if necessary. In practice no doubt for some years the Burroughs scholar would pursue his work there, and whatever work was carried out by him would be work which would not only redound to his credit individually, but would perpetuate the memory of Mr. Burroughs in the most fitting form, and in the way which probably he himself would have chosen. In the name of the Council he accepted the Fund, and in due course he should ask the members of the Committee to affix their names to the deed of trust. He had just received a telegram from Mr. Wellcome expressing his deep regret that at the last moment he found it impossible to be present, and how gratified he was at the success of the Fund. Not the least gratifying feature of the meeting was that Mrs. Burroughs was able to be amongst them. In conclusion he desired on behalf of the whole of the subscribers to tender thanks to the Honorary Secretary and Treasurer, to whose zeal and energy the whole success of the Fund was due.

THE ACONITINE RESEARCH.

Two papers on "The Estimation of Aconitine" by Professor Dunstan and Mr. Tickle, and on "The Detection of Aconitine," by Professor Dunstan and Mr. Carr, were next read. They are printed at pp. 121-2. At the conclusion of the second paper, Professor Dunstan, with the aid of Mr. Carr, performed some of the experiments described.

Mr. JOHN C. UMNEY asked if there was any connection between the two alkaloids as the result of the benzoyl group in the cocaine and in the aconitine, and was there a benzoyl group in hydrastine?

Mr. GERRARD said any man who discovered and published a distinctive test for aconitine would do a great service to toxicology, and he should like to know if Professor Dunstan felt positively assured that this, if taken alone, was such a test. He also asked if he had made comparative experiments with other alkaloids, such as that obtained from the root of *Veratrum viride*, because he thought experiments of that kind could scarcely be considered

complete unless alkaloids of that class were considered which possessed characteristics so closely allied to those displayed by the alkaloids of aconite. It was interesting to know that the permanganate of aconitine was of a different colour, and possessed different physical characteristics to those of some of the other alkaloids, especially solubility in water, but he could not yet feel quite satisfied that one could distinguish definitely between the alkaloids of aconite and those of other bases by the test described.

Mr. MARTINDALE regretted that there had not yet been discovered any means of distinguishing aconitine by a rough and ready method from any other alkaloid, and estimating from the acetic or benzoic acid the amount of true aconite present. However, it was more convenient to get something you could see and weigh, and that seemed to have been accomplished. He did not quite gather whether, when the permanganate was formed in the way described, it could be separated and carefully weighed.

Professor DUNSTAN said no; it was merely a qualitative reaction, not a quantitative test.

Mr. MARTINDALE said the same thing occurred with regard to cocaine; he had tried several experiments, and found that even in solution it decomposed and passed off rapidly.

Professor ATTFIELD remarked that this paper was not only interesting from a toxicological point of view, but still more from a pharmaceutical. He could but sympathise with the authors in their failure to discover a method for quantitatively estimating aconitine in its various preparations, but he was not disposed to be quite so despondent as Professor Dunstan himself, because he hoped that the skill which some years ago enabled him to obtain strychnine separately from the alkaloids of nux vomica, would in time enable him to devise a process for separating and estimating aconitine from the other alkaloids in aconite. He entirely agreed with the remark as to the comparative uselessness of estimating the total alkaloids; for certain purposes no doubt it might be useful, but until they could separate the aconitine, processes for the assay of aconite would be comparatively useless. He congratulated the authors on their courage in attacking this subject, because aconite was shown to be the most difficult of all alkaloid-containing drugs, for in nearly every other case the total alkaloids at least could be separated, and even that had not yet been done with aconite. In his capacity as Editor of the *Pharmacopœia*, he could not help noticing that while there was hope at least of obtaining good assay processes for the respective alkaloidal drugs, there seemed to be no hope whatever of doing so with aconite; but he really felt now that even that was within measurable distance. This was a fitting opportunity to draw the attention of those working in this direction to the important fact that while they could fairly well estimate the total alkaloids in many instances, they were quite unable in the majority of cases to isolate the special characteristic alkaloid, and that there were many objections to the official recognition of processes for the total alkaloids excepting in just a tentative way. The effort should be to isolate the chief active principle, as Professor Dunstan had done in the case of strychnine.

Mr. JOWETT thought the discovery of this test for the detection of the alkaloid should draw attention to the value of true research work. Both the test for the detection of aconitine and also the attempt, unsuccessful so far, to estimate the quantity by estimating the acetic acid, sprang from work proceeding on the line of true research, not work initiated with those special objects, but simply the search for truth. Whether working on aconitine or any other alkaloid, if they proceeded in the same spirit, simply seeking to discover the truth, they were certain in the end not only to find a means for detecting the alkaloid, but also a method for estimating it.

Professor DUNSTAN, in reply, said nothing could be said definitely at present as to the influence of the benzoyl group. Every group present in the alkaloid must have some effect in determining its properties, and to that extent no doubt the benzoyl group had something to do with the formation of the precipitate, but whether it had more than a slight subsidiary effect it was impossible to say at present, as they knew next to nothing about the central nucleus of the alkaloid. Mr. Gerrard's question almost implied proving a universal negative, and it was practically impossible to try every alkaloid, but as stated in the paper they had tried the most important; veratrine behaved in an entirely different manner, cocaine, papaverine, and hydrastine were the only important alkaloids which were precipitated by permanganate under the same conditions, and in those three cases they showed how a distinction might be arrived at. Mr. Martindale referred to the

quantitative application of the method. The difficulty was not so much that the permanganate of aconitine suffered decomposition on drying, as that it was not completely precipitated. A number of experiments were made in the hope of finding some particular condition in which the whole of the aconitine would be precipitated as permanganate when there was a slight excess of acetic acid, but a slight amount still remained undissolved. With regard to Professor Attfield's remarks, he ought to make it clear that it was quite easy to determine the total alkaloids, but it was absolutely useless, as he had indicated; much more so than in the case of nux vomica to determine the percentage of strychnine and brucine together. Brucine had in some respects a similar action to strychnine, but in the case of aconite, as far as he could make out, nothing but the aconitine was of the slightest value, and therefore the determination of the total alkaloids would be entirely misleading. Still, it could be done, if desired; it was merely a question of extraction with chloroform. Mr. Jowett's remark was important. They were not likely to reach the practical conclusions desired if they aimed directly at them. It was very unlikely, if they had set out to search for a method of detecting aconitine, and taken a year in trying the reactions of various salts, that they would have noticed this reaction. They would probably have referred to previous work, and have been prejudiced by the fact that permanganate of potash did not seem to be a likely agent to succeed. As a matter of fact, when this reaction was noticed, they were engaged on a totally different line of inquiry, studying the oxidation products of the alkaloid, and in the course of that work this interesting matter cropped up. They did not claim that this test could absolutely be relied on alone, and personally he should not consider it right to hang a man on the evidence of any one test. A number of different reactions must be taken into account, the production of acetic acid and the behaviour of the alkaloid in other ways. No one test could be relied on as absolutely conclusive.

The PRESIDENT, in proposing a vote of thanks to the authors of these papers, said he quite concurred in the remarks which had been made as to the true spirit of research. Pharmacy was founded upon certain sciences, and true research in pharmacy, if it were to produce results which would stand the test of time, must be conducted on purely scientific lines, and that could only be done by prolonged study, attacking things systematically. That process was slow and costly, and if the Pharmaceutical Society could not afford to do it, it must give it up; but it could not be done in any other way. The word "research" was often used in such a loose way that it was necessary to make a protest. When a man obtained a certain reaction by accident, you could not call that research. An average laboratory boy could obtain any number of reactions, and probably, if he were kept long enough at it, and the results were noted, and he were supervised from time to time, he might achieve something in the end. But in dealing with such subjects as the alkaloids in aconite root they must be attacked entirely from the chemical side first, and then in due time the knowledge obtained would be turned to practical account. Research in pharmacy pure and simple was hardly practicable; it must be in the domain of the sciences on which pharmacy was based.

PEPPERMINT OILS.

Mr. JOHN UMNEY then read a paper on "The Essential Oils of Black and White Peppermint." It is printed at p. 123, and gave rise to the following discussion:—

Mr. MILLARD said he had suggested at a recent meeting of the Chemists' Assistants Association, bearing in mind that attar of roses varied very greatly according to the different altitudes at which the plant was grown, that possibly these two varieties so well known at Mitcham should vary also. What they required to know most of all, however, was how to distinguish foreign from English oil of peppermint, as this oil was very largely adulterated with foreign oil. He hoped Mr. Umney would enable them to clear away this ignorance.

Mr. MARTINDALE said he was surprised to find that there was so much more black peppermint cultivated than white, and should like to know what was the case in America.

Mr. McEWAN said when he was in Chicago he had a conversation with Mr. Todd, of Calmazon, who told him that some years ago he had a large number of white peppermint seedlings sent him from this country, and at that time—viz., in 1893—he had several hundred growing in Michigan. He had been mainly interested in the subject from the scientific side, having heard a

great deal of the superiority of the Mitcham variety of peppermint he wished to satisfy himself on that point, and he told him that the oil was undoubtedly superior. He should like to know if Mr. Umney had discovered that any of this white peppermint was grown in America, because it would be interesting to know if the transplantation to that country caused any difference in the chemical constitution.

Mr. HOLMES said that from a botanical point of view there were several interesting points in this paper. With regard to black peppermint not flowering, he might say that that grown in his garden flowered every year. It often happened that plants cultivated to a large extent, which were cut down before they flowered, after a time ceased to flower. That was the case with the rhubarb cultivated at Banbury, where, he was told, that it was the rarest thing to see a plant in bloom. Perhaps the peppermint being generally cut before it was thoroughly in flower would produce the habit of ceasing to flower regularly. With regard to the green peppermint, as had been pointed out, there was no botanical difference, and no distinctive characteristics by which it could be classed as a separate species, and yet different chemical results were obtained from the two varieties, certain substances being formed in a much larger degree in one than in the other. The same thing occurred with *Mentha arvensis*; when grown in this country it had a disagreeable odour, and in America the plants had to be removed entirely from the fields in which peppermint grew on that account; the same species in Ceylon had the odour of common garden mint, and in Japan oil of peppermint was distilled from the same species. He had no knowledge as to which plant was cultivated in America, but he had a specimen of black peppermint which he had received from Dr. Rusby, so that that variety must be grown there. Mr. Umney had made it quite clear that the oil of green peppermint was superior to the black, and that being so it would appear that it is to be preferred for medicinal use.

Mr. JOHN MOSS said it had been known to him for twenty years or more that oil of black peppermint was produced in much larger quantity than white, one reason no doubt being that the proportion of oil yielded by white plants was much smaller, and it was of course more costly. It was more esteemed on account of its more delicate flavour, and he held was only used in high-class confectionery. It was a very important observation that the difference in odour was due to the different proportion of menthol in the two oils, in combination as esters. From that point probably further work would proceed, and chemists would be endeavouring to promote the combination of menthol into ester compounds so as to produce the more highly esteemed kind of oil from that now obtained from the black peppermint.

Mr. J. C. UMNEY, in reply, said he was not aware of any difference in the case of peppermint arising from the altitude at which it was grown. In the case of oil of lavender there was a most marked difference, the proportion of esters in oil distilled from plants grown at an altitude of 4000 feet being from 39 to 41 per cent., at 2000 feet, 31 or 32 per cent., and at 1000 feet, 15 or 16 per cent. His attention had been called to the point mentioned by Mr. Martindale by the results now described. The majority of American peppermint, at any rate the best, contained 12 to 14 per cent. of esters of menthol, which was practically the same as the white oil contained. He had written to some of the principal distillers in the States to ask whether they produced their oil from black or white peppermint. The best American gave the same reaction with glacial acetic acid as the white, but whether it was derived from the white peppermint or the black which had been altered by cultivation in a different climate he did not know. He had been trying some experiments with the object of promoting the formation of esters in black peppermint oil, and if he succeeded he would submit the results to Mr. Moss.

The PRESIDENT, in proposing a vote of thanks to Mr. Umney, said some pharmacists appreciated the merits of white peppermint oil quite as much as high-class confectioners. If Mr. Umney lived long enough he would probably be able to produce the white oil artificially in the laboratory.

FERRIPYRIN IN DENTAL OPERATIONS.—Frohmann, of Berlin, states that ferripyridin is an excellent hæmostatic in the treatment of alveolar hæmorrhage. It also possesses analgesic as well as hæmostatic properties, and is said to materially assist in allaying the pain which sometimes follows the extraction of teeth (*Journ. Brit. Dent. Assoc.*, xvi., 719).

BRITISH AND FOREIGN SYRUPS.*

BY JOSEPH INCE,

Lecturer in Pharmacy to the Pharmaceutical Society of Great Britain.

DEFINITIONS: A syrup is a preparation of sugar and water; simple, as in syrupus; medicated, of which syrupus papaveris is an example; or chemical, as instanced in syrupus ferri phosphatis.

Dr. Paris: Pharmacologia. [Syrups] are solutions of sugar in water, watery infusions, or in vegetable juices.

Remington: Syrups are concentrated solutions of sugar in water or aqueous liquids; simple, medicated, or flavoured.

Paris Codex: Les sirops sont des médicaments liquides ayant une consistance visqueuse, qu'ils doivent à une forte proportion de sucre.

Dorvault: Les sirops sont des liquides de consistance visqueuse, formés par une solution concentrée de sucre dans de l'eau, du vin, du vinaigre, soit purs, soit chargés de principes médicamenteux.

A few have little claim to official recognition, being flavouring adjuncts to various medicinal compounds, or colouring agents, as syrupus croci.

This last has enjoyed a fitful existence in official pharmacy, its presence being as fugacious as its colour.

It is no longer British; as an official preparation, the French macerate the saffron in Malaga wine or in vin de grenache (15 per cent. alcohol); the Germans do the same, using 18 ozs. of sugar to 11 ozs. of filtered liquid.

The British official syrups [1885] are seventeen in number, and one was added in 1890.

Official British Syrups.

1885. [1890.]

Syrupus. Sp. gr. 1.330.

Derivatives.

Syrupus Aurantii. Sp. gr. 1.282. Tinct. Aurant., 1. Syrup. 7.
Syrupus Chloral, in aquâ solutus. Sp. gr. 1.320. Strength, 10 grains in 1 fluid drachm.

Syrupus Zingiberis. Tinct. Zingib. fort., ʒvi. Syrup. ʒxix.

Not Classified.

Syrupus Aurantii Floris. Sp. gr. 1.330.

Orange-flower water, added last.

Syrupus Scillæ. Sp. gr. 1.345. [Acetum Scillæ.]

Syrupus Tolutanus. Sp. gr. 1.330. Stirring essential. Heat applied at 212° F. (100° C.)

Syrupus Limonis. Sp. gr. 1.340. Cortex, Succus.

Syrupus Mori. Sp. gr. 1.330. Succus.

Syrupus Rosæ Gallicæ. Sp. gr. 1.335. Rosarum petala.

Syrupus Tolutanus. Balsamum Tolutanum.

Syrups containing Rectified Spirit.

Syrupus Mori. Preservative.

Syrupus Papaveris. Sp. gr. 1.330; to aid filtration.
Spirit recovered by distillation.

Syrupus Rhei. Sp. gr. 1.310. Fructus Coriandri.
Percolation [Sp. v. Rect., 1; Aq. Dest., 3].

Syrupus Rhœados. Sp. gr. 1.330. Preservative.

Syrupus Sennæ. Sp. gr. 1.310. Oleum Coriandri. To aid filtration; also preservative. Spirit not recovered.

Syrups in which Infusions are used.

Syrupi Hemidesmi, Papaveris, Rhœados (stirring essential), Rosæ Gallicæ, Sennæ (digested at 120° F. [48° C.]).

Chemical.

Syrupus Ferri Subchloridi. Sp. gr. 1.340. [1890.]

„ Ferri Iodidi. Sp. gr. 1.385, 1.400 (Umney).

„ Ferri Phosphatis. Sp. gr. 1.305.

* Read before the Chemists' Assistants' Association, February 6, 1896.

The Paris Codex of 1839 contained 112; that of 1866 115; while that of 1884 contains 104.

Other foreign pharmacopœias limit this class of remedies. In the Pharmacopœa Germanica, Editio Altera, 1882, and in the Translation by C. L. Lochman, 1884, there are only 20 syrups, being a diminution from 1872, when the number was 29.

The subject was first brought before the notice of the Pharmaceutical Society by Mr. John Savory, during the Presidency of William Allen.

His paper was a running commentary on methods of preparation officially adopted here and abroad, somewhat to the disparagement of the former, with suggestions for amended processes. Many of these recommendations have been superseded, but attention may be directed to his note on Syrupus Tolutanus, to which reference will be made hereafter. The type of this class of preparations is—

Syrupus Simplex.

The B.P. formula is—

Refined sugar 5 pounds.
Distilled water 2 pints.

Dissolve the sugar with the aid of heat, and subsequently make up the weight of the product to seven pounds and a half. Sp. gr., 1.330.

A syrup, which is a preparation of sugar and water, having the above specific gravity, that sp. gr. depending on the relative proportions of sugar and water, does not retain the sugar permanently in solution.

Where this fact is disregarded, the sugar deposits in a crystalline condition. In the so-called chemical syrups the salt or salts do not of themselves precipitate, but are mechanically carried down, and thus precipitated by the sugar in excess, which deposits in a more or less crystalline form due to the acid which the formula may contain.

Mr. Ekin (August 7, 1874) confirms this: "I have found that the acid solution of the precipitated phosphates will keep for years without the sugar." Mr. Umney (same date): "I can quite corroborate what Mr. Ekin has said, for I have for years made a solution of phosphate of iron, which I have found to keep very well."

So also Professor Redwood, in the original discussion [1842], observed "that it was quite as important to avoid adding too much sugar as the reverse, for that when crystallisation commenced, it did not cease at the point of saturation, and hence a hot syrup, in which a greater quantity of sugar is dissolved than it is capable of holding in solution when cold, becomes ultimately much weaker than it would have been if less sugar had been added at first."

Contrast for a moment syrupus simplex with the construction of the two syrups, syrupus rhei and syrupus sennæ, both from the nature of their ingredients prone to deposition of sugar. One is a percolate; both contain coriander, which with advantage might be oleum coriandri in both instances, and both keep well.

Final stage—Syrupus Rhei. B.P. 1885.

Evaporated liquid..... $\bar{z}xv$.
Sugar 24 ounces [only].
Sp. gr. about 1.310.

Final stage—Syrupus Sennæ. B.P. 1885.

Evaporated liquid..... $\bar{z}xvj$.
Sugar 24 ounces [only].
Sp. gr. about 1.310.

It will be convenient here to turn to the tabulated diagram of Professor Oldberg showing the relation of solutions of sugar and water to bulk, and specific gravity. This has been copied by others, doubling the figures:—

Sugar.	Water.	Bulk.	Sp. gr.
Ounces.	Fl. ozs.	Fl. ozs.	Result.
16	12	22½	1.273
16	10	20½	1.298
*16	8	18½	1.330
14	8	17½	1.311
12	8	16	1.290
10	8	14½	1.264
8	8	13¼	1.231

The third on the list, marked by an asterisk [*], represents syrupus of the British Pharmacopœia.

Let us see what is the Continental practice with regard to a preparation which is typical of the rest.

The Paris Codex of 1839 (my first introduction to pharmacy) ordered syrupus to be made with sugar and water in the proportion of two to one, but to be dissolved cold, and after twelve hours' contact to be filtered through animal charcoal. The sp. gr. was 1.320.

Next came the Codex of 1866, which was issued under the personal direction of many distinguished professors and members connected with the Faculty of Medicine and the School of Pharmacy. The preface was written by Jean Baptiste Dumas.

There were two forms of simple syrup, namely:—

Sirop de Sucre Incolore.
Syrupus Sacchari.

White sugar 1000
Water 525

a cold preparation, subsequently filtered; it is to the relative proportion of sugar and water to which I wish to draw attention.

The other was prepared by heat, and clarified by the use of albuminised water.

The albuminised formula has disappeared, and in the Codex of 1884, édition corrigée, we get the following:—

Sirop de Sucre.
Sirop Simple.

Sacchari Albi 1700 grammes.
Aquæ Destillatæ 1000 grammes.

Break the sugar in small pieces; add to the water; raise to the boiling point; strain or filter.

Syrup, when boiling, marks 1.26.
Sirop de Sucre à froid.

Sacchari Albi 1800 grammes.
Aquæ Destillatæ 1000 grammes.
Dissolve cold, filter marks 1.32.

German pharmacy carries out the same idea. The Pharmacopœa Germanica, 1846, gives this formula:—

Syrupus Simplex.

Sacchari optimi 36 ozs.

Dissolve in—
Aquæ Destillatæ..... 20 ozs. (weight).

Ut fiat syrupus. Sit coloris expers.

The sugar is described as sit albissimum et siccum. Pharmacopœa Germanica, 1882-1884.

Syrupus Simplex.

Sugar 60
Water..... 40 (weight),

to produce finally 100 parts of syrup; filter when cold. The formula in the Pharmacopœa Austriaca, 1889, is—

Sacchari contusi 400
Aquæ destillatæ..... 250

Syrupus cilicio coletur antequam sit refrigeratus. Cilicium is a woollen strainer, the syrup to be strained while hot.

In the U.S.P. (1893) there are thirty-two official syrups. Remington: "Four are made by solution with heat, fourteen by simple addition of medicating liquid to syrup, thirteen by agitation of the sugar with the medicating liquid without heat, and one by maceration or digestion."

Syrupus U.S.

Sugar in coarse powder..... 850 grammes.
Distilled water, sufficient to make 1000 C.c.

Dissolve the sugar with the aid of heat in 450 C.c. of distilled water, raise to the boiling point; strain and pass enough distilled water through strainer to make the product, when cold, measure 1000 C.c. An alternative method is by percolation. Sp. gr. 1.317. W. A. H. Naylor, in a concluding paper on Constructive Criticism, which ended the series so admirably inaugurated in the *Chemist and Druggist* by P. W. Squire, said: "As a general remark, it may be observed that the specific gravities of the syrups of the Pharmacopœia are unnecessarily high. The density might be reduced without any corresponding disadvantage to 1.320. These illustrations will show that the specific gravity of 1.330 has not been universally adopted.

In order to prevent deposition, certain special and selected sugars have been recommended.

It is desirable in the general interests of pharmacy, that the formula for syrupus should be so constructed as that white sugar, as commonly met with in honourable commercial manufacture, should meet the requirements of the pharmacist.

German pharmacy it has been seen, insists that the sugar should be very white and dry.

Remington, that it should be pure and not artificially blued by ultramarine; that it should answer pharmacopœial tests, and, moreover, that in accordance with the U.S.P. it should be dry, because the permanency of syrups largely depends on their containing the correct proportion of sugar and water.

Dr. Paris, in the *Pharmacologia*, states that sugar, perfectly free from the extractive matter with which it exists in combination in nature, and which constitutes that compound to which the name of Sweet Principle has been given, will not, however diluted, undergo any kind of fermentation, for it is to the presence of this peculiar extractive matter, the natural leaven of fruits, that enables it to undergo that process.

The syrup of iodide of iron has a literature of its own. It was introduced as a therapeutical agent to British practitioners by Dr. Anthony Todd Thomson.

Finding that the solid salt was an unsatisfactory preparation, he made a solution containing 3 grains to a drachm, and by the suggestion of Mr. Peter Squire, inserted a coil of clean iron wire, as a means of preservation. Subsequently he made a strong solution by boiling iron and iodine in water; this was filtered, evaporated to two-thirds, and converted into a thick syrup by the addition of sugar, dissolved by a gentle heat. The syrup as prepared in December, 1840, was exhibited in a perfectly limpid state on July 7, 1841.

Mr. Henry Scholefield, at a later date, commented on Thomson's method, suggesting a much larger quantity of iron than is actually necessary, and that the mixture should not, in the first instance, be raised to the boiling point. His formula gave a syrup containing 3 grains of anhydrous iodide to the fluid drachm, and from that day to this the syrup has engaged the attention of practical pharmacists.

Mr. Richard Phillips, jun., maintained that the change in the syrup was the formation of hydriodic acid resulting from the decomposition of the water, iodide of iron being hydrated and containing one atom of iodide and five atoms of water; the oxygen of

the water combined with the iron to form protoxide, which latter, gaining oxygen from the air, became peroxide.

He remarked also, that if a solution of a per- or proto-chloride of iron be mixed with syrup, no precipitation takes place on the addition of ammonia, a fact of considerable service in dispensing.

In process of time, by exposure to the air, the hydriodic acid becomes decomposed, yielding iodine, and the iron protoxide is peroxidised, the latter still being held in solution by the syrup.

Mr. Walter Hemingway made a solution of iodide of iron (grs. xxx. to fl. ʒj.) by agitation in a mortar without heat; this was mixed with simple syrup, 15 fluid ounces of which had been reduced 2 ounces avoirdupois by gentle ebullition. Each fluid drachm contained 4 grains of crystallised iodide, the equivalent of rather more than 3 grains of the dry.

Messrs. T. and H. Smith made a solution of iodide in a flask with cold water and agitation. When the action was finished, the solution was boiled until the brown colour disappeared. This was filtered into a graduated bottle containing sugar broken into small pieces; boiling water was added till the liquid reached the level of the mark previously arranged.

Solution was effected in a hot water bath, the required level of the syrup was adjusted, and finally the syrup was bottled in small phials.

The original Edinburgh strength was five grains in one fluid drachm, and this was altered in accordance with Thomson's recommendation to 3 grains in 1 fluid drachm. This method commends itself for effective simplicity. We turn now to the impossible formula of the British Pharmacopœia of 1885. A concentrated syrup is first to be made by dissolving 28 ounces of refined sugar in 10 ounces of the water with the aid of a little heat, the result being a crystallised saccharin paste. The remaining 3 ounces of water are used to form the iodide solution, heating slightly with occasional agitation. Add now 2 fluid ounces of the syrup and boil gently for ten minutes. The problem is to find these 2 fluid ounces; which leads to a second, how to filter the result obtained from ten minutes' additional boiling. "Then filter the liquid while still hot into the remainder of the warm syrup, and mix."

The official strength is 4.3 of iodide of iron in 1 fluid drachm. Total: a congealed, dark-coloured mass which should be sent out in a wide-mouthed stoppered bottle. To my great satisfaction, I find since this was written, that Mr. Charles Umney comes to the same conclusion. He states that the specific gravity is 1.400, and not 1.385. After a few days the sides of the bottle are studded with crystals as large as those of sulphate of sodium. The upper part of the liquid is tinged with free iodine. Mr. Umney would amend the formula by making the product weigh, when cold, 2 lb. 11 $\frac{3}{4}$ ozs.; the present writer would suggest the better amendment of cancelling the arrangement.

The formula of the U.S.P. contains by weight about 10 per cent. of iodide of iron. Iron wire, 25 grammes in a flask of the capacity of 500 C.c.; distilled water, 150 C.c. added, and afterwards iodine, 83 grammes.

Now mark what comes next: "Shake the mixture occasionally, and when the solution has acquired a greenish colour, and has lost the odour of iodine, heat it to boiling." Filter rapidly, the point of the funnel dipping below the surface of 600 grammes of syrup contained in a tared vessel. Wash the flask and filter with a mixture of 25 C.c. each of syrup and distilled water heated to near 100°C., withdraw the funnel and make up with syrup till the product weighs 1000 grammes. Sp. Gr. about 1.353 at 15°C. (59°F.) as compared with 1.385 B.P.

(To be continued.)

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PUBLIC COMPANIES AND THE IRISH PHARMACY ACT.

A DECISION was given in the Queen's Bench Division, Dublin, on Monday last, which has the effect of placing corporations in Ireland on the same footing as in Great Britain with regard to restrictions imposed by pharmaceutical legislation. In the original case, the firm of ALEXANDER BOYD and Company, Limited, of Lisburn, was charged with infringing the provisions of the Pharmacy Act (Ireland) by compounding medical prescriptions, the members of the firm not being legally qualified to do so. For the defence it was contended that a limited company is not a "person" within the meaning of the Act, and it was, moreover, shown that the medical department of the firm's business is conducted by a pharmaceutical chemist duly qualified and registered under the Pharmacy Act (Ireland). The Justices dismissed the summons, but stated a case for a higher court, and the appeal was heard by Justices O'BRIEN, JOHNSON, and HOLMES.

Counsel for the Pharmaceutical Society of Ireland contended that the word "person," in the section under which the prosecution was brought, includes limited companies like that proceeded against, because it contains a prohibition addressed to everyone, while the Interpretation Act of 1889 provides that on the construction of every enactment relating to an offence punishable on indictment or by summary conviction, the expression "person" shall include a body corporate, unless the contrary appears to be indicated. On the other side, the decision of the House of Lords in the case of the Pharmaceutical Society of Great Britain *v.* The London and Provincial Supply Company was relied upon, and it was argued that the whole tenor of the Irish Act indicates that it is applicable to individuals only. Further, it was contended that if the appeal were successful, great diversity would be introduced between the law in Ireland and that in Great Britain, whilst a large number of established businesses would be interfered with.

In giving judgment, Mr. Justice O'BRIEN said that all the members of the Court agreed in upholding the decision of the magistrates. They held that Section 30 of the Pharmacy Act (Ireland), 1875, combines Sections 1 and 15 of the English Act

of 1868, and that whatever the views of the Legislature may have been, the words of both enactments admit of no ambiguity. Both must be regarded as relating to the same subject matter and receive the same interpretation. If the Interpretation Act had been intended to apply in such a case as that before the Court, the object was capable of being attained, and should have been attained, by the use of language different from that actually employed. The law says that no person shall be entitled to compound medicines unless he is a qualified and registered pharmaceutical chemist, implying that the person to whom the penal provision applies is an individual capable of qualifying himself under the Act. A corporation, however, could not be meant by that description, and no person reading the Act could arrive at any other conclusion than that a corporation never was intended to be referred to. Consequently, penalties could not be recovered from a corporation under the Act as it stood.

MEDICINE AND PHARMACY IN KASHMIR.

AN important work on Kashmir has recently been published, in which the author, Mr. W. R. LAWRENCE, I.C.S., C.I.E., Settlement Commissioner, Kashmir and Jammu State, gives much interesting information regarding native drugs, etc. The *Cannabis indica* (Bhang) grows in great profusion along the banks of the Jhelum and the Vishau, and it has been the custom to reserve the land on the river banks for the growth of this plant, for a distance of fifteen yards on either side. The right to collect the products of the hemp plant formerly yielded as much as Rs. 25,000, but for the last five years the revenue has averaged Rs. 6,200 only. The Kashmiris usually speak of the drug manufactured from the hemp plant as "charras," but "ganja" is procurable in Srinagar, the annual production of the latter being 70 maunds, whilst some 400 maunds of hemp fibre is collected every year in that district, and 600 maunds in the country below Srinagar. The leaves of the hemp plant are not used locally for smoking or drinking purposes, but a preparation called "majun" is eaten to some extent. A very common plant in Kashmir, "tetwan," is a species of *Artemisia*. The leaves of this yield a preparation known as "ibsantin," a name probably derived through the Arabic from the Greek *absintha*. The fresh plant of *Narhex asafetida* is used for cooking purposes in Astor, but the asafetida of commerce does not appear to be manufactured there.

Medicinal properties are said to be attributed to every plant by the hakims of Kashmir, the native physicians. The more common medicinal herbs are *Aconitum heterophyllum* (Patis or Nar-Mada), *Hyoscyamus niger* (Bagar bhang), *Macrotomia benthami* (Gao zaban), *Viola serpens* (Banafsha), *Artemisia*, sp. (Tetwan), *Peganum harmala* (Isband), *Euphorbia thomsoniana* (Hirbi), *Pichorhiza kurrooa* (Chob-i-kor), *Berberis lycium* (Kaodach), *Senecio jacquemontiana* (Khalar), *Salvia*, sp. (Sholra). *Podophyllum emodi*, *Colchicum luteum*, and *Atropa belladonna* are common, but not used medicinally. A long list is also given of other indigenous medicines, the botanical sources of most of which have not yet been identified. In addition to *Hyoscyamus niger*, the following poisonous plants were noted:—*Impatiens roylei* (Trul), *Aconitum napellus* (Mohundguji), *Datura stramonium* (Datur), *Atropa lutescens*, and *Rhus acuminata* (Arkhor).

The seeds of *Datura stramonium* are largely exported. The root of *Saussurea lappa* (Chob-i-kot) has a scent like orris, with a slight blend of violets, and possesses a commercial value, its sale being a State monopoly, whilst the leaves of *Macrotomia benthami*, and the leaves and seeds of *Hyoscyamus niger* are also marketable commodities. Violets are collected, and the seeds of the quince (Bihdana) are exported in large quantities to the Punjab. The flowers of *Salix caprea* (Bed mushk) yield an essential oil used in perfumery, and the roses of Kashmir were formerly used for the production of attar, the roses and willows having yielded a revenue of one lakh of rupees in the Mughal times. The value of the drugs exported from Kashmir during 1891-92 was Rs. 4,07,969, but in 1892-93, Rs. 1,60,625 only. Medicine and midwifery give occupation to 738 workers and dependants in Srinagar, which is the twenty-second in order of magnitude among the towns of India, occupying an area of 3795 acres, and containing a population of 139,410 persons. The chemists and druggists number 557. Most occupations seem to have been directly taxed at one time, and during 1871-72 the amount collected from leech sellers and dealers in medicine was 913 Chilki rupees, each equal to ten annas. However, these direct taxes on shops and artificers have now disappeared.

SECONDARY PHARMACEUTICAL EDUCATION.

THE BURROUGHS' Memorial Scholarship constitutes a not unimportant addition to the facilities afforded to British pharmaceutical students, who wish to extend their scientific training beyond what is strictly necessary for the due performance of their professional duties as pharmacists. For many years the JACOB BELL Memorial Scholarships were the only pharmaceutical scholarships that existed in this country, and the funds available in connection therewith have always been devoted exclusively to primary technical education. The REDWOOD Scholarship was founded on similar lines, but has since been diverted to the purposes of secondary education, and the Manchester Pharmaceutical Association Scholarship funds have been similarly employed, for, although intended for elementary students, no candidate has as yet been successful in gaining the Scholarship. The Burroughs' Memorial Scholarship is likewise intended to encourage the extension of secondary education, and will, on account of its pecuniary value, be the most important in that connection. It is gratifying to observe that so many friends of pharmacy, whilst anxious to perpetuate the memory of deceased masters and friends, should find the best outlet for their sympathy with the work of the past in making fitting provision for elevating the position of the craft in the future.

PHARMACEUTICAL SOCIETY OF IRELAND.

THE new edition of the Calendar of the Pharmaceutical Society of Ireland has just been published in the usual form, and gives the customary particulars regarding membership, etc. The number of pharmaceutical chemists on the register at the end of last year was 501, members 175, chemists and druggists 306, registered druggists 379, associate druggists 78, and assistants to pharmaceutical chemists 12. Full information is also given respecting the Irish legal restrictions affecting pharmacy, pharmaceutical examinations, poison regulations, etc. The Calendar is published and sold by the Registrar, at 67, Mount Street, Dublin.

ANNOTATIONS.

THE JOURNAL OF THE AUSTRIAN APOTHEKER VEREIN.—Herr A. J. Sicha, the Editor of the journal, issued by the Austrian Pharmaceutical Society, under the designation of the *Zeitschrift*, reminds us that it is the oldest pharmaceutical journal published in the German language, having been commenced in 1846 by Professor Martin S. Ehrmann as a private undertaking in conjunction with Apotheker W. J. Sedlaczek, and continued by Josef Ehrmann and Franz Klueger up to 1882, when it became the official organ of the Austrian Society, and has been edited since 1886 by Herr Sicha. During the past fifty years the main object has been to advance the scientific position of pharmacy as an art, and to promote the material interests of those engaged in its exercise. In both respects the journal is very generally considered to have rendered much good service.

PHARMACY AND LAW.—The series of lawsuits mentioned last week (see p. 118) between M. MacAuliffe, pharmacist, of Paris, and his neighbour, Mme. Pouteau, have terminated in the Court of Appeal by the reversal of the judgments given in the Inferior Courts, and by the condemnation of Mme. Pouteau and her three witnesses (who were prosecuted for perjury at the instance of the pharmacist) to three years' imprisonment, and a fine of fifty francs in each case.

MALINGERING IN CHILDREN.—The *Lancet* recently pointed out how the children of Nasington—a village in Northamptonshire—go to work in order to avoid the toils of school. On account of the number of children who were kept from school because of a rash on their bodies, Dr. C. N. Elliott, the medical officer of health of that district, was asked to examine them with a view to finding out the nature of the strange disease. His report showed that the whole affair was a case of malingering. The children, about twenty-five in number, were suffering from no real disease, but in order to stay away from school they had rubbed their hands and arms with the juice of the plant called "Patty Spurge." The result of this was that a vesicular eruption appeared which, in most of the cases, resembled a herpetic eruption, but in some there were blisters as large as half-a-crown.

ECONOMIC BOTANY.—The November number of the *Kew Bulletin*, which has only been issued during the past month, contains interesting particulars regarding a number of economic products. Ai or Ngai camphor, which was described in the *Pharmaceutical Journal* many years ago ([3], iv., 710), is the subject of a communication from Dr. A. Henry, who gives an account of the process adopted for preparing the camphor. Information is also given respecting sumach, whilst it is stated on Sir Frederick Abel's authority that any increase in demand for camphor, involving a rise in price is not due to its application as a constituent of smokeless powder.

'INDEX KEWENSIS.'—It will probably surprise many botanists to learn, on the authority of the *Kew Bulletin*, that the 'Index Kewensis' is in no sense intended to be a standard of nomenclature, or to represent the views of Kew in the matter. It is stated to be nothing more than an index of published plant names, with references to the works in which they were first promulgated and the countries of which the plants are natives. No attempt has been made to ascertain the validity of the names cited. The whole expense of preparing the work has been defrayed by the family of the late Charles Darwin, but the Clarendon Press, Oxford, has borne that of printing and publication.

THE FORMULA OF HYDROGEN PEROXIDE.—Referring to the recent note in "The Month" (*ante*, p. 81) concerning Brühl's conclusion with regard to the constitution of hydrogen peroxide, Mr. C. T. Kingzett points out that his earlier investigations led him to the same conclusion—that hydrogen peroxide must be looked upon as containing tetratomic oxygen. In a paper communicated to the British Association in 1882 (*vide Chemical News*, xlvii., 120) he expounded the view that oxygen may behave either as a triad or tetrad, and he also suggested for hydrogen peroxide the formula now advocated by Brühl.

THE NEW REGISTER AND BOGUS REFERENCES.—A correspondent complains of the trouble caused by the use of bogus references by assistants requiring situations, and suggests that others who have suffered by the presentation of such would do well to consult the Register of Chemists and Druggists, so as to ascertain whether the person referred to is actually registered. Further, in case of doubt, the local secretary of the Pharmaceutical Society, in the place where the person referred to lives, should be written to. The list of local secretaries appears in the Society's Calendar, and most if not all of those whose names are given would gladly make the necessary inquiries. In one case instanced by our correspondent the individual whose name was given for reference proved to be an assistant, whilst in another the manager of a drug store gave a reference from his private address. There is little doubt that registered chemists would save themselves much trouble in this and other ways by more frequently referring to the Register and Calendar, new editions of which have just been published.

PRESENTATION AT THE SCHOOL OF PHARMACY.—An interesting event took place at the Pharmaceutical Society's House in London, on February 5, when a presentation was made to Mr. H. T. Durant on the occasion of his departure to take up the position of laboratory manager to Messrs. Loewenstein and Co., of Johannesburg. Mr. Durant has recently worked in the Research Laboratory, and also acted as lecture assistant to Professor Dunstan, his work being much appreciated by all with whom he came in contact during the performance of his duties. The students in the chemistry class gave evidence of their appreciation by presenting him with Mendelejeff's 'Principles of Chemistry,' and Frankland's 'Micro-Organisms in Water.' Professor Dunstan supplemented this with Bence Jones' 'Life of Faraday,' and the students in the Research Laboratory added a copy of Rose's 'Metallurgy of Gold.' Mr. Durant has left for his new position accompanied by the good wishes of many friends.

CURARE AS A PROPHYLACTIC TO STRYCHNINE.—M. Laborde has made some interesting experiments before the members of the Académie de Médecine, by which he demonstrated the utility of curare as a preventive of strychnine poisoning, as well as a cure. He administered a fatal dose of strychnine to two frogs, one of which had been previously injected with a solution of curare. On the one thus treated the strychnine had no effect, whilst the other succumbed. As an example of the inverse action, a similar dose of strychnine was given to another frog, and on the appearance of the tetanic symptoms an injection of curare was made, when the convulsions rapidly disappeared. M. Laborde stated that similar effects were produced on dogs and guinea-pigs, and that it was probable the same therapeutic action would be realised in the human subject. The curare extract used was prepared directly from the plant and diluted to a definite strength for accuracy of observation.

THE NEW PHOTOGRAPHIC DISCOVERY.—The January issue of the *Photographic Journal*, the official organ of the Royal Photographic Society, contains a *résumé* of the various papers which have been published dealing with Professor Röntgen's discovery, together with special articles on the subject by Mr. J. W. Gifford. It is illustrated with reproductions of the results obtained by that experimenter, as well as one by Messrs. Swinton and Stanton, of the living hand, showing the bones very clearly, nine of the new photographs in all being reproduced. The *Photographic Journal*, edited by Captain W. de W. Abney, C.B., D.C.L., is published by Harrison and Sons, Pall Mall, London, at 1s.

SHADOW PHOTOGRAPHY.—In repeating his lecture on Professor Röntgen's discovery (see *ante*, p. 115) on Monday, February 3, before the Liverpool Physical Society, Dr. Lodge referred to the erroneous impression that the effects produced were due to light, since light had to be totally excluded and prevented from having any action on the plate at all. He exhibited some fresh photographs of hands, living frogs, and a sole. These displayed the osteological structure very clearly. In concluding, Dr. Lodge stated that the opinion that these-called "x" rays were streams of electrically charged particles was now disproved, as it was found that negatively charged bodies are diselectrified by the rays. If the rays were of ultra-violet light, it was probable judging from their effects that their vibrations were as much more rapid than white light as that was more rapid than sound. However, he was inclined to think that they were longitudinal ether waves, and if that were proved to be the case there would be a new department of physics as large as any existing one.

RECENT PHOTOGRAPHY.—At a meeting just held of the Société de Médecine et Chirurgie de Bordeaux, Dr. Armaignac showed a very clear photographic proof which he had obtained by simply exposing to the light of a petroleum lamp furnished with a parabolic reflector, a negative in contact with a sensitised gelatin bromide plate, enclosed in an iron box. After three hours' exposure, the plate was developed in the usual manner, and gave a very distinct positive image of the negative. In his experiments with the light of a petroleum lamp, Dr. Armaignac observed (like M. Lebon) that two or three sheets of black paper entirely arrested the photogenic rays, whilst a sheet of iron permitted their easy transmission.

'SCIENCE PROGRESS' for February contains several matters of interest from a medical point of view. Dr. G. A. Buckmaster treats of the diagnostic and therapeutic use of mallein which, he considers, must consist of soluble bodies derived from the specific micro-organism of glanders, just as tuberculin consists of soluble bodies from the tubercle bacillus. Its use for therapeutic purposes appears useless, but it possesses considerable value as a means of diagnosis in glanders. A brief, but interesting, article on the suprarenal capsules is contributed by Professor W. D. Halliburton, and Dr. E. Starling deals with Pawlow's researches on the physiology of secretion. "Emancipation from Scientific Materialism," by Professor W. Ostwald, is, of course, philosophical in its nature, and correspondingly attractive. It concludes with the statement that science may never recognise bounds to her progress, and amidst the struggles for some new possession her eyes must not become blinded to the fact that beyond the territory she is striving to conquer still wider plains extend, which later must also be subdued.

PROCEEDINGS OF SOCIETIES.

CHEMICAL SOCIETY.—At the ordinary meeting held on February 6, Mr. A. G. Vernon Harcourt, President, took the chair, and the first paper read was by Professor Tilden, F.R.S., and R. E. Barnett, on "The Molecular Weight and Formula of Phosphoric Anhydride and of Metaphosphoric Acid."

Professor Tilden read the paper, and stated that most of the oxides of phosphorus had already been pretty well examined, the only one remaining was P_2O_5 , and he explained the difficulties to be encountered in the matter of manipulation. P_2O_5 sublimes without melting, and so we know nothing of its melting or boiling points. The authors doubt that the formula is P_2O_5 and not P_4O_{10} , hence the investigation. The formula P_2O_5 was based on Victor Meyer's P_2S_5 formula, but P_4S_6 has been shown not to be P_2S_3 , and $P_4O_6S_4$ has been shown not to be $P_2O_3S_2$. They think that P_2S_5 is probably dissociated, the formula likely being $P_4S_6S_4$ at the high temperature necessary for taking the vapour density. Metaphosphoric acid undergoes partial dissociation on being volatilised and is likely to be $H_2P_2O_6$ and not HPO_3 . The molecule of phosphorus seems to be an extremely stable structure.

In opening the discussion on this paper, the President mentioned that Professor Morley, of Ohio, was present, and invited him to make a few remarks. The Professor somewhat reluctantly acceded to the request, and the few words he spoke did not immediately concern the subject under consideration.

Professor Thorpe stated that he and a collaborator had had the volatility of phosphoric anhydride brought under their notice in trying to get phosphorous oxide. They found that the anhydride was easily volatilised, that glass was much attacked and corroded, and finally gave way. They had studied the action of sulphur on phosphorous oxide, hoping to get $P_2O_3S_3$, but without success. Phosphorous oxide and sulphur may be heated much together without any action taking place.

The President remarked that the vapour density of a body in the gaseous state at a high temperature did not indicate the molecular weight of the same body in the liquid or solid state at a lower temperature.

Professor Tilden, in the course of his reply, said that the vapour density is no criterion of molecular weight.

The next paper was on "Lead Tetracetate and the Plumbic Salts," by Dr. A. Hutchinson and W. Pollard. This was an attempt to prepare a series of tetra-salts of lead. Red lead treated with glacial acetic acid dissolves and forms a colourless solution. With dilute acid it is not all dissolved; a portion always remains undissolved. Jacquelin's salt is said to have the formula $PbO_2 \cdot 3(C_4H_4O_3)$, but the authors found it really had the composition $Pb(C_2H_3O_2)_4$. Little was known about the tetrachloride, and it was determined to see if it could be obtained by double decomposition. The salt was dissolved in glacial acetic acid, to which was added strong H_2SO_4 , and dry HCl driven through. They succeeded in this, and also in preparing a double salt by pouring a solution of the tetracetate into a solution of ammonium chloride, the compound thus formed having the formula $2NH_4PbCl_4$.

The tetracetate is crystalline. Its molecular weight, with solvent of glacial acetic acid and by freezing point method is 407.412; by boiling point method, 355.376. Real M.W., 443. Specific gravity of the salt—liquid, a saturated solution in glacial acetic acid—found to be 2.228.

The third paper was by Mr. A. H. Allen on "An Improved Method of Determining Urea by the Hypobromite Process."

It had been found that by the ordinary process not more than 92 per cent. of the total nitrogen could be obtained. This was thought to be due to the reversion of urea to cyanate of ammonium. Mr. Allen sought to anticipate or nullify this by adding potassium cyanate (as it had been found to retard such reversion) and reversing the order of procedure generally. In a suitable apparatus, devised by Mr. Allen for the purpose, the urea was placed in a lower bulb along with the alkaline solution and the potassium cyanate, and the bromine, which was placed in an upper separator bulb, run into it. By this means the nitrogen could be determined to a nicety—from 99.5 to 100 per cent. of the total.

A discussion arose between Mr. Allen and Mr. Fenton as to the respective merits of the hypobromite and the hypochlorite methods. The latter method, however, required from fifteen to forty minutes for its performance, whereas Mr. Allen, by his own improved method, could get a result in four or five minutes.

Professor Thorpe, in the discussion which followed, asked if the nitrogen evolved had been examined, as, at Lord Rayleigh's request, for an easy method of obtaining chemically pure nitrogen, he suggested decomposing urea by hypobromite solution. But the nitrogen obtained smelt like a dead rat, and could not be easily purified.

The last paper read was by Dr. Wilson Hake, "On the Absorption of Moisture by Deliquescent Salts." This note was briefly but severely criticised by several of those present.

The following papers were taken as read:—"An Examination of the Products Obtained by the Dry Distillation of Bran with Lime," by W. F. Laycock, Ph.D.; "Luteolin," by A. G. Perkin; "On γ -Phenoxyderivatives of Malonic Acid and Acetic Acid and Various Compounds Used in the Synthesis of These Acids," by W. H. Bentley, B.Sc., E. Haworth, B.Sc., and W. H. Perkin, jun., F.R.S.; "Note on the Preparation of Glycol," by E. Haworth, B.Sc., and W. H. Perkin, jun., F.R.S.

CHEMISTS' ASSISTANTS' ASSOCIATION.—At the meeting of this Association, held on Thursday, February 6, a paper on "British and Foreign Syrups" was read by Mr. Joseph Ince (see page 128).

In the discussion which followed, Mr. Hill remarked upon the samples of syrup of lemon shown, saying they were very elegant preparations. Mr. Elliott said that in order to procure samples of syrup of lemon he had sent to five different establishments, and three out of the five said they did not keep the B.P. article. He produced two samples prepared according to the official process, which were by no means elegant preparations. He suggested that the crystallisation was due to the conversion of sugar into grape sugar by fermentation set up by albuminous matter. With regard to syrup of squills, the B.P. gave sp. gr. 1.345. Prepared according to the official process it does not answer to that requirement, and, moreover, does not keep. It did not state in the B.P. what liquid was to be used in bringing it up to the required sp. gr. He presumed it was with acet. scillæ. He would suggest for the next B.P. that it should be made up to a definite weight. Mr. Jones thought this paper would be of incalculable service to the Committee of the B.P. in its work of revision. Commenting on the dark colour which developed in syr. ferri iodid., Mr. Brown, of the Bloomsbury Square School of Pharmacy, had shown that this was not due to free iodine, but some compound, the formula of which he gave, and which was published at the time. He did not see why in the case of syrup of lemon, citric acid should not be substituted for the fresh lemon juice; with this and soluble essences of lemon a nice preparation could be made. He agreed generally with the remarks which had been made by Mr. Ince. Mr. Strother asked Mr. Ince if he did not think the peculiarity of the names of French syrups were attributable to the desire to conceal from the patient the real nature of the medicine. Mr. Morley Taylor, referring to Mr. Ince's remarks on syr. croci, said he had not noticed so much that this preparation lost its colour, but he had found that gelatinisation took place. He had not experienced any difficulty in making small quantities of syr. ferri iodid. He remarked upon the rarity with which syr. ferri subchlor. was used. Mr. Guyer said the only time he had occasion to make it was at the examination. This was not even a stock article in some wholesale houses. Mr. Melhuish wished to know if Mr. Ince advocated the deletion of syr. chloral. from the B.P. altogether, or merely a reduction in strength.

Mr. Ince in replying to the various remarks commented on the two samples of syrup of lemon produced by Mr. Elliot. They were unsatisfactory, but he blamed the formula and not the pharmacist. Syr. scillæ should be made up with acet. scillæ he thought. The chief precaution in preparing syr. ferri iodid. was to avoid heat in the first part of the process. He could not explain the gelatinisation referred to by Mr. Morley Taylor; he thought it was attributable in a great measure to atmospheric conditions. Syrup. ferri subchlor. was a Scotch remedy rarely used in England. The deposit in syr. ferri phosph. was due to the precipitate being imperfectly washed. He would not advocate the deletion of syr. chloral. but a reduction of the strength—1.20, as in the Codex.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS ASSOCIATION.—At the monthly Committee meeting, held on the 4th inst., the delegates who had been appointed (Messrs. Geo. Breeze, F. Maitland, and Jas. Cocks) gave the result of their interview with

Messrs. Kearley and Morton, the Members of Parliament for Devonport. This was in every way satisfactory. Mr. Kearley seemed specially interested in the limited companies' question, which, he said, would in all probability be considered during the session. He hoped to take an active part in the matter, and would bear in mind the chemists' grievance, that unqualified persons were able at the present time to evade the Pharmacy Act by forming a limited company. The anomaly of the recent Poor Law regulations was also explained, and the difficulty the Pharmaceutical Council at present has in getting poisons, such as carbolic acid, etc., scheduled.

A unanimous vote of thanks was passed to Messrs. Evans, Gadd, and Co., of Exeter, for their valuable gift of 'Carpenter on the Microscope.' This was followed by the election of the following six new members: Messrs. Saver, S. H. Estlick, F. C. Osborne, W. P. Harris, A. T. Buckley, and G. H. Howells (Royal Naval Hospital). The Secretary also announced that Mr. O. A. Reade, of the Naval Hospital, author of 'Botany of the Bermudas,' had kindly consented to take the younger members for weekly botanical rambles during the summer months, on Wednesday afternoons.

The Secretaries of the late Ball Committee, Messrs. Maitland and Westcott, announced that they had a large balance in hand, the greater proportion of which they proposed to use for the benefit of the Association.

SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY.—The members of the above Society were favoured on Wednesday evening with a lecture by Dr. H. C. Sorby, F.R.S., in which he gave the results of long and patient labours in mounting animals for use in lantern slides. The meeting was at the rooms of the Society in Surrey Street. Mr. J. F. Eardley, the President, occupied the chair, and there was a good attendance.

Dr. Sorby explained at the outset that he did not propose to deal with the life history of the animals that would come under notice, except to a very slight extent, but would mainly confine his remarks to certain questions more or less relating to chemistry and chemical methods. In microscopical studies the staining of portions of animals played a very important part, but Dr. Sorby said he had devoted his attention to staining entire animals, not for microscopical purposes so much as for use in lantern slides. For this purpose very different treatment was necessary, and it by no means followed that what was good staining for one purpose was suitable for another. His object was to bring out more distinctly important structural peculiarities on a comparatively large scale, which would be visible when shown on a screen as in an ordinary lantern slide.

The lecturer exhibited some of his early preparations of marine animals in order to show what wonderful improvement in preparing such specimens had been made in the course of the last few years. Specimens were exhibited showing the results obtained by using a great variety of staining materials; but, unfortunately, some of the newer results could not be shown, because the preparations were not sufficiently hard to stand the heat of the lantern. Dr. Sorby's latest researches had been with a view of obtaining the animals in a permanently mounted condition with the colouring which they possessed when alive. The natural colour in many cases was rapidly lost, and it was requisite to stain with some material which will give the true colour in a permanent condition. It was also necessary in some cases to stain different portions of the animal with different materials in order to imitate the true natural colour. Latterly Dr. Sorby said he had been trying a variety of experiments in order to ascertain the result of staining animals when alive in sea water, and a number of these were exhibited. It seemed probable that in some cases the animals absorbed the staining material in a different way when alive from what they did when dead. It was also found that after being kept for some time in alcohol, certain stains had no effect on the animal, and were not mordanted by any of the tissues, which readily coloured if tried shortly after being taken out of their natural sea water. Dr. Sorby stated that he is now employed on what might be regarded as the very reverse of the staining process, namely, removing certain natural pigments more or less diffused over the entire animal, and leaving other pigments not in any way faded where related to the structure of the specimen. None of these again could be shown, on account of the preparations not being yet in a fit condition for use. So far, Dr. Sorby said the main object he had in view had been attained—the exhibiting of lantern slides of the real animals, thus showing far more than it would be possible to do with a mere drawing. Altogether, about fifty specimens were thrown on the screen, and the perfection with which they had been coloured and mounted excited much surprise.

ROYAL PHOTOGRAPHIC SOCIETY.—The accommodation afforded by the lecture room at 12, Hanover Square proved quite inadequate for the large gathering which assembled on the 11th inst. to hear Mr. A. A. Campbell Swinton lecture on "The New Shadow Photography." The first portion of the proceedings was of the usual routine description associated with an annual meeting, but was rendered interesting to an outsider by the presentation of the Progress Medal, which had been awarded to Mr. Dalmayer of lens fame. Captain Abney, who occupied the chair in the absence of the President, complimented the recipient in a few well-chosen remarks, and then announced the result of the election of officers for the session, which showed that he had been selected for the presidential chair. Mr. Swinton next proceeded with his lecture. At the outset he demonstrated, with the aid of a Ruhmkorff coil capable of giving a 10-inch spark, how the size of the spark is directly dependent upon the electrical resistance of the surroundings, and for this purpose he rendered nearly vacuum an ordinary tube by means of a pump, the flame becoming gradually brighter and larger as the electrical resistance decreased. The nature of the spark was also demonstrated by means of tubes which had previously been made vacuum by means of a mercurial pump, and it may here be noted that the ordinary Geissler tubes will not answer the purpose, as a much higher vacuum is needed than they will stand. Proceeding, a distinction was made between the Geissler and Crookes' vacuum tubes, the luminescence of the former being attributed to the different kinds of glass used in making the tubes, whilst the vacuum power is low. On the other hand, that of the Crookes' tube is high, and the luminescence is due to the cathodic rays. In referring to the various hypotheses which have been advanced to account for the nature of Röntgen's rays, Mr. Swinton remarked that the belief that they were something of the nature of longitudinal waves as opposed to the transverse waves of light, was one which had gained many adherents amongst German scientists, although the late Professor von Helmholtz was opposed to it. A large number of striking experiments were then carried out in illustration of the properties of the cathodic rays. Thus, platinum in the shape of a cross enclosed in a Crookes' tube was connected to the terminals of the battery, and, at first, stands out in bold relief, and apparently black. After a short time, however, the glass gets fatigued, and if the platinum be dislodged from its position a white cross will be seen in the same place as that where the dark shadow of the platinum first appeared. The facility with which the rays could be deflected was also illustrated, and it was remarked that these considerations were strong arguments in favour of the rays being electrified particles of matter. It should be noted that after passing through glass they are entirely unaffected by the magnet, are incapable of refraction, and only slightly capable of reflection. The tubes used for the purpose of the experiments were of German manufacture, Mr. Swinton remarking *en passant* that he understood the reason why English glass-blowers could not overcome the difficulties of the work was that they used lead glass whilst their Teutonic competitors only used the soda and potash varieties.

Several articles were now handed from the audience to be photographed, and, whilst the plates were being developed, an attempt was made to photograph a hand which the owner said had been injured. Unfortunately, however, the latter was not a success, and could not be shown on the screen subsequently, but the other plates came out very well, amongst the objects shown being eye-glasses in case, the contents of a purse, pencils, magnifying-glasses, and a sovereign purse. It may be mentioned that in photographing these objects it was considered advisable to limit each exposure to fifteen seconds, allowing the same time to elapse before another exposure, so as to minimise the risk of fracture of the tube. Altogether, the miscellaneous articles were exposed for three minutes, and the hand for eight minutes. A large number of photographs were shown on the screen illustrating the application of this new phase of photography, a razor in its case, hands, feet, contents of a pocket, a frog, sections of resin, sulphur, sal ammoniac, as well as an aluminium cigar-case, in which the contents were shown, and in connection therewith Mr. Swinton remarked that the successful application of the discovery to medicine and surgery would be considerably discounted, unless means were taken which would enable the object to be photographed in a minute or two—five at the outside. He concluded by expressing his thanks to his assistants for the help received in the necessary work.

PHARMACEUTICAL SOCIETY OF IRELAND.—On Wednesday, the 5th inst., the monthly meeting of the Council of this Society was held at 67, Lower Mount Street, Dublin, at three o'clock p.m. The President, Mr. W. F. Wells, presided, and referred to the results of prosecutions in Belfast of a Scotch firm, against whom two penalties of £5 each, with £1 costs, were recovered for an unlawful sale; and at Rathfriland, where two penalties were recovered against a defendant for unlawfully keeping open shop for the sale of poisons. The defendant in the latter case appealed to Newry Sessions, and the County Court judge there adjourned his decision, saying he "would do his best to upset" the Society, whose solicitor had declined to be satisfied with one penalty only. It was unnecessary to refer to the late decision in the Queen's Bench. Another important case would come on in that division on the following Monday.

Mr. Alexander Bryan, of Agnes Street, Belfast, who was fined £10 on November 26 last for breaches of the Pharmacy Act, wrote asking the Council for a mitigation of the penalty. It appeared that Mr. Bryan, who at the time was not a registered druggist, unlawfully compounded two prescriptions. He stated that he had since qualified as a registered druggist, and promised to obey the law in future. His application was refused. A letter from Mr. R. J. Edwards, of Corn Market, Belfast, enclosed a memorial from nine assistants and apprentices in the employment of Messrs. Grattan and Co., Limited, of that city, praying that their cases might be taken into consideration with a view to being admitted to the examination for the licence. Five of them had passed the Preliminary examination, and held certificates in the educational courses; a sixth who had passed the "Preliminary" was attending the lectures and classes; and the remaining three were preparing for the "Preliminary." Their apprenticeships had commenced at different dates since May, 1887.

The memorial was discussed in committee. On the one hand it was urged that the case of Mr. Cleeland, whom it was proposed to admit to the Licence examination in consequence of the recommendation of the judge of the Queen's Bench and as an act of special grace, was quite an exceptional one; whilst on the other it was contended that it would be unjust not to treat with consideration cases so much resembling his, although not so strong. Eventually, on the motion of Professor Tichborne, seconded by Mr. Beggs, the memorial of Mr. Cleeland and also that of the nine apprentices and assistants was submitted to the legal adviser of the Society with a view to get advised as to the legal power of the Council to grant the prayers of those memorials. Donations were acknowledged from the Pharmaceutical Society of Great Britain, of a copy of their Calendar for 1896, and from the Colonial Pharmacy Board of the Cape of Good Hope of a copy of their 'Medical and Pharmacy Register' to January 30, 1895, and thanks were voted to the donors. Some other business having been disposed of, the Council adjourned.

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY.—The usual fortnightly meeting of this Society was held at University College, under the presidency of Mr. T. S. Wokes, on February 6. The fruit of *Bixa orellana*, N.O. Bixaceæ, from which annatto is prepared, the capsules of *Ricinus communis* grown in Italy, and the kernels of the drupaceous fruit of the oil palm, *Elæis guineensis*, were shown by Mr. G. V. C. Last. From the last-named palm nut oil, a white fat largely used in soap making, is extracted, quite a different substance to yellow palm oil, which is from the fleshy part of the drupes. The residue of the palm kernels after the extraction of the fat, is used for cattle feeding. Mr. Frank Walker drew the attention of the meeting to the advisability of dispensers marking on the prescriptions passing through their hands any additions required, such as mucilage, to turn out a satisfactory preparation, and instanced a recipe containing a large quantity of carbonate of bismuth, which had been previously made up evidently with mucilage, but as to the amount used the first dispenser gave not the slightest indication for the guidance of those into whose hands the prescription subsequently might come. The President and members expressed a wish that something like uniformity might be arrived at in these cases by emphasizing the advice of Mr. Walker as to the procedure to be observed.

An illegible prescription was passed round by Mr. H. Peirson. It seemed to be—

Trit. mur. hyd.	gr. xii.
Sacch. alb.	3i.
M. divide in pulv. iv.	

Mr. Peirson had tried the Irish moss mucilage for making cod-

liver oil emulsion as advised by Mr. Walker, and had found it answer very well, but would like some information as to its keeping qualities.

Mr. Walker replied that it would keep indefinitely if a few drops of chloroform were added to it. An exposition of the many and devious ways of quacks and of the art of quackery was then given by Mr. H. B. Morgan, with musical illustrations, in which he was assisted by his brother. The subject, with its comic aspects, was very cleverly treated by Mr. Morgan, whose lecture was certainly one of the most novel the students have had the pleasure of hearing for some time.

A paper on "Aquatic Plants" was next given by Mr. W. A. Cockshott, in which the first principles governing the life history of aquatic plants were broadly touched upon, and the peculiar characters of such plants sketched. The Cryptogams were disregarded as being too numerous, and outside the scope of an ordinary field botanist's range of observation, Phanerogams only being mentioned. These were explained to be partly aquatic and partly aerial, those entirely submerged being designated by the term "hydrophytes." The two principal factors in the plant's life history were the inherent tendency of the plant's growth, and the effect of its environment or all the external conditions affecting it. The water is not simply a passive medium without influence on the plants growing in it, but is a solution containing all the bodies readily available for their sustenance, which are taken up by osmosis by the stem and leaves. The epidermis is specially constructed with this object, and is simply a thin layer of shallow cells, distinguished from that of the aerial plants by the term epithelium, and differing from the epidermis of such plants by being free from hairs and stomata. The roots of aquatic plants are not very highly organised, as the nourishment of the plant being directly absorbed from the water there is not much work for the roots to do—the term rhizoid is generally used to designate them. The structure of these plants was then explained and contrasted with that of the usual aerial plants, and their external form and the influence of the environment on determining this were then gone into, the lecturer illustrating his remarks by means of many herbarium specimens lent by Mr. Last, and others of his own collection.

EDINBURGH CHEMISTS' ASSISTANTS AND APPRENTICES ASSOCIATION.—The fifth meeting of the eighteenth session was held in the Pharmaceutical Society's Hall, 36, York Place, Edinburgh, on Friday, the 7th inst., at 9.15 p.m., Mr. J. Mackintosh Cameron in the chair.

The minutes of last meeting having been read and approved, Mr. George Coull gave a lecture and practical demonstration on "Flame Tests," in which he fully explained the beautiful methods of dry-way analysis devised by Bunsen, and described in a paper published in the *Zeitschrift für Analytische Chemie*, 1866. These methods, he said, had never received the attention they deserved in this country, and they were generally overlooked by the pharmaceutical student. In German text-books there was usually a special section devoted to them, but in such a book as Attfield's, the borax bead was only once mentioned, namely, under manganese. Teachers, too, seemed to give too little attention to them. All the tests could be applied by means of a Bunsen flame, which he described, particular attention being paid to the oxidising and reducing parts of the flame. The film test, the match test, the borax bead tests, etc., were all practically shown and explained.

The lecture was followed by a discussion, taken part in by Messrs. Cameron, Cowie, Duncan, Hill, and Macpherson, and a hearty vote of thanks was awarded to Mr. Coull.

IRISH NEWS.

VACCINE PREPARATION.—Resulting from the late enormous increase in vaccination in Dublin, owing to the outbreak of small-pox (now, happily, almost entirely stamped out), Dr. Knox Denham and some friends have established a depôt at Sandymount, county Dublin, for the production of calf lymph.

MR. J. T. CHAMBERLAIN, L.P.S.I., has returned to his old quarters at Furlong's Medical Hall, Upper Merrion Street, Dublin, *vice* Mr. Daniel O'Sullivan, L.P.S.I., who has gone to Messrs. Anderson and Adams (Mr. J. E. Brunner, M.A., M.P.S.I., proprietor), 68, Grafton Street, Dublin.

ENGLISH NEWS.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.—A musical and social evening was held at the Exchange Rooms on Wednesday, February 5, Mr. H. S. Lawton (Vice-President) in the chair. An excellent programme, which included the following items, was gone through:—Mr. Clarke, violin; Mr. Williams, 'cello; Mr. Rogers, banjo; Mr. Martin, recitation, "Jameson's Ride." Songs were rendered by Messrs. Casson, Clarke, Cornish, France, Lacey, and Small. Mr. Wheeler presided at the piano, and the whole arrangements were in the hands of Mr. P. C. Arblaster.

THE FOOD AND DRUGS ACT IN SHEFFIELD.—In his quarterly report to the Sheffield City Council, Mr. A. H. Allen, the Public Analyst, stated that during the last three months ten samples of vinegar had been received, of which three had the characters of malt vinegar and two others were of fair quality. Four other examples contained added acetic acid of the strength of vinegar to the extent respectively of 50, 50, 67, and 90 per cent.; the last sample in addition containing 0.06 per cent. of free sulphuric acid. The tenth sample contained only a small proportion of malt vinegar. Of seventeen samples of spirit eleven were within the legal limit of strength, the other samples being diluted with water. Of six samples of paregoric, five were of fair quality, but one was deficient in alcohol, containing only two-thirds of the proportion directed to be used in the preparation of the paregoric or paregoric elixir of the British Pharmacopœia. Of the six samples of laudanum, four were of fair quality, one of inferior quality; and one deficient in alcohol, containing only about two-thirds of the proportion directed by the British Pharmacopœia to be used.

SCIENCE TEACHING AT LEICESTER.—Elementary practical physics and chemistry are subjects that are being encouraged by the Technical Education Committee of the Leicestershire County Council, and up to the present the results have been very gratifying. The Committee in its report of the work of the past session states that in the above subjects there have been 151 students, and aid has been granted, to make the teaching more efficient, in six of the chemistry classes, whilst new laboratories have been fitted up at Loughborough and Hinckley Grammar Schools. Another satisfactory feature in connection with the grammar schools in the county is that twenty-three of the teachers in them have attended a course of instruction in elementary practical physics and chemistry. Another proof of the Committee's good intentions is a grant, not to exceed £300, for the special fittings and apparatus required in the physical and chemical laboratories at the new Thomas Rawlings' School at Quorn. Technical education is making very satisfactory progress in the county, and the Committee is to be congratulated on the sound and practical common-sense way in which it is dealing with the subject.

DEATH OF A RETFORD CHEMIST.—A veteran Retford chemist, in the person of Mr. Frederick Appleby, of 1, Market Square, died on Friday morning last at the mature age of 81 years. He was one of the oldest tradesmen in Retford, where he set up in business when he was 21 years of age. Deceased was a native of Egmanton. He had been a widower for twenty years, and leaves one son, Dr. Appleby, of Newark. Mr. Appleby took but little interest in public affairs, the only matters in which he greatly concerned himself being the formation of the Old Retford Burial Board and the laying out of the cemetery in 1854. As a collector of old coins, china, and curios, however, he was widely known.

PILLS IN A BISCUIT BOX.—An amusing case was heard at the Sheffield Police Court on Friday last, a little girl named Florence Vitty, fourteen years of age, being charged with having stolen a quantity of pills. The girl went into the shop of Mrs. Matilda Eyre, of 655, Attercliffe Common, and took a tin box, which presented the appearance of a small biscuit box. It really contained, however, three dozen small boxes of "wind and water" pills. Shortly after the theft the box was returned. The girl, when arrested, said she had been disappointed, as she thought the tin contained biscuits. A fine of 15s. was inflicted.

THE DANGERS OF BENZOLINE STORAGE.—On February 5 two alarming explosions took place at the establishment of Mr. J. P. Hewitt, chemist, Division Street, Sheffield. An assistant had gone into the cellar with a light to obtain some turpentine. An explosion occurred, which threw him to the ground, and played sad havoc in

the shop, blowing out a window and badly damaging the stock. Fortunately a large quantity of silver sand was stored close by, and by the liberal use of this the fire was extinguished. The injured assistant was conveyed to the hospital. About four in the afternoon an employé of the Gas Company visited the shop and descended into the cellars to examine the pipes and meter. He foolishly struck a match, and immediately there was a second explosion, another window being blown out, the door dashed from its hinges, and the gas-man very badly scorched and injured. The amount of damage caused by the two explosions has been estimated at between £500 and £600, but is covered by insurance.

FIRE AT A HARROW CHEMIST'S.—Late on Saturday night last a disastrous fire broke out at Harrow on the premises of Messrs. Tuck and Co., chemists and druggists. About 11 o'clock a Mrs. Stroud, who lives on the premises, slipped on the stairs and upset a paraffin lamp she was carrying in her hand. Her clothes immediately became ignited, and before the flames could be extinguished she was badly burnt about the body. Owing to the combustible nature of the contents of the shop and the amount of drugs stored near the spot where the lamp upset, the whole place was soon alight, and on the arrival of the firemen flames were bursting out through all the windows, and fears were entertained that the walls would collapse. The shop was completely gutted, nothing remaining but the bare walls.

AN OVERDOSE OF LAUDANUM.—A fatal case of laudanum drinking was reported to the Ashton police on February 7, the victim being Louisa Fiddler, single woman, of Charles Street. The woman had suffered severely from bronchitis and dropsy, and for some time had been an inmate of the workhouse hospital. On the previous Thursday night she said she would have some laudanum to ease the pain, and sent a boy for a pennyworth, which she drank right off. She fell asleep at once, and, despite every effort to restore animation, never recovered consciousness.

POISONING BY CARBOLIC ACID.—An inquest was held at Manchester, on February 7, concerning the death of Edward Hallam, the two-year-old child of Matthew Hallam, hotel porter, living at 224, Hyde Road, Ardwick.—The evidence was to the effect that the child was left playing in one of the bedrooms where there was a beer bottle containing carbolic acid on the mantelpiece. During the mother's temporary absence the child got hold of this bottle, and drank some of the acid. His mouth and throat were badly burnt, and though medical assistance was promptly procured, and the child ultimately taken to the Royal Infirmary, the lad died at that institution some time afterwards.—The Coroner said there were far too many cases of poisoning by carbolic acid dealt with in that court. He could not help feeling how stupid and how careless it was that people should keep corrosive poisons in bottles which it was usual to use for drinking purposes. It too frequently happened that a beer bottle or a ginger-beer bottle was used for this purpose, and everybody knew how easily children learnt habits, and how they would naturally think they could drink from a bottle they had seen others using. He would like to see it an offence for keeping a poison in a bottle other than a proper poison bottle. They had had no fewer than thirty cases of carbolic acid poisoning in that court during the past twelve months, chiefly of children.—A verdict of "Accidental death" was returned.

A NOTTS CHEMIST ROBBED.—The establishment of Mr. Fill, chemist, of Gringley-on-the-Hill, Notts, was broken into and robbed in the latter end of last week. Entrance was gained by the removal of a square of glass from the window, and the till was ransacked.

CO-OPERATIVE DRUG STORE AT PLYMOUTH.—According to the annual report of the Plymouth Mutual Co-operative Society, Limited, it is proposed to build a drug store in connection with the Society's clothing and provision stores in Frankfort Street, Plymouth.

FIRE AT A BOSTON PHARMACY.—On Saturday last, between 10 and 11 o'clock in the morning, a fire was discovered in a back room on the premises of Messrs. Grimble and Kent, chemists, of High Street, but was happily extinguished before any serious damage was done. The room in which the fire originated is situated behind the shop, which is heated by means of a stove, the chimney of which runs into the flue of the ante-room, and it is supposed that a quantity of soot ignited by sparks from the stove fell into the fireplace

of the back room and set fire to a quantity of straw, the flames spreading to some empty casks. Some sulphur also caught fire, but beyond damage done by smoke and water nothing serious resulted. The flames were extinguished without the assistance of the brigade.

EARLY CLOSING MOVEMENT AT EXMOUTH.—Mainly through the instrumentality of Mr. Toone, an early closing movement, which has been started at Exmouth, has resulted in the chemists of that town mutually agreeing that on and after Monday, February 10, they will close their establishments at 8 o'clock every evening, Saturdays excepted, instead of at nine as hitherto.

BUSINESS EXTENSION AT PLYMOUTH.—In consequence of an extension of business, Messrs. S. B. Turney and Sons, chemists of Union Street, Plymouth, have made a very effective enlargement of their premises. The front shop, in addition to being extended several feet, has been newly fitted up, and all the latest improvements in modern pharmacy have been introduced.

SCOTTISH NEWS.

EDINBURGH CHEMISTS' BALL.—The thirteenth annual ball took place in the Freemasons' Hall, George Street, on Wednesday, 5th inst. About eighty couples were present, and the company included Mr. J. Laidlaw Ewing, Chairman of the North British Branch Executive and Board of Examiners; Mr. P. Boa, President; and Mr. C. F. Henry, Hon. Secretary of the District Chemists' Trade Association; and Messrs. Coats, Smith, Thompson, MacLaren, etc. The duties of M.C. were efficiently performed by Messrs. J. T. Coats and R. Butchart, and a very pleasant time was spent to the music of Messrs. Dunn and Davidson's band. At the supper, purveyed by Mr. Sawers, the chair was taken by Mr. Boa, and the toast "Success to the Chemists' Ball" was proposed by Mr. J. Laidlaw Ewing. In acknowledging the toast Mr. Boa said this was the first year of the Ball under the management of the Trade Association, and it gave every indication of success. The company separated about 3 a.m.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION.—At the last meeting of this Association—Mr. W. L. Currie, presiding—the Chairman said that the Law Committee had had under consideration the matter of the comments recently made by Scottish judges in connection with pharmacy prosecutions, and they were getting up a protest on the subject. He had in his possession a protest that had been written out by Mr. Laing, and it would be submitted in due course by the Law Committee for discussion, to be afterwards forwarded to the Privy Council.

A long discussion then took place on Mr. Russell's paper, read at the previous meeting, on proprietary preparations (see *ante*, p. 97). The Chairman said Mr. Russell had received many congratulations and letters from chemists and medical men throughout the country, showing the great interest his paper had aroused. One letter in particular, from Mr. Kerr, of Dundee, was read. It stated that the practice dealt with by Mr. Russell of doctors prescribing proprietary preparations was a scandal. Messrs. Laing, Robb, McKellar, Bruce, Mackay, Blair, Watson, and Dunlop took part in the discussion. It was suggested that the fault lay very much with the professors of *materia medica* at the schools, in recommending certain preparations to the students. A representation should be made to them to mend their ways. Mr. Russell did not agree with that, and suggested that a representative should be sent to the Council of the Pharmaceutical Society, with a view to the question being brought before the General Medical Council. Mr. Laing moved that a memorial on the lines suggested by Mr. Russell be submitted to the Council of the Pharmaceutical Society, and that was agreed to.

Mr. George Robertson, Partick, then read the following paper:—

Extract. Ipecac. Acet.

The official mode of preparing ipecac. wine, I think, leads to a much better product than that of the preceding Pharmacopœia, both in regard to therapeutic and keeping qualities. The process is tedious and troublesome on the small scale, and if it were necessary in dealing with larger quantities to increase the details in an equal ratio, it would not be very inviting. The note given in Squire's 'Companion' regarding the acetous extract is fairly exhaustive, and I can only verify it, on several occasions having used 4 ounces of root and the full quantity of water to percolate four pints. The extract obtained was very nearly a constant quantity, somewhat over 90 grains to the ounce of a nearly

dry extract, for, in deference to general opinion, I stopped short of the absolute dryness which the B.P. demands; yet I am not ready to admit that the extract would suffer by carrying the evaporation to that point. Latterly I have used eight ounces at a time, percolating with half the quantity of water. On the last occasion, the percolate was taken and evaporated pint by pint, with this result:—The first pint yielded 640 grains solid extract; the second, 180 grains; the third, 75 grains; and the fourth, 23 grains; total from 8 ounces of root, 2 ozs., 43 grains, which is the best yield I have ever had. I took two grains of an extract (equivalent to .44 of a fluid ounce of wine), allowing it to dissolve or disintegrate in the mouth, time, sixty seconds, and it took effect after nearly an hour. Three grains of the last made extract (equivalent to .52 of a fluid ounce of wine) had very similar effects as to time, and slightly more powerful action; but in both instances the effect was sudden and then over, so that a comfortable meal taken almost immediately after, gave great satisfaction owing to its staying powers.

Mr. Laing then submitted a short paper on—

"Cypher Prescriptions."

He would, he said, like to have the opinion as to how far a chemist may venture, both legally and conscientiously, in the compounding of a prescription when the ingredients are not written in the way they ought to be. It would appear that up-to-date prescribing seems to depend very largely on the plausibility or gullibility of the setting forth. Along with that chemists have to contend with the prescriber who also owns the article prescribed, or at all events can only trust his dispensing to certain individuals, usually on his own supposed premises, for what reason they well knew. True they had still a large number of medical men who can rely on their own knowledge for the proper compiling of a prescription, and on the experience of the chemist for the compounding of it; but they seemed to be getting fewer and fewer, giving place to the proprietary prescriber and cypher writers. With regard to the prescriptions written in cypher, these and such like are quite beyond considering, except, perhaps, to request in a humble manner a supply from the intellectual person, who alone is able to compound such preparations to the satisfaction of the careful physician, nothing being mentioned as to his pecuniary gain thereby. In regard to others, they observed preparations prescribed that there were no recognised formulæ for. In other cases it was often due pretty much either to ignorance or forgetfulness. In most cases such prescriptions were written for the benefit of the writer, and as that was a growing evil, some districts being considerably affected already, he thought a discussion on the matter could not be out of place; certainly one would fancy that the patient is the person who should have the most say as to where the medicine ought to be got, and if he or she has done a sensible thing by employing the proper medical man, and no doubt each medical man thinks he is the right man in the right place, then they ought to be allowed also to use their own discretion as to the proper chemist to employ. That was still the opinion of some medical men. Whether a communication to the medical societies would be of any service might be worth while considering.

In the discussion that ensued Mr. Russell said that in one particular instance he had been the means of obtaining the opinion of the Glasgow Faculty of Physicians and Surgeons on the question of cypher prescriptions, and it was decidedly opposed to the practice. The same view was held by the Faculty in London.

MR. ROBERT DAVIDSON is about to open a new pharmacy at 8, Bridge Street, Hawick.

COLONIAL NEWS.

SOUTH AFRICAN CHEMISTS.—The first monthly meeting of the Cape Town Chemists' Assistants' Association was quite recently held, Mr. F. H. Carman (President), reading a capable paper on "The Cape Examinations." He gave a list of the questions put to a candidate at a recent examination, and considered them quite equal to the English questions of four years ago. Concluding, he thought the public might have full confidence in the men who succeeded in satisfying their examiners. The secretary was instructed to draw up a petition to the Colonial Pharmacy Board asking whether it could not still hold its own preliminary examination, which, as assuring a solid foundation of general education upon which to build professional knowledge, was most necessary. For 1896 the following officers have been elected: President, Mr. F. H. Carman; Treasurer, Mr. Mücke; Secretary, Mr. Sainsbury.

NEW REMEDIES.

[The notes given under this heading embody recent suggestions in therapeutics. They cover both new drugs and preparations, and old ones under new aspects. The word "parts" is used to represent parts by weight, both for solids and liquids.]

EXTRACT OF CONIUM IN ANAL FISSURE.—Aaler recommends the following ointment to be applied locally after each action of the bowel in cases of anal fissure:—Extract of conium, 5; castor oil, 15; lanoline, 30 parts (*Dub. Journ. Med. Sci.* [3], No. cclxxxviii., 311, after *Thérap. Monats.*).

ICE IN ASPHYXIA.—In cases of asphyxia, in chloroform, opium, and other narcotic poisoning, Beer and Forges advocate the application of small pieces of ice to the mucous membrane of the nose and lips. The effect of these applications is to stimulate the respiratory nerve centre and to aid respiration (*Mod. Med.*, iv., 246).

CALCIUM BISULPHITE IN PITYRIASIS.—Leistikow prescribes the following ointment in pityriasis versicolore, the affected parts being rubbed with solution of bisulphite of calcium, 60 parts; lanolin, 20 parts; vaselin, 20 parts. A thorough lathering of the parts once a week should be practised, using quinine soap (*Rev. de Thérap. Med.-Chirurg.*, lxii., after *Bull. Med.*).

AMYGDOPHENINE IN ACUTE RHEUMATIC ARTHRITIS.—A derivative of paramidophenol, in which amygdalic acid is substituted for an hydrogen atom in the amide group, and ethyl carbonate for another atom of hydrogen in the hydroxyl molecule, has been introduced under the name of amygdophenine. In eleven cases of acute febrile rheumatism in which it has been given, it exercised a beneficial action in ten; in seven of these in from four to six days all the symptoms were relieved, the temperature lowered and cure resulted. In four other cases two cures were more slowly effected. In eleven cases of rheumatism without fever five rapid cures were effected, and only one remained intractable. The antithermic action of the drug was demonstrated in two tubercular cases, in which a dose of 1 gramme resulted in a fall of 2° in temperature in three hours. It also has marked anti-neuralgic properties, even in instances of grave affections of the nervous system, such as tabes and multiple scleroses. The dose given is 1 gramme, in the form of powder or tablets, administered several times a day up to a daily dose of 6 grammes. In the course of a trial for six months in the hospital at Frankfort-on-Maine, Stave has only met with two cases in which the drug occasioned vertigo (*Rev. de Thérap. Med.-Chirurg.*, lxii., 722).

ETHYL CHLORIDE IN HYSTERICAL APHONIA.—Kebbell has found the local application of ethyl chloride to the nape of the neck, in such a manner that a small spot, about the size of a shilling, is frozen, most efficient in the treatment of this troublesome affection (*Lancet*, I., 96, 161).

CHRYSAROBIN IN ALOPECIA AREATA.—For the past four years Leistikow has successfully treated alopecia almost entirely with chrysarobin. He uses it in the form of sticks composed of chrysarobin, 30 parts; resin, 5 parts; yellow wax, 35 parts; olive oil, 30 parts. This is rubbed like cosmetic over the scalp, care being taken to avoid touching the hair. The head is then covered with a skull-cap, and the next morning the chrysarobin is removed with olive oil. After some days irritation of the scalp comes on, manifested generally by a characteristic redness, very seldom by bullæ and pustules. When this occurs the frictions with chrysarobin are replaced by zinc ointment, which is also in due course removed with olive oil. As soon as the irritation has subsided the chrysarobin pencils are again used. The result is satisfactory in proportion to the regularity and perseverance with which the treatment is carried out. Some cases are cured in four weeks, but more often the treatment has to be continued for several months (*B. M. J. Epit.*, 2, 95, 103, after *Monats. f. prakt. Derm.*).

CAFFEINE AS AN ANTIDOTE TO OPIUM.—A case of opium poisoning through an overdose of Dover's powder is recorded by Dr. Sharp, in which the administration of 6 grains of caffeine was followed by a prompt improvement in the character of the respiration, resulting in recovery (*Therapeut. Gaz.* [3], xi., 732).

NOTES AND QUERIES.

[The information given in this column includes both notes of practical interest to pharmacists, and replies to queries which seem to possess sufficient interest to readers generally. Readers requiring working formulae for special preparations should intimate their wants to the Editor, who will be pleased to assist them to the best of his ability. The word "parts" invariably indicates parts by weight.]

MIST. BISMUTHI C̄ PEPSINA.

The following formula gives very satisfactory results, and should serve your purpose:—

Bismuth Citrate	1600 grains.
Distilled Water	} q.s.
Liq. Ammon. Fort.	

Dissolve, keeping the volume as small as possible, then add—

Chloroform	1 fl. .
Tinct. Nucis Vom. (conc. 1-7)	5½ fl. dr.
Acid. Hydrocyan. Scheele	5½ fl. dr.
Morphin Hydrochlor	13½ grains.
Liquid Cochineal	400 minims.
Rectified Spirit	7 fl. ozs.
Glycerin	4½ fl. ozs.
Soluble Scale Pepsin	320 grains.
Distilled Water	q.s. to make 1 pint.

It is doubtful whether the pepsin is of the slightest use in an alkaline preparation like the foregoing, as it is difficult to prove that it has any effect upon coagulated egg albumin. [*Reply to W. R. F.*]

GLYCERIN. PEPSIN. ACID.

There is no recognised formula for this preparation. The following is from the 'Era Formulary':—

Pepsin	128 grains.
Glycerin	4 ounces.
Dilute hydrochloric acid	75 minims.
Alcohol	3 ounces.
Water, to make	1 pint.

Soluble scale pepsin should be employed. The proportions of pepsin and acid might be increased with advantage, and the quantity of alcohol should be reduced. Indeed, it is a distinct advantage to avoid the use of alcohol altogether, if possible. [*Reply to Student.*]

EMULSION FOR REMOVING TICKS FROM CATTLE.

Dissolve 8 ounces of yellow soap in 2 quarts of hot water. When the soap is dissolved, add 1 pint of kerosene, and agitate. In from three to five minutes the liquid becomes creamy; it may then be stored for use. For application 1 part of this emulsion is diluted with 3 parts of water and applied over the animal by means of a spray pump.

PREPARATION OF CALCIUM GLYCEROPHOSPHATE.

Lambotte recommends the following method of preparing this salt (*Répert.*, li., 152). A mixture of 250 grammes of powdered glacial phosphoric acid is mixed with 500 grammes of glycerin and boiled over the naked flame; the acid rapidly dissolves, and the liquid gives off vapours and darkens. In about half-an-hour the reaction is complete. The mass is then cooled, water is added, and then freshly-slaked lime, until only a faintly acid reaction is obtained. This requires about 127 grammes of calcium hydrate. The liquid is strained through flannel, and the collected paste suspended in water and filtered. Strong alcohol is added to the mixed filtrates until the calcium salt is completely precipitated. The alcoholic solution is filtered off from this, and the precipitate is washed with alcohol, by suspension, to remove all the adherent glycerin. It is then dried. So prepared the salt is a white, neutral, light powder, 6.25 parts of which are soluble in 100 parts of water.

TRAUMATOL.

Under this name an iodocresol has been introduced as an anti-septic germicide. It is a reddish-violet powder, free from odour, insoluble in water and in alcohol, but readily dissolved in chloroform and carbon bisulphide. It is neither irritant nor toxic (*Répertoire*, vii., 14).

NOTICES TO CORRESPONDENTS.

All Articles, Letters, Notices, and Reports intended for publication in the Journal, Books for Review, and communications respecting Editorial matters generally must be Addressed "Editor, 17, Bloomsbury Square London," and not in any case to individuals supposed to be connected with the Editorial Staff. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

ANY INSTRUCTIONS from Members, Associates, and Students of the Pharmaceutical Society, with reference to the transmission of the Journal, should be sent to the Secretary—Mr. Richard Bremridge,—17, Bloomsbury Square, London.

BUSINESS communications—including advertisements, orders for copies of the JOURNAL, and instructions from Subscribers respecting transmission of same—must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London. Cheques and money orders should be made payable to "Street Brothers."

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

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

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

QUERIES addressed to the "Editor" will be replied to in the Journal as early as possible after receipt; answers of sufficient general interest being given under the heading "Notes and Queries." The Editor cannot undertake to reply to queries through the post.

REPRINTS of articles cannot be supplied unless authors communicate with the Editor before publication.

LETTERS.

CLASS FEES FOR CHEMISTS' APPRENTICES.

MR. J. F. BROWN, of Dover, writes to say that he is trying to obtain from the Technical Instruction Committee of the Dover Town Council an abatement of the fees charged to chemists' apprentices, who are studying in the science classes of the School of Art. He continues, "Would any of your readers help me by sending me through the post particulars of the fees charged elsewhere for teaching science under the grant made to the County Councils."

FERMENTATION.

MR. A. W. HUDSON, of Cranbrook, writes as follows:—"Mr. John Welsh, in his paper on 'Fermentation' (*Ph. J.*, February 1), states that 'it is said the presence of fousel oils in alcohol produced by yeast is due to the fungus spores of *Mucor mucedo* and *Penicillium glaucum*.' I am under the impression that fousel oil is due to an organism entirely distinct from either of the above, which was isolated in 1892, and referred to in 'The Month' at the time."

THE DETECTION OF NITRATES AS IMPURITIES IN NITRITES.

MR. J. OLIVER, of Chard, writes as follows:—"As particular attention is now paid to the detection of impurities in chemical compounds in the Minor examination, perhaps the following test for nitrates as impurities in nitrites—especially that of sodium nitrite, B.P. addendum—will be serviceable to students. The present Pharmacopœia mentions many tests for the detection of impurities in the official preparations, but neglects to give one for sodii nitris. Test: Take ten grains of sodium nitrite and dissolve it in one fluid ounce of ammonium chloride solution, evaporate to dryness. Take some of the residue, dissolve in water and apply the ordinary nitrate test with FeSO_4 and H_2SO_4 . If the sample of sodium nitrite employed was free from nitrate, the black ring at the union of the liquids will not be obtained, but if the minutest trace of nitrate was present it will be immediately detected. The reaction is as follows: $\text{NaNO}_2 + \text{NH}_4\text{Cl} = \text{NaCl} + 2\text{H}_2\text{O} + \text{N}_2$. From the above equation it will be seen that the whole of the nitrogen is eliminated, whilst if any nitrate is present, the whole of the nitrogen of the nitrate is retained as ammonium nitrate. $\text{NaNO}_3 + \text{NH}_4\text{Cl} = \text{NaCl} + \text{NH}_4\text{NO}_3$. For experimental purposes the student should make two solutions of a mixture of sodium nitrite and ammonium chloride, and to one of them add a grain or two of sodium nitrate, apply the same tests to each solution, and compare the results. I suggest that this or some other suitable test be added in the new Pharmacopœia, for the B.P. sodium nitrite seems to be falling

in the favour of many medical men, and it is very important that this particular salt should be absolutely pure when employed in the treatment of disease."

THE ANTI-CUTTING AGITATION.

"LIVE AND LET LIVE" is the signature appended to the following communication:—"To prevent, as far as possible, the insane cutting of proprietary articles, we have decided to materially increase our prices to the trade for those manufactured by ourselves, as we see no necessity for giving to the public the profit that would otherwise fall to the share of the retailer. Those who adopt the cutting principle do not do so in the public interest, but to draw customers to their so-called stores for their own selfish ends, and, in so doing, are indifferent as to how many they force into the Bankruptcy Court, or, who sinks so long as they swim. We think, too, that the trade generally would do well not to support those houses, who, not content with their wholesale trade, open shops in different neighbourhoods on the cutting principle. It was bad enough when they did so on fair lines, it is infinitely worse now. There is no doubt purchasers would pay full prices were it not for the action of the stores in making leading articles of those goods the retail prices of which are advertised."

ANSWERS.

T. H. POWELL.—Hausmann's powder-measuring apparatus may be obtained from the inventor, Fr. Hausmann, Hechtapotheke, Goliathgasse 4, St. Gallen, Switzerland.

"DENES."—We are not aware that any authentic formula has been published. Your best plan would be to resort to analysis.

"SPERO."—See foregoing reply to T. H. Powell.

QUERIES.

MCDADE'S ANTISYPHILITIC MIXTURE.—Information respecting the composition of this mixture is asked for.

PERMANENT GREEN COLOUR FOR SHOW CARBOY.—"Myrtle" requires a formula for a permanent light myrtle green liquid for a show carboy. There must be no suspicion of blue in the colour required, which is most nearly approached by an acidified and fairly strong solution of nickel sulphate. The exact shade required is that observed on holding a pint bottle of Grossmith and Son's Wood Violet Perfume to the light.

CALCIUM CARBIDE.—A correspondent wishes to know where this product can be obtained on a commercial scale.

HOMŒOPATHIC PRESCRIPTION.—A correspondent asks if any reader can explain how to dispense the following homœopathic prescription:—

R Sulph.	2/30	1-11
"	2/200	2-12
	Mitte tales pulv., xii.	

Sig.—A powder night and morning in a wineglass of water.

OBITUARY.

WILLIAMS.—On January 26, Franklin Williams, Chemist and Druggist, Chester. (Aged 75.)

MAIR.—On January 31, Alexander Mair, Chemist and Druggist, Leith. (Aged 43.)

REDMAN.—On February 2, Frederick Redman, Chemist and Druggist, Lincoln. (Aged 77.)

STRINGER.—On February 3, E. C. Stringer, Chemist and Druggist, Peckham. (Aged 76.)

SHARP.—On February 5, John James Sharp, Pharmaceutical Chemist, late Seychelles. (Aged 51.)

APPLEBY.—On February 6, Frederick Appleby, Chemist and Druggist, East Retford. (Aged 81.)

INGRAM.—On February 7, John Ingram, Chemist and Druggist, Sinnahard, N.B. (Aged 70.)

FOOTIT.—On February 9, Charles Miller Footit, Chemist and Druggist, Glan-y-Ffordd, late Great Marlow. (Aged 49.)

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs. Atkinson, Bastow, Blackburn, Bindloss, Bird, Brittain, Brown, Callis, Coleman, Cripps, Cracknell, Davis, Davies, Durant, Donnan, Drayton, Eastman, Griffin, Gunn, Hill, Hudson, Holloway, Keech, Henry, Lurcock, Nicholson, Norman, Notting, Reece, Ridlington, Roe, Rose, Schneider, Tovey, Turner, Umney, Watt, Williams, Williamson, White, Whyte, Young.

**ON THE PRECIPITATION OF TOXALBUMINS
BY NUCLEIN.***

BY M. TICHOMIROFF.

Since it has been shown that bacteria produce their effects by the agency of the poisonous materials they construct, the importance of inquiries into the chemical characters of the toxalbumins and alkaloidal poisons produced by various pathogenic organisms has become generally recognised. The latest contribution to the literature of the subject is contained in a paper by the author.

Ricin was the first substance experimented on. A 5 per cent. aqueous solution of pure ricin was precipitated with a 1 per cent. solution of nuclein. The precipitate, after being washed in alcohol and ether and desiccated, was dissolved in a solution of sodium carbonate, and it was found that the precipitate was equally poisonous with the pure ricin, about .005 Mgr. of each on an average being found to cause the death of a white mouse a few days after the poison had been injected under the skin. In examining the poison of tetanus, it was found necessary to separate the bacilli from the culture medium by filtration through a Chamberland filter, because otherwise living bacilli were carried down with the precipitate. To a ten-day old bouillon culture of tetanus bacilli 5 per cent. of phenol was added, passed through the porcelain filter, acidified with acetic acid, and precipitated with nuclein. After washing and drying, the precipitate was found to be fatal to mice in doses corresponding to .04 Mgr., whether dissolved in sodium carbonate solution or simply suspended in water. Death ensued in from eighteen to twenty hours with all the symptoms of tetanus. The dried precipitate gave the biuret and Millon's reactions, and was found to have retained its poisonous property unimpaired at the end of a month. The toxalbumin of diphtheria behaved in a similar manner. The dried precipitate, after being kept for three months in stoppered bottles in the dark, proved fatal to guinea-pigs when given in doses of from 0.2 to 0.04 Mgr. Death occurred in from two to four days. A less active poison was obtained from the flesh of fish in a state of putrefaction.

Negative results were obtained from cultures of the *Streptococcus pyogenes*; for, though the original culture was highly poisonous, the precipitate obtained was quite harmless. Similarly negative results were obtained with cultures of the *Staphylococcus aureus* and the typhoid bacillus, and the cholera spirillum. As the writer observes, these observations point to the possibility of differentiating poisons according to their behaviour towards nuclein. It is well known that nuclein will precipitate albumins and pro-peptone from acid solutions, but it would be too hasty to conclude that all the poisons which are thrown down by nuclein are of an albuminous nature; for it has been observed that in the formation of such precipitates the really precipitable substance is apt to be associated with other substances which, when similarly dealt with in pure solutions, are not precipitable. This phenomenon has been observed in most varied substances, colloids and crystalloids, both organic and inorganic, and in different cases is due to different causes. In

this connection, the author recalls the observation made by Brieger to the effect that after sufficient purification the poisons of both tetanus and diphtheria can be shown to be free from albumin. The method described by the author calls for far less minute manipulation than is required for the precipitation of toxic substances by saturation with ammonium sulphate.

TABASHEER.

BY WALTER H. INCE, PH.D., F.C.S., F.I.C.

Tabasheer, or Tabûsheer, is a white, smooth, porcelain-like substance rarely found deposited in the knots of the bamboo, where it forms a thin saucer-like layer. Owing to the fact that this deposit occurs so seldom, several valuable medicinal properties have been ascribed to it. The Indian (E. Indian) population use it in Trinidad as a specific against fever, malaria, and ague. I have been told by a creole Indian, *i.e.*, one who has been born in the West Indies, that the name is derived from the French "tabatière." This is, however, much to be doubted, seeing that neither the form nor colour, nor occurrence of the substance remotely suggests anything connected with tobacco snuff, or its uses.

A Java variety is said by Tonningen (*Jahresb.*, 1860, 531) to have the following composition:—

SiO ₂	86.39
Fe ₂ O ₃ .....	.42
CaO .....	.24
K ₂ O	4.81
Organic matter .....	.51
Water.....	7.63
	100.00

I find, however, after examining several samples, that its composition varies very considerably. They all contain large quantities of silica, with indefinite quantities of iron, potassium, and calcium. From this it would seem that the substance is not a definite silicate, but silica contaminated with accidental admixtures of other silicates.

	Tonningen's Analysis.	I.	II.	III.
SiO ₂	86.39	91.69	89.77	90.45
Fe ₂ O ₃ .....	.42	trace	.665	trace
CaO.....	.24	2.057	3.81	.725
K ₂ O	4.81	4.332	3.35	1.524
Organic matter	.51	.52	.0	3.122
Water	7.63	1.613	3.051	4.13
	100.00	100.112	100.656	99.961

No. I. and III. are Trinidad samples, No. II. is an imported East Indian sample. For the first I am indebted to Mr. J. H. Hart, F.L.S. (Superintendent of the Royal Botanic Gardens), and for the second and third to Ali Rhamseraam Boccas, high priest, Tunapoona.

Government Laboratory,
Port of Spain, Trinidad.

* Abstract of a paper in the *Zeitschrift für Physiologische Chemie*, July, 1895.

BRITISH AND FOREIGN SYRUPS.*

BY JOSEPH INCE,

Lecturer in Pharmacy to the Pharmaceutical Society of Great Britain.

(Concluded from page 130.)

The Pharmacopœa Germanica, 1872, differs so little from that of 1882 (Editio Altera, Berlin), that the latter only need be quoted:—

Pulv. ferri.....	20
Aquæ	300
Iodine	41
Sacchar.....	650

The solution made as usual, and filtered upon the sugar, raised to the boiling point, and evaporated to 1000. One hundred parts of this syrup, called syrupus ferri iodati, contain 5 parts iodide of iron. The recommendation of the preceding pharmacopœa to preserve the syrup by means of a coil of iron wire, and to keep it in *loco aprico*, exposed to light, was not retained.

The French sirop d'iodure de fer differs from all other formulæ. It was not included in the Codex of 1839. In the Codex of 1866 it was as follows:—

Iodine.....	4.25
Iron filings.....	2.00
Distilled water	10.00
Syrup of gum	785.00
Syrup of orange-flower	200.00

[The iodine in 1884 was diminished to 4.10.]

Put the iodine in a small flask with the distilled water, add the iron filings in small portions, shaking each time. Let the action take place for some instants, then heat gently until the liquid has assumed the green colour proper to the proto-salts of iron. Filter the solution into the syrups and wash the filter with water sufficient to make 1000 grammes. Twenty grammes contain 0.10 (centigramme) of iodide of iron.

English practice would not favour the introduction of the two syrups named, but attention is once more directed to the precaution of applying no heat to the solution until the first action is over. The syrup keeps well.

The Austrian formula (1889), Vienna, is:—

Ferri pulverati	4
Aquæ destillatæ	87
Iodi	10
Sacch. pulv.	141

Mix by agitation only and filter on to the sugar.

[5 per cent. ferrous iodide.]

A simple arrangement of the B.P. formula has proved satisfactory:—

Iron.....	10
Iodine.....	20
Sugar	245 (<i>vice</i> 280)
Water	130 fluid

Digest the iodine and iron with 30 of water; shake and apply heat, when, and not before, the first action is over and the solution is nearly cold.

Filter the green ferrous iodide solution into the hot syrup made by—

Sugar	245
Water	100

the tube of the funnel dipping just below the surface of the syrup.

A tasteless syrup of iodide of iron has been proposed under the names of syrupus ferri citro-iodidi. A green solution is made with iron, water, and part of the iodine, heat to boiling, filter, and wash the filter with hot distilled water. To the hot filtrate add citrate

of potassium, and afterwards the remainder of the iodine. Agitate till green and pour on the sugar; when cold add distilled water, so that each fluid drachm may contain an amount of iron corresponding to about 3.6 grains of ferric iodide. The iron is in the ferric condition.

Few aromatic syrups occur in British pharmacy:—

Syrupus aurantii is only a mixture, a poor substitute for the original formula made with fresh infusion. The aroma of syrupus aurantii floris is conserved by adding the orange-flower water last. Syrupus zingiberis is wisely made with the strong tincture, as the old method was unsatisfactory.

Syrupus toltanus, as made formerly, required great skill in manipulation. The balsam was boiled in distilled water, and while in full ebullition was poured over the sugar, ready to hand, and instantly converted into syrup. The cinnamic acid was retained, and the art consisted in such rapidity of treatment as that the result might be a clear viscid syrup, rich in aromatic flavour.

The B.P. directions are to boil the balsam for half an hour, with occasional stirring, filter cold, and in the solution dissolve the sugar by the aid of steam or water bath. The occasional stirring is essential to the process.

The U.S.P. has a cumbersome method in which the balsam is dissolved in alcohol, and added to a mixture of calcium phosphate and part of the sugar, the alcohol is evaporated, the residue treated with water, and filtered bright. The filtrate is heated to about 60° C. (140° F.), and in it the remaining sugar is dissolved by agitation. With the usual precautions the syrup is brought up to the required amount.

Sirop de Baume de Tolu. Codex, 1884 [édit. corrigée].

Baume de tolu sec	50 grammes.
Eau distillée	1000 "
Sucre très blanc	<i>q.s.</i>

Digest balsam of tolu with half water, two hours with agitation; decant and repeat the process, mix the two digestions, cool, and filter.

Aromatic liquid	100
Sugar	180

Make into a syrup over the water bath and filter. Observe the relative proportions of sugar and water, a reduction even on the Codex of 1866.

Aromatic liquid.....	100
Sugar	190

The general method for the preparation of syrupus limonis adopted in the B.P., and formerly in the U.S.P., is based upon the necessity of coagulating the albumin of the succus by heat. So prone to deterioration is this syrup, that there appears to be a general desire to have it replaced officially by a perfectly stable form of syrupus acidi citrici, and this has already been done. The application of heat to the succus is an injury, as it alters the aromatic character and tends to subsequent coloration, but until some other means are found to effect coagulation, it is unavoidable, for the syrup will not keep while the albumin is present. One must object to the final B.P. directions to dissolve the sugar in the filtered liquid with the aid of heat, as it is an error in galenic pharmacy, and carefully avoided by those supplying effervescent syrup beverages. Two pounds and a quarter of refined sugar, added to 1 pint of strained lemon juice, is regarded by some as a printer's error.

The formula of the U.S.P., 1880 (not official in their latest pharmacopœia), is—

Lemon juice strained	40
Sugar in coarse powder	60
Water, <i>q.s.</i> to make	100
Fresh lemon peel	2 parts.

* Read before the Chemists' Assistants' Association, February 6, 1896.

Dissolve the sugar in the filtered liquid by agitation, without heat, and strain. The succus has previously been heated to the boiling point.

A fragrant syrupus limonis may be extemporaneously prepared, when not desired to be kept in stock, by taking advantage of the remarkable influence of sugar in conserving aromatic principles.

Pour the strained lemon juice directly upon the sugar, adding the peel, and allowing the whole to make a cold solution. Citric acid should be added, 1 per cent.

As the peculiar taste noticeable in syrupus limonis, which in wine would be termed *corke'd*, is due to the action of heat on the succus, it would clearly be an advantage to be able to coagulate the albumin by other means. Rectified spirit was naturally suggested—the coagulation was complete, and a bright succus was obtained, but the aroma had been effectually dissipated. The alcohol method was of no service. A more definite experiment was subsequently made: Lemon juice (strained) was treated with 20 per cent. of spirit. vini rect., and filtered; the result was unsatisfactory, little or no lemon flavour was perceptible; indeed, there was a somewhat unpleasant odour.

Mr. William Elliott therefore conducted a series of experiments to see whether the direct action of sugar in the extraction and diffusion of aromatic volatile principles could not be utilised in this preparation. The following formula is suggested, by means of which fragrance is preserved, and a syrup made of definite acid strength:—

Syrupus Limonis [Ince's method].

Lemon-peel (outer peel cut thin)	2
Sugar (coarse powder)	36
Distilled water	22
Citric acid	3

Intimately mix the sugar and lemon-peel; let stand five days, shaking occasionally. Add then water, 19 fluid ounces, and warm by means of a water bath until dissolved. Dissolve the citric acid in the remainder of the water, cold, and mix with the cold, strained syrup. It contains about 5 per cent. of citric acid. Weight, 61 parts.

The power possessed by sugar of developing and retaining volatile principles when brought into direct contact, may be illustrated in many ways, and is somewhat analogous to *enfleurage* with regard to fats. Vanilla steeped in pure white sugar diffuses its aroma throughout the whole mass; it seems to permeate every grain, and to be an actual combination.

The odorous principle so transferred is not a mixture but an impregnation.

Any artificial aromatic water, as aqua menthæ piperitæ, or aqua carui, may be prepared by adding the essential oil to cut sugar (not powder), crushing down the sugar and adding cold distilled water. The oil globules do not separate, nor does the water need filtration.

Germany makes any required aromatic lozenge by the use of rotulæ sacchari; these are fused discs of sugar over which the volatile oil is sprayed, no dampness is apparent, and the aroma is persistent.

On this method depend the oléosaccharures of France, and the elæosacchara of Germany.

Thus aniseed, citron, bergamot, cédrat, and orange are combined with and preserved in sugar. So it was that Mr. John Savory devised his method for the preparation of syrupus toltanus.

Triturate the balsam with half the quantity of sugar, previous to simmering for some time in the prescribed quantity of water; filter when cold and make into a syrup in the usual manner with the remaining sugar.

Anodyne syrups are a small group, far more esteemed in Continental practice than amongst ourselves.

The general public, however, is apt to place implicit confidence in non-official formulæ of this nature, and to credit the virtues assigned to them in tractates and advertisement.

The syrupus papaveris of the B.P., 1885, is admirable in all respects. An infusion is made of poppy capsules freed from seeds, and in coarse powder, with subsequent percolation to exhaustion. Carefully reduce to a definite quantity over the water bath, and when cold, add rectified spirit. The alcohol renders filtration possible by coagulating albumin; let stand and filter.

The spirit having been distilled off, the remaining liquor is evaporated and made into a syrup with sugar.

Refined sugar	4 pounds.
Anodyne liquor	2 pints.

The sugar in this case does not precipitate, being held in suspension by the tenacious character of the liquid. Observe that no rectified spirit is present in the finished product, an inestimable advantage, seeing that this is essentially a children's remedy.

I look back with regret on the manner in which syrup of poppies has been traditionally made in times gone by. Let me give an exact copy of a formula which was in use for upwards of a century:—

Papaver. album., 50 lbs. (avoird.),

boil twice, strain, and boil down to 6 gallons (common measure); dilute with pump water, bag, and boil to 45 lbs., add sugar, 75 lbs., and simmer to 112 lbs. When cold add spirit. vini rectific., 2 quarts (C.M.). To make 115 lbs. when done.

It is the firm belief of many that I am the *laudator temporis acti*, but in this instance I confess that the new is better than the old.

On the other hand, here is syrupus chloral, with its unfortunate strength of 10 grains of hydrate in 1 fluid drachm. The maximum official dose is 2 fluid drachms, that is equivalent to 20 grains. It will be urged that chloral hydrate has a maximum dose of 30 grains, a discrepancy which has not escaped notice.

We know the stereotyped notion of the harmlessness of a syrup. We know also, unhappily, how this syrup has crept into domestic use. The result has been disastrous, not the less because a teaspoonful, by which the syrup is too often measured, is a vague method of administration. We have in foreign pharmacy all manner of anodyne syrups:—Sirop d'aconit, de belladone, de chlorhydrate de morphine, de codéine, diacode, de jusquiame, de lactucarium opiacé, de laurier-cerise, de morphine, d'opium, de pavot blanc, and de sulfate de morphine, and, when we come to the Codex of 1884, sirop de chloral hydrate as thus prepared:—

Chloral hydrate	50
Aqua destillata	45
Syrupus	900
Spirit. menthæ pip.	5
	1000

The strength is 1 in 20, as compared with 1 in 6, B.P.

I think it advisable to say a few words respecting French opiate syrups, as I am told that some slight misapprehension exists.

Syrupus de ipecacuanhâ compositus bears no relation whatever to our pulvis ipecacuanhæ compositus, which our *confrères* will persist in calling poudre de Dower. It is an essentially Codex preparation, not adapted to our use. Dover's powder is distinguished as poudre d'ipécacuanha opiacée, which differs both in strength and constitution from the English form.

There are three opium syrups, made from extractum opii, not from pulvis opii.

Sirop Diacode.

[New Synonym Sirop d'Opium faible.]
To replace Syrupus Papaveris.]

Ext. opii	0.50 (50 centigrammes).
Aq. dest.	4.50 (4 grammes, 50 centigrammes).
Syrup.	995 grammes.
	1000 grammes.

Dissolve the extract in the distilled water, filter the solution and mix with syrup. Twenty grammes of this syrup contain 1 centigramme of extract of opium.

2.

Sirop d'Opium.

[Synonym. Sirop Thébaïque.]

Ext. opii	2 grammes.
Aq. dest.	8 "
Syrup	990 "
	1000 "

Twenty grammes of this syrup contain 4 centigrammes of extract of opium

3.

Sirop de Karabé

is made by adding 50 centigrammes of tincture of amber to 100 grammes of syrup of opium. The remaining anodyne French syrups containing opium or morphia salts need not be mentioned. The B.P. Addendum of 1890 has added a chemical syrup, namely, *syrupus ferri subchloridi*, to the list.

This is prepared by the direct action of hydrochloric acid and water on iron wire, with subsequent addition of citric acid (10 grains to the pint), and though minus glycerin and hypophosphorous acid, seems to keep well. It has the advantage over the syrup of the perchloride, which rapidly changes, with loss of colour.

The exact value of citric acid in this case is not easy to determine; the syrup prepared with varied quantities of citric acid, and with its entire omission, seemed to present no points of difference therewith with respect to its keeping properties or as regards coloration.

I am relieved from entering at length into the history of the phosphate syrups owing to the excellent articles which have appeared in the *Pharmaceutical Journal*, entitled "The Introduction of Phosphorus and its Compounds into Pharmacy." I quote the following sentence (*Ph. J.*, p. 513, Dec. 21, 1895): "The syrups and chemical foods prepared by Parrish, Squire, Fellows, and Easton have been frequently discussed in works dealing with pharmacy, but the experience has been that it is almost impossible to produce a compound of regular and uniform composition from the prescriptions which have been published." Mr. Thomas Greenish, on April 9, 1851, at an evening meeting of the Pharmaceutical Society, my father as President, in the chair, drew attention to a preparation of iron which had been introduced to the medical profession by Dr. Routh in the January of that year. The process was thus described:—Add as much phosphate of iron to solution of metaphosphoric acid, as the latter, in a boiling state, will take up and allow it to cool. The solution was of a semi-transparent greenish hue, hardening on exposure to the air, soluble in water in all proportions, and free from inky taste. Mr. Greenish made a syrup of this salt: strength, 5 grains to a drachm.

At the suggestion of Mr. Phillips, at that time in the Laboratory in Jermyn Street, it was called "superphosphate of iron," waiting for a more definite term until its composition was better understood.

At that meeting at Bloomsbury Square it made its first appearance as a new remedial agent.

The preparation was improved as it was found that it contained more iron than could be held in solution.

The syrup of the superphosphate of iron was shown at the Great Exhibition of 1851, and since that date syrups known as compound syrup of the phosphates and hypophosphites form a long series which time would fail to describe.

Mr. Carteighe has proposed a method of preparing various syrups of the phosphates direct from any required phosphate, in a similar manner to his formula for

Syrupus Ferri Phosphatis. (Carteighe.)

Phosphate of iron.....	96 grs.
Water.....	℥ix.
Syrupy phosphoric acid (Sp. gr. 1.5)	℥vii.
Syrup	℥x.

Rub the phosphate of iron with the water in a glass mortar, add the phosphoric acid, and filter the mixture into the syrup. The ferri phosphas must be freshly made, as that kept in stock is not sufficiently soluble.

The B.P. (1885) *syrupus ferri phosphatis* is a manifest improvement on its predecessor, both in the strength of the acid and the substitution of the bicarbonate for the acetate of sodium. It seems too acid.

One wonders that in the finishing process the sugar and water are not made in the usual way into syrup, into which, when cooled, the acid solution should be filtered; or dissolve the sugar in the water without heat and into this filter the dissolved precipitate. The retarding influence of phosphoric acid on saccharin solution has not been taken into account. Possibly the text may bear this meaning and needs only a slight reconstruction.

This phosphate syrup combines beautifully with Easton's syrup made according to the modified formula adopted by the British Pharmaceutical Conference under the name of *syrupus ferri, quininae et strychninae phosphatum*, and by Guy's Hospital, under the far preferable title of *syrupus trium phosphatum*. Suppose we were to call tincture of rhubarb, *tinctura rhei, cardamomi seminum, coriandri fructus, croci et spiritus tenuioris*, we might fancy ourselves drifting into organic chemistry.

Dr. Easton, date 1863, proposed the syrup bearing his name, as an excellent general tonic. Dr. Aitken, in his 'Science and Practice of Medicine' (3rd edition, 1864), inserted the previously unpublished formula of his friend.

Strychnine in powder	5 grains.
Concentrated phosphoric acid (Sp. gr. 1.5)	75 minims.
Distilled water.....	225 minims.

Dissolve and add

Phosphate of quinine.....120 grains.

Dissolve by the aid of a gentle heat (?) and add syrup of phosphate of iron to 1 pint.

It has been stated that the quinine is apt to crystallise; I cannot confirm this. By treating the strychnine according to the method of gently smoothing out the crystalline structure between a fold of paper, the solubility is increased to such an extent that the least heat is required; on an experimental scale, none; the phosphate of quinine requires no additional heat, and the result seems all that can be desired.

We need not then dissolve the strychnine and phosphate of quinine in the solution of phosphate of iron, though the method is most ingenious; nor need we resort to the addition of hypophosphorous acid, as is sometimes the practice. Easton's syrup is also made by direct action on iron wire according to the following formula:—

Iron wire	grs. 65.
Strychnine	grs. 5.
Syrupy phosphoric acid	℥xi.
	(Sp. gr. 1.5.)

1.

Quinine phosphate.....	grs. 120.
Simple syrup	℥xiiij.
Water to	℥xx.

M.S.A.

A series of formulæ, suggestions, and variorum proposed amendments relating to this syrup will be found in current pharmaceutical literature.

Chemical food, that fertile subject for discussion, must be left undisturbed. It has been exhumed so often that there is not a vestige of novel treatment left.

Frequent reference is made in all manuals treating on galenical pharmacy to the preservation of syrups. In most cases this means suggestions for methods to be applied to the preservation of liquids containing organic matter, protected only by sugar. The protective substance itself is liable to undergo fermentation, and hence the precautions needed. One rule obtains throughout in pharmacy that preservation by any means, chemical or otherwise, should be of the simplest nature, and that any such addition made should not alter essential character.

All good methods have for their object the prevention of fermentation in syrups of vegetable construction; when once this has commenced, consign the preparation to the sink; chemical syrups are kept in an unaltered state by controlling decomposition or precipitation special to each particular case.

A long series of suggestions may be found scattered through periodicals, a few of which may be enumerated.

(a) Separation of albumin by heat, or (French method) clarification by albuminated water.

(b) Filtration by various means, notably by animal charcoal.

(c) Percolation, for which process there are strong advocates, chiefly insisting that no more sugar is dissolved than that which can be perfectly retained, and that excess is consequently avoided.

(d) Demarest's process. The syrup is beaten up with unsized paper made into a pulp, in the proportion of 1 gramme to 1 litre. The fluid is passed twice or oftener through a woollen filter bag. Syrup so treated must be maintained at a temperature of 35° C. to 40° C. [95° F. to 104° F.] and moleskin is recommended as the filtering material.

(e) The Via Frigida, a cold process; no heat to be applied in effecting the solution of the sugar. Great advantage is claimed by some; denied by others in view of fermentation. In the hands of an experienced pharmacist who uses judgment it is of service.

(f) The addition of rectified spirit of wine as in *syrupus mori* and *syrupus rhœados*; good pharmaceutically, but therapeutically doubtful.

Pharmacists of an earlier date used this method freely, the ordinary proportion being *sp. v. rectific. 4, syrup, 16*.

(g) Glycerin and water, equal parts; to replace syrup in the phosphate series; this will never do; the liquid is too thin, and a glycerole is not a syrup.

(h) Devices for iodide of iron syrup; their name is legion, a few selecta è præscriptis must suffice.

(1) Coil of iron wire.

(2) Thin supernatant layer of oil, preferably almond. Two theories are held respecting this—one, that it results in a loss of 3 per cent. of ferrous iodide; another, that the syrup becomes somewhat lighter in colour, while oil takes up only a minute trace of iodine even after long keeping.

(3) Dilute the syrup with a third of its volume of water, boil for a few minutes, filter, and reduce by evaporation to original bulk.

(4) Treating with hyposulphite and hypophosphorous acid—also

this: stir a few drops of liquor potassæ into the syrup previous to the addition of a trace of phosphoric acid. What an advantage it is to have learnt chemistry.

(5) Selection of some specially-manufactured sugar.

(6) The addition of pure glucose in the place of a corresponding amount of sugar.

(7) Beardsworth advises the addition of citric acid, 1 grain to an ounce, and exposure to a bright light, as being all that is required to clarify, decolorise, and keep the syrup in perfect condition.

(8) Messrs. Godfrey kept the syrup in small bottles, exposed to what sunshine London could afford.

(9) Mr. Carteighe states that if the sugar-syrup be heated rapidly to the boiling point before adding the iodide solution, the preparation has less colour than when made at the lowest temperature at which the sugar will dissolve.

No process should be slighted on account of its foreign origin. Our own British Pharmacopœia will compare favourably with any other as regards simplicity and arrangement; but while its formulæ may often be used with advantage by Continental authorities, we, on our side, may frequently adopt methods of manipulation and practice which commend themselves by their intrinsic excellence.

Appert's method for the preservation of syrups is specially serviceable in the case of those syrups which it is desirable to have in stock, but for which there is not much demand. I give my own student's note (translated):—

Take small bottles holding from 6 to 8 ounces each, fill them right up to the neck, immerse the bottles in water, and raise to the boiling point. To avoid breakage, the bottles must stand on wood placed at the bottom of the pan.

A slight expansion of the syrup will take place, but it will contract on cooling with formation of a partial vacuum, if corked while hot. Remove the source of heat, and let the bottles, still in the surrounding water and by no means removed, cool gradually down.

Reverse the bottles when stored else the corks may dry and leak. It is essential that the bottles used should have been absolutely dry, well corked and kept in a cool place. [Enfermez le sirop dans des bouteilles bien sèches, que vous boucherez exactement et que vous tiendrez couchées à la cave.]

No syrup can be made to keep for an indefinite period; by preservation is meant that it should retain its characteristics unimpaired for a reasonable length of time.

I believe the best general method for the preservation of a syrup is judgment in calculating the right proportion of sugar, and the management of heat.

DISTRIBUTION AND FUNCTION OF CAROTIN IN PLANTS.—Dr. H. Ritter Schrötter-Kristelli records the occurrence of carotin in the aril of *Azalia cuanzenensis*, belonging to the Leguminosæ, dissolved in a fatty oil, and not—as in all cases hitherto observed in flowering plants—in connection with the chromatophores. The author believes carotin to be nearly related to the group of cholesterins, and to have a function connected with the respiration of the plant. For the group of the yellow pigments of plants and animals to which carotin belongs, he proposes the name lipoxanthins. They occur in green leaves, and in autumn leaves in many flowers and fruits, in arils and in roots (as the carrot) also in algæ, fungi, lichens, bacteria, and myxomycetes. This group of yellow pigments must be carefully distinguished from others which occur dissolved in the cell-sap, and are not connected with the chromatophores (*Botanisches Centralblatt*, lx. (61), 33).

ALKALOIDS OF THE VERATRUMS.*

BY ALFRED H. ALLEN.

(Concluded from last volume, p. 243.)

Cevadine, $C_{32}H_{49}NO_9$, is the most abundant alkaloid of *cevadilla* or *sabadilla* seeds, and, according to Wright and Luff, is also present in the rhizome of *Veratrum viride*. It is identical with the 'veratrine' of Merck, and of Schmidt and Köppen, but that name is more appropriately given to the alkaloid first designated thus by Couerbe,† which yields veratric acid on saponification, whereas *cevadine* yields *cevadic acid* when similarly treated. But the nomenclature is liable to cause great confusion, even recent observers (*e.g.*, Ahrens, Bosetti, Merck) retaining the name "veratrine" for the base which yields *cevadic acid*, while the pharmacopœias apply the term "veratrine" to the mixture of alkaloids obtained from *cevadilla* seeds. *Cevadine* separates from alcohol in anhydrous needles, but from ether it separates only as a varnish, which becomes crystalline on moistening with slightly diluted alcohol and well stirring. The crystals are at first transparent, but on exposure to air become white and opaque, without material loss of weight. The alkaloid melts at 205° to 206° , or at a somewhat lower temperature if impure. *Cevadine* dissolves in acetic ether, acetone, chloroform, amylic alcohol, and carbon disulphide, but is only sparingly soluble in petroleum spirit, even when hot. The solutions are optically inactive.

Cevadine is extremely poisonous and exerts a peculiarly powerful action on the mucous membrane of the nose, the smallest particle producing violent sneezing.

Few of the salts of *cevadine* have been obtained crystallised. On adding auric chloride to a solution of *cevadine* in hydrochloric acid the aurichloride is thrown down as a very sparingly soluble yellow precipitate, which is amorphous at first, but soon becomes crystalline. When drained and boiled with slightly diluted alcohol it dissolves, and on cooling is deposited in small, well-defined needles containing

* This article is taken, with a few alterations, from advance-sheets of *Commercial Organic Analysis*, vol. iii., part 3.

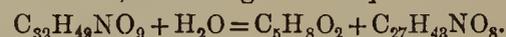
† For the extraction of the alkaloids from *sabadilla*, Alder Wright and Luff (*Journ. Chem. Soc.*, xxxiii., 341) percolated the coarsely pulverised seeds with alcohol acidulated with tartaric acid (1 part of acid to 100 parts of seeds), evaporated the liquid to a small bulk, precipitated the resin by adding water, rendered the filtrate alkaline by sodium carbonate, and agitated with ether. The separated ether was then shaken with tartaric acid solution, and employed again. The acid liquid containing the alkaloids as tartrates was again treated with sodium carbonate, and agitated with ether, which completely dissolved the alkaloids. The ethereal solution was cautiously treated with benzoline previously diluted with a little ether until a permanent precipitate began to form, and then set aside, when the ether evaporating the more rapidly, the liquid became gradually richer in benzoline, and deposited first viscid masses of amorphous alkaloid and subsequently distinct crystals. These were stirred up with a few drops of alcohol, well drained, and slightly washed with alcohol on the filter-pump, and the nearly pure crystals of *cevadine* thus obtained purified by repeated recrystallisation from hot alcohol till they melted at 205° . On treating the viscid amorphous alkaloid with a quantity of ether insufficient for its complete solution, *cevadilline* remained behind, while on again treating the solution with benzoline and allowing it to evaporate more *cevadine* crystallised out. The resinoid precipitate which first separated was dissolved in dilute sulphuric acid, the liquid treated with ammonia, the precipitate drained on the filter-pump and partially dried by exposure to air. On stirring up the nearly dry base with dilute nitric acid in a mortar, a sticky mass was obtained, which was only partially soluble in water even on boiling. The insoluble portion gradually became granular, and was filtered off and purified by boiling two or three times with small quantities of water. On treating this product with sodium carbonate and ether, evaporating the ethereal liquid, and treating the alkaloidal residue with dilute sulphuric acid, fine crystals of veratrine sulphate resembling paper pulp formed on standing. These were collected and drained on the filter-pump. On spontaneous drying by exposure to air these became a resinoid mass of conchoidal fracture, but on dissolving this in water and allowing the solution to stand, crystals were again formed from which pure veratrine was obtained by treating the solution with sodium carbonate and ether.

$BHAuCl_4 + 2 \text{ aqua}$. The water of crystallisation is lost only slowly at 100° , and the salt melts at 182° . *Cevadine picrate*, $B, C_6H_5(NO_2)_3O$, forms stable crystals, which are very slightly soluble in water, but readily in alcohol, and blacken at 225° . The mercurichloride, BH_2HgCl_2 , crystallises in small silvery plates, which melt at 172° with decomposition, are readily soluble in alcohol, but very slightly so in water. The chloroplatinate is an amorphous precipitate, soluble in alcohol, but decomposed by water. Alder Wright and Luff found that when *cevadine* was heated to 100° with twice its weight of benzoic anhydride it was converted into mono-benzoyl-*cevadine*, $C_{32}H_{48}(C_7H_5O)NO_9$. From the formation of this body, the impossibility of obtaining a more highly benzoylated derivative, and the products of the saponification of *cevadine* by caustic alkali, Wright and Luff deduced the following constitutional formula for the alkaloid:—



When *cevadine* is boiled with concentrated hydrochloric acid it yields tiglic acid, $C_5H_8O_2$, and a lustrous, ruby-red, crystalline mass which is probably the hydrochloride of a new base. On treatment with nitric acid, *cevadine* is wholly oxidised; with alkaline potassium permanganate it yields acetic and oxalic acids; and with chromic acid, acetaldehyde and carbon dioxide.

When *cevadine* is heated in sealed tubes with water to 200° it undergoes saponification. The change occurs more readily when the alkaloid is boiled with alcoholic soda or baryta-water, and is also brought about by cold aqueous caustic potash or soda, and even, though more slowly, by cold dilute ammonia. The first reaction appears to consist in the formation of angelic acid and a new base called *cevine*, according to the equation—



The angelic acid changes with great facility into the isomeric *cevadic* or *tiglic acid*, which is, to some extent, split up into acetic acid, $C_2H_4O_2$, and propionic acid, $C_3H_6O_2$, while the *cevine* undergoes further decomposition with the formation of non-basic resinous products. The facility with which *cevadine* undergoes hydrolysis is the cause of the formation of much amorphous alkaloid and other products in the extraction of the alkaloids from *cevadilla* seeds.

To obtain the two chief products of the saponification of *cevadine*, Alder Wright and Luff boiled the alkaloid with alcoholic soda under a reflux condenser.* The liquid was then diluted with water, acidulated with dilute sulphuric acid, and distilled as long as any acid passed over. The distillate was neutralised with soda, evaporated to a small bulk, treated with sulphuric or phosphoric acid, and distilled. The distillate consisted partly of fluid acids, readily soluble in water, and partly of crystals or an oil becoming crystalline on standing. An alternative method is to acidulate the solution of the sodium salt with sulphuric acid, and agitate with ether. On distilling the separated ethereal layer after the ether had passed over, an acid liquid began to distil a little above 100° , the temperature quickly rising to 185° – 190° , when a fraction was obtained which solidified on cooling to a mass of crystals wetted by an acid liquid. On pressing this product between blotting-paper, pearly scales of *cevadic acid* were obtained, melting at 64° – 65° .

Tiglic acid, *Cevadic acid*, or *Methyl-crotonic acid*, $C_5H_8O_2$, forms triclinic prisms or scales, which melt at 64.5° , though a mixture of it with a somewhat greater weight of its isomeric, angelic acid,† is

* They continued the treatment for many hours, but this is manifestly undesirable, and half-an-hour's boiling with normal alcoholic soda is amply sufficient to effect complete saponification.

† Angelic Acid, or Pentenoic Acid, isomeric with tiglic acid, crystallises in long prisms having an aromatic smell, melting at 41° – 44.5° , and boiling at 185° . When boiled for some time, or when heated to 100° with sulphuric acid, it is converted into tiglic acid. Angelic acid is but

liquid at the ordinary temperature. Tiglic acid has an aromatic odour somewhat resembling butyric acid, but more pleasant, and boils at 198.5°, giving off a vapour which excites violent coughing. When fused with caustic potash it yields propionic and acetic acids. Calcium tiglate, $\text{Ca}(\text{C}_5\text{H}_7\text{O}_2)_2 + 3 \text{ aqua}$, is soluble in about 16 parts of cold water, but is much more soluble in hot water, and is deposited on cooling in white plates.

Cevine.— $\text{C}_{27}\text{H}_{43}\text{NO}_8$. In order to isolate the complementary alkaloidal product of the saponification of cevadine, Wright and Luff filtered the acid liquid left after distilling off the volatile acid, to separate resinous matter, rendered it alkaline with caustic soda, and agitated with amylic alcohol. The amylic layer, when separated, filtered, and evaporated, yielded a brownish varnish, which on solution in dilute acetic acid left resinous flakes. The filtrate from these, on fractional treatment with soda and amylic alcohol, gave an amber-coloured varnish of cevine perfectly soluble in acids. When heated in a capillary tube this did not frit below 140°, and fused at 145°. It dissolved readily in alcohol and amylic alcohol, sparingly in chloroform, and hardly perceptibly in ether. Neither free cevine, nor its salts were obtained crystallised. On adding Mayer's reagent to a solution of the base in acetic acid, nearly insoluble white flakes were precipitated, containing (after drying at 100°) BHHgI_3 . The aqueous solution of cevine becomes turbid on warming. Cevine does not attack the mucous membrane, gives a crimson colour with strong sulphuric acid, and a brown colour with sulphuric acid and sugar.

Veratridine, $\text{C}_{37}\text{H}_{53}\text{NO}_{11}$, occurs in sabadilla seeds, and possibly in minute quantity in the rhizomes of white and green hellebore. It is identical with Wright and Luff's "veratrine."

Veratridine free from cevadine has never been obtained crystallised. It melts in a capillary tube at 180° (Wright and Luff).

On triturating solid veratridine with dilute nitric acid a horny nitrate is formed, which is almost insoluble in water, even when boiling. Dilute sulphuric acid readily dissolves veratridine, and, on standing, the sulphate crystallises out in extremely fine needles, which, on drying, unite to form a horny translucent mass, reproducing crystals when dissolved in water and allowed to stand. The hydrochloride exhibits a similar behaviour, but the crystals are not so well marked and distinct. The aurichloride is obtained as a gelatinous yellow precipitate, which, when dried over sulphuric acid, becomes a translucent horny mass, not crystallisable from alcohol.

When boiled with alcoholic soda, veratridine undergoes saponification, with formation of veratric or dimethyl-procatechuic acid and verine, according to the equation:—



The acid is identical with that obtained by the saponification of pseudonitine. The basic product verine, or veratrine, presents a close resemblance to cevine, obtained in a similar manner from cevadine. The only recognisable distinctions are in the behaviour on heating and the elementary composition. Thus, verine fritted in the water bath or in a capillary tube at 95°, and on raising the temperature gradually became a thick viscid mass, exhibiting no distinct melting point, and not becoming completely fluid till heated to about

slightly soluble in cold water, but dissolves readily in hot water and alcohol, and is extracted from aqueous liquids by agitation with ether. When fused with caustic potash, angelic acid behaves like tiglic acid. Calcium angelate $\text{Ca}(\text{C}_5\text{H}_7\text{O}_2)_2 + 2 \text{ aqua}$, is much more soluble in cold water than in hot. A cold saturated solution contains about 23 per cent. of the salt, but when heated to 30°—40° glistening needles separate out, and at about 70° the whole becomes semi-solid. If air has been excluded the crystals dissolve completely again on cooling. The constitution of angelic and tiglic acids is probably represented by the following formulæ:—Angelic acid, $\text{CH}_2 : \text{C}(\text{CH}_3) \cdot \text{CH}_2 \cdot \text{COOH}$. Tiglic acid, $\text{CH}_3 \cdot \text{CH} : \text{C}(\text{CH}_3) \cdot \text{COOH}$.

130°; whilst cevine exhibited no sign of fritting below 140°, and completely fused at 145°.*

Bosetti (*Arch. Pharm.* [3], xxi., 81), attributes to veratridine the formula $\text{C}_{32}\text{H}_{49}\text{NO}_9$, and the melting point 150° to 155°. To the basic product of its saponification he gives the formula $\text{C}_{55}\text{H}_{92}\text{N}_2\text{O}_{16}$, and states its melting point at 143° to 148°.

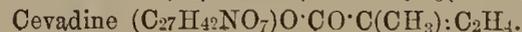
Sabadine, $\text{C}_{29}\text{H}_{51}\text{NO}_8$, has been recently isolated from sabadilla seeds by E. Merck (*Chem. Zeit. Rep.*, xv., 48; *Jour. Soc. Chem. Ind.*, x., 481). It is deposited by the slow evaporation of its alcoholic solution in well-defined crystals, which melt with decomposition at 238° to 240° C., but the residue obtained by evaporating the ethereal solution has no definite melting point. The crystals are difficultly soluble in water and ether, and insoluble in petroleum spirit. With strong sulphuric acid, sabadine gives a yellowish coloration and green fluorescence, the colour subsequently changing to blood red, and finally to violet. Concentrated nitric acid appears to produce no change. BHCl crystallises with 2 aqua, but becomes anhydrous with decomposition at 282° to 284°. Sabadine is not precipitated on adding caustic alkalies, alkaline carbonates, or ammonia to cold solutions of its salts, but is separated in a flocculent form on warming the liquid. It can be extracted from the alkaline liquid by agitation with ether. Sabadine attacks the mucous membrane of the nose and causes sneezing, but in a less marked degree than cevadine.

Sabadinine, $\text{C}_{27}\text{H}_{45}\text{NO}_8$, behaves like sabadine with alkalies. It is best extracted by agitation with chloroform. From its ethereal solution it separates in hair-like needles, which commence to melt at 160°, and decompose at a higher temperature. The alkaloid is moderately soluble in water, sparingly in ether, but readily in alcohol. Concentrated sulphuric acid produces a permanent blood-red coloration, but nitric acid causes no visible change. BHCl forms crystals which contain water, and are readily soluble. Sabadinine does not occasion sneezing.

AINU MEDICINAL PLANTS.

The interest that is always attached to the useful plants of a new or little-known country is greatly enhanced when sufficient knowledge of the plants themselves exists to allow of their botanical identification, and still more so where the country is one that offers capabilities and promises of future development. Anything connected with Japan, therefore, or with matters worked out by such progressive people as the Japanese, is of sufficient interest to warrant a wider circulation than that which it would possibly have in a publication issued in a far-off land. Such, for instance, is the paper on Ainu Economic Plants, contributed by the Rev. John Batchelor and Dr. Kingo Miyabe, in the twenty-first volume of the 'Transactions of the Asiatic Society of Japan.' The authors point out that the study of the useful plants of the Ainus attracted the attention of the Japanese so long ago as the latter part of the eighteenth century, and contributions to the subject have been made from time to time since, all of which have been carefully studied by the present authors; but only those matters that have been examined and confirmed by them, with the aid of a native AINU, have been included in the paper mentioned, so that the uses of the plants referred to, as well as the identification of the

* Alder Wright and Luff, to whom the foregoing observations are due, point out that the numbers obtained by the analysis of veratrine are not incompatible with other formulæ differing but little from $\text{C}_{37}\text{H}_{53}\text{NO}_{11}$, which is that which agrees best with their results. But they add that the formula $\text{C}_{36}\text{H}_{51}\text{NO}_{11}$ would indicate cevine and verine as being identical, and cevadine and veratridine as containing a common radical when their formulæ are thus written:—



plants themselves, have the double value of actual confirmation by competent writers. Forty-four plants are enumerated, their scientific and common names given, and their uses in medicine stated. The authors are careful to point out that this is not an exhaustive list of Ainu medicinal plants, but that the subject has only just been commenced, and that they intend steadily to pursue their studies. The plants are arranged according to the sequence of the 'Genera lantarum' of Bentham and Hooker, though the natural orders are not given. The following are the principal plants referred to, the Ainu name in all cases standing first:—

Arikko (*Thalictrum aquilegifolium*, L.)—The bitter roots, either raw or roasted, are said to cure pains in the stomach. Sometimes, however, a decoction is made by steeping the roots in boiling water, and a good strong dose is taken. This is said to work wonders as a cure for stomach ache. Should a person wound his hand when at work, or thrust some sharp object into his foot when walking through the forest, he will take the roots of this plant, chew them to a paste, and apply to the wounded part to prevent suppuration. Some of the Ainu take the leaves, roll them between the hands to bruise and make them soft, and then plaster over any part of the body where there should be an internal pain or contusion.

Horap or Orap (*Paeonia obovata*, Maxim.)—The root is dug up, dried and preserved for medicinal purposes. It has a bitter taste. An Ainu will take a piece of the root and swallow it with water to cure stomach ache, and it is said to have an immediate effect. Chewed into a paste the root is sometimes applied to aching joints. For ordinary slight ailments a decoction is commonly recommended. In Mukawa and elsewhere the seeds are recommended as a remedy for sore eyes, for which purpose they are chewed up and put in a piece of clean white cloth and the juice then squeezed out into the eyes. In Usu when a person suffers from a pain in his ears the smoke from a mixture of tobacco and the powdered seeds is blown into them.

Opke-ni, or Omau kush-ni (*Magnolia kobus*, DC.)—The bark is the part used in medicine, a decoction of which is taken for colds. The bark is believed to have the mysterious power of driving away the demons of disease. In times of pestilence a piece of the bark is commonly put into the drinking water as a preventive. Branches are placed over doors and windows as a charm. A thin decoction is often made and drunk in place of tea.

Repnibat (*Schizandra chinensis*, Baill.)—The stems are mostly used in medicine, although the fruit is sometimes so used. It is believed by some of the Ainu to be a specific for colds: for this purpose a piece of the vine is rolled up and put into a cup of boiling water, and the thin decoction thus made is taken. It is also recommended by some Ainu as a remedy for sea-sickness.

Otompui-kina (*Chelidonium majus*, L.)—The stems and leaves, softened by dipping in hot water, are applied externally to any place where there are internal pains caused by a fall or contusion. Some Ainu believe that the yellow juice of this plant destroys warts, a belief that may possibly have been learnt from the Japanese. It is also believed to be an antidote against snake poisoning, and it is further used by some Ainu to relieve internal stomach pains. A most peculiar practice is when a child suffers from constipation, a small piece of bruised stem is placed in the anus, and it is said to have an immediate effect.

Riten-kina (*Stellaria media*, L.)—This common weed is widely used for external application to bruises or to any part of the body where the bones ache. The stems and leaves are steeped in hot water before being applied.

Kutchi-pungara (*Actinidia arguta*, Planch.)—In the spring, when the vine of this climber is cut, the sap flows out freely in

large quantities, and this is used in medicine and believed to be a good expectorant. The structure of this stem is peculiar, as it shows no annual rings or medullary rays, but presents a mass of large, clear, round, open pores, on which account cross sections of the trunk are used in Japan for making tobacco boxes, as sufficient air is admitted through it to prevent the tobacco becoming mouldy.

Shikerebe-ni (*Phellodendron amurense*, Rupr.)—The inner bark is much esteemed by the Ainu as a medicine. It is yellow and extremely bitter to the taste. It is applied externally over any portion of the body where there may be internal pain, particularly such as may have been caused by falling from a horse, or by any similar accident, it is also applied to burns, scalds, and sore eyes. The bark is bruised and made damp, either by chewing or with water, before it is used. Persons who travel in the interior, and who are called upon to wade streams the greater part of the day, suffer greatly from a skin disease called mizu-mushi by the Japanese. This disease attacks the spaces between the toes, quickly making them quite raw. An application or two of the inner bark of the shikerebe-ni is said to remove the malady. The berries are much prized by some Ainu as a medicine, and are said to be a good expectorant. In some places they are used where the muscles have been strained and caused to swell; a few berries are chewed into a pasty mass and put upon the affected part; they are also eaten as an article of food.

Shiu-ni, or Yuk-raige-ni (*Picrasma ailanthoides*, Planch.)—The bitter bark is believed by the Ainu to be poisonous, and a strong decoction is often used to kill lice; eruptions on the scalps of children are also sometimes washed with it. It is said that should deer eat the bark they die very soon after, hence the name, which means "Deer-killing tree."

Tochi-ni (*Aesculus turbinata* Bl.)—The nuts are collected and dried and often used in medicine; when required they are soaked and well scraped, and the scrapings steeped in water, when the decoction is used to wash wounds with. The Ainu often use it for washing the eyes of horses when they run water or discharge matter.

Oikara (*Pueraria thunbergiana*, Benth.)—The root is used as a remedy for aches and bruises, it is thoroughly roasted and the affected part of the body well rubbed with it. The root stock is rich in very fine starch, and is well known and much esteemed by the Japanese as an article of food, but the Ainu know nothing of it as such.

Chikube-ni (*Cladrastis amurensis*, Benth., var. *Buergeri*, Max.)—The bark of this tree is believed to have a poisonous property. It is externally applied to the body when there is internal pain.

Kikin-ni (*Prunus padus*, L.)—The bark is sometimes steeped in hot water and the decoction used as a remedy in stomach ache. The bark is also used as a beverage in place of tea. At Saru and elsewhere this plant is believed to have the power of driving away the demons of disease, and is, therefore, used as a charm.

Tokaomap (*Cicuta virosa*, L.)—The poisonous root-stock when charred is used by some Ainu for external application to pains in the bones.

(To be continued.)

CUPRIC OXIDE AS A VERMIFUGE.—In the *Wien Med. Prax.* Schmidt prescribes the following pills as a vermifuge:—Black oxide of copper, 6 grammes; prepared chalk, 2 grammes; French chalk, 12 grammes; glycerin, 10 grammes. Make into 120 pills; two pills four times a day for the first week, then three pills four times daily for another week (*Dub. Journ. Med. Sci.* [3], cclxxxviii., 5111).

ANOTHER OLD DRUG SHOP.

On reading the article in the Journal of January 11 on "An Old Drug Shop in Leeds," the writer thought that a few notes of personal experience of another more or less historic establishment of eighty years' standing in a town of the West Riding of Yorkshire, might be of some interest, principally by way of contrast between the style of business forty or fifty years ago, and at the present day. He was acquainted with the business referred to some fifty to sixty years ago, and has been connected with it as partner for over forty years. It has been mainly, and still is, a retail drug business, although drugs now form but a small item in the daily routine, being largely replaced by chemicals. It may also be interesting to state that the above business has been carried on without any break in the proprietorship since 1817, that is to say, the partnerships have overlapped each other during that time.

A doubt has often arisen as to whether our pharmaceutical "powers that be"—who assume that druggists or pharmacists are necessarily and primarily dispensers of physicians' prescriptions—can possibly realise the condition of things in a town of over 200,000 inhabitants, where there have been sometimes two, sometimes one, and sometimes no physicians writing prescriptions, and where nine-tenths of the medicine required is supplied by the medical practitioners. Of course there are prescriptions from London and elsewhere, but probably all these could be dispensed from one establishment without any great over-strain. As there are about a hundred chemists and druggists in the district, one naturally asks, Where does the pharmacy come in?

In the years 1820 to 1830 the then principal of this business was much interested in philanthropic matters. The shop was the depôt of the British and Foreign Bible Society, and the Bible room was the meeting place of those like-minded with himself, and many schemes for the good of the town and district were there inaugurated. Large warehouse room was a desideratum in those days. There was no sending for articles to London, as wanted, and having them in twenty-four hours, and this meant keeping a large stock. Representatives of London drug houses came once in six months and the goods were sent by sea and canal. These comprised bales of many drugs, duppas of castor oil, jars and half jars of olive oil, gourds of aloes, and carboys of other things—no "Winchesters." The visit of So-and-so's traveller was then an event looked forward to and prepared for weeks beforehand. Compare this happy (?) state of things with the present continual worry of travellers the day through! The proprietor of the business in 1820-30 had been in the habit of acting more or less as an apothecary prior to the passing of the Apothecaries Act, and in his later years prescribed for those who came to him; not visiting patients, but receiving them in the Bible room, and having his prescriptions dispensed downstairs. This prescribing was more or less continued by his immediate successors, but has long since ceased.

In the years about 1860 times were pretty good, mill hands were fairly well paid, and their hair, male as well as female, required much greasing for Sunday. Two "pipes" of ol. olivæ sublim. was then about the yearly purchase, and nearly all went for this purpose. Hair oil, at 2*d.* per fl. oz. in this quantity, even with a fair allowance of perfume, indicates, probably, good times gone by. The shop was often crowded on Saturday evenings up till 10 and 11 p.m., when the demands for hair oil would be varied by requests for "cipity" ointment, camomiles and poppy heads, pennyworths of jalap, salts and senna, "ikery pikery," brimstone and cream of tartar, and such like, all at good paying prices if in small quantities. Epsoms were *not* sold at 1*d.* per lb. Bear's grease became fashionable in later times. There were also a good many proprietary remedies peculiar to the establishment in those days. Of course it is well

known now that cordials are bad and wicked things to use for children, and yet, either the children of that day were of tougher stuff than those of later times, or from some other cause, hundreds of children in that town, who were dosed regularly with a carminative compound called "white mixture," have made good sturdy men and women. It was an article of faith in many households that this white mixture was a necessity in the rearing of children. Now; the stopper of the shop bottle is often set fast for want of use!

The writer joined the business as a partner in 1854, after a year at "the Square," then under the guidance of Pereira, Redwood, and Bentley as lecturers, with dear "old Braithwaite" as presiding genius over the laboratory in the cellar of No. 17. This was followed by a couple of years at the German Universities of Giessen and Munich, where Baron Liebig was then in the height of his fame. This is only mentioned to show the effect of the introduction of analytical and other chemistry into an old-fashioned drug business. One of the first changes in the character of the business was brought about by the introduction of photographic materials, an innovation then looked at very doubtfully by the seniors, who preferred the old steady drug, with oil and colour and candle trade. In process of time, other firms arose, dealing in drysalteries especially, and the value of this branch of the business was much lessened.

Another change, and one of a far-reaching and fatal character has been brought about by the transfer of the demand for simple drugs and own proprietary remedies to that for other "patents" fostered by the advertisement mania. We have, as a trade, ourselves to blame in this matter in that we have condescended to push this or that "patent," and have thus helped to bring about the present lamentable state of things.

The expansion of a large town has also had a great effect on the demand for domestic drugs from the older central establishments. The residential circle has widened, and many of the small general shops in the outskirts of the town sell drugs—of a sort. Independently of this, however, the value of salts and senna, jalap, camomiles, etc., are not "understood of the people" as they once were. Another change, and a very unpleasant one to the writer, is the transfer of the manufacture of pharmaceutical preparations to large establishments furnished with steam and other appliances. It is humiliating, but has to be admitted, that many of these can now be better bought than made by the ordinary retail druggist. For many years all the preparations of the business were made on the premises, and scores of apprentices have found it in this respect a very useful school.

The most recent change in the character of business has been brought about by the great extension of scientific teaching in the present day. This, and more especially the teaching of chemistry, added to the necessity experienced by manufacturers, dyers, and others, for the applications of chemistry in their processes, has caused a demand for chemicals in place of drugs and for scientific apparatus and materials of all kinds. Thus, at the present time the sulphur, of brimstone and treacle fame, has to be supplied as sulphuretted hydrogen, or as sulphurous or sulphuric acids, whilst the pennyworth of hair oil has given place to a pennyworth of glass tubing or a penny test-tube, and the purchase of bales of drugs to that of such things as compressed liquid chlorine and carbonic acid by the hundredweight. The very names of things not uncommonly asked for now, such as phenolphthalein, metaphenylene-diamine hydrochlorate, fluoresceine, and others are enough to take away the breath of one used to the old style of business.

What the character of the next changes will be one cannot foresee, but there does not appear to be, in the class of district to which these notes refer, any likelihood of much development of pure pharmacy.

CORRESPONDENCE.

[Letters to the Editor should be written as concisely as possible, on one side of the paper only, and preferably with name and address for publication.]

THE 'INDEX KEWENSIS.

Sir,—It was certainly with "surprise" that I read in your issue of Feb. 15, p. 130, that the 'Index Kewensis' is in no sense intended to be a standard of nomenclature, or to represent the views of Kew in the matter. I thought there must be some mistake, but I find that your statement is confirmed by the *Kew Bulletin* (Jan. 1896, p. 29), in which, however, the following two sentences appear, that to a certain extent modify the meaning of the passage quoted:—"Where it has been pointed out by competent authority that the names cited are 'synonyms,' the fact is indicated. As to the remainder, no attempt has been made to ascertain their validity. To have done this would have been to undertake a task that could not have been completed in a reasonable time even with the aid of a large staff of workers."

In the preface to the 'Index Kewensis' it is stated that Mr. Darwin intended his legacy to be, "in aid or furtherance of some work of utility to biological science. He further informed me (Sir J. D. Hooker) that the difficulties he had experienced in accurately designating the many plants which he had studied, and ascertaining their native countries, had suggested to him the compilation of an index to the names and authorities of all known flowering plants and their countries; as a work of supreme importance to students of systematic and geographical botany, and to horticulturists, and as a fitting mode of fulfilling his intentions, I have only to add that at his request I (Sir J. D. Hooker) undertook to direct and supervise such a work, and that it is being carried out at the Herbarium of the Royal Gardens, Kew, with the aid of the staff of that establishment."

We have here a distinct statement that the Index was compiled under the direction and supervision of the late Director of Kew Gardens, aided by the staff of the Kew Herbarium, and that it was intended by Mr. Darwin to aid students in accurately designating plants. Yet the present Director says it is in no sense intended to be a standard of nomenclature, or to represent the views of Kew in the matter. Under these circumstances, purchasers of the work have a right to ask—

1st. Does or does not the 'Index Kewensis' represent the views of the Kew Herbarium up to the date of the year 1885?

2nd. Who are the "competent" authorities who have "pointed out" that some names cited are "synonyms," and on what principles were they selected?

3rd. If the work is not to be considered as an expression of the views of Kew (the generally accepted leading authority on botanical matters in this country), why is there any distinction made in the type, indicating that the names of some genera and species are retained and others are not? and why is it stated that the work was done with the aid of the Herbarium staff?

4th. Why are dates of publication not given (as far as possible) for each species, so that the reader could exercise his judgment on the name he should select?

These are a few of the questions that naturally occur to the puzzled purchaser of what was supposed to be a standard work, and it is hoped that as there is no explanatory preface in the work the deficiency may be made good in the next *Kew Bulletin*. The January *Bulletin* states for what uses the work cannot be employed. Those who have the work would like to know for what purposes it can be used.

February 18, 1896.

PHARMACEUTICAL CHEMIST.

CLASS FEES FOR CHEMISTS' APPRENTICES.

Sir,—Would you allow me to thank, through the Journal, Mr. Henry Pollard, of Ryde, and those other correspondents who have kindly sent me particulars of the fees generally charged in the chemistry classes at schools of art? In the new school opened here last September, which has been described in your columns, the instruction given up to Christmas was theoretical and elementary only, owing to delay in procuring apparatus and chemicals. For this 5s. the term was charged for one hour per week, and an abatement was made to apprentices of one-half the fee, in common with the other science classes. For the current term this privilege is withdrawn from the chemistry class only; the elementary course is put at 5s. the term, the advanced course at 7s. 6d., while the laboratory or practical, of one and a half hours weekly, is £1.

Those advanced students, who, as suggested by their teacher, are taking two practical lessons weekly to make up for the time lost before Christmas, are called upon to pay £2 7s. 6d. This seemed so heavy an exaction from apprentices that I obtained an interview yesterday with the Technical Instruction Committee of the Council, in order to represent to them how disproportionate the charge was to those payable elsewhere, but the only concession I could gain was a promise to remit half the fees to those students who succeeded in passing the examination in May. With profound regret I recognised an unwillingness to allow those students who strive to qualify themselves for the practical application of chemistry in pharmacy, the aid and encouragement which is given, say, to a carpenter's apprentice learning mathematics.

Dover, February 19, 1896.

J. F. BROWN.

"CASH CHEMISTS."

Sir,—I note the inquiry by Mr. Leech, of Macclesfield, anent the using of the title "Cash Chemists," by limited companies. Has the question of their right to the title ever been settled by our Law Courts; I am aware our judges have found a way for companies to trade as chemists by ruling that "person" in the singular does not preclude persons as representing a limited company from trading as I said as chemists, but I do not remember to have seen it ruled that a company can adopt the title of chemists; whether cash chemists or credit chemists does not matter. It seems a plain and intentional device to defeat the purpose of the Act, which was to prevent ignorant and unqualified men deceiving the public by styling themselves chemists. If persons can call themselves cash chemists, cannot we have "Cash Doctors," and "Cash Dentists," or even "Cash Lawyers," and "Cash Doctors of Divinity"? Imagine the announcement that the Rev. John Jones (Cash D.D.) will preach next Sunday; it would save printers' ink, as it would be taken for granted that a cash D.D. would mean a collection after the sermon. I note, too, that some of our newly-fledged members are styling themselves "Cash Chemists." One knows what an analytical chemist is, and what a dispensing chemist is, but "Cash Chemist" is a new genus.

Blackpool, February 17, 1896.

J. JACKSON.

COMBINATION OF ANTIPYRINE AND TANNIN AS A STYPTIC.—Roswell Park has accidentally discovered that the gummy adhesive mass which forms on mixing strong solutions of antipyrine and tannin, is a most powerful and prompt hæmostatic. The only objection to its employment is the extremely tenacious hold which it takes upon the surface to which it is applied, so that its subsequent removal is a matter of some difficulty (*B. M. J. Epit.*, February, 1895, 90).

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DEATHS BY POISON IN 1894.

THE fifty-seventh annual report of the Registrar-General shows that, during the year 1894, there were 1091 deaths from the effects of poisons and poisonous vapours, as against 973 in the previous year. Of the 1091 cases, 588 (or 53.9 per cent.) were the result of accident or negligence, and 501 (or 45.9 per cent.) are attributed to suicide. There were two cases of murder, one of the victims—an infant under one month—being poisoned by ammonia, whilst a child of five years was poisoned by carbolic acid. In 1893, there were 597 fatal cases due to poisoning by accident or negligence, 370 suicidal deaths, one case of murder, and five of manslaughter.

Of the 588 persons poisoned by accident or negligence, 399 were males and 189 females, the figures for 1893 being 400 and 197 respectively. In 23 instances the kind of poison causing death is not stated, and 220 cases (140 males and 80 females) are attributed to poisons scheduled under the Pharmacy Act. Opium, laudanum, morphine, and chlorodyne are credited with 111 deaths; chloroform (presumably including cases where it was used as an anæsthetic), 58; chloral, 12; strychnine and nux vomica, 8; potassium cyanide, 6; prussic acid and oil of almonds, 5; arsenic, 5; oxalic acid, 4; belladonna, 4; aconite, 4; corrosive sublimate, 2; and cantharides, 1. Carbolic and other unscheduled acids caused 61 deaths, phosphorus 11, ammonia 9, creasote 2, and salt of lemons 1.

The suicidal deaths by poison numbered 299 males and 202 females, as against 209 males and 161 females in 1893. The kind of poison was not stated in 45 cases, and scheduled poisons caused 219 deaths—154 males and 65 females. Opium, laudanum, morphine, and chlorodyne lead with 85 fatalities; oxalic acid comes next with 45; then prussic acid and oil of almonds, 22; strychnine and nux vomica, 19; potassium cyanide, 17; vermin killer, 9; arsenic, 8; belladonna, 4; chloroform, 3; corrosive sublimate, 3; aconite, 3; and chloral, 1. Carbolic, sulphuric, hydrochloric, nitric, and chromic acids were taken with fatal results in 207 cases, the first-named alone being accountable for the death of 82 males and 85 females. Altogether, carbolic acid was responsible for 202 out of the 1091 deaths by poisoning that occurred in England during 1894, that is to say, for more than 18.5 per cent.

THE SALE OF ARSENICAL FLY-PAPERS.

As briefly indicated in last week's Supplement, it is unlikely that the appeal will be proceeded with in the fly-paper case that came before His Honour Judge BACON at the Bloomsbury County Court on January 21 (see *ante*, p. 62). This is unfortunate, as it is always much more satisfactory to have a High Court decision in such matters than a judgment in a court of first instance, which is not legally binding, except in that particular court. But, of course, as an expression of opinion the judgment carries a certain weight, and already there are indications that the natural result of the decision will be an exercise of greater care on the part of unregistered persons, in order to conform with the requirements of the Pharmacy Act, 1868. Thus, in the *Grocer* for February 15 some sensible advice is given to the members of the trade so well represented by our contemporary. It is pointed out that grocers who sell fly-papers prepared with poison will do well to note the result of the case which has recently been decided. This case, the *Grocer* remarks, makes the duty of the fly-paper-selling tradesman clear, if he be not a chemist. "He ought to obtain from the manufacturers of the articles which he stocks, an assurance, before he buys them, that they do not contain any scheduled poison, and a further assurance in writing, in every case, that in the event of the Pharmaceutical Society prosecuting him for selling the goods, the manufacturers will guarantee him against all costs arising from such sales. The only other course is to refuse to keep any doubtful articles of this character." This is well and wisely said, and should excuse the pettish allusions to the Pharmaceutical Society's "trade persecution" and "crusade for gathering heavy penalties from unsuspecting traders." The *Grocer*, however, should by this time be well aware why the Society is bound to proceed in such cases, and is surely sufficiently independent to be above catering to the passions of its readers like a certain section of the photographic press.

THE SALE OF FOOD AND DRUGS ACTS IN 1894.

THE twenty-fourth annual report of the Local Government Board shows that 238 appointments of analysts under the Sale of Food and Drugs Acts were approved during 1894. The total number of analyses during the same period was 39,516, or one to every 734 of the population, and an increase of nearly 2300 over the number made in 1893. The administration of the Acts is shown to be still very unequal. In Norwich, Yarmouth, Northampton, Stockport, Ipswich, and other large towns no serious attempt is made to suppress adulteration and, as might naturally be expected, many rural districts are in a similar position. In London, one sample was obtained for every 492 persons, and in the provinces generally one for every 801. Of the 39,516 articles examined, 4060 only were found to be adulterated. This is equivalent to 10.3 per cent., and indicates improvement as compared with the figures for 1893, which showed 12.9 per cent. of adulterated samples. Of 1116 samples of drugs analysed, 125 (or 11.2 per cent.) were reported impure. The report states that "As usual, the principal articles adulterated were nitre (36 out of 108); rhubarb (22 out of 148); cream of tartar (9 out of 59); and sulphur (8 out of 76). Of the remaining 725 samples, less than 7 per cent. were condemned. In 50 cases in which drugs were condemned, proceedings were taken,

and there were 39 penalties inflicted, amounting in all to £43 10s. 1d." It is a great pity that the authorities still continue to record the figures simply, without showing the sources from which the condemned samples were obtained. The unfairness of the omission has been repeatedly urged in these pages, yet it is again necessary to enter the same protest. For instance, it would be extremely interesting to know whether any of them were purchased from registered chemists and druggists. The public naturally associates chemists and druggists with the sale of drugs, and on the ground of the Local Government Board statistics it might be urged that whereas adulteration generally has been reduced, the adulteration of drugs has not. If, however, the number of samples of drugs obtained from grocers, hucksters, and others were deducted from the total, it is probable that the matter would bear a very different aspect so far as chemists are concerned.

GOVERNMENT SCIENCE.

THE total number of institutions where science was taught in connection with the Department of Science and Art increased from 1463 in 1884 to 2602 in 1894, the number of classes from 5001 to 9433, and the number of persons examined from 46,776 to 99,818. During the same period the direct payments on results increased from £56,533 to £140,390. In 1895 both the curriculum and method of payment of organised science schools, under the Department, were greatly modified, payments on results being greatly reduced, and a variable grant being introduced for each pupil who had qualified for an attendance grant, as well as certain other special grants for practical work. The payments on results, though still depending on the general examinations in May, are now only made in the advanced courses of the organised science school programme, and are on a different scale to what they were. The variable grant is based on the report made by the inspector after his inspection of the general work of the school. It is satisfactory to find that the authorities are at last awake to the evils of the old system, but much yet remains to be accomplished before the training received in the great majority of cases can be regarded as truly scientific and of any real and lasting value. The acquirement of a mere smattering of several sciences is virtually equivalent to little more than so much time and energy wasted, and in the case of students attending the Government classes, a loss is thus caused of much of the most valuable portion of the individual's life, for such, from an educational point of view, we must regard the years immediately subsequent to ordinary schooldays. However, changes having once been initiated, there is hope that a rational system of general scientific and technical education may ultimately be realised in the United Kingdom.

JAPANESE TRADE IN DRUGS AND CHEMICALS.

ACCORDING to Mr. GERALD LOWTHER'S report for the year 1894, drugs, medicines, and chemicals have, for many years, formed a very important item in the Japanese import trade, as there is a steadily increasing consumption in Japan. The values of drugs and chemicals imported for the past six years have been as shown in the following table:—

Year.	Value.
1889	£296,608
1890	331,208
1891	370,961
1892	363,760
1893	446,431
1894	393,343

It is stated that in each of these years Great Britain has had a valuable and important share in the trade. The principal items in the import list for 1894 were salicylic acid, bismuth sub-nitrate, amorphous phosphorus, potassium chlorate, sodium bicarbonate, caustic soda, alcohol, and saltpetre. Alcohol, silver nitrate, and salicylic acid were obtained almost exclusively from Germany, whilst caustic soda, sodium bicarbonate, potassium chlorate, and amorphous phosphorus were equally exclusively imported from England.

It will be noted that there was a considerable falling off in 1894, as compared with 1893, and during the first six months of 1895, there was, according to Mr. ERNEST SATOW, a further decrease in the value of drugs and chemicals imported, equivalent to 118,625 dollars, as compared with the corresponding period of 1894, but the next three months saw a change, a net increase being shown over the third quarter of 1894 of 206,318 dollars. The value of the October trade, which is the latest recorded, is described as having reached the highest total ever attained in any one month by Japan, the total imports being valued at 12,030,656 dollars, of which drugs and chemicals are credited with 280,314 dollars, as against 487,275 dollars for the whole of the preceding three months.

The Japanese import trade may therefore be regarded as having been during recent months in an exceedingly healthy condition. The most interesting item in the exports from Japan, camphor, was exported to the value of 1,023,956 dollars during 1894, 649,457 dollars in the first six months of 1895, and 391,438 dollars in the next three months, a constant increase being thus perceptible during the past year. The figures for the previous five years showed a steady falling off, and the quality of the product had deteriorated, but a guild was formed amongst the native sellers, and other steps have also been taken to effect a much needed reform in the quality of the drug.

THE BAOBAB TREE.

THE *Adansonia gregorii*, or Baobab tree, has always attracted attention on account of its singular gourd-like fruits, and because the pulp of the fruit is used to make an acid drink in fevers. Hitherto, only four species have been recognised by botanists, although the fruits differ considerably in size, and often in shape. Its name of "Cream of Tartar" fruit was shown by HECKEL and SCHLAGDENHAUFFEN to be correctly applied, since it contains 12 per cent. of bitartrate of potash, as well as 2 per cent. of free tartaric acid (*Pharm. Journ.* [3], xix., p. 246). Dr. C. GERBER has now made a careful histological examination of three species, *A. digitata*, *A. madagascariensis*, and *A. gregorii*. He finds that the structure is simplest in *A. gregorii*, is a little more complicated in *A. madagascariensis*, and is most complex in *A. digitata*. As *A. gregorii* is an Australian species, the author thinks that the genus must have originally started from that country, and that it travelled across a continent which has disappeared, but formerly united Australia and Madagascar, the species becoming modified as it proceeded westward. The author remarks in the *Annales de l'Institut Colonial de Marseille* that the "terra sigillata" of Lemnos probably owed its reputed medicinal value in the early part of the century to the dried pulp of the *Adansonia* fruit, of which it largely consisted.

ANNOTATIONS.

EVENING MEETING IN EDINBURGH.—On Friday next, February 28, an evening meeting of the Pharmaceutical Society will be held at 36, York Place, Edinburgh. Mr. W. L. Currie, of Glasgow, will take the chair at 8.30, and an interesting programme is promised. In the first place, "Notes from some Old Edinburgh Infirmary Case-books" will be communicated by Dr. A. Lockhart Gillespie. A paper on "Spiritus Ætheris Compositus, B.P." will then be contributed by Dr. W. Inglis Clark and Mr. D. B. Dott, and the latter will subsequently read a "Note on Papain," the next communication in order being a "Note on Commercial Litmus," by Mr. R. Rainy Brown. The palm for evening meeting programmes of interest to pharmacists generally apparently still remains with the North British Branch.

PRESENTATION TO MR. G. E. BRIDGE, OF BOURNEMOUTH.—Visitors to the Conference last year will remember the excellent arrangements made for the meetings and excursions, by which their convenience and enjoyment of the meeting was considerably enhanced, and it is with much pleasure we learn that those associated in that work with Mr. Bridge, the Chairman of the Local Committee, have presented him with a complimentary memento, in acknowledgment of the services rendered on that occasion.

THE NEW PHOTOGRAPHY.—The first practical demonstration in a London hospital of the use of the Röntgen rays in photographing the interior of a living subject was given last week at St. Thomas's Hospital, before the members of the Medical and Physical Society. Dr. Mackenzie, one of the assistant physicians, presided, and was largely supported. The experiments were conducted by Mr. A. F. Stanley Kent, late Demonstrator of Physiology, who briefly described the new process. The first experiment was a most interesting one to those present. The subject was a young medical student of St. Thomas's, who during the day had the misfortune to break one of the fingers of his right hand. This hand was photographed, and the plate when developed showed the exact position of the fracture in the bone of the finger. In the opinion of many medical men present the result was regarded as being very satisfactory, and as likely to lead to important developments in surgical and medical science. Other experiments followed, and it is the intention of the authorities of the hospital to enter more fully into the medical side of the discovery.

CHEMISTS' ASSISTANTS' ASSOCIATION.—Owing to indisposition, Mr. W. Manger was unable to read his paper on "Filtration" at the meeting of this Association on Thursday, and a musical and social evening was held instead. The eighteenth annual dinner of the Association will be held in the King's Hall, Holborn Restaurant, on Thursday, March 5, when the chair will be taken by the President, Mr. E. W. Hill, and it is hoped that a goodly number of the members and their friends will be present. Mr. George Roe, the honorary Secretary, will be glad to receive applications for tickets (5s. each), at 1A, Campden Grove, W., as early as possible.

HOW NOT TO LEARN THE ART OF PHARMACY.—A singular, and one would hope uncommon, method of learning the art of pharmacy is suggested in a recent advertisement in the *Burnley Express and Advertiser*. The business of a druggist and drysalter is offered for sale as a going concern, and as a special inducement it is stated that "the purchaser will be taught the business." It is to be hoped that no unsophisticated individual may burn his fingers by becoming a purchaser in this case.

SPECIAL ISSUE OF THE JOURNAL.—Next week's issue of the *Pharmaceutical Journal* will be sent to everyone on the Registers of Pharmaceutical Chemists and Chemists and Druggists, in addition to many other persons and firms connected with pharmacy in the United Kingdom and abroad. More than sixteen thousand copies will thus be distributed, being the largest number of any single issue of a paper addressing itself exclusively to individuals connected with British pharmacy. The subject matter of the special issue will, it is trusted, be found not unworthy of the occasion, the design being that the contents should prove both interesting and useful to readers. Amongst other matters treated will be the first complete historical account of what is probably the oldest London drug-house of which records are extant. This will be fully illustrated by the best modern processes. Local secretaries and others interested in the continued success of the Journal, will find this a fitting opportunity for advancing its claims to the support of the whole craft.

PRESENTATION AT COVENTRY.—There was an interesting gathering at the King's Head Hotel, Coventry, on Monday evening last, when Councillor Slingsby, churchwarden, gave a dinner to the choir and members of St. John's congregation. Mr. Slingsby presided, and Mr. Frederick Bird, chemist and druggist, was in the vice-chair, there being present a company numbering about fifty persons. Several complimentary toasts having been submitted and honoured, the Chairman proposed the health of Mr. Bird, and took the opportunity of presenting him with a handsome gold watch, on which was inscribed the words: "Presented to Frederick Bird by numerous friends of the congregation of St. John's, Coventry, in recognition of twenty-four years' faithful service as churchwarden." The Chairman spoke in the highest terms of the work of Mr. Bird in the parish. Mr. Poole added his expression of praise, and Mr. Bird heartily returned thanks for the present.

PHOTOGRAPHY AND ELECTRICITY.—At the last meeting of the Paris Academy of Sciences, M. H. Murat, of Havre, described results similar to those of Röntgen, obtained by the use of ordinary light. He places a sheet of copper in a photographic printing frame, next to this the object to be photographed, and then the sensitised gelatin plate. The frame is afterwards placed on a large sheet of copper, then covered with a sheet of lead, and the overlapping edges of the copper and lead sheets are folded over so as to enclose the frame completely, thus excluding ordinary light rays. After exposure of the whole to sunlight or lamplight, however, and subsequent development of the plate, distinct images are obtained of a similar nature to those of Röntgen. It has been found by M. Le Bon that electricity is generated during the formation of the photographic image, and Professors Righi, Bergmann, and Bergim find that the Röntgen rays have the property of electrically charging an insulated body, even if sheltered by means of a Faraday screen.

EXCHANGE NOTICES.—During the past twelve months opportunity has been afforded for readers of the Journal wishing to exchange surplus books, apparatus, etc., to insert notices to that effect in the Supplement. The necessity and utility of the "Exchange" have been proved by its increasing popularity, but it has now become necessary to adopt some means whereby undue occupation on our limited space might be prevented. A small charge will therefore be made for the insertion of such notices, and the conditions will be found on the last page of this week's Supplement. It will be noted that all communications in connection with the "Exchange" should henceforth be addressed to the publishing office, 5, Serle Street, W.C.

THE PRESCRIBING OF PIPERAZINE.—In the *Lancet* for February 8, Dr. E. D. Mapother recalls attention to the fact that some time ago he bore testimony to the utility of piperazine as a solvent for urates and a remedy for gout. It has since given satisfaction in most cases in which it has been employed, and the writer attributes its failure in some instances to the administration of the remedy in the presence of "vegetable tinctures or infusions." He says: "It appears that with these it is incompatible," and he imagines that adverse reports upon the drug may have been due to its combination with those preparations. He now urges that piperazine should always be dissolved in distilled water and taken by the patient on an empty stomach.

MISLEADING ABBREVIATIONS.—A correspondent of the *Western Morning News* appears to have experienced some inconvenience from the "ambiguity that exists in the abbreviations of 'Member of the Pharmaceutical Society' (M.P.S.), and 'Members (*sic*) of the Phonetic Society' (M.P.S.)." He calmly suggests therefore, that in the first-mentioned case the custom sanctioned by half a century's usage should be amended, by the substitution of the form "M.Phr.S." He continues "I think anyone of ordinary intelligence will perceive the judiciousness of the seemingly slight though somewhat necessary alteration." Though he is doubtless blessed with more than "ordinary" intelligence, it does not seem to have occurred to him that the greater may possess a higher degree of importance than the less, and that, as suggested by pharmaceutical correspondents to the paper in which his effusion appears, the members of an insignificant body of users of barbarous language may find it the simpler plan to avoid the misleading use of letters which have become inseparably associated with pharmacy. It is quite conceivable, too, that circumstances might arise which would render illegal the use of the letters "M.P.S." by any person not a member of the Pharmaceutical Society.

GOOD NEWS FOR BOTANICAL STUDENTS.—As evidence of the exceptional mildness of the season, it may be noted that *Daphne mezereum* came into flower in the Royal Botanic Garden, Edinburgh, on January 28. Last year it did not flower till March. The lesser celandine and other early flowering species have also come before their time in the London district.

NEWSPAPER ACCURACY.—It must always be satisfactory to pharmacists when they find that their proceedings are considered of sufficient general interest to be worthy of notice in the daily press, as on the occasion of the formal transfer of the Burroughs Memorial Fund last week, which was referred to in several of the London dailies. In one case, however, the paragraphist made sad work of the names, the *Morning* recording that "Mr. M. Corteighan (President of the Society) was presented by the committee of the Burroughs Memorial Fund with the sum of £850 for the purpose of endowing a scholarship to the memory of the late Mr. Sailas."

RANDIA DUMETORUM.—In "The Month" some years ago (*Ph. J.* [3], xxi., 881), reference was made to Sir James Sawyer's experiments with a tincture prepared from the fruit of *Randia dumetorum*. The drug had been suggested as a substitute for ipecacuanha, and its physiological action as a nervine calmative and anti-spasmodic was attributed to the presence of saponin and valeric acid. It is now being imported from Cawnpore by Messrs. John Haddon and Co., of Bouverie House, Salisbury Square, E.C., who are trying to place it on the English market, and have sent a sample to the Museum of the Pharmaceutical Society.

PROCEEDINGS OF SOCIETIES.

School of Pharmacy Students' Association.—A meeting was held on Thursday, February 13, Mr. H. A. D. Jowett, B.Sc., occupying the chair. The minutes of the previous meeting having been read and confirmed, the Chairman announced that the amended rules of the Association had received the sanction of the Council of the Pharmaceutical Society, and that, in accordance with the new rules, the Executive Committee had added to their number Messrs. H. Brown and H. Wilson. A discussion upon "A Student's Union for the School of Pharmacy" was then opened by Mr. T. A. Henry. In his introduction Mr. Henry remarked that pharmaceutical students lay under peculiar disadvantage, owing to the very short term they spent at a school of pharmacy. On this account it was difficult for them to take any great interest in the Association connected with the School. It was hoped that this would be remedied to some extent by the formation of a Students' Union. The working of a Students' Union was then briefly outlined, and some of the reforms which such a body might attempt were pointed out, in particular the securing of a common room for students, where they might hold meetings, instead of meeting on sufferance, as they did at present, in corners of the Laboratory or in the Library. A magazine for students was also advocated in order to keep up the interest of former students in the School. The discussion was taken part in by Messrs. Read, E. J. Eastes, Fothergill, Spurge, Payne, H. Brown, E. A. Umney, F. U. Stamp, Wilson, Lean Grier, and the Chairman, and general support was given to the proposal. A resolution to the effect that in the opinion of this Association it is eminently desirable that a Students' Union be formed was carried unanimously.

Midland Chemists' Assistants' Association.—At a meeting on Wednesday, February 12, at Exchange Rooms, Birmingham, the President (Mr. T. C. Clarke) occupied the chair, and the following paper was read:—

"LABORATORY NOTES."

BY JOHN BARCLAY, B.Sc.

Note 1.—*Liquid Extract of Pareira.*—The present official method of preparing the above is unsatisfactory on account of the partial insolubility of the aqueous extract in the aqueo-alcoholic menstruum and the resulting necessity for filtration, which involves considerable loss. Instead, therefore, of using 4 parts of the extract of pareira, as ordered by the Pharmacopœia, it has been found better to take an equivalent quantity (20 parts) of the root, and from it to prepare an extract by exhausting with a mixture of water, 3 parts, and methylated spirit, 1 part, the resulting extract being dissolved in sufficient of the official menstruum (rectified spirit, 1 part; water, 3 parts) to make 16 fluid parts. An extract so prepared dissolves completely to form a liquid containing about 20 per cent. of total solid matter. The same result might be obtained by percolating and re-percolating the root with the official menstruum, but the use of methylated spirit as above is found to be more economical.

Note 2.—*Colocynth Pulp.*—The determination of the percentage of ash in the powdered drug is useful for ascertaining its freedom from seeds. The Pharmacographia gives the ash of pulp dried at 100° C. as 11 per cent., of seeds 27 per cent. Squire gives for the former 8.6 to 14 per cent., for the latter 2.2 to 4 per cent. The writer found that 212 lbs. of peeled apples ground under small edge-running stones just so long as to crush the pulp without breaking the seeds, yielded 48 lbs. of pulp containing 12 per cent. of ash, and 164 lbs. of seeds containing 2.37 per cent. of ash. This method may, he recommended, be safely used for separating pulp from seeds. Eight samples of pulp obtained from various sources were incinerated and the results are given below.

Percentage of Ash Calculated on Drug Dried at 100° C.

1.	12.00	} Mean of 8 samples—11.45.
2.	10.10	
3.	12.40	
4.	11.40	
5.	11.20	
6.	11.70	
7.	11.70	
8.	11.20	
Whole apple	4.60	
Seeds	2.37	

Note 3.—*Compound Extract of Colocynth.*—An extract prepared according to the official formula and dried at 100° C. contains:—

Extract of aloes	59.6	per cent.	about.
Scammony resin	19.8	"	"
Curd soap (dried)	14.9	"	"
Cardamoms.....	4.5	"	"

Together with so much of the colocynth used as is soluble in proof spirit.

It might, therefore, be expected that a properly prepared extract would contain an amount of water-soluble matter equal to that of the extract of aloes and soap used (about 75 per cent.), plus a small percentage due to the colocynth and cardamoms, and that similarly the extract would yield about 20 per cent. to ether, that percentage representing the amount of scammony resin. Eleven samples of compound extract of colocynth obtained from various wholesale houses were examined with the following results:—

Compound Extract of Colocynth.

	Moisture.	Calculated on dry extract.			
		Ash.	Alkalinity as NaOH.	Soluble in water.	Soluble in ether.
1.	7.05	4.22	1.10	47.4	14.51
2.	11.59	6.33	1.81	69.6	18.86
3.	12.10	5.79	1.08	56.1	15.84
4.	7.18	6.50	1.88	60.7	13.55
5.	9.51	4.05	1.69	79.0	29.56
6.	19.85	5.37	1.58	77.0	15.90
7.	15.29	6.30	2.41	58.6	13.72
8.	8.14	5.03	2.28	82.4	16.20
9.* ...	2.73	6.62	1.45	62.0	9.55
10.† ...	4.24	6.80	2.70	55.8	22.39
11.† ...	3.50	3.30	.37	40.6	6.57

* A very old sample. † Dry extracts.

The alkalinity of the ash was taken with a view to arrive at the percentage of soap present. The dried curd soap used in preparing extract No. 10, was found to contain 6.92 per cent. of soda (NaOH), so that the ash of this extract would contain just over 1 per cent. of soda due to the soap, but the total alkalinity as soda of this sample was found to be 2.70, hence more than half of the alkalinity of the ash in the case was due to other ingredients. It will be seen that there is a very considerable variation amongst the samples in all the points examined. This is particularly the case with the ether soluble percentage, which may be regarded as fairly accurately representing the amount of scammony resin present.

The writer expressed his indebtedness to Mr. E. W. Mann for assistance given in making the experiments for the note, and in the discussion which resulted, the following members took part:—Messrs. Clarke, Williams, Arblaster, Shields, Jessop, and Bindloss. A hearty vote of thanks was accorded the speaker, in conveying which, the Chairman remarked that the Association was also greatly indebted to Mr. Barclay for the sound advice and suggestions he had offered the promoters, which had proved of immense service in the formation of the Association.

Chemists' Assistants' Association.—To the fact that the Junior Pharmacy Ball had been held the previous night may be ascribed the small attendance at 103, Great Russell Street on the 13th inst., when the President (Mr. E. W. Hill) occupied the chair. After the usual routine business, Mr. J. Castil Evans, F.I.C., F.C.S., Lecturer on Chemistry to City of London Guilds, gave an address upon "The Chemical Training of Pharmacists." He commenced by expressing his conviction that the evolution of chemistry was greatly due to representatives of pharmacy of bygone ages, who in their search for a myth in the shape of the philosopher's stone, laid the foundation of an exact science. Of late years there has been a revolution in methods of chemical teaching, as until recently a youth was very apt to imagine that he could learn the science without a course of systematic training, and that he could take for granted the methods of determination of molecular weights, being content if he simply committed to memory the necessary data. From his own experience in different parts of the country, Mr. Evans considered it was a great mistake to enforce the teaching of pure mathematics as the first step in a scientific curriculum. The axiom

that nothing should be taken for granted must always be borne in mind, for, chemistry being a purely inductive science, the laws and principles connected therewith ought to be worked out practically. He had no sympathy with a type of student that often came under his notice, whose only aim was to get through his work in a perfunctory manner, and was quite indifferent in regard to the accuracy of his results and methods of manipulation so long as he got some idea of the outlines of the process. The superficial nature of chemical training unfortunately pervades much of the current literature, and many of the results published are mere theory, owing to the way in which workers jump at conclusions. Of course every man has his own ideas as to the correct method of teaching chemistry, but undoubtedly the principle which should underly them all is to impress on students the necessity of continual observation and reasoning, and a teacher should be thoroughly qualified to carry out practically the ideas which he communicates as well as be an enthusiast in his work. Mr. Evans proceeded to enumerate what he regarded as cardinal points to tyros in chemistry:—A thorough knowledge of the features which distinguish elements from compounds, as well as the laws of combination both by weight and volume; a thorough acquaintance with the work which has been done by former investigators; a practical knowledge of the methods used in determining the equivalents of such of the elements as silver, copper, and chlorine; on this point he was of opinion that every student should carry out one or two of these methods for himself, for the man who is best qualified on leaving the school to engage in technical work is the one who has learnt the means of ascertaining facts by means of the processes which he has investigated, although he may not carry in his head a long string of dry facts. A student should also aim at proficiency in chemical reactions, being not only familiar with the mechanical details, but also the principles underlying the processes.

Every youth should know something of a physical science, preferably chemistry, since a study of it engenders care and exactitude. It is noteworthy that all good experimentalists in physical science have started as chemists. There was one branch of chemistry which Mr. Evans recommended to his audience in preference to all others to being conducive to the exercise of all the faculties, and that was blow-pipe analysis. He said that many men were fairly expert at wet analytical methods who were quite at sea with the dry reactions. Passing on to the subject of examinations, regret was expressed at the present-day tendency of studying with special reference to the requirements of examination schedules instead of for the sake of knowledge, and Mr. Evans said that the outcome of his experience as a teacher under the Science and Art Department, as well as at South Kensington and Finsbury, was that dissatisfaction—even from the point of view of percentage of passes—was the result of close observance of the requirements of the syllabus. At the present time there seems to be too much teaching and far too little individual learning, so that students think there is a "royal road to learning," instead of facing their difficulties and thereby acquiring self-reliance. In conclusion, Mr. Evans briefly summarised the points which he thought worthy of attention by his hearers.

The President (Mr. E. W. Hill) was of opinion that Mr. Evans had treated the subject of education rather exclusively from a theoretical standpoint, and he thought that some of the recommendations were impracticable to most pharmaceutical students, because of expenditure of time and money involved. Independently of those considerations, the training of pharmacists, as carried out at the present day, was as a rule exceedingly good. Messrs. Roe and Summers also joined in the discussion, and a cordial vote of thanks was awarded to the lecturer, on the proposal of Mr. R. G. Guyer, seconded by Mr. H. H. Robins.

It is understood that Mr. R. H. Jones, who for some time past has occupied a prominent position in connection with the Chemists' Assistants' Association, and filled the presidential chair during the session 1894-1895, is leaving Messrs. Savory and Moore in the course of a few days to take up a position in the Laboratory of Messrs. Brady and Martin, Newcastle-on-Tyne.

Midland Pharmaceutical Association.—A meeting of the above was held on Tuesday, February 11, at Mason College R. Darton Gibbs, President, in the chair, when F. H. Alcock, F.C.S. delivered a lecture on vegetable histology, illustrated with lantern views by Mr. J. Davis. There was present a numerous company of pharmacists and students. Mr. Alcock began by giving an outline

of the structure of the cell, and the various forms of cells found in vegetable tissue, with their contents, illustrating the varieties by sections from *Clematis vitalba*, *Hoya carnososa*, *Pinus*, *Tilia*, and garden rhubarb. The varieties of starch depositions were shown in potato, canna, arrowroot, and others; starch granules were also examined by polarised light. Raphides and other deposits in cells were shown, as also were lactiferous cells and vessels from euphorbia and dandelion. Leaving the morphology of the cell, a section of the stem of sun-flower showed the varieties of tissue that made the cortex, viz., sclerenchyma, phloem, cambium, xylem. The same section showed the chlorophyll grains, and also sieve tubes, another showed resin passages, epithelial cells, and fibro-vascular bundles, which were fully explained. A section of the leaf of cherry laurel gave examples of palisade parenchyma, chlorophyll, and stomata, the uses of which were pointed out. A section of the stem of *Ulmus campestris* showed the layers of cork tissue, inter-cellular spaces, pith, and medullary rays. A section from the root of *Hippuris vulgaris* showed the tissue in an aquatic plant. The structure of the embryo was dwelt upon in detail and illustrated by sections, followed by descriptions of the pollen, anthers, and stigma, the slides showing the difference in structure of monocotyledonous and dicotyledonous plants in their reproductive organs. At the conclusion of the lecture, a vote of thanks was proposed by the President, who hoped Mr. Alcock would occupy another evening this session: this was seconded by Mr. C. Thompson, who said the lecture carried him back to his old student days. Some lantern slides of a human hand, a living frog, a purse containing coins, and a razor in a case, obtained by the new Röntgen light, were exhibited by the Secretary, Mr. C. F. Jarvis, and gave rise to much interest.

Sheffield Microscopical Society.—Mr. Chas. Hoole assisted by Mr. Harrow, the curator of the Sheffield Botanical Gardens, on Friday last delivered a lecture to the members of the above Society on the "History, Cultivation, and Microscopic Structure of the *Victoria regia*." Mr. A. H. Allen, F.I.C., F.C.S., President of the Society, occupied the chair. The lecture throughout was of the most attractive character. An interesting point brought out was that the under surface of the leaves of this royal plant were of a deep crimson colour, and it has recently been proved that the effect of this is to change light rays into heat rays, and thus materially add to the maintenance of the internal temperature, which is so essential to the plant. After the lecture, Mr. Hoole, by the aid of a number of microscopes, kindly lent by Mr. Newsholme, showed a large number of microscopical sections taken from all parts of the plant. The warmest thanks of the Society were subsequently conveyed to Mr. Hoole and Mr. Harrow.

Royal Institution.—On Thursday, February 13, Professor H. Marshall Ward delivered the first of a series of three lectures on "Some Aspects of Modern Botany." The professor alluded first to the rise of descriptive and systematic botany, pointing out the advantage derived from the use of illustrations in describing plants, the recognition of the fact that the plants of one locality varied from those of another, the difficulty experienced in identifying them, and finally the necessity that was felt for some system of classification. In attempting to arrange plants, particular stress might be laid either upon the detection of minute differences or upon the recognition of resemblances. The older botanists followed the former of these two courses, whilst modern botanists were inclined to follow—perhaps, as the lecturer thought, too closely—the latter, and to lay too much stress upon the resemblances between various plants and the detection of transition forms. The object of modern systematic botanists was to compile a complete list of plants, all of which must be compared and contrasted with one another so as to build up a botanical genealogical tree; the difficulty of the task could be appreciated by remembering that on an average a new species arrives in this country every day.

Professor Ward then touched upon the question of variation and adaptation, and selected the Alpine edelweiss as an illustration of one direction in which work was being done. The hairy covering of this well-known plant might be thought to be a protection from cold. But hairy plants are extremely common in districts subjected to severe drought, as, for instance, the South American savannahs; now the edelweiss grows on ledges of rock which rapidly dry, and the plant might therefore easily suffer from excessive evaporation of the moisture it contains; the probability is that the dense covering of hairs obviates such an excessive evaporation of moisture, both in the Alpine edelweiss and the savannah plants, by surrounding the stomata with a quiescent layer of air.

By means of lantern slides the lecturer demonstrated the similarity in habit of growth that plants of widely different natural orders may assume when living under the same conditions, as well as the variation the different species of one and the same genus may exhibit when living under widely different conditions. To illustrate the latter case, an extremely interesting series of slides of various species belonging to the genus *Senecio* was exhibited, one having peltate leaves, another narrow recurved, and a third succulent leaves, whilst a fourth resembled a cactus in habit, a fifth was a climbing plant, and a sixth was a tree 30 feet high. The lecturer pointed out the effect of climate on various Indian species of *Senecio* that he had been investigating, and concluded by speaking in favourable terms of the value of descriptive botany as a means of teaching.

Western Chemists' Association.—At a meeting of this Association, held on Wednesday, February 19, a discussion was opened by the reading of the following paper, by the President:—

OUGHT THE BRITISH PHARMACOPŒIA TO BE USED AS A STANDARD UNDER THE SALE OF FOOD AND DRUGS ACTS?

BY J. C. HYSLOP.

Decidedly not. The first B.P. was published in 1864. The Sale of Food and Drugs Act was passed in 1875—eleven years afterwards—and the Act to amend it in 1879. Yet not a word is found as to the Pharmacopœia in either of the two Acts. Can it then be possible that the framers of those statutes had the least idea of making the Pharmacopœia a standard in their administration?

True the question is by no means a simple one, nor uninteresting, for the term "drug" occurs in the Act as often as the term "food," and one would naturally expect that where so much is said of "drugs" the Pharmacopœia would to some extent be recognised. Hence the omission becomes the more significant. But is there any standard mentioned for "food"? No. Why, then, should we expect to find one for "drugs"? The idea has arisen purely from the indolence and incapacity of those whose office it is to look up the sinners and mete out the punishment. They are down upon the poor milk-sellers, because they think it is so easy to determine the amount of water that has been mixed with the milk, and they are down upon the unfortunate chemist for a similar reason; he has a book in plain English, to be his one standard of strength and composition for the substances which the physician prescribes. So they are ever meddling with this book and with him in his dispensing business. Pity the Pharmacopœia is not still in Latin, which might confine men more to their true and proper callings.

Now this omission of any reference to standards was, it would seem, recognised very early as a defect in the working of the Act, hence the Sale of Food and Drugs Amendment Act of four years later had for its main object the adoption of certain standards with respect to brandy, whiskey, rum, and gin. The essential function of the Sale of Food and Drugs Act is evidently to come to the rescue of the purchaser, with reference to his lameness as to that time-honoured motto *caveat emptor*: "Let a buyer take care of himself." It was found that the tricks of trade were so guileful and varied that a buyer could not take enough care of himself, and this Act was passed to render his self-help more possible and easy. It has thus entirely to do with trade, and nothing whatever with the dispensing counter.

If a sausage maker uses up meat that is too bad for his dainty productions, even his offence may be punished by another Act of Parliament, but it does not come within the four corners of the Sale of Food and Drugs Act. Similarly, if a dispenser of medicines commits an offence against the B.P., he may be proceeded against under the provisions of the Pharmacy Act, 1868, Sec. 15., which reads thus:—"From and after the 31st day of December, 1868, any person who shall sell.....or use the title.....or shall fail to conform.....or who shall compound any medicines of the B.P., except according to the formularies of the said Pharmacopœia, shall for every such offence be liable to pay a penalty or sum of five pounds." If, therefore, I am asked for a seidlitz powder, or for a box of seidlitz powders, my only safe and proper course is to supply without a word of remark the "pulv. sodæ tart. efferves." of the B.P., for I am told in a footnote, where this formula occurs, enough to imply that this is what a consultant is most likely to mean by telling his patient to take a seidlitz powder. Now, if I give a larger dose, without being requested to do so, or a smaller one, I certainly disobey the clause just quoted from Section 15 of the Pharmacy Act, and I may, I suppose, be punished for so doing, but the offence surely has nothing to do with the provisions of the

Food and Drugs Act, the object of which is to prevent fraudulent and deleterious admixture with articles of food or physic.

In full support of this view it will suffice to note the schedule that accompanies the Act. This gives the form for the analyst's certificate, which must be produced in court; it runs thus:—

"To Mr....."

"I, the undersigned, public analyst for.....do certify that I received, on the.....from Mr.....a sample offor analysis, which then weighed.....and have analysed the same, and declare the result of my analysis to be as follows:—

"I am of opinion that the same is a sample of genuine....."

or

I am of opinion that the said sample contained the parts as under, or the percentages of foreign ingredients as under:

”

Then there comes a space for observations, with a foot-note to explain that "here the analyst may insert at his discretion (?) whether the mixture (if any) was for the purpose of rendering the article portable or palatable, or of preserving it, or of improving the appearance, or was unavoidable, and may state whether in excess of what is ordinary or otherwise, and whether the ingredients or materials mixed are, or are not injurious to health."

As witness my hand this.....day of.....

A. B.

at.....

These are some of the grounds on which rests my opinion that the Food and Drugs Act has nothing whatever to do with the B.P. or with the dispensing of medicines. Otherwise note a few of the incongruous results. Poor people on a Sunday, when other shops are closed, could not get their cheap carbolic acid because the chemist may not sell any but the B.P. article, for which he has to pay more than one shilling per pound.

What would my Lords of the Privy Council think of this? Burden the taxpayer perhaps, so that an article as useful for wrapping up dirtiness as for promoting suicides might be supplied gratis and *ad lib.* Then as to wax, white wax B.P. is bleached beeswax, but there is plenty of very useful white wax which is not the produce of bees, and in certain arts it is preferred for its suitability as well as its cheapness. In the laundry business, electrical engineers, engravers, etc., white wax is used, but beeswax would not suit even if it were cheaper. We chemists know people's respective wants in these matters better than other men, yet we are to be prohibited from selling these things if the same name also happens to occur in the B.P., with tests and a standard to determine the exact variety of the article that is to be used in medical dispensing.

Then there are the essential oils quite on all fours with the wax question. The oils of juniper, lavender, peppermint and rosemary for medical purposes we must pay from 3s. to 8s. per ounce for these, whilst the public requires an article worth from 6d. to 1s. an ounce. Are we not to supply these varieties because we happen to be chemists and although these are as good as the dearer kinds for the purposes required?

Indeed, gentlemen, it comes to the old, old, tale, a case of trade *versus* pharmacy. Mere buying and selling is always over-shadowed by the *caveat emptor* notion, joined of late with the threatenings of the Food and Drugs Act, as against the mere trader, who, by means fair or foul, will press for the uttermost farthing of profit.

The dispensing of medicines, whether by verbal or written directions is, on the contrary, illuminated by the special light of the B.P.: that is supplemented, perfected as far as may be, by the trained skill and competent experience of the dispenser, who, mindful of his high vocation, is half insulted when he meets with the *caveat emptor* idea across his own counter; he has more than enough of this in selecting his own drugs and the preparations which he has no time or convenience to prepare for himself. The ideas that guide his life's business come from quite another quarter, have quite a different ring about them; in the forefront stand leaders such as these:—

Caveat dispensator—Let the dispenser take the care.

Noblesse oblige—One's distinguished position involves great responsibilities.

Mr. W. Martindale remarked that he was placed in rather a delicate position on account of his connection with Pharmacopœia Revision Committee. He reminded his hearers that under the 15th Section of the Pharmacy Act of 1868, a chemist was bound to supply articles mentioned in the Pharmacopœia which were in strict accordance with its requirements, and he considered that an infringement

of the Section was bound to bring legal penalties. In regard to the seidlitz powder case referred to by Mr. Hyslop, a good deal depended upon the motive which influenced the sale of an article not in accordance with official requirements in this particular instance. From all accounts it seemed that a better article than the official tartarated soda powder had been sold at a higher rate of profit, but he was forced to the conclusion that the transaction savoured of over-reaching, and did not commend itself from an ethical standpoint. Another point to be remembered was that there are doubtless many cases in which the Pharmacopœia does not give a sufficient definition to the chemist, which will serve to bind him down to a hard-and-fast rule, and that was only to be expected, considering the length of time since the last edition had been issued. Convictions having reference to the sale of such articles as carbolic acid or soda water, which had been referred to by Mr. Hyslop, had never yet been attained, nor did he think they were likely to be so long as common sense was exercised and the customer understood what he was buying, but he must say emphatically that if a chemist is asked for a pharmacopœial article, and he supplies an article which is not up to the official standard, and at the same time neglects to inform the customer of the fact, he certainly comes within the pale of the law.

Mr. R. H. Parker said the subject which had been introduced by their President was of far more importance than they were likely to realise at the outset. To him the main difficulty seemed to be that the administration of the law is in the hands of those who are not conversant with the interpretations which should be put upon the pharmacopœial statements, and are often unacquainted with a pharmacist's calling, and hence are apt to act in a very erratic fashion. Had the authorities been men acquainted with those details, he would have said by all means maintain the pharmacopœial requirements strictly. He was of opinion that the strict application of the Food and Drugs Act should be limited to those articles which were sold for internal or external use by human beings, but should not hold good for articles of everyday use, which rendered explanation to individual customers burdensome. It was ridiculous to suppose a chemist would supply hyposulphite of soda in the pure state for photography; whilst many essential oils when used for external and commercial purposes, and other things readily suggested themselves. By all means let it continue to be compulsory to supply medicinal preparations intended for medicinal use in strict accordance with official requirements, but beyond that he was of opinion that considerable latitude should be allowed.

Mr. Robinson supported the arguments advanced by the President and Mr. Parker. He very much questioned whether the section of the Pharmacy Act quoted by Mr. Martindale would suffice to obtain a conviction; on the other hand, he was rather of opinion that the Food and Drugs Act would have the preference, seeing that it was passed subsequently to the Pharmacy Act. He strongly objected to the increasing tendency shown to adopt synonyms in the Pharmacopœia, and trusted that steps would be taken to delete those already in existence as far as possible. There was one argument which could be advanced in favour of chemists supplying all articles officially mentioned in strict accordance with pharmacopœial requirements, and that was that at the present time the public have been educated to look to chemists for the best, and only the best, drugs, and it was of course necessary that this feeling of confidence should be maintained. He was of opinion that it was quite absurd to expect a chemist to supply pharmacopœial articles only when the substances happened to be mentioned in the B.P. As far as lay in his power he always discouraged any attempts being made by the authorities to entrap chemists, by asking them to supply such articles as milk of sulphur, in the expectation of being supplied with the old preparation containing lime.

Mr. Martindale observed that convictions under the Food and Drugs Act were often based upon the poison having been left out of the preparation asked for, such as paregoric without opium, etc.

Another member said that it would be extremely inconvenient to many chemists if they were always expected to supply pharmacopœial articles to the public. At the present time there were many people who were accustomed to a particular strength of seidlitz powder and a particular flavour for their black draught, and they would have no other.

Mr. Marsh thought that the crucial point of the seidlitz powder case referred to was that it really resolved itself into a chemist having been convicted for selling a larger dose of an article than that specified in the Pharmacopœia, since it was not denied that the relative proportion of the ingredients was the same as in

the official powder. If the decision was upheld a chemist would be liable for selling a black draught of a larger dose than that prescribed in the Pharmacopœia. Further, he remarked upon the sale of arsenical soap by oilshops at the present time, as one which required the attention of the authorities.

In the course of the subsequent discussion, which was taken part in by Messrs. Martindale, Parker, Robinson, Andrews, Hinde, and others, it was at first intended that a motion should be put to the meeting—proposed by Mr. Robinson, seconded by Mr. Parker—to the effect that the Pharmacopœia should be regarded as a standard for the preparations named in it, which were used for medicinal purposes, but not necessarily for those sold for commercial use, but it was ultimately decided to adjourn the meeting *sine die*.

Cambridge Pharmaceutical Association.—On Friday, February 7, Mr. F. J. Stoakley, lecturer of chemistry at the Technical Institute, gave a lecture entitled "Alcohols," illustrated by experiments, at the Technical Institute, East Road. There were about thirty members and friends present. At the conclusion of this most interesting lecture Alderman Deck, F.C.S., moved a hearty vote of thanks to the lecturer; this was seconded by Mr. E. Saville Peck, and was appropriately responded to by Mr. Stoakley, and thus a most successful evening was brought to a close.

The lecturer gave a description of the synthetical production of methyl alcohol; he also said spirits of wine might be produced synthetically, but that it was usually prepared by the fermentation of sugar. He showed that sugar was decomposed by yeast into alcohol and CO₂. The lecturer gave a lucid description of the conversion of starch into sugar, and from thence into alcohol, and showed the rectification of alcohol from fermented liquids by distillation of a bottle of port wine, and thus obtaining alcohol. He then dealt with the conversion of starch into fermentable sugar by the action of—

- a. Infusion of malt.
- b. Boiling with dil. acid.

He enumerated the important and many uses of spirit in pharmacy and commercial work generally, and finished this most interesting and useful lecture with definitions (explained by experiments) of—

- Methylated spirit,
Proof spirit, etc.

ENGLISH NEWS.

NOTTINGHAM AND NOTTS. CHEMISTS' ASSOCIATION.—The annual dinner of this Association was held at the Masonic Hall, on Thursday, February 13, and was very well attended. Amongst those present were Ald. Gibson (Manchester), Councillor FitzHugh, Mr. S. Cook, Mr. T. Mason (Chairman), Messrs. J. Wilford, G. W. Gill (Vice-Chairman), C. A. Bolton, Middleton, Beverley, R. Widdowson, W. Widdowson, Beilby, Deaville, Sergeant, Turton, Dadley, Hare, H. Wilford, R. Jackson, Gascoyne, Vallance, Radford, Wilson, and A. Eberlin (Hon. Secretary).—After the loyal toasts had been honoured, the Chairman proposed "The Pharmaceutical Society of Great Britain," to which Mr. Bolton (Local Secretary) replied.—Ald. Gibson, in a forcible speech, proposed "The Public Bodies of Nottingham," and paid a high tribute to the work done by Mr. FitzHugh.—Mr. FitzHugh, in responding, said he felt it to be an honour to serve this town as a member of the Council, and hoped the time would come when all public bodies would be included in one Corporation, as he believed it would be to the advantage of the town.—Mr. S. Cook also responded, and dwelt upon the magnitude of the work done by the Board of Guardians.—"Success to the Nottingham and Notts. Chemists' Association" was given by Mr. Gascoyne, and responded to by Messrs. J. Wilford (Treasurer) and Eberlin.—"The Visitors" was proposed by Mr. Gill, and responded to by Mr. Deaville and Stevenson.—"The Chairman" was proposed by Mr. FitzHugh, and drunk with musical honours.—Mr. Mason suitably replied.—The proceedings were interspersed with songs, recitations, etc., by Mr. Turner, Mr. Vallance, Mr. Beverley, Mr. Winslow, Mr. A. W. Young, and several members of the company.—Mr. H. Woodhouse proved an able and sympathetic accompanist.

NEW PHARMACY BRANCH AT BEDMINSTER.—A new establishment, being the first of a series of branches proposed to be started

in connection with the Central Store of Messrs. Henry Hodder and Co., Limited, the well-known chemists of Broad Street, Bristol, has been opened at 79, East Street, Bedminster. The premises have been fitted up with every kind of pharmacy requisite.

THE MEANING OF THE VERB "TO KNOW."—The *Evening Standard* thus comments upon the fact that the Marylebone magistrate declares that the fact of a servant making a casual purchase at a shop, from time to time, does not justify the shopkeeper in assuming that he knows her:—"We cannot but think, with all respect, that it depends upon the meaning attached to that very indefinite verb 'to know.' A tradesman who understands his business does not allow the handmaiden of a well-to-do neighbour to depart without such little attentions as he has time to bestow. If, as in the case referred to, it be a small chemist's shop, and the servant be housekeeper to a thriving medical man in the next street, we would almost undertake to say that the shopkeeper 'knew' her before she paid her third visit. It was the interpretation of the 'Sale of Poisons Act' which raised this question. The law forbids a chemist to sell poison to anyone 'unknown' to him, unless introduced. This chemist believed that his acquaintance with the housekeeper was sufficient for all purposes, and 'he thought her master, the doctor, might be angry if she were refused.' So he supplied a composition to kill mice, containing 'thirteen per cent. of strychnine and any quantity of arsenic.' Disaster followed. For in her zeal to destroy the rodents she contrived to poison her master's favourite dog, and he avenged himself by denouncing the obliging but incautious chemist. It might have reasonably been argued that he 'knew' his customer, within the meaning of the Act; but this course was barred by his neglect to enter her name and address, though he fulfilled its requirements in other particulars. So a fine of ten shillings and costs was imposed, and the poor man is aware henceforward that acquaintanceship over the counter will not justify him in selling 'strychnine to any amount.'"

A FATAL DOSE OF BELLADONNA.—An extraordinary fatality was reported on Wednesday, February 12, at an inquest held by Mr. W. M. Glugan, at St. Mary's, Isles of Scilly, touching the death of Joseph Hicks, an inmate of the Union.—William J. Hicks, brother of the deceased, stated that on Tuesday evening he, with his wife and sister-in-law, called to see his brother, who had been ill for a long time, and after being with him a short time deceased asked him to give him some medicine, which he would find in a cupboard. He found a small bottle about half full of some mixture, and his brother told him to pour the whole of the contents into a glass and to add to it the contents of a smaller bottle, containing a teaspoonful, and a teaspoonful of a mixture contained in a third bottle. This he did, and his brother swallowed the mixture in the glass. Shortly afterwards his brother said, "You will call and see me in the morning, and I shall be dead. I have taken my last dose." Witness then looked at the labels on the bottles, and found they were marked "for external use only." Being very much alarmed he called the matron, who sent him for the doctor, returning with him in less than five minutes. This statement was borne out by Emily Gendal.—Mr. J. Thornton Michilin, M.D., stated that when he arrived deceased informed him that at his request his brother had given him several mixtures. The bottle taken from the [cupboard had contained a mixture which, from the label, he inferred was of a poisonous nature. Deceased had probably brought the bottle from Penzance some time ago, as it bore the name and address of a chemist there. The second bottle had contained a preparation of belladonna and glycerin, and the quantity taken was not more than a quarter of a grain of extract of belladonna. The third bottle contained a lotion, and the small quantity taken could have done no harm. He administered an emetic and an antidote to the belladonna. Deceased recovered somewhat from the effects of the belladonna, but although he made several attempts to speak, he could not properly articulate, and died some hours afterwards. Deceased had been in a consumptive state for at least eighteen months, and suffered considerably from an ulcer in the back. He could not probably have lived beyond a week or ten days. In his opinion death was caused by the effect of the belladonna and exhaustion caused by the means used to counteract them.—The jury returned a verdict that death was caused by belladonna, administered by the brother at deceased's request, and the brother was severely censured for his carelessness.

PARLIAMENTARY INTELLIGENCE.

ROYAL COMMISSION ON VACCINATION.—There are indications of some impatience over the delay in the report of this Commission. Petitions for the early presentation of that report have been received at the House of Commons from various midland towns, and have been consigned to that euphonious substitute for a parliamentary waste-paper basket—the table of the House. It will be remembered that the Commission includes the names of one or two gentlemen well known to the Pharmaceutical Society and its members, and one honorary member of the Society, Professor Michael Foster, F.R.S.

SHOPS (EARLY CLOSING) BILL.—Sir J. Lubbock reaped the advantage of the "lightning legislation" on Wednesday last by carrying his Bill through the ordeal of a second reading. The Bill is identical with that of last Session, and as it recognises the important relations between pharmacists and the public by the insertion of a saving clause in favour of pharmaceutical chemists and chemists and druggists, the measure does not call for opposition on the part of the trade. Among the sponsors for the Bill are found the names of Mr. H. E. Kearley (Kearley and Tong, tea dealers, Mitre Square, E.C.), who moved an amendment to the address on the subject of the importation of adulterated merchandise, and Dr. Farquharson, who has on several occasions taken charge of Pharmacy Act Amendment Bills.

PROCEEDINGS UNDER THE PHARMACY ACT.

ACTION BY THE PHARMACEUTICAL SOCIETY.

THE SALE OF FELLOWS' SYRUP.

In the Market Harboro' County Court on Monday, Feb. 17, the Pharmaceutical Society of Great Britain sued Messrs. Symington and Thwaites, local grocers, for one penalty of £5 for a breach of the law by retailing or dispensing a compound of strychnine known as Fellows' syrup of hypophosphites, contrary to the provisions of the Pharmacy Act, 1868. Mr. T. R. Grey, barrister (instructed by Messrs. Flux, Thompson, and Flux), appeared for the plaintiff Society; Mr. J. H. Douglass, solicitor, defended.

In opening the case Mr. Grey said Fellows' syrup is a proprietary medicine, and an analyst would prove that the bottle sold by defendants contained as much as 1 grain of strychnine, one of the most dangerous poisons mentioned in the Schedule to the Act. Of course, ignorance that it contained poison could not be accepted as a plea, because on the outside wrapper which enclosed the bottle were words setting forth what the Act required.

Mr. Douglass pointed out that the bottle produced (like the one sold) was in a thin plain outside wrapper over the other.

Mr. Grey said that would not affect the case, and he went on to add that the proceedings were taken under 31 and 32 Vic., chap. 121, an Act to regulate the sale of poisons. As stated in the preamble it was passed for the benefit of the public, so that no one should sell poisons unless he had a proper technical knowledge of the subject. Having read the Sections bearing on the case, counsel quoted the cases of the Pharmaceutical Society *v.* Piper, reported in 93, 1st Queen's Bench Division, page 686, and the same *v.* Armson, 94, 2nd Queen's Bench Division, page 720.

Arthur Foulds then gave evidence as to purchasing a quarter of a pound of tea and a bottle of Fellows' hypophosphites from defendant's shop and handing them to Mr. Moon.

Cross-examined: It was on December 28 he purchased the things. He came from Manchester. Could not say if anyone locally had given information. Defendant's assistant served him from a case behind the counter. Was quite sure he did not go upstairs for it.

Mr. Douglass said, after the evidence taken, he should not contest the case, but he was instructed that defendants only bought three bottles of the medicine specially for a customer, who took one, and the other two were kept upstairs. Defendants did not know of the sale, and could not trace who sold it.

The Judge: Is this a case of Mother Siegel?

Mr. Grey: No; that is not a scheduled medicine.

Mr. Douglass suggested that his Honour should reduce the penalty.

The Judge: Have I any power to do that?

Mr. Grey said No.

Judgment was then given for plaintiff for £5 and costs. Three witnesses were in attendance.

POLICE PROSECUTIONS UNDER SECTION 17.

THE SALE OF VERMIN-KILLER IN LONDON.

Mr. Herbert Ensell Carne, a chemist, carrying on business at 12, Wigmore Street, Cavendish Square, was summoned by Chief Inspector Shannon at the Marylebone Police Court, on February 13, for selling strychnine to Julia Hadler, who was unknown to him, and was not introduced by a person known to him. Mr. Beck was for the defence. Mrs. Hadler is housekeeper to Dr. Charles Stonham, of 4, Harley Street, Cavendish Square, and said that, being annoyed by mice, she on January 18 went to the defendant's shop, which is close by, and was supplied by him with sixpennyworth of poison to kill them. He entered the sale in a book, and she signed it, but he did not ask her name or address. She had been in Dr. Stonham's service eight years, and had been into the defendant's shop several times to make small purchases for herself, but not for her master. The defendant advised her as to how she was to use the stuff, and she followed his directions. Unfortunately, Dr. Stonham's dog got hold of some of the stuff, and died in half-an-hour. Dr. Stonham was greatly annoyed at the loss of his dog, and he had some of the unused poison analysed. The result showed 13 per cent. of strychnine and "any amount of arsenic." He informed the police of the matter, and defendant told them that he let Mrs. Hadler have the poison as she said she came from Dr. Stonham, and he thought the doctor might be angry if she was refused. He had seen the woman two or three times in the shop.—Mr. Curtis Bennett held that it would be idle to say that the fact of a person making a casual purchase at the shop, or even saying that she was servant to a doctor, was "knowing her." The defendant might have made inquiries and verified her statement, but he did not. Her statement, as it happened, was true, but for aught the defendant knew, purchaser might have had a criminal intent and made an untrue statement. He fined the defendant 10s., with 2s. costs.

THE SALE OF VERMIN-KILLER IN LEEDS.

On the same day Mr. J. W. Howard, chemist, of King's Road, Headingley, Leeds, was summoned at the Leeds Town Hall, before the Stipendiary Magistrate (Mr. C. M. Atkinson) for an offence under the Pharmacy Act. The proceedings arose out of the sale by defendant of a preparation containing strychnine to Mary Grierson, aged 13, of 6, Victoria Road, Headingley, who subsequently used it for the purpose of committing suicide at home.—Mr. Ward prosecuted, and Mr. Bowling defended.—The defendant pleaded guilty.—Mr. Ward stated that Section 17 of the Pharmacy Act, which required the vendor of a poison to enter the name and address of the purchaser, the name and quantity of the article bought, and the purpose for which it was required in a book specially kept for the purpose, had been infringed by defendant. On January 26, Mary Grierson went to defendant's shop, and purchased a packet of "Vermin-Killer." She then went to Sunday-school, and afterwards to her bedroom. It was shortly discovered that she had taken some of the poison, from the effects of which she died the same day. An inquest was held, and a verdict of "Suicide whilst of unsound mind" was returned.—For the defence, Mr. Bowling contended that it was unnecessary for defendant to take the girl's name, as he knew her to be the daughter of Mr. Grierson. Defendant was unaware of the composition of the "vermin-killer" until after the inquest, when he wrote to the maker of the preparation, who replied that the powder did contain strychnine. When the girl went to defendant's shop she asked for some rat powder, as her father wished to destroy some rats. Defendant was fined £3.

NOTES AND QUERIES.

Owing to pressure of matter, this column is unavoidably omitted this week, and the publication of several replies to correspondents is also deferred.

NOTICES TO CORRESPONDENTS.

All Articles, Letters, Notices, and Reports intended for publication in the Journal, Books for Review, and communications respecting Editorial matters generally must be Addressed "Editor, 17, Bloomsbury Square, London," and not in any case to individuals supposed to be connected with the Editorial Staff. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

LETTERS.

DETECTION OF ACONITINE.

A READER says:—"Professor Dunstan will find that the purple precipitate of aconitine and potassium permanganate has been previously observed, and, indeed, indirectly described in *The Medical Times and Hospital Gazette* of December 8, 1894, page 798, under the head of 'Antidote to Alkaloid Poisons,' viz., one centim. (c.c.) of a 1 per cent. solution of aconitine was left with a tenth normal (half a milligramme of potassium permanganate in a weak acid solution) and after several hours the pink solution became colourless. This, diluted so as to contain one per twenty thousand of alkaloid, whilst still responding to the iodine reagents, did not give the sensory effects of aconitine, but the bitterness of aconine, although one per three thousand (dilution) afforded a strong tingling.' In the same series of articles it is recorded that the amorphous aconitine immediately decolorises acid permanganate, whilst the crystalline does not do so."

HOMŒOPATHIC PRESCRIPTION.

MR. W. H. EDWARDS, of Guy's Hospital, replies to the query in last week's Journal as follows:—"The homœopathic prescription—

℞ (1) Sulph. 2/30 1-11.
(2) " 2/200 2-12.

Mitte tales pulv., xii.

Sig.—A powder night and morning in a wineglass of water.

should be read:—(1) Sulphur: 2 grs. in each powder of attenuation number 30; number powders 1 to 11, viz., 1, 3, 5, 7, 9, 11. (2) Sulphur: 2 grs. in each powder, of attenuation number 200; number powders 2 to 12, viz., 2, 4, 6, 8, 10, 12. Send such powders, xii., viz., six of each kind. It would be preferable to add to the physician's directions: 'To be taken in numerical order.' Each powder, according to homœopathic etiquette (!) should be wrapped separately in tin foil (after paper) and numbered outside to preserve its properties (?). With regard to making attenuations required, attenuation No. 1 is 1 in 100; attenuation No. 2 is 1 in 1000, and so on. I leave it to your correspondent to work out the quantity of sulphur he will require. Sugar of milk is the diluent. I will also refer him to the homœopathic B.P. for *modus operandi*, which he will find a lengthy and arduous one (*experientia docuit*)."

MR. WALTER WHITE, of Newport, Isle of Wight, thinks "the homœopathic prescription should be dispensed as follows:—

℞ Sulph. gr. 2 of 30 dilution. Number 1, 3, 5, etc.
" gr. 2 of 200 dilution. Number 2, 4, 6, etc.

Send 12.

Label.—One to be taken, according to number, night and morning, etc.

"To prepare the dilutions, take 1 grain sulphur and triturate with 100 grains sacch. lactis. This forms No. 1 dilution. Take of No. 1 dilution 1 grain, and triturate with 100 grains sacch. lac. to form No. 2. Repeat the process till you arrive at No. 30 and No. 200, then dispense as above."

Mr. LOUIS JNO. WELLS, of Newmarket, says "To translate the prescription more fully, it reads thus:—

℞ Sulphur 30 grs. ij.
Ft. pulv. mitte vi.

Label the powders separately 1, 3, 5, 7, 9, 11.

℞ Sulph. 200 grs. ij.
Ft. pulv. mitte vi.

Label the powders separately 2, 4, 6, 8, 10, 12.

The twelve powders number from 1 to 12, one to be taken night and morning in a wineglass of water.

So it is really two prescriptions; containing two kinds of powders, and they are taken alternately, hence the numbering one lot odd

number and the second lot even, thus getting the series 1 to 12; the 30 and 200 show the strength of the powder, or the attenuation as it is called, but it is no use explaining this, as your correspondent would save time and trouble by buying it ready made. The twelve powders are dispensed together, under the directions, of course."

MR. T. A. OAKLEY HEALE thinks "it is intended to send one dozen four-grain powders, each to contain—

℞ Sulphur, No. 30 potency 2 grs.
" No. 200 " 2 grs.

unless the figures 1-11, 2-12, apply to size of pills, when it would mean two pills of each potency to be crushed and made into a powder, and one dozen such powders sent."

OIL OF WHITE PEPPERMINT.

MR. JOHN MOSS writes as follows:—"Will you permit a correction of your report of my remarks at the Evening Meeting on Tuesday last? I did not say that the above was used 'only' in high-class confectionery, but that it was 'mostly' so used. Nobody at the meeting needed to be told that the white oil is preferred and used by pharmacists, but as the requirements of the latter are smaller than those of confectioners, my statement was quite correct, and hardly, I thought, exposed me to the good-natured banter of the President. The matter is trifling enough, but being credited with implying that pharmacists do not use the best and most esteemed oil of peppermint, which is entirely at variance with my experience, I hope you will find space for this note."

MCDADE'S ANTISYPHILITIC MIXTURE.

MR. J. G. HARRIS, of Wimbledon, sends the following formula for this preparation, which is apparently the same as "Succus Alterans," referred to in the 'Extra Pharmacopœia,' 8th edition, page 397:—

℞ Fl. Ext. Smilax Sarsaparilla,
" " Stillingia Sylvatica,
" " Lappa Minor,
" " Phytolacca Decandra aa ʒij.
Tinct. Xanthoxylum Carolinianum ʒi. M.

He says:—"A teaspoonful in water three times a day before meals, gradually increasing the dose to a tablespoonful, is said to be beneficial in either primary, secondary, or tertiary syphilis. The extracts must be made from the freshly-gathered herbs." Messrs. Parke, Davis and Co., send similar information, together with a pamphlet containing medical opinions on the use of the mixture.

CALCIUM CARBIDE.

MR. W. A. BLUNT, of Shrewsbury, says:—"Your correspondent can obtain calcium carbide and all the necessary apparatus for generating and storing acetylene, from Messrs. Read, Holliday, and Sons, Limited, Huddersfield, who are making a specialty of this method of illumination." Mr. Richard Reynolds, of Leeds, and other correspondents write to the same effect. The price for small quantities of the carbide is said to be 8*d.* per lb. The firm above mentioned also makes an automatic acetylene gas generator.

SOLUTION OF MORPHINE ACETATE.

MR. G. W. BLYTHE, of Doddinghurst, Essex, suggests the following as an original way of making a strong and stable solution of morphine acetate, whether for administration by the stomach or hypodermically:—"Mix water, 3 parts (by measure), with glycerin, 1 part, and heat the acetate in the solution till dissolved."

ANSWERS.

"ALCOHOL."—We do not know of any remedy likely to fulfil the conditions you specify.

C.P.R. has omitted to enclose his name, and is referred to our rule with regard to anonymous communications.

"SUBSCRIBER."—Apply to the Secretary, Royal Veterinary College, Red Lion Square, London, W.C.

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs. Barrow, Baxter, Bilbrough, Bindloss, Blunt, Bridge, Cocks, Connan, Conll, Edwards, Harris, Hill, Hyslop, Jackson, Jarvis, Jordan, Kirkby, Maish, Moss, Netting, Noak, Parker, Postlethwaite, Prescott, Purves, Reece, Reynolds, Rideal, Robinson, Row, Smith, Thomas, Thompson, Vogl, Wells, White, Wolff, Woodruff.

The publication of several communications is unavoidably deferred, owing to pressure on our space.

“THE MONTH.”

Thyro-iodin. Chemical investigation of the thyroid gland by Professor Baumann, of Freiburg, in conjunction with clinical trial of the product by Dr. Roos has led to the important result of obtaining from the thyroid glands of sheep a product amounting to from 0.2 to 0.5 per cent., which possesses in a high degree the peculiar therapeutic activity of the gland, and is almost as powerful as a corresponding quantity of the fresh gland. One of the most remarkable characters of this constituent of thyroid gland is that it is an iodine compound. According to the account given by Baumann, thyro-iodin is described as an amorphous brown powder, almost insoluble in water and readily soluble in alcohol. It is readily dissolved by alkalis and is again precipitated on adding an acid. When heated, it swells up and gives off an odour of pyridin. Thyro-iodin does not give any of the reactions of albumin; it always contains phosphoric acid corresponding to 0.4 or 0.5 per cent. of phosphorus, and possibly it may be a product derived from the nuclein acids of Kossel. By repeated purification a product has been obtained containing no less than 9.3 per cent. of iodine, but the proportion of phosphorus was not equally increased. Examination of the human thyroid gland showed that it contains a similar iodine compound in the normal condition, whereas in cases of goitre the amount of iodine appeared to be smaller. The discovery of this organic iodine compound appears to throw a light upon the use of iodine in the treatment of affections of the thyroid gland, and it offers an explanation of the fact observed by Kocher, that preparations of thyroid gland are much more rapidly effective than saline compounds of iodine. It is suggested that this difference is analogous to that observed in the assimilation of iron when administered in the form of organic compounds and in organic salts, etc. Professor Baumann speaks in a highly complimentary manner of the assistance that has been rendered to him in carrying out his investigation by Messrs. Fr. Bayer and Co., of Elberfeld, who have now undertaken the manufacture of the preparation for medicinal use (*Zeitschrift Physiol. Chem.*, xxi., 319).

Copper Silicide. M. Vigouroux has prepared a silicide of copper, SiCu_2 , by heating silicon and copper together in an electric furnace. The silicide is a very hard and brittle substance, of the density 6.9 at 18°. The halogens attack it with incandescence; fluorine acts upon it at the ordinary temperature, chlorine before it reaches red heat, and the others at higher temperatures. At a red heat dry oxygen or air converts it into a silicate, and moist air oxidises it in the cold. Hydracids also attack it, forming salts of copper and silica, potash in solution blackens it, and alkaline carbonates in a state of fusion decompose it if finely powdered. The vapour of water is reduced by the silicide (*Comp. rend.*, cxxii., 318).

Lactyltropheine. This preparation forms bundles of acicular needles, melting at 74° to 75° C. It is readily soluble in water, alcohol, ether or chloroform. The hydrochloride forms colourless crystals readily soluble in water or alcohol. The hydriodide is also crystalline, freely soluble in water, sparingly in alcohol. Lactyltropheine is obtained by heating an aqueous solution of equal parts

lactic acid, tropine, and hydrochloric acid (s.g. 1.12) to 70° or 100° C. for several days on a water bath, taking care to replace any hydrochloric acid evaporated. The liquid is then made alkaline, and the base is shaken out with chloroform, the residue left after evaporating down the separated chloroform solution being purified in the usual manner. Lactyltropheine has the composition represented by the formula: $\text{C}_8\text{H}_{14}\text{NO}\cdot\text{CO}\cdot\text{CH}(\text{OH})\cdot\text{CH}_3$ (*Pharm. Centralh.* xxxvii., 73).

Lithium Hydride. A compound of the formula LiH , has been obtained by M. Guntz, by heating lithium in an atmosphere of hydrogen. The hydride formed is decomposed by water, as follows:—



one kilogramme of the compound yielding 250 Gm., or 2780 lit. of hydrogen. Heated in a current of nitrogen, the hydride is decomposed, with formation of a nitride, and when heated in a current of air it burns, lithia being produced (*Comp. rend.*, cxxii., 244).

Theobromine Salicylate. E. Merck describes this salt as crystallising in well-defined needles of definite composition, and it is a very stable compound as compared with the double compound of theobromine sodium with sodium salicylate, known as diuretin, which is decomposed even by carbonic acid and is also objectionable on account of its alkaline taste, which is rendered still more disagreeable by the sweet taste of salicylic acid. The definite salicylate is therefore likely to be a preferable form for administration of theobromine (*Merck's Jahresbericht*).

Albumin in Urine. D. A. Jolles recommends the following reagent as a convenient test for albumin in urine:—

Mercuric chloride	10
Succinic acid	50
Sodium chloride	10
Water	500

The filtered urine—4 to 5 C.c.—is shaken with 1 C.c. of 30 per cent. of acetic acid, and then with 4 C.c. of the above test liquid. In order to make allowance for the presence of mucin, equal quantities of urine and acetic acid are shaken in a second tube, then mixed with 4 C.c. distilled water and again shaken. By comparing the two tubes the presence of a trace of albumin may be recognised with certainty. The test is said to be more delicate than that with ferrocyanide and to be capable of showing the presence of one part of albumin in 120,000 parts of urine (*Apotheker Zeitung*, xi., 96).

Triphenin. Under this name J. von Mering recommends as an antipyretic and antineuralgic, a compound homologous with phenacetine and obtained by heating *p*-phenetidine with propionic acid. It melts at 120° C., and is soluble in 2000 parts of cold water. A dose of from 7 to 9 grains is said to reduce the body temperature 2 or 3 degrees C. (*Pharm. Centralh.*, xxxvii., 73).

Separation of Albumose from Peptone. A. Bömer recommends the use of zinc sulphate as preferable to ammonium sulphate for the precipitation of albumose, as it obviates the difficulty encountered in quantitative operations from the presence of nitrogen in the precipitating agent. Albumose is completely precipitated by zinc sulphate, but in case the material operated upon contains ammonium salts, the possible formation of a sparingly

soluble double sulphate $(\text{NH}_4)_2\text{SO}_4 \cdot \text{ZnSO}_4 + 6\text{H}_2\text{O}$ must be borne in mind and provision made against consequent inaccuracy in determining albumose on the basis of the nitrogen in the precipitate (*Zeitsch. Analyt. Chem.*, 1895, 562).

Amygdophenine. This is a derivative of *p*-amidophenol, analogous to phenacetine in constitution, one atom of hydrogen in the amide group being replaced by a mandelic acid rest and one atom of the hydroxyl group by ethyl carbonate. It is a greyish-white voluminous crystalline powder, very sparingly soluble in water. R. Stüvel reports that it is serviceable in rheumatic affections of the joints, and is without objectionable action. It is anti-neuralgic, but of little value as an antipyretic. The daily dose is 92 grains (*Merck's Jahresbericht*, p. 43).

Iodates. Ruhemann has shown that sodium iodate, when brought into contact with the mucous membrane, eliminates iodine and he has recommended it as preferable to the organic iodine compounds commonly used. More recently he has extended his observations to other iodates, especially those of silver, lithium, mercury, and some of the alkaloids. Subcutaneous injection of 1.5 grain of the lithium salt has been found very efficacious in cases where there was copious elimination of uric acid and somewhat larger doses given internally have been useful in chronic gout. Scopolamine iodate is said to be three times as active as the other salts and it, as well as atropine iodate, produces mydriasis more rapidly than the other salts of those bases. The solution of atropine iodate can be kept for a long time unaltered without addition of any antiseptic (*Merck's Jahresbericht*, p. 33).

Volumetric Determination of Lead. A. S. Cushman and J. H. Campbell refer to the observation of Fresenius, that no really good method exists which can be generally employed for the volumetric determination of lead simply and exactly, and they describe a modification of Schwartz's method (*Dingl. Poly. Jour.*, clxix., 284), which they consider of value. The lead is precipitated as sulphate, ammonia added, then a slight excess of acetic acid, after which boil until the lead sulphate is dissolved. Moisten a filter with ammonia, pass the liquid through, and afterwards wash the filter, first with water containing ammonium acetate in solution, and finally once or twice with hot water. Cool the filtrate, and run in from a burette an excess of standard bichromate solution, stirring until the precipitate settles rapidly and the supernatant liquid has a yellow colour. Then allow to settle for a few minutes, filter under pressure, wash a few times, and titrate the filtrate against standard ammonio-ferrous sulphate. It is stated that, after a little practice, the method described can be carried out as detailed in about thirty minutes. In general, the results obtained are a trifle low, the mean of the amount of lead recovered in twenty determinations being 99.6 per cent. of that taken (*Journ. Amer. Chem. Soc.*, xvii., 901).

Cerotic and Melissic Acids. T. Marie, in a very lengthy paper, gives an account of a research, the results of which lead him to the conclusion that the body known as cerotic acid is a mixture of two distinct acids. One of these appears to be identical with the melissic acids obtained on oxidising myricic and melissic alcohols, and is present to the extent of 40 per cent. The name "cerotic acid" he proposes to retain for the body present in the larger proportion. Analyses of the two acids, and of their ethers, salts, and other derivatives, indicate that

the formula for melissic acid is $\text{C}_{30}\text{H}_{60}\text{O}_2$, and that of cerotic acid, $\text{C}_{25}\text{H}_{50}\text{O}_2$. Details are given concerning a number of derivatives of both acids (*Ann. de Chim. etc.* [7], vii., 145).

Assay of Benzoates. G. Rebière has devised a method of determining the proportion of base and benzoic acid in benzoates generally, and particularly in benzoates of the alkalies. By dissolving a weighed quantity of a benzoate in water, adding hydrochloric acid and evaporating to dryness, the base will alone remain in the form of chloride, and can be determined by volumetric solution of argentic nitrate. The same quantity of the benzoate is then again dissolved in water, and the amount of sulphuric acid requisite to exactly combine with the base calculated from the previous operation and added to the solution. The benzoic acid, previously in combination, will be liberated, and can be determined by volumetric alkali and phenolphthalein. The results obtained are said to agree with the calculated quantities. In the case of benzoate of ammonia a modification has to be made (*Journ. de Pharm. et de Chim.* [6], iii., 113).

Test for Nitrites. K. Gorter points out that in 1875 Plugge showed that mercurous nitrate does not give a red colour with phenol when free from nitrous acid, and that the minutest quantity of nitrous acid suffices to produce red coloration. Hence he suggests that in the test recommended by Denigés (see "Month," Nov., 1895, p. 365) the use of mercurous acetate is the only novelty, and that the reaction is really the same as that suggested by Plugge for detecting and determining nitrites (*Apotheker Zeitung*, xi., 95).

Tannoform. Under this name, E. Merck has introduced a condensation product of nut-gall tannin with formic aldehyde. Its composition is represented by the formula $\text{C}_{20}\text{H}_{20}\text{O}_{18}$. It is a reddish-white, light powder insoluble in water, but soluble in alkaline solutions. It melts at 230°C . with decomposition. Several eminent dermatologists have found this product to be very useful in the treatment of various forms of skin disease, and it is quite harmless. Constitutionally, tannoform may be regarded as a methylene ditannin, and its formation is represented by the following equation:—



Similar compounds obtained from other kinds of tannin are distinguished as oak bark tannoform, quebracho or rhatany tannoform, etc., according to the plant from which the tannin is obtained (*Merck's Jahresbericht*, 1895).

Bismal. This is a bismuth salt of methylene digallic acid, prepared by E. Merck. According to Dr. v. Oefele, it is a useful astringent for internal administration in cases of diarrhoea which are not influenced by opiates. The dose is from 1.5 grain to 4.5 grains (*Merck's Jahresbericht*, 1895).

Testing of Butter. The method of testing for adulteration by determinations of viscosity, suggested by Killing, has been subjected to examination by Pollenske, by direction of the German Sanitary Department, and the viscosity of butter fat has been found to vary so much that a very considerable admixture of margarine might escape detection (*Apotheker Zeitung*, xi., 97).

Testing of Medicines.

Dr. E. Lücker reports the following observations:—Ether frequently gives indications of the presence of hydrogen peroxide, and sometimes of vinyl-alcohol. Glycerin was often found to contain sulphuric acid and ammonia: on warming with dilute sulphuric acid, the odour of volatile fat acid was always observed. The samples tested always had a reducing action upon Nessler reagent. Copaiba balsam, capable of bearing the testing of the German *Arzeneibuch*, could not be obtained. Chloral hydrate sometimes contained an admixture of alcoholate. Sodid carbonate frequently contained not only more monocarbonate than it should do, but also chloride and sulphate. Calomel was not unfrequently found to contain some mercuric chloride (*Apotheker Zeitung*, xi., 104).

Hydrazide and Azide of Carbonic Acid.

Curtius and Heidenreich state that when hydrazine hydrate reacts with urea at 100° C., hydrazide carbamic acid is formed—



By heating carbonic ester with hydrazine hydrate to 100° C., carbonylhydrazide is formed, $\text{CO}\left\langle \begin{array}{l} \text{NHNH}_2 \\ \text{NHNH}_2 \end{array} \right.$ It melts at 152° C., is soluble in water with feeble alkaline reaction and forms salts with two equivalents of acid. By treating the hydrochloride in a water solution with two molecular proportions of sodium nitrite, the azide of carbonic acid, $\text{CO}\left\langle \begin{array}{l} \text{N} \\ \text{N}_3 \end{array} \right.$ is formed, a colourless oil, which explodes violently when touched with a glass rod. This compound is readily soluble in water, alcohol, or ether: it may be regarded as nitrogen carbonyl and related to chlorocarbonyl, COCl_2 , as hydrazotic acid is related to hydrochloric acid. When the oily product is shaken out with ether and the solution evaporated, the carbonylhydrazide remains in the form of spiky crystals, having a stupefying smell analogous to sulphuretted hydrogen (*Journ. Prakt. Chem.*, 52, 433).

Hydrazine.

This body has hitherto been known only in the state of hydrate, $\text{N}_2\text{H}_6\text{O}$, but it has now been obtained by L. de Bruyn in the free state, N_2H_4 , by decomposition of the hydrochloride with sodium methylate dissolved in methyl alcohol—

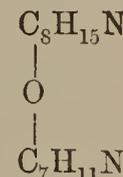


Hydrazine may also be obtained by heating the hydrate with baryta to 100° C. and distilling under reduced pressure. In the free state hydrazine is a liquid boiling at 113°·5 C. without decomposition; it solidifies when cooled below 0° C., and then melts at 1°·4 C. Hydrazine is a stable body and can be heated above 300° C. without decomposing: it reacts violently with the halogens: with solid sulphur it forms sulphuretted hydrogen: at the ordinary temperature it readily oxidises with elimination of nitrogen and, consequently, must not be exposed to the air (*Berichte*, xxviii., 3085).

Lupanine.

A comparative investigation conducted by Shermann Davis under the direction of Professor E. Schmidt has led to the conclusion that the alkaloids in the seed of *Lupinus angustifolius* and *L. albus* have a composition represented by the formula $\text{C}_{15}\text{H}_{24}\text{N}_2\text{O}$, as indicated by Siebert and Soldaini. The deliquescent base

obtained by Soldaini from white lupine seed is identical with the liquid base obtained from the same material, and both are identical with the liquid base obtained by Siebert from blue lupine seeds. The designations "liquid" and "deliquescent" are inappropriate, since all these products are readily crystallisable from petroleum spirit forming needles melting at 44° C. The aqueous solution of the base is dextro-rotatory. The solid base melting at 99° C. obtained by Soldaini from white lupine seed has also the formula $\text{C}_{15}\text{H}_{24}\text{N}_2\text{O}$, and it is a racemic compound of dextro- with lævo-lupanine, which can be separated into its components by converting them into sulphocyanides, and it can be reproduced by mixing in water solution equal parts of the dextro- and lævo-bases. These bases do not contain either a hydroxyl, methoxyl, ketone or aldehyde group. By the action of bromine the hydrochloride of dextro-lupanine is convertible by hydrolysis into two bases, $\text{C}_8\text{H}_{15}\text{NO}$ and $\text{C}_7\text{H}_{11}\text{NO}$, and since each of them contains one hydroxyl group, it is probable that the constitutional formula of lupanine may be represented by the accompanying formula—



—(*Apotheker Zeitung*, xi., 94).

Luteol.

This is the trivial name applied to oxychlor diphenylquinoxalin, a new indicator, which is described by W. Autenrieth as possessing certain advantages over phenolphthalein and litmus. The name must not be confused with that of the yellow colouring matter of *Reseda luteola*—luteolin—recently referred to by A. G. Perkin (*Proc. Chem. Soc.*, 160, 37). Luteol occurs in fine, woolly, yellowish needles (m. p. 246°), which are insoluble in water, sparingly soluble in cold alcohol, but readily soluble in hot alcohol and in ether. Luteol is also insoluble in dilute hydrochloric acid, only sparingly soluble in the concentrated acid, and forms a red solution in concentrated sulphuric acid, being re-precipitated from the latter solution on adding water. It expels carbonic acid from carbonates, and is readily dissolved by alkalies, a yellow solution being formed. A distinct yellow colour appears on adding a few drops of an alcoholic solution of luteol to 5 to 10 C.c. of a solution obtained by the addition of a drop of dilute soda-lye to one litre of water, the new indicator being therefore decidedly more sensitive than either phenolphthalein or litmus. Another advantage of luteol over phenolphthalein is that it is applicable in the presence of ammonia, whilst as compared with litmus there is no intermediate colour produced during the change (*Zeit. f. Anal. Chem.*, xxxv., 68).

Ergot.

As the result of an extended series of experiments, Beckurts and Grothe have confirmed the opinion previously expressed by Keller, that the ergot of Russia and Austria contains the largest amount of cornutine. It has also been found that the smaller-sized ergot contains most cornutine and is, therefore, preferable to the selected large grains. The authors recommend that in drying ergot it should not be exposed to heat, and they consider exposure over quicklime is the only method admissible (*Zeitschr. allg. Oesterr. Ap.*, V., 1896).

Juniper Tar.

In the South of France this tar is made by dry distillation from *Juniperus oxycedrus* and other varieties of juniper, but no tests are given for its identification or distinction from other kinds of tar in any of the pharmacopœias. Hirschsohn finds that the specific gravity of juniper tar varies from 0·978

to 1.102, and it is only partially soluble in alcohol of 95 per cent., but is perfectly soluble in aniline, while birch tar is only in part soluble. The aqueous extract of juniper tar gives no red coloration with aniline and sulphuric acid, and in this respect it differs from pine tar. With very dilute ferric chloride, the aqueous extract of juniper tar gives a reddish coloration, while birch tar extract gives a green colour (*Pharm. Zeitschr. f. Russland*, 1895, 52).

Influence of Light on Vegetation.

C. Flammarion has studied the action of different rays of the solar spectrum upon sensitive plants. The houses in which the plants were grown were glazed with red, green, and blue glass respectively, others being kept under ordinary white glass to serve as a check. It was found that the growth in height of the plants followed the order—red, green, white, blue, the difference being very marked in the case of the red. The action of red light was also most pronounced as affecting the vigour and activity of vegetation, white coming next in this case, then green, and blue again last. Red light is described as producing a similar effect to a chemical manure, while under blue glass development was almost stationary (*Comp. rend.*, cxxi., 957).

Boric Acid in Nature.

H. Jay deals with the prevalence of boric acid in nature, his observations possessing special value in connection with the use of the acid as an antiseptic in articles of food. The ash of fruits was found to contain from 1.5 Gm. to 6.4 Gm. of boric acid per kilo. Similarly, the ash of sea-weed, plane-tree leaves, wormwood tops, chrysanthemum flowers, and onions yielded from 2.1 Gm. to 4.6 Gm. per kilo. The plants which seem to absorb the acid with least facility are the cereals (wheat, barley, rice, and rye), certain fungi (*champignons de couche*), and cress, not more than 0.5 Gm. being found per kilo. of ash in those cases. The urine, milk, and blood of various animals have been examined for boric acid, but it was found in the urine only—to the extent of 0.0086 Gm. per litre in that of the cow, and 0.0075 Gm. in that of the horse. In conclusion, it is stated that boric acid is distributed over the chief part of the globe, if not the whole; both wild and cultivated plants absorb it from the soil and water whenever they meet with it, and most important of all, the acid is not assimilated when introduced into the animal stomach in small quantities, but is eliminated with the urine and other excretions (*Comp. rend.*, cxxi., 896).

Cod-Liver Oil.

W. Dulière has examined genuine cod-liver oil, and compared its characters with those of other oils. He finds the gravity stated by the Belgian Pharmacopœia (·920 to ·922) too low, and recommends the addition of a maximum acidity permissible, and limits within which the saponification number, iodine number, index of refraction and heat evolved with sulphuric acid should be stated (*Annales de Pharm.*, ii., 41).

Localisation of Daphnin.

L. Sauvan has investigated the localisation of the glucoside daphnin in *Daphne alpina* and *Daphne gnidium*; the reactions employed were the golden-yellow colour produced by solution of potash and the orange or blood-red by nitric acid, the results being confirmed by Errera's method with alcohol and alcohol acidified with tartaric acid. Sauvan has found that the root contains but little daphnin; the stem is much richer in the glucoside, which is principally contained in the outer cell-layers of the

cortex and in the bast, and is present most abundantly when the plant is flowering and fruiting. Both petiole and lamina of the leaf yield the reactions, but the fruit and the seed coats contain more of the glucoside than any other part of the plant. *D. alpina* appears to contain daphnin more than *D. gnidium* (*Répert. de Pharm.* [3], vii., 55).

Preparations of Kola.

J. Jean has determined the proportion of kolanin and caffeine (including theobromine) contained in various samples of kola seeds, as well as in certain galenical preparations made from them. The alkaloids were determined by the lime and chloroform method, but details of the determination of the kolanin are not given. The best seeds were those from Sierra Leone, which contained as much as 2.4 per cent. of caffeine and theobromine and 1.2 per cent. of kolanin. As the best preparation, the author recommends the tincture, since it contains practically all the kolanin, together with the majority of the alkaloids; upon the presence of kolanin particular stress is to be laid by reason of its decomposition in the stomach and consequent presentation of the alkaloids in a nascent condition. Of the extracts of kola examined, that prepared according to the directions of the Codex alone represented the drug, and such an extract should be the only one used for the preparation of a liquid extract (*Rép. de Pharm.* [3], vii., 49).

Oil of Russian Anise.

G. Bouchardat and M. Tardy have examined the essential oil of Russian anise to ascertain what it consists of, in addition to anethol, the chief constituent. As a result they have been able to separate two compounds—aniseic aldehyde and a ketone (*acétone anisique*). The first occurred more abundantly, 22 kilos. of oil yielding 80 Gm., whilst only about 20 Gm. of the ketone was obtained. The aldehyde has an odour resembling that of hawthorn or dry hay; its density at zero is 1.141, and its formula is $C_{16}H_{18}O_4$. It does not affect the plane of polarisation, and it combines with sodium bisulphite to form laminated and pearly crystals. On oxidation, the crystals yield a product identical with aniseic acid, $C_{16}H_{18}O_6$, crystallising from ether in needles that melt at 182°. Like the aldehyde, the ketone exists naturally in the oil, being derived from estragol or its isomer—anethol—by oxidation. It is optically inactive, has a density at 0° of 1.095, and an odour recalling that of the aldehyde. It also forms crystals of similar appearance with sodium bisulphite, but they contain a little less sodium. The composition of the ketone accords with the formula $C_{20}H_{30}O_4$ or $C_{20}H_{32}O_4$. Its oxidation results in the formation of aniseic acid as the chief product, together with traces of oxalic acid and a volatile acid as yet undetermined. A small proportion of aniseic acid was naturally present in the oil, and also traces of a liquid, the odour of which recalled that of cuminic aldehyde. Further particulars concerning the composition of the oil will be published later (*Comp. rend.*, cxxii., 198).

Oil of Pycnanthemum Lanceolatum.

W. G. Correll has examined a specimen of the oil distilled from *Pycnanthemum lanceolatum*, Pursh., collected whilst in full bloom, and found the specific gravity was 0.9135 at 20°, whilst the specific rotatory power indicated was $[\alpha]_D = +3^\circ.25$. Oil distilled from the same plant before blossoming had a specific gravity of 0.9160, and $[\alpha]_D = +0^\circ.88$. Carvacrol was isolated from the first oil to the extent of 7.2 per cent., whilst 9 per cent. was indicated in

the second specimen. Negative results were yielded by tests for pulegone, though duplicate experiments were performed successfully with oil of pennyroyal (*Pharm. Review*, xiv., 32).

Test for Thymol and Carvacrol.

The presence of carvacrol in the oil of *Pycnanthemum lanceolatum* was indicated in W. G. Correll's experiments by the beautiful purple-red colour produced on heating 0.01 Gm. of oil with 0.01 Gm. of caustic potash and 20 drops of chloroform. Commercial carvacrol and thymol both gave a similar purple-red colour with this test, as did also the oils of monarda and thyme, which are known to contain those phenols. Three samples of pennyroyal oil were examined; two each of spearmint and turpentine oils; and one each of the oils of spike, lavender, rosemary, balm, peppermint, juniper, savin, cedar, balsam fir, and white spruce, but none of them gave this characteristic reaction for carvacrol and thymol (*Pharm. Review*, xiv., 33).

Lignosulphite. This is a liquid obtained in the production of wood pulp for paper-making by treating pine wood with a boiling solution of lime and sulphurous acid. The liquor extracts ethereal oil, resin, and the balsamic constituents of the wood, as well as other substances produced by the action of sulphurous acid, and it has an agreeable aromatic odour. The use to which it has been applied by Dr. Hartmann, Professor Schrötter, and other physicians in Austria is for inhalation in the treatment of diseases of the lungs and respiratory organs (*Merck's Jahresbericht*, p. 95).

Umbellaria Californica, Nutt.

At the last meeting of the Berlin Pharmaceutical Society, Dr. Busse gave an account of the leaves of this plant, which are erroneously stated to be used in the preparation of Bay rum. They have a strong narcotic odour and are capable of producing toxic effects. An oil is obtained from the leaves, yielding at 167° to 168° C. a fraction of pleasant odour resembling terpinol, and having a composition represented by the formula $C_{20}H_{32} \cdot H_2O$. The fraction distilling at 215° to 216° C. is narcotic, and dissolves in concentrated sulphuric acid with red colour. This is named umbillol, and its composition is represented by the formula $C_8H_{12}O$ (*Apotheker Zeitung*, xi., 108).

Paper-making in Corea.

It is not generally known that the best kinds of paper met with in China and Japan are the produce of Korea. Varat says that "the Corean paper excels the very best that is made in China and Japan." It is produced entirely by manual labour and without the use of any machinery. The raw material used for the better kinds is obtained from the bark of *Broussonetia papyrifera*, which is collected in spring and beaten in water containing a large admixture of wood ashes until reduced to thick pulp. This is taken in large ladles and spread upon frames of bamboo so as to form thin sheets. Another kind of paper is made from old scraps trodden into pulp much in the same way that grape juice is expressed in some countries and though this process of pulping is slow, it has the advantage of not breaking the fibre so much as when machinery is used. After the pulp has been made into paper the sheets are piled up to a height of six feet, and then cut into pieces, to be again subjected to the stamping with the feet. At the same time the roots and seeds of a plant called "tackpoul" are added, the soluble parts of which are supposed to give tenacity and toughness to the paper (*Apotheker Zeitung*, xi., 107).

Analyses of Honey.

F. B. Guthrie publishes the results of the analyses of four samples of Australian honey, the origin of which was more or less definitely known. No. 4 was a sample in comb, and appeared to have granulated slightly, the left-handed sugar being consequently in excess of the dextrose. A considerable quantity of pollen, wax, etc., was present in the same sample, the large quantity of ash being thus explained. The approximate composition of the samples was as follows:—

Sample.	Water at 100° C.	Ash.	Dextrose.	Levu'ose.	Cane Sugar.	Combined Water and Unknown.
No. 1....	21.62	.23	37.21	32.23	3.70	5.01
„ 2....	19.2	.19	38.16	33.24	1.80	7.59
„ 3....	16.20	.03	32.30	31.80	13.60	6.07
„ 4....	21.56	.42	35.57	36.90	1.20	4.35

The third sample was regarded with some suspicion by bee-keepers, and the abnormal amount of cane sugar present rendered its purity doubtful. At the same time it is well known that bees fed on cane sugar yield honey containing an excess of that substance, and Guthrie considers it would be unsafe to assert positively that the sample represented an adulterated article (*Agricult. Gaz. of N. S. Wales*, vi., 793).

New Theory of Sight.

H. M. Bernard has been engaged for the past ten years in endeavouring to find an explanation of light sensations, and has at last worked out a theory which he considers capable of connecting and explaining most of the phenomena. He hopes also to prove that it is capable of demonstration, and is now engaged in arranging the evidence. Meanwhile, a short abstract is published of the conclusions arrived at, the development of visual organs in the animal kingdom being briefly described as follows:—Under the influence of light certain organisms travelling toward the light seek either to leave the Metazoan body altogether or else to discharge their contents at the surface. Such emigration cannot take place without the cognisance of the nervous system, and in the most frequently illuminated parts of the body complications arise between the fugitives and the other tissues, notably the peripheral nerves. Bernard's suggestion is that out of these complications all the known eyes of the animal kingdom, the most complicated as well as the most simple, have arisen in one way or another (*Mag. of Nat. Hist.* [6], xvii., 162).

Australian Fungi.

D. McAlpine has carefully tabulated all the Australian fungi known up to the end of the year 1894, and finds that the total number of species is 2284, West Australia contributing 242, South Australia 262, Tasmania 339, Victoria 1070, New South Wales 406, and Queensland 1060. He proposes now to put on record all fungi coming under his notice, whether they are new to science, new to Australia, new to particular colonies, or are found in new localities or on new host plants. After means have thus been supplied for the discrimination and correct classification of species, he trusts that vegetable pathologists will supply the requisite practical application of this knowledge by studying the life history of the fungi and their influence upon the well-being of other plants. The species so far known are classified and several new species described, and their spores illustrated (*Agricult. Gaz. of N. S. Wales*, vi., 752).

THE OLD FIRM OF GODFREY.

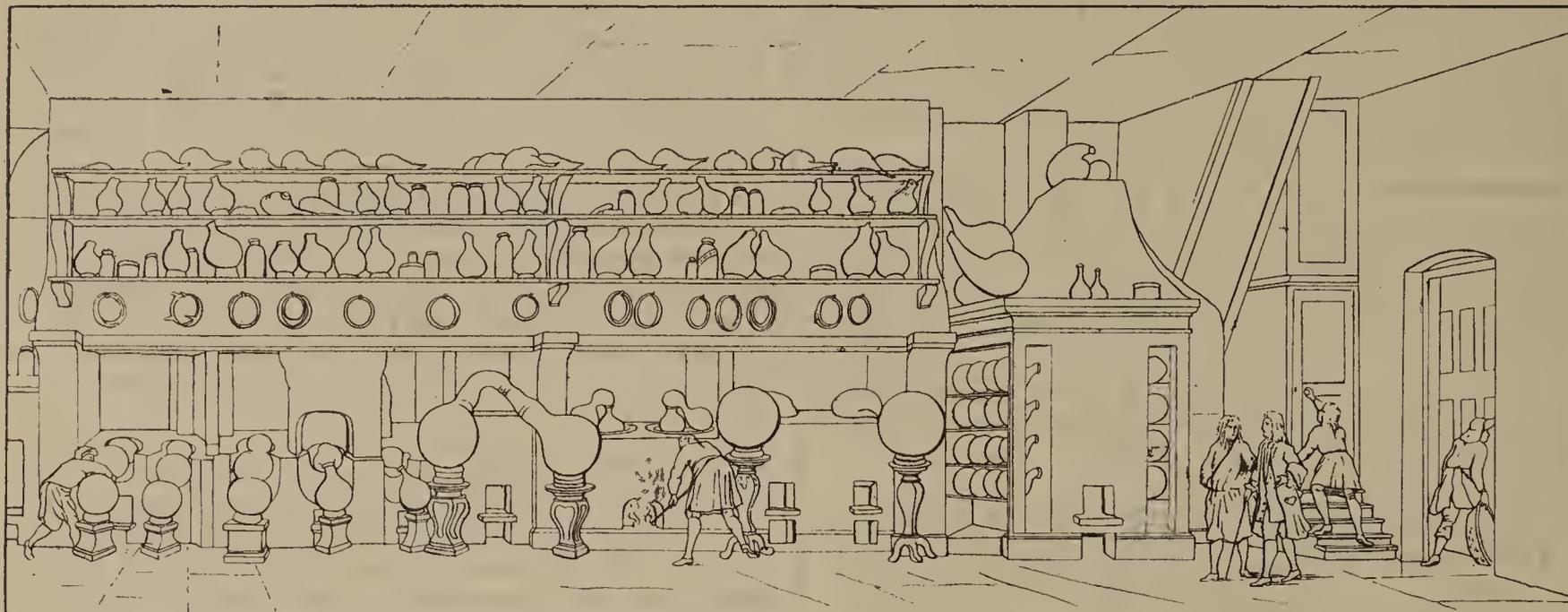
BY JOSEPH INCE.

Late Director of Godfrey's Laboratory.

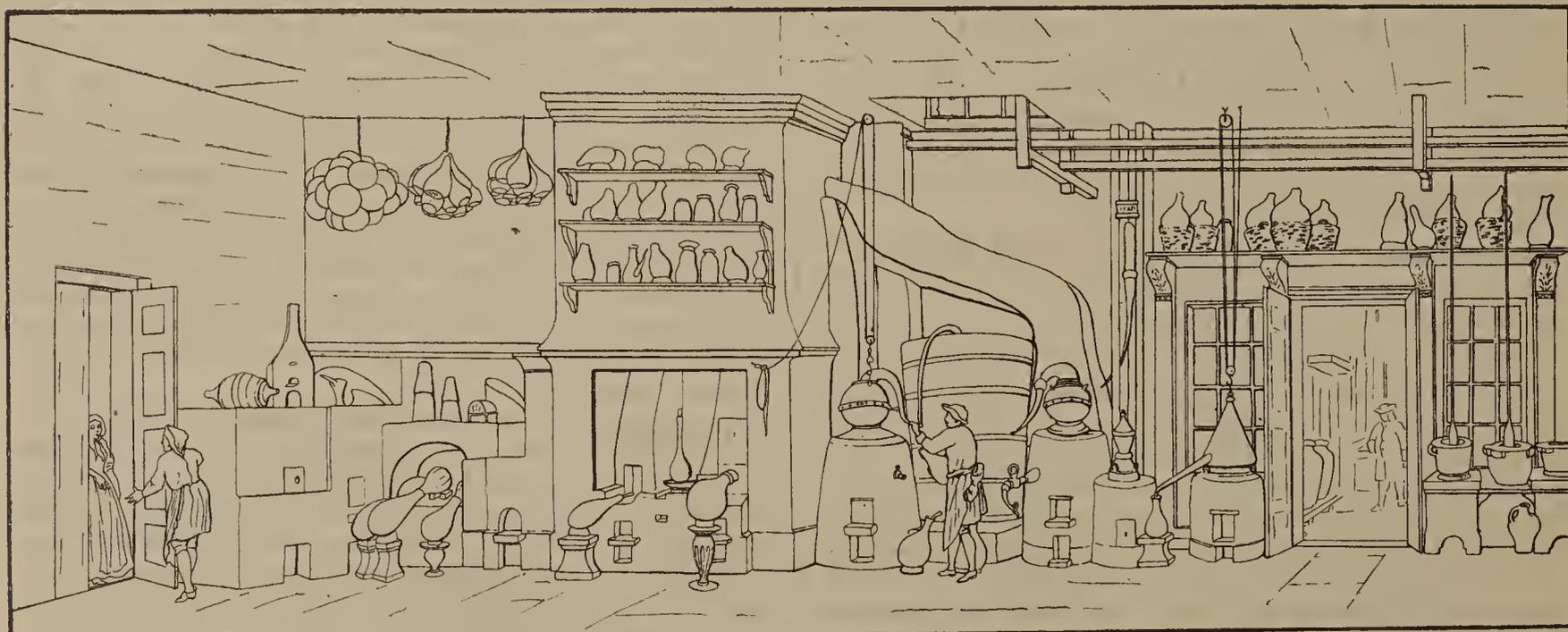
The mediæval history of this ancient house, dating from 1680 as a business, has been told so often,* that a brief outline of its earliest period will be sufficient. This is the story. The Honourable Robert Boyle devoted himself to the cultivation of science, particularly to the study of chemistry, natural philosophy, and theology.

On these three subjects he wrote many books, which in their day were held in great esteem.

mental evidence. So Boyle brought his young German friend* to London as his assistant, and some time about the year 1660 they built between them a long, lofty, straggling laboratory which opened into Maiden Lane, and extended down towards the Strand to the westward of the site, where the houses forming Southampton Street were subsequently built. The accompanying illustrations are taken from prints representing the laboratory at a later period when it was used for manufacturing purposes. The first represents the whole process of making phosphorus. The second shows unwieldy stills and retorts in full operation, and the third represents various pharmaceutical processes.



GODFREY'S LABORATORY—THE DISTILLATION OF PHOSPHORUS.



GODFREY'S LABORATORY—STILLS AND FURNACES.

Boyle lived for six years on the Continent, which inspired him with a love of foreign travel, and on one of his wanderings he met with a young German, Ambrose Godfrey Hanckwitz. A strong bond of fellowship drew the philosopher and the youth together—both were enthusiastic workers; the latter was plodding and industrious, and though Boyle occasionally saw visions, his rare love of truth led him to distrust theories not based on experi-

In this last illustration the open door of a vestibule to the right discloses a spacious garden which was a fashionable resort in the afternoon, and on certain occasions popular experiments were performed for the amusement of visitors.

In the history of the firm of Godfrey the usual order of things was reversed, a chemical laboratory entirely up to the science of the day was established first; it was devoted exclusively to experi-

* *Pharmaceutical Journal*, xviii., 126, *et seq.*

* The surname Hanckwitz being difficult to pronounce, and quite as hard to spell, it was eventually dropped.

ment and research; trade was an afterthought and an adaptation; only long afterwards was the old firm established.

I have been at pains to trace the exact origin of the business subsequently established, and it appears to have been this:—there was a great stir about phosphorus, heralded as one of the Arcana or mysteries of alchemy. It was the wondrous lumen, the *agens intrinsicum*, and many other things vaunted by the discoverer (Brandt) and his followers.

Boyle heard of phosphorus by "lytterall" correspondence; got a specimen from Saxony, and gave it to his head chymist, Mr. Bilger, who was to experiment and then instruct Godfrey how to make it. But Godfrey produced it first and made his fortune at the same time. He had been living in obscure lodgings in Chandos Street, with a wife, a family, and very slender income. He was immediately promoted to Boyle's friendship, and was engaged at once in the production of phosphorus. Afterwards he was sent on a travelling expedition to Holland, France, Italy and Germany, to display his specimens and to promote their sale. Then it occurred to Godfrey that science might be allied to trade, and the house in Southampton Street was built. I can find no evidence to show that Boyle had any connection whatever with its business career. He died a few years after and left his former assistant, Godfrey, in full possession of the situation.

heads; alembics of various pattern; curious receivers and glass vessels of strange shapes, the probable use of which it was difficult to determine. Much is it to be regretted that a fire, arising from the overflowing of a spirit still, destroyed most of these antiquarian relics. Beneath the whole flooring ran the cellarge, arranged in separate arched vaults—the receptacle for ammonia salts, ether, phosphorus, strong acids and essential oils—as well as for whatever might come under the denomination of dangerous chemicals.

The ground-plan of the chief section of the laboratory may be traced in the church of Corpus Christi, which has been built upon the exact site; the walls have followed the old line of construction. Modern improvements swept away much that was additional and external, but the out-house, which held the larger tinctures and an extensive assortment of snakes and adders, was the last to disappear. A plane tree, which adorned the yard and cast a grateful shadow in the summer, continued to flourish in spite of its untoward surroundings, smoky and unpropitious, until cut down by ignorant hands while the present writer was abroad. Communism is not limited to Paris.

Yet a lover of the past, standing on the steps of the church in Maiden Lane, may note that the right and left entrances mark the position of the phosphorus furnaces which Boyle, Godfrey's "honoured master," built. Their fate proves the mutability of all



At the time the writer of this article became acquainted with the laboratory of Godfrey, it had probably undergone much alteration from its original condition when used only for purposes of scientific experiment. In its construction whatever was wanting in symmetry was amply compensated for by height and space; ground had not risen to its modern value, hence the building was roomy and irregularly spacious, and was in time provided with two huge vats, supplied with water from the main which served as condensers to worms of similar dimension, attached to those ponderous stills, the memory of which survives in old prints. Big metal mortars were served by iron pestles, fixed to a long, wooden spring beam, suspended at the further end by a chain and ring. Much later in date came two sublimers for ammonia; one much resembling the usual form of apparatus—with a second which was an unwieldy leaden receiver, cooled by means of running water, and when possible encased with snow. Winter work was a sore trial for the men, since on all the laboratory premises there was not a solitary fireplace. On the shelves was an array of still-

earthly things; three on the left were demolished to make way for a coal-shed, two on the right were pulled down to accommodate a truck, the third lingered as a charcoal-burner until the business migrated to the West end, its last operation being to calcine acacia wood, which was manufactured into a *poudre dentifrice* for the then Empress of the French.

When the priest addresses his congregation he is probably not aware that the pulpit stands upon the spot once occupied by the Drying Chamber. This was a room arranged when ventilation and air currents were little understood, and it resembled, in its main features, the furnace seven times heated, of sacred history. It was equally ineffective in accomplishing the desired purpose. The modern drying-closet, one-fourth the size, offers a far better method of desiccation. The high-altar of the Church stands on the spot once appropriated to the manufacture of carmine, with rows of precipitation basins arranged on shelves and the store of silver grey cochineal. A particular feature of this room was the admission of light only from above.



It would be tedious once more to recapitulate the scientific transactions of the period between 1660 and 1741, full particulars of which will be found in the earlier numbers of the *Pharmaceutical Journal*. The record shows that Godfrey first produced sulphuric ether in saleable quantity, a circumstance pointed out to me by Professor Redwood. The statement must be taken without prejudice to the share that Sir Isaac Newton, Boyle himself and a certain Dr. Frobenius had in the discovery. Next came researches upon Ambergris, which he pronounced to be a substance analogous to, but not identical with, Amber.

The more important matter for present purposes is the date at which, in 1680, Godfrey became a business man and issued an elaborate advertisement, which will be dealt with in the next article. Then chemistry was no longer an abstract science, but bore a direct reference to the till.

There are two portraits of Godfrey extant: one by Vertue, dated 1718, is reproduced at page 168: it represents him as the "Chymist at the Sign of the Phoenix," of whom mention is made in Brandes' 'Chemistry' as being the founder of "Godfrey's" in Southampton Street, Covent Garden.

(To be continued.)

PHOTOGRAPHY FOR CHEMISTS.

BLACK AND WHITE.

One or two queries that have been sent by correspondents, on the subject of failures in successfully reproducing black and white subjects, such as line diagrams or printed matter, either as prints or lantern slides, suggest that primarily the cause of failure lies in the making of the negative and that this point is deserving of treatment at some length.

First, as to the lens. Almost any lens may be used, even a single or landscape lens, because, as a rule, we do not use the whole of the field, merely the centre, and there distortion of marginal lines does not become apparent; on the other hand, a doublet is preferable, and undoubtedly the newer lenses, such as the Concentric, Collinear, Zeiss, Goerz, or Cooke, give superior results, because of their flatter fields and greater freedom from astigmatism. The focus of the lens is immaterial, provided always it is not so long that it will not allow of a sharp image being obtained when copying full size or nearly so, because it must be remembered that the nearer you get to your object, so the focal length for the time increases, and if you have two or more lenses the necessary distances should be calculated out so that you do not get into a difficulty by using a lens of too long focus, or one too short. The rule to find these distances is, divide the longer base of original by longer base of plate, add one, and multiply by the focus of lens; for copying, this gives the distance between lens and object. To find the distance between lens and sensitive plate, divide the distance between lens and object by the number expressing the ratio of image to object. We want to copy a diagram or page of a book measuring 9 x 5 ins. so that we can make a lantern slide by contact; the lantern plate measures $3\frac{1}{4} \times 3\frac{1}{4}$ ins.; $\therefore 9 \div 3\frac{1}{4} =$ the amount of reduction, or ratio of image to object. Using an 8-inch focus lens we have a very simple sum:—

$$[(9 \div 3\frac{1}{4}) + 1] \times 8 = \frac{40}{3} \times 8 = 30\frac{2}{3} \text{ ins.}$$

This is the distance from lens to object; then—

$$30\frac{2}{3} \div [9 \div 3\frac{1}{4}] = 10\frac{2}{3} \text{ ins.,}$$

which is the distance between lens and plate. It may be added that in doublet lenses these distances should practically be measured from the diaphragm slot, and with single lenses from the front surface of the lens. There is one important point which must not be

forgotten; taking the above case we find that the focus is increased to 11 ins. practically, but our diaphragms or stops, which have an important bearing on exposure, are calculated out on a basis of 8 in. focus. The result will be that they are reduced in value, and, therefore, the exposure should be proportionately lengthened; for instance, the diameter of F/8 with an 8-in. lens is obviously 1 in.; therefore, with 11 in. focus it is no longer F/8, but F/11; and as the exposures with these two apertures are as $8^2 : 11^2$, or practically as 1 : 2, it is obvious we must take this into consideration,

Now for the treatment of the object. Suppose we have a page of a book, a diagram, or engraving to copy, and it is impossible to tear it out of the book, what is the best way to go to work? As a rule one does not care to tear up one's own books, though we may not be so careful of other people's; but even they would object probably to have, perhaps, a valuable book mutilated merely because you want to copy something. Obtain two pieces of plate glass, or even old negative glasses will do, as long as they are quite clean, some stout india-rubber bands or American wooden clips. Place your book flat on the table, open at the particular leaf. Hold this leaf up straight, place one glass behind it and one in front, slip two india-rubber bands over the glasses and leaf, one near the centre of book, the other at the edge of page, and you will have a perfectly flat surface, and only need place a box or pile of books behind to keep this upright and in a position for copying.

The next point is, where is it to be copied? Naturally, we have a totally different subject to a living subject. We want no half tones, no modelling, nothing but black and white, consequently as flat and even a lighting as possible. This does not seem a very difficult thing to obtain, but it is far more difficult than one would suppose. Placing the book exactly opposite the window of the room is satisfactory as long as too short a focus lens is not used, or else the camera casts a shadow, and photography is far more sensitive to varying lighting than our eyes. If it is not possible to do this or to copy the book out of doors, then place it as nearly as possible at an angle of 45° with the window, and to equalise matters, use a good-sized bedroom mirror to reflect the light on to the side further from the window. Now set up your camera approximately at the distance found by above rule, and focus sharply with full aperture of the lens, and now look out for reflections; if you can on the ground glass see the slightest reflection you may be quite sure that it will appear in the negative and spoil your results. If you cannot get rid of them in any other way—and it will be found that it generally is possible to do it by a slight shifting of the book and camera—then you must erect a framework of tissue paper all round the book, for this breaks up the light, so that no distinct reflections are visible.

Before leaving the question of the subject, it must be distinctly understood that the camera must be parallel to the object, or parallel lines in a diagram will appear to be convergent. This is particularly important when making negatives for lantern slide work.

One of the principal advantages of rapid plates is their power of reproducing correctly the vary tones or gradations which exist in nature, but in copying black and white this very power is a great drawback, because we want no tones, no gradations, merely black and white, and, therefore, rapid plates possess a quality we do not want. The only plates to use for this work are the so-called photo-mechanical or process plates, which are specially made for the purpose, and have but little or no scale of gradation, but merely two tones.

With regard to exposure, but little help can be given, the only thing to do is to make a trial as follows:—Pull out the shutter of your dark slide, and uncap the lens for thirty seconds, cap the lens

push sliding shutter in about one-fourth, give fifteen seconds more; repeat this operation till the whole plate has been exposed in strips with thirty, forty-five, sixty, and seventy-five seconds, exposure; on development, a good guide will be obtained as to something like the correct exposure. Practical trial alone can teach this.

The particular method of development is not of much moment, pyro., hydroquinone, glycine, or even metol and hydroquinone.

A very good pyro, formula is—

Pyro.	4 grains.
Metabisulphite of potash ...	4 „
Potassium bromide	4 „
Distilled water	1 oz.
Sodium tribasic phosphate	40 grs.

or hydroquinone—

Hydroquinone	4 grs.
Metabisulphite	4 „
Bromide	2 „
Citric acid	2 „
Distilled water	1 oz.
Sodium tribasic phosphate.....	40 grs.

Glycine may be used instead of the hydroquinone in the last formula, and equally good results obtained. For beginners pyro. should be avoided.

In developing, the main point to be observed is clear lines; density is quite of secondary importance, though if the two can be obtained in one operation, so much the better. Continue development as long as you can, but on the slightest sign of the lines veiling wash and fix. When thoroughly fixed, rinse and take out into the light and examine. If the lines, when the negative is laid on white paper, do not show as absolutely bare glass, flood the negative with Belitski's potassium ferric oxalate reducer till the lines are cleared, and then well wash. Treat the negative to an acid and alum bath, or one of anthion, and again wash. If the ground is not dense enough, intensification must be resorted to. A very little experience will tell the operator this; in fact, after making, say, a couple of negatives and printing from them, he will know about how dense the negative should be.

There are two methods of intensification which are very suitable, the one bleaching with mercuric chloride, thorough washing and blackening with Monckhoven's potassio-silver-cyanide solution; the other mercuric chloride, followed after thorough washing with a 5 per cent. solution of Schlippe's salt, sulphantimonite of soda. The latter is to be preferred because the resultant image is bright red, and therefore of an extremely non-actinic colour.

Attention to details and a little care is all that is required to enable anyone to make negatives on dry plates fully up to the standard of those turned out by the old wet collodion process, which is the process always used by professionals for this work, and till last year was used exclusively by the writer for this work.

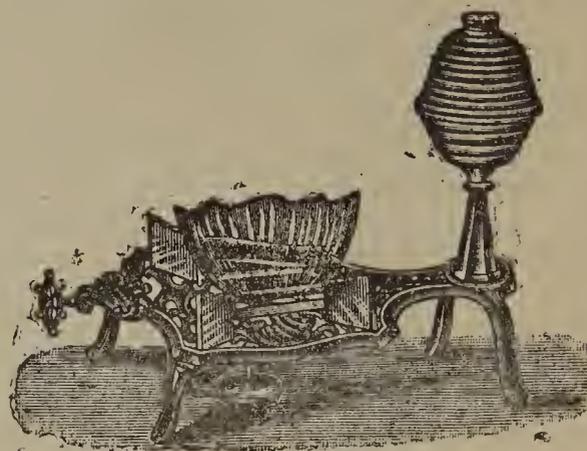
Now a note as to printing such results; for paper prints, bromide or platinotype paper must be used. It is hopeless to expect to get satisfactory results on any silver printing-out paper. For lantern slides, slow plates specially made for black tones must be used.

Particular stress has been laid upon those points in which the beginner in copying is likely to fail, but it is hoped readers have not been impressed with an idea that there are enormous or insuperable difficulties. By constant practice some have become so perfect in this process—and anybody else may do the same—that in preference to copying long extracts, particularly if accompanied by diagrams from books or papers, they now photograph them and make a print in a few minutes on bromide paper, with considerable saving of time and labour,

NOVELTIES IN PHARMACEUTICAL APPARATUS.

A SIMPLE SPIRIT STOVE.

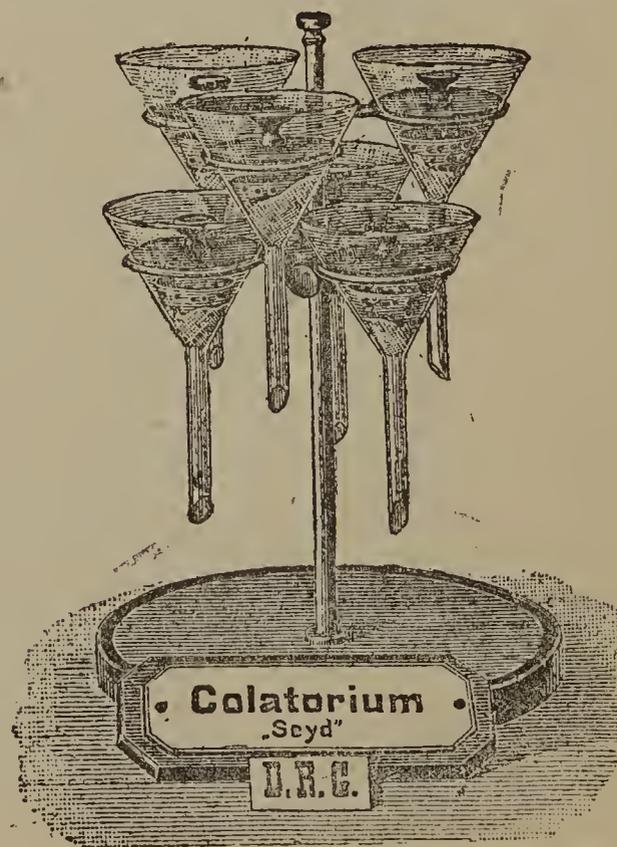
A German firm has introduced and patented an elegant and simple spirit-stove. A steady stand with four feet carries a brass globe holding about half a pint of spirit. By turning a small wheel



a little spirit is allowed to overflow into a dish below the stand; this is then ignited, but before it has quite burnt out the wheel is again turned; the spirit that flows is now converted into vapour, and burns with a blue and intensely hot flame. The spirit burnt costs about a penny per hour, and the heat is sufficient to boil a litre of water in from four to five minutes.

A NEW COLATORIUM.

Seyd's colatorium appears to be specially adapted for straining mucilaginous infusions, such as that of marshmallow root, etc. The straining material consists of a layer of cotton-wool backed with muslin, and is sold in rolls. A square piece is cut off, placed



in the funnel, wool outwards, kept in position by a perforated porcelain cone and protected by an earthenware cover. Six such funnels can be arranged on a single stand,

PHARMACEUTICAL JOURNAL.

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FIFTY-FIFTH YEAR OF PUBLICATION.

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THE BENEVOLENT FUND.

THE attention of everyone legally qualified to practise pharmacy in Great Britain is this week directed to the Benevolent Fund administered by the Council of the Pharmaceutical Society. The extreme catholicity of this Fund should suffice, without further recommendation, to attract to it the practical sympathy of all included within its sphere of operations, but it may serve a useful purpose to point out that, between 1872 and 1894, the total amount received by annuitants was £12,975, and that there are now forty-seven persons in receipt of annuities from the Fund, whilst nearly £2700 has been expended in payment of annuities and casual grants during the past year. The subscription of so small a sum as half-a-crown entitles an individual to take part in the election of annuitants, and it is believed that, were every non-subscribing chemist and druggist to devote that small amount annually to the purposes of the Fund, all cases of need in connection with the craft could be amply provided for. It must be borne in mind, too, that the payment of annuities alone now necessitates the disbursement of £2245 per annum. Whilst, therefore, it is hoped that all former subscribers will continue to assist the Fund to the best of their ability, those who have not yet borne their share in securing their unfortunate fellows against the need of outside charity, are urged to begin at once, remembering that gifts in such a cause are valuable in proportion as they are given quickly.

WHAT THE SOCIETY HAS DONE.

THE present issue of the *Pharmaceutical Journal* will be sent to every person entitled under the Pharmacy Act, 1868, to pursue the calling of pharmacy in Great Britain, and it would, therefore, seem particularly fitting that some prominence should be given to considerations affecting the interests of those persons. From the report recently presented to the Council by the Registrar, it appears that there are now 15,078 names on the Register of Chemists and Druggists, and one cannot but be impressed with the possibilities which so large a body of individuals might accomplish if they chose to regard community of calling and identity of interests as a reason for mutual association and concerted action. But the pharmaceutical millennium is still

only *in posse*, and the chemists and druggists of Great Britain are as much divided amongst themselves as were those hypothetical men of science whom the influence of a subtle phenol compound revealed to Professor MICHAEL FOSTER. Unless there be some malign influence in medicaments—some inherent spirit of discord in the art of dispensing—it is difficult to account for this infinite isolation of individuals engaged in the same daily avocation. It is not unlikely that “the fault is not in our stars but in ourselves that we are underlings,” and if that be so, it might be well to recognise, at once, the force of making the most of existing means of defence or advancement and the futility of cursing the horoscope.

Happily, chemists have no need to painfully evolve or laboriously execute plans for the erection of a barrier against antagonistic forces; the loyalty and earnestness of a past generation of pharmacists accomplished all that for them more than fifty years ago, and to-day there is—available to stand between pharmacy and those that threaten its existence—the Pharmaceutical Society, the sole means of resistance and the only hope of safety. Remarks of similar purport to this may have been made before, but even as a sermon, according to WHITFIELD, is good for nothing till it has been preached forty times, so one may be inclined to doubt the efficacy of pharmaceutical arguments until they have been well seasoned by repetition. Who shall say, too, that after the fiftieth time chemists and druggists may not begin to think there is “something in it”? One may hope to be forgiven, therefore, for again urging upon chemists the vital necessity of making their only safeguard a strong and sufficient one. What real motive chemists may have for not joining the Society is difficult to discover, but the expressed reasons, if they were not lamentable indications of ignorance and indifference, would be humorous. When a registered man declines to join—as was actually the case quite recently—on discovering that as a member he would only get two votes for the Benevolent Fund, one is apt to take a pessimistic view of the future of our calling. Equally difficult is it, at times, to divine the actual reason of a member's retirement from the Society.

There is little doubt, however, that the chief cause of secession from the Society and abstention from joining it is a want of knowledge of the Society's work. “What has the Society done?” is a familiar and perfectly natural question. In the hope of dispelling some misconceptions and galvanising to activity some indifferent minds, the inquiry may again be briefly answered. To urge gratitude for past work as a reason for present loyalty, is perhaps not in accord with *fin-de-siècle* philosophy, and the fact that chemists and druggists have shared in whatever good may have accrued from the Society's fifty years' of steady effort is, therefore, passed over. The past year's work alone is sufficient to gauge the value of the Pharmaceutical Society to all qualified persons.

In the first place some £1500 was spent in prosecuting persons infringing the law. True, this is a public duty and it is imposed in the interest of public safety, but it should not be forgotten that, from the business point of view, every action against an unregistered man tends to enhance the value of personal qualification; the ten thousand registered men who are unconnected with the Society being as much interested in upholding that value; benefiting as much by its maintenance, as the four thousand members of the Society who paid the bill. Of course, it might be

argued quite plausibly, "Why should I join in prosecuting these people when someone else will do it and find the money?" To those who would employ this sophistry the converse of the argument may be commended; the question may be asked what will be their position when the present members conclude to bear no longer the burdens of the whole calling? The privileges already won may be far from what the education and training of a chemist entitle him to hope for, but is he prepared to forego even that which he has?

The administration of the Pharmacy Acts, and the consequent training of the public mind in respect for the qualification provided by those Acts, though the chief, is not the only item in the record of the Pharmaceutical Society's work. As a voluntary association of qualified persons it has expended during 1895 a very considerable sum in endeavouring to secure the educational fitness of those who follow, or who seek to enter upon, a pharmaceutical career. The maintenance of the Libraries, Museums, and Laboratories in a state of efficiency is a factor of no inconsiderable value in the elevation of the status of the qualified chemist. The Society's work in that direction is of indirect benefit to all chemists and has been of immediate advantage to many who have availed themselves fully of the opportunities offered. The Society has also to perform and does frequently perform, services which by their very nature cannot be immediately made public. Allusion may be made to the strenuous efforts which have been continued for some time past by the Council to direct the attention of the Government to the abuses practised under shelter of the Companies Acts. Those efforts had naturally to be made diplomatically; it should be clear to every thoughtful person that it is not always expedient in such matters to herald one's intentions by bold advertisement. During the year, the Council has made representations to more than one Government Department on such questions as the qualification of Poor Law dispensers, the Metric System of Weights and Measures, the Adulteration of Food and Drugs and other matters affecting the business of a chemist and druggist; and it is certainly unjust, however natural it may appear, to assume that nothing has been done because there have been no banners on the outer walls. No doubt the representations of the Council are not always successful, but they would be more frequently effectual if the strength of the Society were commensurate with the number of chemists on the Register.

There can be no danger of general adherence to the Pharmaceutical Society tending to destroy or even to weaken in any degree the individuality of chemists and druggists. The founders of the Society were mindful of the fact that with many men there must be many fancies; they drew up a constitution broad enough to allow for all sorts of opinions arising from a healthy and virile personality. It is the possession of this broad constitution—more democratic than most of the institutions specially devoted to the cult of Demos—that should render the Pharmaceutical Society beyond suspicion by the most hypersensitive pharmaceutical *sans-culotte*. Registered men are not asked to join a select body of superior people who will take all the subscriptions and make regulations for self-advancement, but to associate with fellow-craftsmen in the attainment of common privileges. If the Society's half century of work has been on wrong lines, let the advocates of a new policy come in and effect the desired change; on the other hand, if the

past has been productive of good so much the stronger reason is there for guarding well the heritage that has wrought the good. Let the chemists and druggists of the two kingdoms ponder well these things.

THE VALUE OF A PHARMACEUTICAL JOURNAL.

IN a paper read before the Connecticut Pharmaceutical Association, R. H. KIMBALL points out that the pharmacist who desires to keep up in the race needs to be posted regarding new remedies and many other matters, concerning which he can nowhere find immediate information except in the pages of his drug journal. Without such information he may often find himself in the awkward position of being unable to reply to a customer's question, this being especially annoying when the querist is a physician. In many such directions journals of pharmacy are of inestimable value to working pharmacists, and the writer of the paper referred to observes that he would as soon think of trying to conduct the business of a pharmacist without a pharmacopœia, a dispensatory or other books of reference, as without a journal of pharmacy. He therefore urges every pharmacist, every assistant, and every student to buy and read some such publication. It may be added, to fitly apply his concluding words, that in no way can they invest so small an amount and get better or more valuable returns than in subscribing for the *Pharmaceutical Journal*. Every effort has been made, for some time past, to meet the legitimate requirements of the trade in these pages and, as the organisation for this purpose becomes more and more perfect, it is anticipated that the Journal will come to fully satisfy the needs of readers generally.

PHILADELPHIA COLLEGE OF PHARMACY.

AT the first pharmaceutical meeting of the present year, a long paper was read by Mr. F. B. KILMER on "Kola and Kolanin": it does not add much to the knowledge of this subject, and is for the most part a recapitulation of the statements already published. In dealing with the use of kola as a stimulant and medicinal agent, the author assumed the existence of the substance, to which the name kolanin has been applied and attributed to it a greater efficacy than either caffeine or theobromine possess; but the ground for this opinion was purely speculative and, as Professor TRIMBLE pointed out in the discussion, there is much reason for doubting the romantic accounts of kolanin, the existence of which is far from having been satisfactorily proved. The second paper read was on "The Influence of Medicines upon the Character of Urine," by Mr. F. W. HAUSSMANN, and it gave evidence of much observation in reference to a subject which requires careful attention and study. The third paper related to "Comparative Examinations of Methods for the Assay of Cinchona Bark," by Mr. LYMAN F. KEBLER. Abstracts of both these papers will be published in the Journal. The January number of the *American Journal of Pharmacy* contains the first of a series of articles upon the "Coniferæ of North America," by Professors BASTIN and TRIMBLE, and there is a second article in the February number. These articles contain descriptions of the botanical characters of the plants, their chemical constituents and economic uses, with excellent illustrations of the microscopic structure of the roots, leaves, etc.

EXPERIMENTS ON TRANSPIRATION.

IN the *Botanische Zeitung*, E. STAHL has described a number of interesting experiments, on the results of which he bases a method by means of which it can be demonstrated to the eye whether a plant loses water by transpiration, and also through what parts of its surface the loss takes place. For this purpose A. MARGET had formerly employed white paper impregnated with a mixture of mercurous and palladous chlorides, or with palladous and ferrous chlorides and tartaric acid. In the dry state the paper was whitish-yellow, but it became darker, and finally black as it absorbed water. When applied to the transpiring surface the loss of water could be estimated by the change in colour, and at any point the colour could be fixed by simply dipping the paper in solution of ferric chloride. Other investigators, however, have found MARGET's method unsatisfactory, and STAHL has resorted to the use of cobalt salts, especially cobalt chloride. He soaks strips of Swedish filter paper in an aqueous solution (1 to 5 per cent.) of this salt and dries them, their colour then varying from light to deep blue, according to the strength of the solution employed. As the paper becomes moist, the colour changes to pink and then to white. In use a small piece of the cobalt paper is thoroughly dried, placed in position on the plant, then held firmly against the surface, and protected from the air by means of a thin piece of glass or mica, which is held in place by small clamps. In cases where leaves have stomata on the under side only, cobalt paper on that side is reddened very quickly, often in a few seconds, while that on the upper side of the same leaf may retain its original colour for several hours. Where stomata occur on both sides, the reddening is proportionate to the number, and in the case of *Trifolium repens*, the leaves of which have more stomata on the upper than the under side, the paper fades more rapidly on that side. No reddening occurs in the case of slightly wilted leaves or in any instance where the stomata are closed on account of an insufficiency of water in the plant, even when the leaves are exposed to the sun. The slight extent to which evaporation through cuticularised epidermis takes place is thus demonstrated, whilst fully turgescient leaves supplied with water are said to illustrate the same fact.

RHODINOL OR GERANIOL.

THE principal liquid constituent of rose oil was first isolated by MARKOWNIKOFF in a state of purity sufficient for approximately determining its composition and molecular weight. Then POLECK and ECKART gave it the name of rhodinol, and showed that it is a primary unsaturated alcohol of the fat series, having the composition represented by the formula, $C_{10}H_{17}OH$, and being readily convertible into terpene derivatives. MONNET and BARBIER ascertained the presence of rhodinol in French geranium oil from *Pelargonium odoratissimum*, and described the method of preparing it from that material. BERTRAM and GILDEMEISTER prepared the very unstable compound of rhodinol with calcium chloride, and showed the probable existence of rhodinol in Palmarosa oil from which JAKOBSEN had in 1871 obtained an alcohol, $C_{10}H_{18}O$, by means of calcium chloride.

The essential agreement of these results did not prevent the expression of different views. While MARKOWNIKOFF and REFORMATSKY adopted the formula $C_{10}H_{20}O$ as representing the composition of rhodinol and, consequently, regarded it as

different from the alcohol of palmarosa oil, HESSE held that rhodinol, although having a composition represented by $C_{10}H_{18}O$, was a mixture of two isomeric compounds, one of which, obtained from the geranium oil of Reunion, he named reuniol.

ERDMANN and HUTH have since then studied the products from all the different sources, and obtained evidence of the chemical identity of the alcohol obtained from all of them. They therefore suggest, in the *Journal für praktische Chemie*, the retention of the name rhodinol for scientific purposes, although for trade purposes the terms "rhodinol" or "geraniol" may be useful, as indicating the different sources of commercial varieties of this alcohol and the very sensible differences in the odour of the alcohol, according as it may be obtained from rose oil, geranium oil, palmarosa, or citronella. Chemically it is not possible to ascertain what is the cause of the honey-like odour of rose oil, the sweet smell of the rhodinol from *Pelargonium odoratissimum*, or the faint smell of that from palmarosa or citronella, though these materials bear the same relation to each other as the alcohol from wine, corn, potatoes, or beetroot.

TURKISH AND PERSIAN OPIUMS.

THE consular report for the district of Salonica, dated January 7 last, embodies somewhat belated information regarding the opium trade of Macedonia. This trade is described as being of growing importance, the cultivation of the poppy having largely increased in Macedonia, and it is anticipated that as the Salonica and Constantinople varieties of opium are most in demand in foreign countries, the annual harvest will before long rival that of Asia Minor. The poppy crop of 1893 was very small, and a comparatively small amount of seed was exported (500 tons), but an improvement took place in 1894 (900 tons). In the former year the weight of opium exported from Salonica was 37,500 pounds, the price free on board varying from 10s. 2d. to 10s. 10d. per pound; during 1894 the quantity exported rose to 157,500 pounds, and the price varied from 9s. 6d. to 13s. 7d. per pound. The United States takes the largest proportion of the drug, London coming next, followed at a considerable distance by the markets of Germany and France.

The report for the year 1894-95, on the trade of Ispahan and Yezd, shows that the total output of opium in the Ispahan district reached about 390,000 lbs, the quantity exported from Ispahan—1600 boxes—being valued at about £125,000. European exports of the drug were absolutely *nil*, the price being too high, ranging at the time of writing the report, from 7s to 11s. per pound. China probably takes the bulk of the product. European merchants are also hampered by having to pay 5 per cent. *ad valorem* duty on their cases, whereas the natives pay but a nominal duty. From Yezd, 530 tin-lined cases of opium in cake form, valued at £31,800, were exported to China. Each case weighs about 130 pounds. The crop has been a failure for some years past, but since Yezd opium has a special reputation in Persia, large quantities are imported in the raw state from Ispahan and other places, then exported after preparation as Yezd opium. The stick opium, which is very carefully prepared in Yezd, is mainly preferred in Persia, and brings a higher price than the ordinary variety in cakes. Tested on the spot, the highest yield of morphine from Persian opium, according to this report, is 12 per cent.

ANNOTATIONS.

"THE DISCOVERY OF OXYGEN."—The reprints of the articles dealing with the life and work of Scheele, Priestley, Cavendish, and Lavoisier—with special reference to their connection with the discovery of oxygen—are now ready, and readers can obtain copies from the *Pharmaceutical Journal* Office, 5, Serle Street, W.C. The book contains sixty octavo pages, and is illustrated with portraits of the famous chemists whose labours are delineated, together with sketches of the apparatus they employed. Copies are supplied at one shilling each, post free.

BACTERIA IN AGRICULTURE.—The Berlin correspondent of the *Daily Telegraph* reports that at the last meeting of the German Agricultural Society, Dr. Thiel, of the Prussian Ministry of Agriculture, stated that experiments which have been carried on for a long time past by Herren Hall, Riegel, Notbe, and others, with a view to ascertaining how the bacteria of the soil may be rendered useful, have been crowned with success, so far as the bacteria necessary for the assimilation of nitrogen and the successful cultivation of leguminous plants dependent upon it are concerned. Herr Notbe has succeeded in cultivating these bacteria on a large scale, and he is convinced that the sowing of these bacteria will make soils which need them more productive in a cheaper and more convenient way than the method of inoculating suitable earth invented some years ago.

THE PROPRIETARY ARTICLES TRADE ASSOCIATION.—A meeting of retail chemists in Bristol and its neighbourhood was held at the University College, Bristol, on Wednesday last, under the auspices of the Bristol Pharmaceutical Association, to consider what action should be taken by it in regard to the Proprietary Articles Trade Association, and was attended by some members of the Council of the latter Association.

UNIVERSITY COLLEGE, LIVERPOOL.—Extensive alterations and additions are at present being carried out in connection with the chemical, medical, physiological, and pathological departments of University College, Liverpool, the total cost to be incurred being estimated at about £30,000. As to the chemical department, there is now in course of construction, at a cost of some £7000, a handsome building adjoining those erected in the year 1885-6 in Brownlow Street. This wing, which will do much to supply the extra accommodation required by the students of chemistry, is the gift of Messrs. William Gossage and Son, and is being erected in memory of the founder of that firm, Mr. William Gossage. It has been decided that an additional metallurgical furnace room shall be provided in the new Gossage Laboratory, and a still more important want supplied by the new building is the enlargement of the professors' laboratory, which is entirely devoted to original research. In the present small room assistants are engaged in research work—one endeavouring to solve an exceedingly difficult problem in theoretical chemistry, aided by a grant from the Royal Society, whilst the others are producing new substances or solving problems, many of which will be of practical importance.

ANTI-CUTTING DISCUSSION AT PLYMOUTH.—On Wednesday, March 4, a meeting of chemists and druggists will be held at Plymouth to hear an address by Mr. Glyn-Jones on recent proposals for dealing with the "cutting" evil. The meeting will be held at 3 p.m., and several large manufacturers have notified their intention of being present.

THE ANNUAL DINNER.—A meeting will be held at 17, Bloomsbury Square, W.C., on Wednesday, March 11, at 11.30 a.m. precisely, for the purpose of making preliminary arrangements for the annual dinner of the Members of the Pharmaceutical Society and their friends. The President of the Society, Mr. Michael Carteighe, will take the chair, and gentlemen interested in the annual gathering are invited to attend.

THE EARLY SPRING.—A correspondent mentions as evidence of an advanced season that he saw, a day or two ago, in a garden in Edinburgh, *Anemone pulsatilla* with the buds quite through the ground and well advanced. At this stage, he says, birds are very fond of the buds, and frequently tear the plants to pieces unless they are protected by a net. Who can explain this?

THE PRODUCTION OF ALUMINIUM.—The Hall process for producing aluminium—as described by Mr. Alfred E. Hunt before the Institution of Civil Engineers—involves the direct electrolysis of alumina, dissolved in a molten bath of the mixed fluorides of aluminium, calcium, and sodium. One cubic foot of the solvent serves for an hourly production of one pound of aluminium, and as the fluorides remain unchanged, the operation is continuous. The carbon anodes are consumed at nearly the same rate as the metal is produced.

PHOTO-MICROGRAPHY.—The articles published in the *Journal* under the heading of "Photography for Chemists," have been greatly appreciated, and in the present number the series is continued. A practical, illustrated article on "Photo-Micrography" is in course of preparation, and will appear shortly. This, it is hoped, will prove of considerable value to pharmacists who desire to have permanent records of interesting objects, in which the personal equation of the observer will be eliminated.

SCHOOL OF PHARMACY STUDENTS' DINNER.—The annual dinner of the Pharmaceutical Football and Cricket Club will take place at the Holborn Restaurant on Wednesday, March 18, at 7 o'clock, when Professor Attfield, F.R.S., President of the Club, will once more occupy the chair that he has for so many years dignified. It is hoped that all past and present students of the School of Pharmacy who can conveniently attend will be present on this occasion. Tickets (5s. each) may be obtained from either of the following members of the Dinner Committee:—Messrs. Senter, Stamp, or Tickle, 17, Bloomsbury Square, W.C.

THE SYNTHESIS OF FOODS.—In the *Asclepiad*, Sir B. W. Richardson suggests that if foods could be theoretically constructed that would perform every necessary purpose for the body of man in every season, and under all varieties of rest and work, the art of feeding could be transformed into one that would develop an ideal system and a more perfect race. To flesh feeders, meals prepared in chemical laboratories would be more than equal in matter of quantity, equal in quality and taste, and could be prepared with infinitely greater economy than now exists. Vegetables, fruits, and herbs would form the basis of the new system, and the artificially-prepared foods would not fluctuate in supply under adverse seasons and blights. They would also be free from the risk of disease incident to the diseases of animals, and would be altogether assimilable by the body, leaving no constituents to be excreted, thus conserving the strength and activity of the body.

PROCEEDINGS OF SOCIETIES.

Chemical Society.—An ordinary meeting of the Society was held on February 20, Mr. A. G. Vernon-Harcourt, President, in the chair. It was a ballot night, but in spite of the inclemency of the weather, there was a strong muster of fellows. The greater part of the evening was taken up with the consideration of subjects relating but remotely to pharmacy. The first on the list was read by Professor Armstrong, F.R.S., on "The Origin of Colour; the yellow, 2: 3—hydroxynaphthoic Acid." This is a continuation of a series of papers by the Professor on the subject of the origin of colour. The hydroxynaphthoic acid has peculiar properties, and is strongly coloured—deep yellow, and its salts are also yellow. The ethereal salts likewise are peculiar and dissolve in alkalies with the production of yellow derivatives. Professor Armstrong commented on the structure of naphthalene and of benzene, and dealt with the relationship of formula and colour. In the course of his remarks he said that aniline and bromine always yield tribromaniline. It is exceedingly difficult to stop the reaction and to obtain the monobromide. Dimethylaniline, however, readily yields the monobromide.

Dr. Kipping said that Professor Armstrong's attribution of the origin of colour to a quinonoid structure was quite inadmissible, and he especially objected to NO_2 being considered as quinonoid. Iodoform, he said, was coloured, but chloroform with a similar molecule was colourless.

Dr. Perkin was asked to speak, but would not commit himself as he was at present writing a paper on the subject.

Professor Armstrong replying to Dr. Kipping maintained that iodoform was an absolutely quinonoid form. Chloroform was not sufficiently refractive to become coloured.

The next paper was by the same author on "The relation of Pinene to Citrene." From what Professor Armstrong said, it would appear that these two bodies are not very closely related. Pinene is distinctly divalent, and citrene trivalent, and they belong to very different groups. Pinene should be capable of definite combination. It may be a trimethylene derivative. The formula of pinene cannot be made to harmonise with any arguments.

A paper on "The Formation of Naphthaline and Isoquinoline Derivatives from Dehydracetic Acid," by Dr. Collie, and Mr. W. Wilsmore followed. The authors had already studied this question and the present paper further treated of the condensation products of diacetylacetone. They had succeeded in obtaining yellow derivatives closely allied to naphthaline compounds. They described chiefly the production of yellow crystalline compounds by combination of diacetylacetone with barium. Mr. Wilsmore, who read the paper, stated that one of the bodies they had obtained was submitted to Dr. Schäfer, of University College, for physiological examination, as it had given distinct evidence of having alkaloidal properties. Only one experiment so far had been performed, and that was a subcutaneous injection on a frog which died.

By the time this paper had been read the interest of the audience seemed to be flagging. But the next paper by Professor Dunstan and Mr. F. H. Carr revived matters considerably. This was "On a Difficulty Encountered in the Determination of Nitrogen by the Absolute Method." The substance in question, said Professor Dunstan, was aconitine whose formula is $\text{C}_{23}\text{H}_{45}\text{NO}_{12}$, and this equals 2.1 per cent. of nitrogen. On burning aconitine with copper and the oxide the percentage obtained was nearly twice the theoretical yield, and there seemed something curious in these results. Using the base they obtained nearly 4.4 per cent. Professor Dunstan gave the figures obtained by several other methods. By the Dumas method—4.4 to 5.1 per cent. The vacuum method yielded 3.79 per cent., and the soda-lime method 2.4 to 2.6 per cent. Other alkaloids, strychnine, for instance, were all right in giving up their nitrogen, but aconitine seemed to behave in an altogether anomalous way. Methane was found to be the body accompanying the nitrogen, and great difficulty was experienced in oxidising the Marsh gas.

Dr. Perkin asked if the authors had tried lead chromate, and Dr. Bernard Dyer inquired if Kjeldahl's method had been tried, to both of which questions Professor Dunstan replied in the affirmative.

This concluded the business for the evening, and the following papers remained unread:—"Mixed Diazoamides Containing an Orthonitro Group," by Professor Meldola and Mr. F. W. Streatfield; "Allyl-p-Dinitrodiazo-Amidobenzene: A Study of the Relations Between Melting Point and Constitution," by Professor Meldola and Mr. F. W. Streatfield.

Linnean Society of London.—At the meeting held on February 6, Mr. C. B. Clarke, F.R.S., President, in the chair, the Rev. E. Woodruffe-Peacock and Mr. William Cole were admitted, and Messrs. J. Backhouse, Gilbert Christy, and Ivor Richards were elected Fellows of the Society.

Sir W. H. Flower, K.C.B., F.R.S., presented to the Society, on behalf of the subscribers, a portrait of Mr. William Carruthers, F.R.S., Ex-President of the Linnean Society, painted by Mr. J. Hay. On the motion of Mr. J. G. Baker, F.R.S., it was resolved *nem. con.* that the portrait be accepted, and that a cordial vote of thanks to the donors be recorded.

Professor C. Stewart, F.L.S., exhibited a series of dissections of skulls, illustrating the development of air cavities. The skull of a herring, carefully dissected, to show the relations of the ampullæ of the pneumatocyst to the cranial bones; of a crocodile, to show those of the extra tympanic cavity and siphonium; of a rook, to show the limitations and relationships of the vesicular and other strata of the cranial roof; and of a chinchilla and a *phascolarctus*, to illustrate the variations and development of the "bullæ" and of its associated structures, were the chief objects shown. Professor Stewart expressed himself favourable to the belief that the parts mentioned in the herring are functional for acoustic purposes. In this he was supported by Professor Howes, who referred in detail to the arrangements occurring in *Hyodon* and *Mormyrus* as substantiating this conclusion.

On behalf of Mr. B. G. Cormack, Dr. D. H. Scott, F.L.S., gave the substance of a paper on polystelic roots of certain palms. He remarked that with scarcely any exception roots show one normal vascular bundle or stele. The author, utilising material from Ceylon, found that in *Areca catechu*, Linn., *Cocos nucifera*, Linn., and a species of *Verschaffeltia*, the young roots agree with this condition, but on examining older and thicker portions of the same roots, he found many steles present. After discussing the origin of this, the author considered the change to be primary, not secondary, and suggested that these roots might serve as props to the stem. The paper was criticised by Mr. George Murray and Prof. Trail, Dr. Scott replying to objections.

Mr. R. Morton Middleton, F.L.S., read a paper on a remarkable use for ants in Asia Minor, communicated by Mr. Miltiades Issigonis of Smyrna. It was stated that the Greek barber-surgeons of the Levant employed a large species of ant for the purpose of holding together the edges of an incised wound. The ant held with a forceps opens its mandibles wide, and being then permitted, seizes the edges of the cut which are held together for the purpose; as soon as a firm grip is obtained the head is severed from the body. Mr. Issigonis had seen natives with wounds in course of healing with the assistance of seven or eight ants' heads. The ant referred to was a large-headed species of *Camponotus*, not unlike one found in India.

Mr. Middleton recalled the fact that a similar observation concerning a species of ant in Brazil had been recorded many years ago by M. Mocquerys of Rouen (*Ann. Soc. Entom. France*, 2 sér., ii., lxvii.), as quoted by Sir John Lubbock in his work on ants, bees, and wasps; but the observation had not been confirmed either by Bates or Wallace during their travels in South America.

Dr. John Lowe, commented upon the irritation generally caused by the bite of an ant, and remarked that in this operation apparently no attention was paid to the usual antiseptic precautions which are regarded as indispensable in modern surgery.

Sir William Flower considered the observation of interest from an ethnological point of view, as showing the independent existence of the same custom in countries so far apart as Brazil and Asia Minor.

Royal Institution.—Dr. E. Frankland's lecture on the "Past, Present, and Future Water Supply of London" attracted a very representative audience on the 21st inst. At the outset reference was made to the fact that the Royal Institution had always been prominently connected with official work on the subject, through the person of some of the professors of chemistry for the time being, and it was therefore not unfitting that for the third time he should tell his hearers something of the present position of affairs. Before going further it was interesting to note that in 1829 there was absolutely no system of filtration applied to the water supplies of the metropolis, and although some twenty years after three of the companies voluntarily adopted some system for the purpose, it was not until 1856 that it became compulsory. This satisfactory state of things was doubtless greatly due to Dr. Snow, who had seven years before declared that cholera epidemics in this country were

undoubtedly directly traceable to impure water, and although his statements were received with incredulity at first, their truth was proved by the fact that no case of Asiatic cholera has been traced to this source since the compulsory adoption of filtration. After brief allusion to the sources and characteristics of the present water supply, Dr. Frankland passed on to a description of modern methods of water analysis by means of determination of the colonies as enunciated by Koch. The fact that cholera is propagated by bacilli existing in the water, and not by the presence of ordinary organic impurities, led the latter chemist to devote attention to the isolation of microbes and spores in a given volume of water, which gave a method for their determination with quantitative exactness. For this purpose a nutrient material is prepared by dissolving gelatin in beef tea and effecting complete sterilisation of the product by keeping it at a temperature of 99° C. for three days. The sample of water which has been collected by breaking off the end of a vacuum tube at a considerable depth below the surface, is added to the gelatin peptone, and placed in a circular glass dish, which is afterwards kept at a temperature of 20° C. in an incubator for several days. The product is examined microscopically at intervals, quantitative results being obtained by observing the number of colonies present in an area of 1 square centimetre, as it would usually be impossible to count those present in the whole slide. The development is somewhat slow, three days being usually required for perfect growth.

A large number of slides were shown on the screen and illustrated the various stages of development. The lecturer, in drawing attention to the beautiful way in which some of these colonies are built up, amused his audience by remarking that it was possible that some enquiring microbes had become so enamoured with the architecture of London that they had made up their minds to emulate it in the space of forty hours. The efficiency of the system of filtration adopted at the present time by the different water companies was duly acknowledged; indeed, the results in some cases are simply astonishing, a case being cited in which one drop of ordinary river water contained 3000 colonies, this number after ordinary sand filtration being reduced to 50, 30, 20, 10, and in some cases to zero. The water from the Kent Company's new well at Deptford seems to lead the van, no colonies whatever being perceptible after one week's incubation, but river water is not far behind, and it is but seldom that the standard fixed by Frankland and Koch—which allows the presence of fifty microbes in a cubic centimetre—is infringed, nor is it often approached within 50 per cent. Some interesting results were shown of analyses which had been carried out to ascertain the truth of the statements advanced by some observers that sunlight is of great importance in its destructive action upon bacterial growths. These show that a beneficial action results only when the exposure to sunlight has taken place at not more than six inches below the surface of the water, as at a greater depth the number of colonies gradually increases.

Turning to the question of the future of the metropolitan water supply, Dr. Frankland said that it was absurd to entertain any fear as to the necessity of recourse being made to the watersheds of Cumberland, Westmoreland, Wales, the Severn or the Wye, as had been proposed at various times, as the evidence given before the Royal Commission showed there was no necessity, and it is satisfactory that no river water in Great Britain affords such a good supply as the Thames. It would be necessary, however, to have additional reservoirs constructed, and to improve the present system of filtration by using a finer sand for the purpose. Slides were shown which demonstrated that storage decreases the bacterial growths enormously, a sample which contained 11,560 when first drawn containing only 1360 after an interval of thirteen days. In conclusion, it was remarked that the London water supply would not be surpassed by any in the world for fifty years at least. Dr. Frankland expressed his indebtedness to Mr. Burgess for executing the diagrams, etc., which illustrated the lecture.

Chemists' Assistants' Association.—Owing to Mr. Manger being unable to read his promised paper on "Filtration" on the 20th inst., a musical and social evening was held instead, and in spite of the short notice given, proved a great success. This was due to the energy displayed by the President (Mr. E. W. Hill) and Secretary (Mr. R. Glode Guyer), who put themselves to considerable pains to ensure a good attendance and enjoyable programme. Amongst those who contributed to the evening's entertainment were Messrs. Bellamy, Burgess (violin), Barrett, Dawson, Latreille, Morley, Pasco, Taylor, Robins, Roberts, and Walton,

whilst Mr. Ellis gave satisfaction as accompanist. During the evening Professor J. Reynolds Green, F.R.S., Sc.D., Messrs. Peter Squire and P. MacEwan were duly elected patrons of the Association.

Midland Chemists' Assistants' Association.—At a meeting held on Wednesday, February 19, at Exchange Rooms, Birmingham, Mr. T. Clarke (President) in the chair, the following paper was read—

"COAL—IN RELATION TO PHARMACY."—PART II.

BY H. JESSOP.

In opening the subject he remarked that most of the members present were aware that this paper was the sequel to one read by him on January 15, yet for the benefit of those who were not present on that occasion, and in order to make the paper quite intelligible, he proposed to recapitulate very briefly the more important points of his first paper, which were in connection with the manufacture of coal gas. The gas manufacturer found that the coals that suited him best were those belonging to the bituminous class; this class comprising caking-coal and the different varieties of cannel. The reason these coals were chosen was that other things being equal, they contain a comparatively small percentage of oxygen in proportion to hydrogen. The gas maker well knows that for every 16 parts of oxygen present, 2 parts of hydrogen combine to form 18 parts of water, so that it is only that hydrogen which is over and above that required by the oxygen which is available for the production of hydrocarbons. The most suitable coal having been chosen it is introduced into the retorts and subjected to a red heat for six hours, during which time distillation goes on. The charge is now drawn and the residue is coke, a comparatively pure form of carbon. It is found that an average coal will yield for every 100 lbs. distilled, about $22\frac{1}{2}$ lbs. of gas, $8\frac{1}{2}$ lbs. of tar, $9\frac{1}{2}$ lbs. of ammonia water, and $59\frac{3}{4}$ lbs. of coke.

Among the gaseous constituents are:—Water vapour (formed by combination of the H and O of coal), marsh gas, olefiant gas, small quantities of acetylene, benzene and other hydrocarbons, ammonia (formed by combination of N and H of coal), cyanogen, sulphuretted hydrogen, sulphur dioxide, carbon bisulphide, carbon dioxide, carbon monoxide, and free hydrogen. Apart from coal gas itself almost the only gaseous constituent related to pharmacy is ammonia.

Ammonia is removed from other gaseous products by a system of washing with water. By this means the ammonia is obtained as ammonium hydrate (NH_4HO) together with a somewhat considerable quantity of sulphide and carbonate formed by the combination of a portion of the ammonia with H_2S and CO_2 . The ammoniacal liquor is then sold to be converted into sulphate or nitrate of ammonia, both of which are useful as artificial manures, or it may be converted into carbonate, resublimed, and thus find its way into our shops.

Passing on to the consideration of crude coal tar, it was shown that, during the destructive distillation of coal, the lower the temperature at which distillation was effected the larger the yield of liquid and solid hydrocarbons, but the lower the yield of gas, which, however, was of a better quality. Thus tars vary a great deal according to the coal used, the temperature of distillation, the manner of working, etc. An average coal tar contains the following constituents:—Gasses of marsh gas (CH_4) and olefiant gas (C_2H_2) families dissolved in the liquid tar. Benzene and its isomerides (C_6H_6) and higher hydrocarbons, of which styrolene (C_8H_8) is an example. Naphthalene (C_{10}H_8), anthracene ($\text{C}_{14}\text{H}_{10}$), and other bodies of that class.

Wood spirit (CH_3HO) and acetic acid ($\text{C}_6\text{H}_5\text{HO}$) occur, but neither of them in workable quantities. Then there are carbolic acid ($\text{C}_6\text{H}_5\text{HO}$), cresylic alcohol ($\text{C}_7\text{H}_7\text{HO}$), nitrogenous bodies as ammonia (NH_3), methylamine (NCH_3), pyridine bases, among which are pyridine ($\text{C}_5\text{H}_5\text{N}$), picoline ($\text{C}_6\text{H}_7\text{N}$), lutidine, and numerous others. Also, the leukoline bases, of which leukoline itself ($\text{C}_9\text{H}_7\text{N}$) is a type, and lastly the non-volatile residue which we call pitch. Many of the above substances do not actually occur as such, but are formed during the subsequent processes to which the tar is subjected. Of all these substances the lecturer said he would refer only to those which are interesting to pharmacists.

The tar, as it comes from the gas works, always has more or less water in suspension, to free it from which it is pumped into large iron tanks, allowed to stand for some time, when the water rises to the top and is pumped off. This liquid often contains a

fair percentage of ammonia compounds. The tar is then run off into enormous stills, and subjected to a steam heat; by this means any water vapour, ammonia, permanent gases, and the more volatile constituents of the tar pass over and are collected separately. This fraction is known as "first light oils," and in a 1200 gallon charge would amount to about 70 gallons, of which under one-half would be naphtha and the rest water containing various substances in solution.

The temperature is now raised when the break occurs (at this point the still almost ceases working, little else but water vapour passing over for about an hour). As the temperature rises the still comes off the rattle—a term used by the workmen probably on account of the peculiar noise made by the water vapour issuing—and about 20 gallons of an oil lighter than water are collected. The temperature is now continually being raised.

After a short time an oil which is heavier than water is being collected; when this occurs the shoot (or receiver) is changed and the first heavy oil is collected separately. This oil distils for about three hours and about 300 gallons distilled off. The first portion consists chiefly of naphthalene, so that considerable care must be exercised in order to prevent the worm of the still becoming blocked. The second portion of the distillate is called "sharp, soft oil," the naphthalene which distils over now is wholly soluble in the oil running. When the oils begin to thicken the shoot is again changed, and the still is said to be on the anthracene oil, of which about 50 gallons are collected. The fire is now drawn and the still cooled; the residue is pitch. Now returning to the first fractions obtained, the "first light oils" are allowed to stand and the oils drawn off from the water and run into another still and fractionated. The portion passing over below 80° C. is often sold as naphtha for dissolving rubber, etc.

The next fraction (taken between 80° and 115° C.) is commercial benzene. The portion remaining in the still is added to the second light oils. The second light oils (as are the other oils) are now subjected to a wet process, *i.e.*, they are washed with hydrochloric acid, then with water, next with a solution of caustic soda, and again with water. These washings are put aside and used for the manufacture of carbolic acid, as will be shown later. The second light oil is now fractionated, that passing below 140° C. is added to another batch of first light oils, that passing between 140° and 190° C. being collected. The first portion of the heavy oil is used to prepare naphthalene, and the second portion (together with any other oils which are unworkable) are sold to railway companies for creosoting timber sleepers, telegraph poles, etc., to prevent decay and the attacks of insects.

The anthracene oil has of late years become very valuable on account of the artificial production of alizarin from anthracene. The anthracene is extracted by a system of cold and hot pressing, subliming, and condensing. In this condition (yellow flakes) it is sold to the colour maker, who converts it into alizarin. Returning now to benzene, which we had obtained in a crude state—this hydrocarbon was first discovered by Faraday in 1825, who termed it bi-carburet of hydrogen, under the supposition that its empirical formula was C_2H_2 . Later, Hofmann discovered its existence in coal tar. Soon after its discovery in coal tar its use for the removal of grease from cotton, wool, oil-cake, seeds of various kinds, clothes, etc., became known. Finally, the discovery of aniline dyes caused a great increase in the trade of this substance.

The crude benzene obtained contains, in addition to benzene, a substance, toluene, of some interest to pharmacists on account of its being also contained in "Dragon's blood" and tolu balsam; and the fact that this substance is the one from which saccharin is prepared. To obtain the benzene in a pure condition it is only necessary to re-distil, collecting that which passes over at about 80° C. (Benzene boiling at that point.) In order to obtain aniline, which is the starting point of the manufacture of an immense number of beautiful dyes, it is necessary to convert the benzene into nitro-benzole or oil of mirbane. This oil of mirbane is an oily liquid having the odour of oil of bitter almonds. It is obtained by allowing a mixture of nitric and sulphuric acids to slowly trickle into a cylinder of benzene, the cylinder being constantly rotated. When the nitration is complete the cylinder is allowed to stand, when the nitro-benzole rises to the top, and is drawn off, washed with water, then with caustic soda solution to neutralise any acid left, and finally re-washed with water. The purified nitro-benzole is now converted into aniline by nascent hydrogen by adding it to hydrochloric acid and iron trimmings. On distillation the aniline passes over and condenses as a colour-

less liquid, which rapidly changes colour and solidifies at a low temperature.

Having now obtained aniline the next step is to convert it into rosaniline, from which the countless number of dyes are made. It is converted by a process of oxidation, to effect which numerous substances have been used, but principally arsenic acid.

The aniline and arsenic acid are heated together, the product dissolved in alcohol, then acetic or hydrochloric acid is added and the alcohol distilled off, leaving rosaniline (or fuchsine) behind. By heating rosaniline with iodide of methyl or ethyl several shades of blue can be formed; these are known as Hofmann's blues, and so on by various means almost all the colours can be formed from rosaniline.

Aniline was first discovered by distilling indigo. Several of the recent remedies are obtained from aniline, antifebrin for example, which is obtained by the action of glacial acetic acid upon it, and subsequent purification. For the preparation of carbolic acid from the washings (as previously spoken about) the caustic soda used converts the carbolic acid into sodium carbolate and is run off. This solution is treated with HCl, the carbolic acid (which rises to the surface) is treated with chloride of calcium to deprive it of water, distilled and re-distilled, when a crystalline mass of pure carbolic acid is collected, melting at about 33°, and boiling at 183° C.

From carbolic acid several substances are obtained of interest to pharmacists, notably salicylic acid, phenacetine, and picric acid.

Salicylic acid is formed by the combination of the elements of carbolic and carbonic acids.

Picric acid is obtained by the continued action of nitric acid on phenol.

Saccharin or gluside was first discovered by Fallberg in 1879, and if prepared from toluene by heating with strong sulphuric acid at a temperature below 100° C. This product is subjected to oxidation, equal parts of para and ortho sulpho benzoic acids being formed. These are converted into potassium salts and then converted into di-chlorides by the action of chlorine in the presence of phosphorous tri-chloride. After the phosphorous oxychloride has been distilled off, the di-chlorides are treated with ammonia in an atmosphere of CO_2 . The para salt is insoluble and is filtered off, whilst the filtrate which contains the ortho salt is treated with acid, when saccharin is formed.

Saccharin is only sparingly soluble in water, so that for use it is usually converted into the sodium salt either by the action of sodium hydrate or, as is more usually by mixing with an equal quantity of bicarbonate of soda.

Liverpool Pharmaceutical Students' Society.—This Society held its usual meeting at University College on Thursday, the 20th inst.

A practical demonstration of suppository making by cold compression was given by the President, Mr. T. S. Wokes, who used a small "Perfection" machine for the purpose capable of making three suppositories at a time. The mixed cocoa butter and drug were passed through the machine once or twice until homogeneous, after the style of "milling soap," and then were pressed into the moulds. Upon removal of the cover at the base of these moulds, and the application of further pressure, the suppositories were ejected at the extremity of a thin rod of the mass, from which they were detached by means of a knife. Pessaries of about 2 drachm size, suppositories of 15, 30, and 60 grains, and bougies were rapidly made, all being irreproachable both in shape and consistence.

A couple of prescriptions worthy of comment were brought under the notice of the meeting by Mr. R. H. Mitchell.

The first contained the following ingredients:—

R̄ Ferri et Quin. Cit.	80 gra.
Croton Chloral Hyd.	ʒiiss.
Tinct. Gelsem.	ʒii.
Aquæ ad.	ʒviii.

On mixing they separated, the croton, chloral, and citrate of iron and quinine forming a solid mass, leaving the liquid nearly colourless. Mucilage had to be used to get a presentable mixture.

The second was for pills—

Ext. Hyoscyami,	
Zinci Valerianatis	aa gr. iiss.

The mass was deliquescent, and took a large quantity of *P. glycyrrhizæ* to make it cut nicely.

It was advised by the members that Mr. Mitchell should try a dry extract similar to the U.S.P. abstractum instead of the usual B.P. ext. hyoscyami.

A string of "issue peas" made from minute unripe orange fruit was passed round for inspection by Mr. Pickering, who stated that they were still used in Cornwall.

Then followed an address of a very interesting character, by F. C. Larkin, Esq., F.R.C.S., upon "Facts," in the course of which various phenomena or facts were reviewed, and the mental and other processes by which we became aware of them were thoroughly gone into and explained. Dr. Larkin has always been ready to assist the Students' Society, and each session since its formation has contributed a lecture to its syllabus, invariably of a novel and valuable scientific nature, so that the vote of thanks accorded him at the close was well deserved by him, and was given by the students with flattering vigour.

Cambridge Pharmaceutical Association.—A meeting of the above was held on Friday, February 21, Mr. Alderman Deck, F.C.S., in the chair, and Mr. Arthur S. Shrubbs, of the University Herbarium read two papers:—(a) "Ancient and Mediæval Materia Medica." Sundry quaint old recipes for various diseases, and accounts of the extraordinary errors which crept into the writings of the early herbalist were given, being illustrated (by means of lantern slides) by the sheep tree or Tartarian lamb and the Barnacle or Goose Tree. This was supposed by the people of the north in the 16th century to have brought forth little living creatures which, dropping into the water, gave rise to feathered fowls, and these they considered accounted for the large number of geese in the rivers at certain seasons. (b) "The Medicinal Plants of Cambridge-shire," was illustrated by plants collected by Mr. Shrubbs, and preserved as herbarium specimens. He mentioned their various medicinal properties, and some of the diseases for which they were used. The Chairman proposed a hearty vote of thanks to the lecturer for thus affording such an instructive and interesting evening. This was seconded by Mr. A. S. Campkin, J.P., and endorsed by Messrs. C. S. Addison, and E. Saville Peck.

PROCEEDINGS UNDER THE PHARMACY ACT.

THE UNLAWFUL SALE OF POISON.

At the Liverpool County Court on Tuesday, before His Honour Judge Shand, an action was heard in which the Pharmaceutical Society of Great Britain sought to recover a penalty of £5 from J. Bainbridge, an assistant employed at the Park Lane Pharmacy, Liverpool, for having sold poison contrary to Section 15 of the Pharmacy Act, 1868, he not being registered as a chemist under the Act. Mr. T. R. Grey, barrister (instructed by Messrs. Flux, Thomson, and Flux), appeared for the Pharmaceutical Society, and the defendant appeared in person.

Mr. Grey said the action was one to recover a penalty for the sale of poison under the Pharmacy Act of 1868. The poison sold on this occasion was a preparation containing opium, and it was sold at 158, Park Lane by the defendant on November 25 last. As his Honour knew, a preparation of opium was a poison within the schedule of the Pharmacy Act. That Act was passed for the safety of the public and to absolutely exclude all persons from selling poisons unless they had passed an examination under the Pharmacy Act. The Act made it unlawful for any person to sell or keep open shop for the sale, dispensing, or compounding of poisons, and it declared that the several articles entered in the schedule were to be deemed poisonous. Section 13 of the Act made the register which he now put in proper evidence—that was to say if the defendant's name did not appear in that register, it was evidence against him that he was not qualified unless he could prove to the contrary. The penalty provided for by the Act in the case of an unqualified person selling poison was £5. Counsel then cited a case decided in the Queen's Bench Division, where it was held that if an unqualified chemist's assistant sold poison he was liable to the penalty, notwithstanding that he effected the sale on behalf of his master, and that his master was duly registered.

The Registrar (to defendant): You admit your liability, do you?—Yes, sir. I admit selling the poison.

The Registrar: And you admit that you were not qualified?—Yes, sir.

The Judge: That is sufficient. The penalty is £5.

NEW REMEDIES.

[The notes given under this heading embody recent suggestions in therapeutics. They cover both new drugs and preparations, and old ones under new aspects. The word "parts" is used to represent parts by weight, both for solids and liquids.]

VIBURNUM PRUNIFOLIUM IN DYSMENORRHOEA.—In a paper read before the Edinburgh Obstetrical Society, Dr. Spennan reported on an investigation of *Viburnum prunifolium*. He concludes that it acts as a sedative in neurotic and hysterical conditions, this action being partly due to the valerianic acid present and partly to an alkaloidal substance. The preparations most convenient for use are the fluid extract, and an inspissated extract obtained by evaporating the former to one-sixth its volume, *in vacuo*, or at a low temperature. This thickened extract may be conveniently enclosed in capsules. In nervous cases he finds that it is at least as efficacious as opium; it does not produce constipation, and is practically non-toxic. In the discussion which followed, Dr. Craig stated that he knew no drug so efficacious as *Viburnum* for threatened abortions. Other authorities confirmed this view (*Lancet*, II., 95, 1626).

PHENOCOLL HYDROCHLORIDE IN MALARIA.—Dr. Ludewig has found phenocoll hydrochloride of marked service in the treatment of malaria, known locally in tropical Mexico as "calentura." In nine adult cases the treatment which proved successful consisted in the administration of 15 grains of the hydrochloride three times a day; in three infantile cases, 15 grains dissolved in a quart of water was given in three portions during the day. As a prophylactic, one dose daily of 15 grains is sufficient, even in subjects who are refractory to quinine. The author considers phenocoll hydrochloride to be a quick and reliable remedy, and a certain preventive in cases of tropical malaria (*Therapist*, v., 96).

ANTIPYRINE IN INFANTILE DIARRHOEA.—In the diarrhoea of children, not due to toxic causes, the following has been suggested:—Antipyrine, 7 grains; syrup, 1½ ounce; water, 1½ ounce. One teaspoonful every two hours.

SALOPHEN IN ACUTE RHEUMATISM AND IN CHOREA.—Huot has confirmed the usefulness of salophen in cases of acute articular rheumatism, in which it is preferable to salicylate of sodium, since it exercises no irritant action on the stomach or the kidneys; it seems to act on the bowels as a gentle laxative. Marie has obtained a complete cure in a case of Sydenham's chorea in eight days with the use of salophen. From its freedom from taste it is readily taken either suspended in fluid or in cachets. The usual daily dose is from 3 to 4 grammes, advantageous taken in five or six separate portions at intervals (*Rev. de Thérap. Méd. Chirurg.*, lxii., 763).

VALERIANIC ETHER IN PERSISTENT HICCOUGH.—Valerianic ether is claimed to be a specific in persistent hiccough and other spasmodic disorders. It should be given in capsules in doses of 2 minims (*Med. Times*).

PELLETIERINE FOR TAPEWORM.—Prospero speaks strongly of the value of this alkaloid in the treatment of the two larger varieties of *tenia*. He administers it in doses of 20 centigrammes of the sulphate with 25 centigrammes of tannin in syrup, to be followed by an aperient next morning. Extract of male-fern is unreliable in its effects, and may be poisonous. For the *ankylostoma*, thymol is the best vermifuge. In one case proglottides of the *tenia mediocanellata* were voided through the mouth, and that without any severe vomiting (*Brit. Med. Jour. Epit.*, February, 1895, 88).

CHLORAL IN ACUTE CORYZA.—The following pigment, applied to the mucous membrane after cleansing the surface is said to arrest the secretion and calm the irritated surface, as well as the accompanying headache:—Chloral, 10 grains; castor oil, 4 drachms. Ft. pigmentum (*Practitioner*, lv., 517).

MENTHOLATED CHLOROFORM IN CORYZA.—The inhalation of a 5 or 10 per cent. solution of menthol in chloroform will, according to Wünsche, cut short an acute attack of coryza. A few drops of the solution are sprinkled on the hands, which are held before the mouth and nose and five or six deep inspirations are made (*Rev. Medico. Pharm.*, ii., 296).

NOTES AND QUERIES.

[The information given in this column includes both notes of practical interest to pharmacists, and replies to queries which seem to possess sufficient interest to readers generally. Readers requiring working formulæ for special preparations should intimate their wants to the Editor, who will be pleased to assist them to the best of his ability. The word "parts" invariably indicates parts by weight.]

DISPENSING LANOLINE.

A. P. S. has made several unsuccessful attempts to incorporate the ingredients in the following prescription, and only succeeded in turning out a presentable ointment at last by adding two grains of tragacanth :—

R Lanolini	3ij.
Aq. Rosæ.....	3ij.
Zinci Oleat.....	3ij.
Glyc. Amyli	3ij.

Misce bene. Sign. "The Cream."

The addition of tragacanth was quite unnecessary. Warm the mortar, avoiding too much heat. Mix together the solid ingredients, and very gently stir in the rose water by circular manipulation. This is best effected by means of a spatula, and not with the pestle, as the latter exerts too much pressure.

COVERING THE ODOUR OF IODOFORM.

It is probably not possible to mask the odour of iodoform entirely, for it is so persistent that it reveals itself after the odour of any added substance has been dissipated. Amongst the additions recommended at different times for temporary or partial deodorisation are the following :—(1) Squire, in the 'Companion,' says geranium oil, 5 minims to 2 drachms, is most effective; (2) carbolic acid, $\frac{1}{2}$ per cent., and peppermint oil, 1 per cent.; (3) coriander oil, 8 drops to 1 drachm of iodoform; (4) menthol is said to produce the desired effect if enclosed in a bottle with the iodoform for an hour or two; (5) coumarin, preferably the synthetic product, answers to some extent; (6) camphor disguises the odour, especially if the iodoform be dissolved in Rubini's solution, or Martindale's camphoid; (7) eucalyptus oil; (8) anise oil; (9) tannic acid; (10) balsam of Peru. [Reply to Iodoform.]

PILL-COATING WITH PARAFFIN.

C. De Houck finds that pills can easily be coated with paraffin by heating them to about 80° C. in a capsule and adding the paraffin in shavings and rotating; 2 or 3 grammes of paraffin are sufficient to coat 1000 pills. The coating in no way interferes with the action of the pills, since they disintegrate easily in the mouth (*Annales de Pharm.*, ii., 66).

INK FOR WRITING ON GLASS.

Dissolve 36 grammes of fluoride of sodium and 7 grammes of sulphate of potassium in 500 grammes of water. Dissolve 14 grammes of chloride of zinc in 500 grammes of water, and add 65 grammes of hydrochloric acid. Mix equal quantities of these solutions, and apply with a pen or brush. In half an hour the surface covered will be etched (*Annales de Pharm.*, ii., 81).

COLOUR OF DARK-ROOM WALLS.

J. E. Appleby asks regarding the treatment of the walls of a dark-room. Provided the light admitted by window or emitted from a lamp is safe, white is by far the best colour, as it reflects all the light, and consequently makes it easy to see and move about.

MICROSCOPIC FIXING SOLUTION.

Zenker recommends the following fixing material for vegetable tissue; it penetrates the tissue readily without producing any shrinking: Distilled water, 100 parts; mercuric chloride, 5 parts; bichromate of potassium, 2.5 parts; sulphate of sodium, 1 part; glacial acetic acid, 5 parts (*Intern. Journ. Micro. Sci.* [3], vi., 91, after *Munich Med. Woch.*).

ERLICH'S TRIPLE STAIN.

Reinbach gives the following formula for the triple stain as improved by Erlich (*Arch. f. Klin. Chirurg.*). Saturated solution of orange G., 120 parts; saturated solution of acid rubin, 80 parts; saturated solution of methyl-green, 100 parts; water, 300 parts; absolute alcohol, 180 parts; glycerin, 50 parts. The aqueous solutions of the dyes must be thoroughly saturated. The mixture is not to be shaken before use.

NOTICES TO CORRESPONDENTS.

All Articles, Letters, Notices, and Reports intended for publication in the Journal, Books for Review, and communications respecting Editorial matters generally must be Addressed "Editor, 17, Bloomsbury Square, London," and not in any case to individuals supposed to be connected with the Editorial Staff. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

ANY INSTRUCTIONS from Members, Associates, and Students of the Pharmaceutical Society, with reference to the transmission of the Journal, should be sent to the Secretary—Mr. Richard Bremridge,—17, Bloomsbury Square, London.

BUSINESS communications—including advertisements, orders for copies of the JOURNAL, and instructions from Subscribers respecting transmission of same—must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London. Cheques and money orders should be made payable to "Street Brothers."

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

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

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

QUERIES addressed to the "Editor" will be replied to in the Journal as early as possible after receipt; answers of sufficient general interest being given under the heading "Notes and Queries." The Editor cannot undertake to reply to queries through the post.

REPRINTS of articles cannot be supplied unless authors communicate with the Editor before publication.

LETTERS.

MEMBERSHIP OF THE SOCIETY.

Sir,—Another year has passed since the report of the Registrar was made in the Journal, showing the numerical strength of the Society, and this strengthens the opinion I expressed in my letter in the Journal the corresponding period of last year. The members of the Society are decreasing at a very fast rate, sixty-two having disappeared out of 2000 since last year; and it must be understood that the governing portion of the Society is drawn only from the members of the Society, which means, in time, that there will be very few members left to form a council. Why cannot a bye-law be made that associates in business after a certain number of years be allowed to be enrolled as members? Surely after a number of years in business they can show sufficient ability to assist in keeping the Society together, besides being an inducement for the whole of the trade to become associates. It is plainly shown that raising the fee for one examination and reducing the fee of the other has not had the desired effect. I think I remember one of the aspirants for Council honours said he would try and do something in the right direction. Hoping to hear the opinions of others on the subject.

Chester, February 19, 1896.

J. H. THOMAS.

UNDUE CUTTING IN THE RETAIL TRADE.

Sir,—I have read the remarks by Mr. E. J. Smith and others on the above subject, but fail to grasp the proposed mode of action. My impression is that anything that may be done for the benefit of the pharmacist must be for the benefit of the public also, otherwise the project will fail. If the pharmacist desires the public to come to him in preference to his opponents, he must make himself useful to the public.

The trouble in prices has been caused entirely by the so-called "patent" medicines, the plan followed being usually as follows:—The cutter prospects for a good business position, secures a suitable shop, puts in stock, issues a price-list, quotes patents at about cost price, and drugs at a very low figure. Result: A big turnover from the first or opening day. As a matter of fact, he secures his connection with his quack medicines, and so runs the shops in his vicinity more or less dry, and ultimately secures a portion of their drug trade and dispensing. I contend that if the same man opened the same shop without patents, and cut drugs only, he would not be able to pay rent and wages out of the profits for some considerable time.

This systematic cutting is a very serious matter to chemists and druggists. It not only reduces a man's income to starvation point, but if he wishes to sell his business, instead of getting a substantial goodwill, he cannot sell even at valuation; and very often the business has to be broken up. If a man reduces prices to absolute cost, such trading must ultimately result in a loss, but a cutter or drug store that is in the ring, and knows the ropes, can reduce patents to the level of the ordinary wholesale price-list and still make a substantial profit, out of which he could live and pay his way without selling a single crude drug, whereas a chemist buying in normal quantities would never see invoice price back if he competed with such a man.

This, I think, proves my point that quack medicines are a dead branch on pharmacy, and if not removed will prove its utter ruin. The Inland Revenue returns, 1894-5, show that medicine stamps were sold amounting to £234,881. These would stamp 37,580,960 *ls.* $1\frac{1}{2}d.$ packages of medicine, which, if sold at the reduced price of $9\frac{1}{2}d.$, would amount to about £1,487,579.

There are about 14,000 registered chemists in Great Britain, and about 2000 in Ireland. Nine or ten thousand of these are in business, and a small percentage of them are making a living from advertised quack medicines of their own manufacture, whilst perhaps fifteen or twenty are making a fortune. Further, about two-thirds in value of the quack medicines are owned by men with no legal connection with pharmacy or the drug trade.

Now with regard to the remedy, I would first ask each chemist and druggist to give the whole of his support to any movement for the general good of pharmacy; in fact, to co-operate on all broad questions that affect the trade generally. Commence by forming a company with a suitable capital, say £5000 to £10,000 in £1 shares, establish a central analytical laboratory, and at once commence to analyse all advertised "patent" medicines at the rate of ten or fifteen per month. Subsequently, where practicable, give a working recipe for each article analysed, and publish each month's work on a suitable sheet or pamphlet, leaving the front page blank for the shareholders to print their own business announcements, previous to circulating to the public in their respective districts. Assuming that there are 5000 chemists unconnected with the "patent" medicine trade, and that each one became a shareholder and purchased only 1000 pamphlets monthly, this would give a circulation of 5,000,000 monthly, or 60,000,000 per annum, of a pamphlet that would be eagerly looked for and widely read by the public. On the quantity required, if the company charged a profit of 25 per cent. on cast, they would still be able to print each chemist's announcements on the front and supply the entire pamphlet for less money than he would have to pay for 1000 counter bills like the front page. The company would have many other sources of profit, but it is not necessary to go into detail at present.

"Patent" medicines are, roughly, of three classes—useful, pernicious, and fraudulent. By this system we could stamp out the pernicious and fraudulent, and so elevate the drug trade, and gain the confidence and respect of the public. In many cases they would ask chemists to compound the recipes that had been pointed out as useful. A further source of profit would arise from the fact that we should thus paralyse the backbone of the cutter's trade, and increase each shareholder's returns by reducing the cutter's.

In conclusion, I strongly advise pharmacists to unite and be solid on this one idea—to clear out so-called "patent" medicines, which serve as the decoy duck of the cutter, and with which he undermines your business. Hitherto the cutter has posed as a public benefactor to the extent of $33\frac{1}{3}$ per cent., or fourpence in the shilling. If you utilise your knowledge you are in a position to go one better, and educate the public to the fact that the ingredients of a successful *ls.* $1\frac{1}{2}d.$ patent medicine often only costs the fraction of one penny, and seldom over twopence; and that you are ready to compound quite a large package of the stuff for *6d.* or *1s.* You would also be able to help the medical man with the host of secret remedies that crowd your cupboards and beset his path; lastly, you would be able to help yourselves.

56, *Cheapside, E.C., February, 1896.*

WILLIAM FERGUSON.

SOLUTION OF MORPHINE HYDROCHLORATE.

MR. G. W. BLYTHE, of Manor Cottage, Doddinghurst, Essex, points out that "a strong solution of morphine hydrochlorate (48 grains in the fluid ounce) can also be made in the same way as that of the acetate referred to last week (p. 160), except that sufficient tartaric acid must be added to keep the morphine salt dissolved after the sol. has cooled."

ANSWERS.

"CARYOPH."—The words you specify could not be registered as they would be regarded as descriptive of the article to which they were applied. With regard to the other point you raise, apply to the Comptroller, Patent Office, 25, Southampton Buildings, Curator Street, Chancery Lane, London, E.C.

J. PENDLEBURY.—Straw hats are renovated by applying a spirit varnish, after thoroughly removing all traces of moisture. The yellow varnish is ordinary French polish, the black is a spirit varnish containing some form of vegetable black in suspension, and a green preparation can be made by dissolving an aniline green in a clear spirit varnish.

"SODA."—The cleanliest and most convenient apparatus a retail chemist and druggist can employ for preparing his own aerated waters is one in which compressed gas is employed for aeration. Such a machine is supplied by the Volcanic Aeration Co., 203, Great College Street, London, N.W., or by Barnett and Foster, 26T, Eagle Wharf Road, London, N. One outfit by the first-named maker has cost only a few shillings for maintenance and repairs during the last five years, though it has been in continual use. It is worked by a man of "less" than ordinary intelligence, and has been proved to work very economically.

J. K. W.—Try Hopkin and Williams, chemical manufacturers, Cross Street, Hatton Garden, London.

QUERY.

REFINING GELATIN.—C.P.R. wishes to know how gelatin is refined. His experience is that when it comes out of the press it is very clondy, and he desires to know the simplest way of getting it as clear as possible.

OBITUARY.

PUMPHREY.—On February 10, J. H. Pumphrey, Pharmaceutical Chemist, Evesham. (Aged 40.) Mr. Pumphrey had been a Member of the Society since 1879, and was a former Student in the Society's School of Pharmacy.

COOPER.—On February 14, George Cooper, Chemist and Druggist, Branscombe. (Aged 84).

HODSON.—On February 15, Edwin Hodson, Chemist and Druggist, Burton-on-Trent. (Aged 53).

BUSH.—On February 18, William Bush, Chemist and Druggist, Walworth. (Aged 74).

OLIVER.—On February 19, John Oliver, Pharmaceutical Chemist, Liverpool. (Aged 78).

COLVIN.—On February 22, J. T. Colvin, Chemist and Druggist, Peckham. (Aged 51).

STEWART.—On February 23, John Stewart, Chemist and Druggist, Birkenhead. (Aged 61).

PUBLICATIONS RECEIVED.

PETROLEUM AND ITS PRODUCTS. By BOVERTON REDWOOD, F.R.S.E., F.I.C., Assoc.Inst.C.E., assisted by GEO. T. HOLLOWAY, Assoc.R.Coll.Sc., F.I.C., and other Contributors. In two volumes, with numerous Maps, Plates, and Illustrations in the Text. Pp. 900. Price 45s. (London: Charles Griffin and Co., Ltd., Exeter Street, Strand. 1896.) From the Publishers.

PHARMACEUTICAL REGISTER OF VICTORIA FOR 1895. Pp. 28. Price 2s. 6d. (Melbourne: H. Hearne and Co. 1896.) From the Registrar.

CHEMICAL RECIPES. By the ATLAS CHEMICAL COMPANY, Sunderland. Pp. 316. (Sunderland: Hills and Co., 19, Fawcett Street. 1896.) From the Publishers.

BERICHT ÜBER DAS JAHR 1895. By E. MERCK, Darmstadt. 1896. From the Author and Publisher.

A MANUAL OF PHARMACOLOGY AND THERAPEUTICS. By WILLIAM MURRELL, M.D., F.R.C.P. Pp. 657. Price 10s. 6d. (London: Buillièrè, Tindall and Cox, 20 and 21, King William Street, Strand. 1896.) From the Publishers.

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs. Bush, Blythe, Brown, Carteighe, Darton, Davies, Duncan, Ferguson, Glynn, Henry, Highfield, Johnston, Jones, Loissette, Morgan, Newton, Pendlebury, Powell, Reynolds, Richardson, Robinson, Sawyer, Snaith, Thomas, Thompson, White, Wretts.

NOTE ON COMMERCIAL LITMUS.

BY D. RAINY BROWN.

The manufacture of litmus is carried on chiefly in Holland, and is prepared from various species of *Rocella*, *Variolaria*, and *Lecanora*, and also from other lichens, for the most part natives of the Mediterranean and Channel Islands. There is very little published information to be had regarding the preparation of litmus, as the process of manufacture is kept in the hands of the makers, but the process is somewhat as follows:—

The lichens are made into a paste with water, and are allowed to ferment in the presence of ammonia, as in the preparation of archil. When the mixture has acquired a purple tint, stale urine and potassium carbonate are added, and fermentation is then allowed to proceed until the blue colour produced is considered to be of the correct tint. It is stated that the best product is obtained in about forty days. The blue liquor is then mixed with chalk, gypsum, or sand, and, according to some authorities, alum, in order to give it consistency. After moulding into pieces of the desired dimensions it is more or less thoroughly dried.

This addition of chalk, sand, gypsum, and alum to the blue liquor, to give it consistency, is surely a doubtful proceeding, and very likely to be attended with loss of colouring matter from the formation of an insoluble lake. It would be better to send the litmus into the market either in the form of a liquid extract similar to archil, or else to acidify the solution and precipitate the colouring matter with excess of alcohol, and offer the product in the dry state.

Apparently indigo is sometimes added in the process of manufacture to improve the colour of the product. I did not observe any indications of it in the samples which I examined, and, if present, it must have been in very small quantity. This addition of indigo is not to be commended from the analyst's point of view. Indeed, from any point of view it should be objected to as a sophistication, but it is a practice quite on a level with the indefinite crude and unscientific methods which, so far as can be ascertained, characterise the production of the commercial article. Wartha suggests that the presence of indigo might result from the fermentations of the lichens at the expense of the urine added.

The blue colour of commercial litmus is due to varying proportions of a pigment called azolitmin in combination with potash. Azolitmin is a weak acid, and combines with alkalies forming blue salts. It is soluble in water, but insoluble in alcohol.

According to De Luynes, azolitmin may be prepared from orcinol by the treatment of that substance with sodium carbonate and ammonia by keeping the mixture in a closed vessel with water for four or five days at a temperature of 60°–80° C. On acidifying this solution what is considered to be pure azolitmin is precipitated this substance is soluble in alcohol, and nearly insoluble in water (Allen, 'Comm. Organic Analysis,' vol. iii., part i., page 325).

The substance which I have separated and consider as azolitmin was quite soluble in water, but insoluble in alcohol. It cannot, therefore, be the same substance as that described by De Luynes as azolitmin, but it is undoubtedly the colouring matter of litmus, and agrees with the descriptions of that substance given by Kane (*Royal Soc. Trans.*, 1840, p. 298), and Wartha (*Berichte*, 9, p. 217).

Besides azolitmin there are three other colouring matters in litmus—spaniolitmin (which occurs very rarely), erythrolein and erythrolitmin, but as they are of no value as indicators they need not be spoken of here.

I have estimated the azolitmin in nine samples of commercial litmus and get fairly constant results from each sample. The finely powdered sample is exhausted with boiling water so long as any colouring matter is extracted; the water extract is evaporated to

small bulk, and after acidifying with acetic acid, the evaporation is continued until the extract is nearly to dryness. The object of adding acetic acid is to form potassium and ammonium acetates, which are both soluble in alcohol. A large excess of 85 per cent. alcohol is added to the acidified solution, which precipitates the azolitmin in a crude state; after standing for twelve hours the precipitate is collected on a filter, and when dry is washed through, with the smallest possible quantity of boiling water, into alcohol. After standing over night the precipitate is filtered off, and is dried and weighed.

In order to check the results the samples were re-assayed by a slightly different method. The finely powdered sample was heated on a water bath with excess of acetic acid, and it was then exhausted with warm alcohol; the residue insoluble in alcohol is extracted with boiling water, which, after evaporating to small bulk, is precipitated with alcohol in large excess. The precipitate is collected, and after exhausting with warm alcohol, is dried and weighed. The products obtained were free from inorganic matter.

Sample. No.	Per cent. moisture.	Per cent. insoluble in boiling water.	Per cent. azolitmin.	
			First assay.	Second assay.
1	2.8	84.3	5.21	5.09
2	4.0	73.6	5.84	5.83
3	2.0	83.3	4.92	5.02
4	1.2	89.8	3.40	3.30
5	6.4	60.0	13.55	13.10
6	1.6	87.9	4.79	4.75
7	2.0	86.4	4.31	4.46
8	1.8	89.6	3.82	3.70
9	10.1	46.0	14.22	13.98

According to the only analysis I have seen (Mitchell, *Chem. News*, 1876, p. 140), litmus is stated to contain 2.2 per cent. of azolitmin.

Seven samples—Nos. 1, 2, 3, 4, 6, 7, 8—give an average of 4.6 per cent., which is a much higher percentage than that found by Mitchell. It will at once be seen that Nos. 5 and 9 contrast strongly with all the others. They both indicate a high percentage of moisture, a low percentage of insoluble matter, and a high percentage of azolitmin. Even to look at they appeared to contain a much larger percentage of pigment, and one naturally concludes that the process by which they were prepared must have been different from and superior to that of the others. It will also be seen that the lower the percentage of moisture in the samples, the higher is the percentage of insoluble matter, and the lower is the percentage of azolitmin. This seems to indicate that the quantity of chalk, gypsum, etc., added to the blue liquor to give it consistency is not regulated in any uniform way. The insoluble matter ranges from 46–89.8 per cent., and surely it ought not to be difficult to attain a higher and more uniform standard for commercial litmus than the results found indicate.

In the process given for the preparation of litmus solution in the appendix to the B.P., it is directed to boil the powdered litmus with successive quantities of alcohol, and then to make a water solution. The treatment with alcohol will remove erythrolein, erythrolitmin, and ammonium carbonate, and the water extract will contain azolitmin and potassium carbonate. The presence of the latter is objectionable, because by its alkalinity it may affect the analytical result, and it will render the indicator much less sensitive, as the presence of carbonic acid in titrating interferes greatly with the production of the blue colour.

In place of the official formula I would suggest that a method should be given for the preparation of pure azolitmin, of which a suitable solution could readily be prepared.

PAPAIN AS A DIGESTIVE AGENT.

BY D. B. DOTT, PH.C., F.I.C.

On a former occasion* I contributed a brief note on this subject, showing that papain compares very unfavourably with pepsin, when these are tested by their solvent and peptonising effects on egg albumin under the usual conditions. Since then Dr. Rideal has published a paper† in which he endeavours to make out a good case for papain, and attributes unfavourable results to the mistake of supposing that papain should be tested under the same conditions that hold good for pepsin. He notes that papain differs from pepsin in so far as the former acts fairly well in an alkaline solution, while the latter does not, and more particularly that the proportion of fluid to albumin must be much less in the case of papain than is required with pepsin. That may be correct, but it is permissible to point out that Rideal's proportion of one albumin to three of liquid does not greatly differ from the B.P. proportion of one to four and a third. I have recently tried a few experiments on Dr. Rideal's lines, with the result that they confirm in all essentials what I previously stated. The experiments are not supposed to be very precise, indeed, the methods employed are not capable of great precision, but they are quite sufficient for the purpose in hand; some sources of slight error are very obvious. When working with such a substance as moist sifted albumin, which rapidly loses moisture to the air, absolute accuracy is scarcely possible, and as 14 parts dry albumin are equal to 100 parts of the moist, a slight error, due to variation in the desiccation is very considerably magnified when the dry is calculated into the moist. But the principal source of error appears to be in the filtration. Calico is impracticable. Dr. Rideal recommends muslin, which is a little indefinite, as muslin varies in fineness. I have used a double fold of common muslin, such as is used for straining purposes, and it was scarcely possible to avoid small portions of the more finely-divided substance passing through the filter, particularly in some of the experiments. It is believed rightly or wrongly, that some of the proprietary papains contain a certain proportion of pepsin in order to enhance their power. There is, in a sense, no objection to this addition, but it would never do to assume that the total action of a commercial papain is due to a constituent of papaw juice. Dr. Rideal does not seem to have taken into account the solubility of the albumin in the menstruum employed, which is very considerable, but to have assumed that the difference between the albumin employed and that remaining at the end of the experiment was due to the action of the enzyme.

The following experiments may be noted:—

1. 15 gramme of the enzyme was used in each case, being added to 15 grammes moist sifted albumin in 45 C.c. water containing .5 per cent. hydrochloric acid, at 40° C. After digestion for 1½ hour the undissolved albumin was collected on filter, washed with a little cold water, dried, and weighed. A represents dried papaw juice from Ceylon; B another sample of same; C is pepsin. The numbers indicate the percentage of albumin apparently dissolved.

A	B	C
12.9	11.3	99.6

2. In these experiments 12 grammes of albumin were used, 45 C.c. of water, .15 gramme of enzyme, digested at 40° C. for 1½ hour. In alkaline solution the water contained .5 per cent. NaHCO₃; in the acid solution .5 per cent. HCl.

A=commercial papain in acid solution. B=same in alkaline solution. C=papain powder in alkaline solution. The result of A was particularly difficult to filter, the viscous mass having a tendency to choke, and also to ooze through the filter.

A	B	C
66	7.8	10

per cent. apparently dissolved.

3. Same proportions (Rideal's) as in No. 1, but digestion continued for three hours before filtering.

A=papain specially prepared from papaw powder; B=papain powder with 1/8th part pepsin; C=blank experiment, *i.e.*, albumin with acid solution alone, no enzyme added. Numbers indicate percentage of albumin apparently dissolved.

A	B	C
25.4	84.3	20

4. Same proportions and conditions as No. 3, but in alkaline solution the water containing .5 per cent. of NaHCO₃. A=papain powder; B=commercial papain; C=blank experiment.

A	B	C
23.0	20.9	17.8

These results are confessedly incomplete, but seem sufficient to show:—

1. That the solvent action of the menstruum alone must be taken into account in experiments conducted on the above lines.
2. That dried papaw juice, and the papain prepared from it by purification and precipitation, have very little solvent action on albumin, either in alkaline or acid solution.
3. That one brand of commercial papain has very slight solvent action in alkaline solution, but considerable action in acid solution, in these respects resembling a mixture of papain and pepsin.
4. That even the commercial papain has not nearly the solvent action on albumin which is possessed by pepsin.

It has to be noted that in the case of the experiment 1 C, the amount of albumin dissolved would have been greater had excess been present. What remained consisted of small traces, insoluble *débris* from the albumin and pepsin. It is not intended to undervalue papain in certain of its applications. It has undoubtedly a disintegrating and special action of its own on animal tissues; but as an aid to digestion it appears to be altogether inferior to pepsin.

SPIRITUS ÆTHERIS COMPOSITUS.

BY W. INGLIS CLARK, D.S.C. AND D. B. DOTT, F.I.C.

The formula for "Hoffmann's anodyne" now official in the British Pharmacopœia differs very slightly from that given in the old London Pharmacopœia. Briefly stated the older directions are: to distil 2 lbs. spirit with 4 lbs. sulphuric acid till black froth rises in the retort, separate the light fluid from the heavier, expose it for a day to the air, agitate with sufficiency of potash solution, separate the ethereal oil which subsides, and wash it well.

The product was oleum æthereum. The spiritus ætheris sulphurici compositus was made by mixing 3 fl. drms. of the oil with 8 fl. ozs. of ether and 16 fl. ozs. of spirit. It was certainly a more definite and intelligible formula than that which is now authoritative. According to the present instructions, there is no separation of the ethereal distillate from the strongly acid watery portion. Lime water, though eminently unsuited on account of its weakness, is used to neutralise. The direction simply "to expose to the air for about twelve hours," must give a less definite result than when "exposed for a day" and afterwards "well washed." The U.S. Pharmacopœia process is on similar lines, but more specific and detailed. Shortly described, the process is; to distil together 1 litre alcohol with 1 litre sulphuric acid at 150°–160°, until oily drops cease to come over; separate the ethereal liquid and expose it for twenty-four hours in a shallow capsule; transfer to a wet filter, and wash the oil with 25 C.c. cold water; mix the oil with an equal volume of ether. The spiritus is prepared by mixing 25 C.c. of the oil with 325 C.c. ether and 650 C.c. alcohol. Some of the defects of

* Pharm. Journ. [3], xxiv., 758.

† Ibid. [3], xxv., 183.

these processes have been previously discussed (*Pharm. Journ.* [3]. xvii., 316, and xxii., 614, and other papers). In order to further elucidate the subject the following experiments were tried.

(1) 80 fl. ozs. of rectified spirit, and 72 fl. ozs. sulphuric acid were mixed, and after twenty-four hours distilled. The distillation was continued as far as practicable, that is, until the black liquid began to froth up in the flask, and large quantities of sulphur dioxide were being evolved. The distillate consisted of an ethereal portion (27 fl. ozs.), and an aqueous portion (6 fl. ozs.). To neutralise an intensely acid liquid with lime water is not a reasonable method, and the use of caustic alkali seems contra-indicated on account of its decomposing influence on compound ethers, on the presence of which the virtues of this preparation at least partly depend. We therefore used bicarbonate of soda. It required about 6 ounces to neutralise. After neutralisation the ethereal liquid was separated and filtered. It amounted to 26 $\frac{3}{4}$ fl. ozs.

(a) 100 C.c. exposed in shallow basin in warm laboratory for fifteen hours. The residue was 7.5 C.c. (5 C.c. being oily heavy layer, and 2.5 C.c. upper layer). It was mixed with 160 C.c. ether and 320 C.c. rectified spirit; sp. gr. = .8167.

(b) 100 C.c., without any evaporation, diluted in the same proportion as "a," i.e., to 167 C.c. with ether, and then 320 C.c. spirit added; sp. gr. = .8184.

(c) 100 C.c. placed in cylindrical glass dish, four inches diameter, two inches deep, in cold room. After fifteen hours the residue was = 25 C.c. This was mixed with 530 C.c. ether, and 1060 C.c. rectified spirit; "a" and "b" differ slightly, though appreciably in odour and taste. Although "c" is a literal fulfilling of the law, the result is as might be expected, too purely ethereal and spirituous.

(2) In this experiment the same proportions were used as in No. 1, a thermometer being inserted with bulb dipping in the liquid, and the distillate collected in fractions:—

135°-147°	= 170 C.c. ethereal;	13 C.c. aqueous.
147°-157°	= 162 C.c.	" 21 "
157°-167°	= 155 C.c.	" 39 "
167°-170°	= 148 C.c.	" 67 "

Each fraction was neutralised with sodium bicarbonate; first required 10 grammes, second required 20 grammes, third required 35 grammes, fourth required 50 grammes. After neutralisation:—

1st	=	145 C.c.
2nd	=	127 C.c.
3rd	=	90 C.c.
4th	=	85 C.c.

These left by "spontaneous" evaporation:—

1st	=	3.0 C.c.
2nd	=	4.0 C.c.
3rd	=	5.0 C.c.
4th	=	12.4 C.c.

(3) 320 C.c. rectified spirit and 288 C.c. sulphuric acid were mixed, and after twenty-four hours distilled, the distillation commencing at 134° and continuing to 173° C. The temperature was only for a few seconds so high as 173°, but a considerable amount distilled at 170-171°. The distillate consisted of 125 C.c. ethereal and 10 C.c. aqueous. The ethereal portion was mixed with 10 C.c. water and 10 grammes sodium bicarbonate, which was sufficient to render nearly neutral. When separated and filtered it measured 108 C.c.

(a) 50 C.c. were exposed in a glass cylindrical dish for fifteen hours, leaving a residue of 3.3 C.c. This was diluted with 70 C.c. ether and 140 C.c. S.V.R.; sp. gr., .8088.

(b) 50 C.c. were simply diluted with 20 C.c. ether and 143 C.c. spirit; sp. gr., .8116.

Several experiments were tried in evaporating quantities of the two solutions for different periods of time, and in capsules of varying dimensions. The average percentage of residue was:—

$$"a" = .39 \quad "b" = .59.$$

We have arrived at the general conclusion that the evaporation of the distillate merely causes loss of material, without serving any useful purpose. The only difference that can be detected in the spirit prepared by direct dilution, as in "b," from that prepared in the old method, as in "a," is that the former is rather stronger. There is no evidence, or any probability of an objectionable element, which is got rid of by the wasteful evaporation. It is only necessary that the neutralisation should be properly conducted so that no sulphurous acid gets into the finished preparation. We are, therefore, of opinion that a method on the lines suggested by experiment "3b" should be adopted for the preparation of compound spirit of ether. The distillation should not be pushed to its utmost extent, as there is then a tendency to an empyreumatic odour in the product. The following formula might be suitable. Mix 80 fl. ozs. alcohol with 72 fl. ozs. sulphuric acid. After a day, distil slowly with thermometer in the liquid till the temperature rises to 340° F. Then separate the liquids, rejecting the lower or aqueous distillate. The ethereal liquid is now mixed with 3 ozs. water and sufficient sodium bicarbonate to render neutral or nearly so. Decant the liquid, add 10 fl. ozs. ether, and 80 fl. ozs. alcohol, mix, and filter.

NOTES FROM SOME OLD EDINBURGH INFIRMARY CASE-BOOKS.

BY A. LOCKHART GILLESPIE, M.D.,
Medical Registrar, Royal Infirmary.

While looking over some of the old registers of the Edinburgh Royal Infirmary the other day, I came across two of the case-books of Dr. W. Cullen, and one which is probably from his ward also, although it is not indexed. On one of the pages of the third volume the name of Cullen's son, afterwards Dr. Henry Cullen, occurs, perhaps as clerk of the case, if clinical clerks were known in those days. The earliest of these journals, the earliest, in fact, of any preserved in the Infirmary, bears the date of July 16, 1755, and belongs to Dr. Cullen's female ward. The second dates from 1787 and bears the inscription "Dr. Cullen's Women's Journal," begun August 28, 1787. The third and doubtful number is dated 1773 and begins on November 24 of that year. Pages 15 and 16 have been cut out of this journal, a piece being left, on which the signature of Mr. H. Cullen may be seen. On page 61 a case is signed "Thos. Jamieson, stud. of Physic," probably the same Dr. T. Jamieson who became a fellow of the College of Physicians, Edinburgh, in 1800. This third volume may therefore with reason be ascribed to Dr. W. Cullen's wards.

I do not for a moment suppose that I am mentioning anything new when I describe some of the prescriptions in these old journals. Many much older books exist. For physicians and chemists in Edinburgh, however, anything that pertains to the great Cullen must have a great and absorbing interest. Cullen was without doubt one of the greatest pioneers of modern medicine. One hundred and forty years is not so very long a period of this world's history, but just think of the huge strides made in these few years in the science of medicine alone. Cullen originated much of this. Probably if Cullen had never been born, someone else would have done so, but that does not detract in the slightest degree from the honour due to him. Someone has said that genius consists in the power of taking infinite pains. It is far better described as the power of taking infinite pains originally. Hard

work with a small amount of originality is priceless compared with the most painstaking toil performed by previous rule. Cullen was not only a hard worker—witness his voluminous writings—but an original worker, and any records left by him must always be of interest. I would propose to dip at random into these case-books of his and endeavour to extract some facts of interest and instruction as I proceed, giving details of a number of interesting cases with the treatment employed. The first was a case of Jacksonian epilepsy, in which the patient got 10 grains of a laxative pill containing soap, rhubarb, aloes, and syrup of roses. This was followed by 1 oz. castor oil and $\frac{1}{2}$ oz. compound tincture of senna; the laxative pill was again given, and a blister was at the same time applied round the arm. This was followed by 2 grain doses of opium twice daily for four days, and the patient was then dismissed cured.

A case of acute rheumatism was treated with $\frac{1}{2}$ -oz. doses of a solution of tartar emetic (2 grains to 1 fl. oz.), followed by a diaphoretic jalap containing aqua alexeteria (distilled from elder flowers and fresh angelica leaves), Mindererus' spirit, carbonate of ammonia, and sugar. A yeast poultice was at the same time applied to the breast, and enema salinum (sodium chloride, 2 table-spoonfuls, in 16 fl. ozs. of warm water), administered and repeated whenever fever recurred. The patient soon recovered.

A case of hysteria was treated first with a bolus containing 2 grains calomel, 6 grains jalap, and confection of roses, *q.s.*; this was followed by a kind of spirit of sal volatile, to be applied to the nostrils, and a few drops to be given by the mouth on the advent of a hysterical attack. Afterwards a mistura anti-hysterica was given of the following composition:—

R̄ Aq. fontis.....	ʒii.
Sp. vol. fetid.	gtt. 100
Sacch. alb.	ʒii. M.
Cujus capiat ʒss. urgente paroxysm.	

This stopped the fits, but the treatment next prescribed consisted of $\frac{1}{2}$ -drachm doses of powdered metallic tin at bedtime, indicating the belief that worms were the cause of the hysteria, as pubis stanni was chiefly employed as a remedy for tape-worm. Dr. Alston recommended 1 oz. powdered tin, to be taken on an empty stomach, mixed with 4 ozs. molasses; $\frac{1}{2}$ oz. the second day and $\frac{1}{2}$ oz. the third day, then a cathartic. The next treatment consisted of julapium salinum, containing peppermint water, syrup of lemon, and sal absinthii (potassium carbonate obtained from wormwood). Then followed julapium foetidum, containing water of rue, of asafoetida, anti-hysterical water (valerian, levisticum or lovage seeds, savin, and brandy), oil of hartshorn, and white sugar. The result of this case is not recorded. A girl with sore throat was subjected to the following heroic treatment:—A saline enema, a gargle of infusion of roses, six leeches to the fauces, solution of tartar emetic till vomiting was induced, and an ounce of saline julep every third hour. Next day a note was made that the symptoms were relieved.

A case of erysipelas in the legs was treated by applying three leeches and giving a scruple of ipecacuanha and potum acidi mineralis (weak solution of hydrochloric acid) *ad libitum*. The legs were to be rubbed with wheaten flour, and in the morning a draught was given containing 1 oz. Glauber's salt and $\frac{1}{2}$ oz. cream of tartar, and the treatment succeeded in removing the redness of the legs. Suppuration supervened in the great toe, and for this a decoction of cinchona bark with elixir vitrioli (gentian root, $\frac{1}{2}$ oz.; orange peel, $\frac{3}{4}$ oz.; cochinill (*sic*), grs. 15; brandy, 1 lb.; oil of vitriol, 4 ozs.) was given. The subsequent treatment included ipecacuanha, tincture of opium, and emollient enema (palm oil, $1\frac{1}{2}$ oz., yolk of one egg, milk, $\frac{1}{2}$ lb.), soluble tartar, emulsio arabica (sweet almonds, 1 oz.; water, 2 lbs.; sugar, 2 drachms; gum arabic, $\frac{1}{2}$ oz.), julapium

cardiacum (aqua alexeteria, ʒiv.; aqua aromat., ʒii.; spirit. vol. oleos., ʒii.; tinct. croci, ʒii.; sacchar. alb., ʒss.). Aqua aromatica contained canella bark, lemon peel, cardamoms, or Jamaica pepper and brandy. Spiritus volatilis oleosus contained oils of rosemary and amber, carbonate of ammonia, and brandy. Milk seemed to be a favourite ingredient of enemata with Dr. Cullen, one curious example containing milk, $\frac{1}{2}$ lb.; red sugar and olive oil, 1 ounce of each. Why red sugar (red rose petal juice and white sugar) should have been used in an enema was a mystery. One instance of curious spelling is opodeldoc, which is spelled "oppodeltoch." In a case of faltering of the speech, a local gargle is prescribed which could hardly be expected to influence a central affection of speech. The rest of the treatment, however, is more in accordance with modern ideas. "Let a kettleful of cold water be poured upon her left shoulder every morning, the arm afterwards to be carefully rubbed with dry flannel." Here was a foretaste of the now fashionable massage. Then, "let very slight electrical shocks be given from the top of the shoulder to the points of the fingers, and from the top of the thigh to the toes." What more would we do now except half poison the patient with iodide of potassium? In a case of acute rheumatism, cerevisia tenuis (small beer) is ordered to be given *ad libitum*.

Cullen was by no means so severe on his patients as many of his contemporaries were, as the following case, from Dr. Cheyne's book on 'The English Malady *vulgo* Megrim, shows:—"I first took 20 grains of what is called Prince's powder, which gave me twelve vomits and near twice the number of stools, and I certainly would have perished under the operation but for an overdose of laudanum after it." After that he took 10 grains of calomel daily for ten days, and although much lighter he found himself no better, a result which I for one am not surprised at. As megrim is without doubt a disease, chiefly of nervous origin, the exhibition of drastic purgatives, even if they should happen to remove the exciting cause of the "nerve storm," to use Liveing's term, must necessarily lower the nervous tone and predispose to further attacks.

The study of these old journals has made it plain to me the physicians of Cullen's time were excellent prescribers, and probably knew more of the art of prescribing than many of the present-day practitioners, who are nourished on theory, brought up on "tabloids," and reach their prime dependent on the manufacturing chemist for the proper dosage of the drugs they wish to administer. If I have aroused as much interest by the presentment of these bold glimpses of bygone days as I experienced in its preparation, I shall be amply rewarded.

MISTURA FERRI COMPOSITA—A WRINKLE.

BY W. JOHNSTON.

Dissolve the sugar with the iron sulphate instead of mixing it with the myrrh and potassium carbonate. This seems a very little trifle to take notice of, and yet it is surprising what a difference "little trifles" sometimes make. Dear old Redwood used to tell us that sugar was unfriendly to emulsions; and, acting on that hint the writer tried a little departure from the letter of the law, on the lines above named. The result justified the experiment. The emulsion of myrrh, pot. carb., and rose water was more easily formed and more milky without the sugar; and not a little irritation in future was saved. To get a really good emulsion, the myrrh (nice, oily pieces) should be rubbed hard with the alkali till it becomes not only pulverulent but pasty, before adding any rose water. When that is done, the emulsion can (when diluted) be safely strained through coarse muslin, to remove bits of bark, etc. If not too late, the Pharmacopœia revisers might take note of this.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

MEETING OF THE COUNCIL.

WEDNESDAY, MARCH 4, 1896.

Present:

MR. MICHAEL CARTEIGHE, PRESIDENT.

MR. JOHN HARRISON, VICE-PRESIDENT.

Messrs. Allen, Atkins, Bottle, Corder, Gostling, Grose, Hampson, Hills, Martin, Martindale, Newsholme, Savory, Schacht, Southall, Storrar, Warren, and Young.

The minutes of the previous meeting were read and confirmed.

THE BURROUGHS MEMORIAL FUND.

The PRESIDENT officially reported that as President of the Society he had received a cheque for the amount raised for this Fund, which would be invested in the course of a week or so, and the trust deed duly signed.

ELECTION OF A MEMBER.

The following having passed the Major examination and tendered his subscription for the current year, was elected a "Member" of the Society:—

Gill, Joseph William, Pendleton.

ELECTION OF ASSOCIATES IN BUSINESS.

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

Amiss, Albert Edward, Shipdham.
Armstrong, Benjamin, Malvern.
Arthur, Arthur, Carmarthen.
Banks, Charles Henry, Paddington.
Boreham, Walter H., Manor Park.
Cameron, John M., Edinburgh.
Churchyard, O. George, S. Tottenham.
Dent, John Wallace, Swaffham.

Dunston, Alfred, Farnham.
Green, George Edward, Southborough.
Herman, Robert Charles, Liverpool.
Hill, Blair, Edinburgh.
Hogg, George, Edinburgh.
McMurtrie, John, Maeduff.
Pilling, John William, Halifax.
Smith, Wm. John, Old Swindon.

ELECTION OF ASSOCIATES.

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

Arthur, Harvey Phillips, Glasgow.
Barron, Robert, Turriff.
Bell, Charles, Wolverhampton.
Bickle, William J., Newport Pagnell.
Bramley, William Miles, Birmingham.
Fairlee, Alfred Jas., Carlisle.
Holt, William, Seunthorpe.
McDonald, David Baird, Glasgow.

Plekworth, George B., Congleton.
Robertson, Daniel Coutts, Galashiels.
Sinclair, George, St. Andrews.
Sisson, Edwin, Carlisle.
Slater, Thomas Sutcliffe, Burnley.
Volans, John Russell, Sunderland.
Wilson, Thomas, Burntisland.
Wright, Robert Edwin, Redditch.

ELECTION OF STUDENTS.

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

Allan, David Houldsworth, Govan.
Arnott, William John, Topcliffe.
Bellingham, Edgar S., Blackburn.
Benham, Reginald Reuben, Chichester.
Brown, Thomas Frederick, Gravesend.
Campkin, Francis Sidney, Cambridge.
Casson, Frank, Birmingham.
Chapman, Edward John, Hull.
Davis, Henry, Riverhead.
Dewhurst, John Arthur, Halifax.
Douthwaite, Percival Few, Newport.
Endicott, William Bassett, London.
Field, William J., Cambridge.
Fisher, Percy, Bradford.
Green, George Winifred, Tadeaster.

Haddock, John, West Bromwich.
Hallgarth, Arthur, Thorne.
Hewitt, Neville Charles, Cowes.
Hitt, Thomas Gabriel, Long Eaton.
Hunter, John, Maybole.
James, Ernest Henry, Guisborough.
Jean, Ernest Albert, Jersey.
Jeffrey, John Edwin, London.
Johnson, Robert Clitherow, Scawby.
Jowett, Hugh Hamilton, Aylesbury.
Kember, George Norman, Pittenweem.
Kent, Charles Wesley, Louth.
Knowles, John Thos., Lancaster.
Leak, William, Beursil.
Leseher, Thomas Edward, London.

Maedonald, Robert, Elgin.
Magan, Frances, Hampstead.
Nelson, William Brown, Harrogate.
Nicholson, William Henry, Guildford.
Oxendale, Thomas T. R., Edinburgh.
Pearson, George Ernest, Wakefield.
Pinson, Percy J., Willenhall.
Plenderleith, John Wm., Edinburgh.
Pring, William Wallace, Bromyard.
Ramshaw, Harold, Sunderland.
Ridge, Percy Littlewood, Selby.

Rogers, James William, Sheffield.
Sargeant, Fred Pilkington, Chorley.
Shaw, Henry Woolhouse, London.
Smith, James W. M., Alexandria.
Stewart, Jeanie, Dumbarton.
Swift, Herbert Henry, Barnsbury.
Teffel, Leonard John, Newcastle-on-T.
Thompson, John, York.
Turner, John Scriven, London.
Tweedy, Sidney C. G., Northwich.
Wileman, Frederick Walter, Lincoln.

RESTORATIONS TO THE REGISTER.

The names of the following persons, who have severally made the required declarations, and paid the restoration fee, were restored to the Register of Chemists and Druggists:—

James Walker Howard, 23, King's Road, Leeds.
David Stevenson Reid, Anstruther, N.B.
Henry Smith, 46, High Street, Evesham.
Robert Walter Somers, 99, Mile End Road, E.

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

FINANCE COMMITTEE.

The report of this Committee was read, recommending sundry accounts for payment.

The PRESIDENT (as Chairman of the Committee) moved the adoption of the report and recommendations. He said there was nothing calling for special notice. During the present and following month the largest portion of the income from subscriptions was received. The payments were of the usual character. With regard to the Benevolent Fund, about £250 had been received on current account, and during March and April it was hoped that a large amount of subscriptions would come in. It might be considered satisfactory, he thought, that the Society was able to spend judiciously all the money subscribed for benevolent purposes. He should add that the accounts of the Executive of the North British Branch had been forwarded to the Committee and examined, and it was satisfactory to find that the expenditure on keeping up the building, cleaning, lighting, etc., which would be a permanent charge, was very moderate, and that their friends in the North were keeping the expenditure as low as possible. Of course a little more would have to be paid each year in taxes and cleaning, but the figures showed that a very wise and careful judgment had been exercised. The chief expenditure, apart from the building itself, had been for extra furniture and chemicals, and apparatus for the use of the Examiners, so that it was really in the nature of capital expenditure.

Mr. STORRAR asked if he correctly understood the President to say that the principal part of the income came from subscriptions? He thought the examination fees formed the major portion of their receipts, and came in more or less constantly throughout the year.

The PRESIDENT said that was so. He only said that the larger portion of the income from subscriptions came in during March and April.

BENEVOLENT FUND COMMITTEE.

The report of this Committee included the recommendation of grants amounting to £15 to the following cases:—

The widow of a member and subscriber who was formerly a local secretary of the Society. Applicant is trying to establish a private school for the support of herself and family. A grant was made on behalf of applicant's husband in February last year.

The widow of a registered chemist and druggist who has had nine previous grants from the Fund, amounting to £85. She is burdened with an invalid daughter, and her other children cannot render adequate assistance.

One case had been deferred.

Mr. BOTTLE, as Chairman of the Committee, in moving the adoption of the report, said he thought the meeting of the Committee yesterday was a record one as to the minimum amount they voted, and he trusted that it might be regarded as an indication of the prevalence of better times. Their recommendations called for no observations, but there were two other subjects which he should like to bring to the notice of the Council. The first was one advantage which had accrued to the Society from the establishment a few years ago of a list of corresponding members.

Their Secretary had taken advantage of the fact that one of these corresponding members lived in Sydney to hand over a small sum from the Benevolent Fund to a widow of one of their members, who was in search of her brother, and had through their corresponding member's exertions succeeded in that object. An effort was now being made to find her some position, and he thought the Council would be gratified to know the service that their corresponding and honorary members might be able, as they were willing, to render to those connected with the Society. The other subject to which he desired to call attention was the case of Miss Alice Coulson, the daughter of a deceased chemist and druggist, who having been in the position of a governess at Worthing found her school collapse through the outbreak of typhoid there. Under the Society's old charter he thought they might have been able to entertain an application for some temporary relief, but the existing regulations for administering the Fund limited their relief to orphan children—a designation under which this lady did not come. But though they had failed to help her in this direction it might be that either members of the Council or their friends might be able to secure her assistance in another quarter. Consequent on her bad state of health she was a candidate for admission to the British Home for Incurables at Streatham, and should any chemist and druggists or their friends be able to promote her candidature by their votes, he trusted they might see their way clear to do so.

LIBRARY, MUSEUM, SCHOOL, AND HOUSE COMMITTEE.

Library.

The report of the Librarian had been received, including the following particulars:—

	Attendance.	Total.	Highest.	Lowest.	Average.
January	Day	419	28	5	16
	Evening.....	153	14	3	7
Circulation of Books.	Total.	Town.	Country.	Carriage paid.	
January.....	187	99	88	£1 3s. 11d.	

Donations to the Library had been announced (*Pharm. Journ.*, Feb. 15, p. 125), and the Committee had directed that the usual letters of thanks be sent to the respective donors.

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

For the Library in London:—

Caspari, Treatise on Pharmacy, 1895.
 Scoville, The Art of Compounding, 1895.
 Thorpe, Inorganic Chemistry, new ed., 1896.
 Pearmain and Moor, Aids to the Analysis of Food and Drugs.
 Flügel-Schmidt-Tanger, German and English Dictionary, 1896.
 Zimmermann, Die Morphologie und Physiologie der Pflanzenzelle, 1887.

For the Library in Edinburgh:—

Richter, Inorganic Chemistry.
 Allen, Chemistry of Urine.
 Pearmain and Moor, Analysis of Food and Drugs.

Museum.

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

	Attendance.	Total.	Highest.	Lowest.	Average.
January	Day.....	545	31	6	20
	Evening.....	47	8	1	2

Donations to the Museum had been received (*Pharm. Journ.*, Feb. 15, p. 125), and the Committee recommended that the usual letter of thanks be sent to the respective donors.

The Committee recommended, in consequence of the decrease in the interest received from the Hills Fund, that after the present session the gift of books to second and third prizemen be discontinued.

The PRESIDENT, in moving the adoption of the report and recommendations, said the principal part of the proceedings of the Committee were purely administrative. The reference to the Hills Fund arose in consequence of the universal fall in the rate of interest, which had been going on for some time, and the Committee thought the best way of dealing with the difficulty was to confine the gift of books to the first prize-man. The other prizes were really valuable in themselves, and it was not believed that withholding the books would have any influence on the competition.

The resolution was then carried unanimously.

THE ANNUAL REPORT AND ANNUAL MEETING.

It was resolved that the preparation of the annual report be referred to the Library, Museum, and School Committee. Also that the annual meeting be held on Wednesday, May 20, at 12 o'clock.

LAW AND PARLIAMENTARY COMMITTEE.

The report of this Committee recommended the appointment of a small standing committee to watch the progress of Parliamentary business, and take such steps as might be necessary. Such committee to consist of the President, Vice-President, and Messrs. Allen, Hills, Martindale, Savory, and Warren.

The PRESIDENT, in moving the adoption of the report and recommendations, said this was a reversion to a plan which was very general many years ago, of having a small committee of London members available at any moment to interview members of Parliament who had charge of Bills which might affect the trade. A reference was made in the Queen's Speech to a Bill for the amendment of the Companies Acts, and such a Bill was in course of preparation, based on the report of the Special Committee appointed by the Board of Trade last year. That report included the evidence given by himself and the documents put in, and since its publication, he in association with the representatives of the dentists, veterinary surgeons, and others affected by the Companies Acts, had considered what steps should be taken to impress on the President of the Board of Trade the importance of amending the Acts in certain directions. A long conference had been held with Mr. Ritchie, the President of the Board of Trade, in which their opinions were fully expressed, and whether they were adopted or not it was quite certain that Mr. Ritchie understood the question from beginning to end. He was not in a position to state the result of the conference, for though it was usual in some cases when a deputation waited on a Minister to publish a report of what took place, it was felt that in this particular case it was rather to their interest to ascertain the views of the President of the Board of Trade and his subordinates, and from long experience they knew that if a Minister ever would express himself freely, it was to a private deputation—not a public one. By adopting this course they were not able to let their friends in the country know exactly what was going on, but he might say that they were in touch with the Board of Trade, and he hoped in a few days to have a reply to a communication which had been sent, which would place them in a position to know whether they could accept what was suggested, to seek another interview, to apply to the Privy Council, or whether it was desirable to take any other steps to remedy the grievances under which they laboured. In this position of affairs it was very desirable that a small committee should be at hand, ready to act with the President, and to enlist support when the Bill was introduced, if thought desirable. The chief difficulty in dealing with the matter was the magnitude of the financial interests involved in any legislation affecting limited liability companies; on the other hand, the injurious working of the Act on certain professions and callings was such that it behoved the Council and the bodies with which it was acting to see if they could not insert a general clause, which would materially lessen the difficulties he had referred to. It must be remembered, however, that no legislation would ever interfere with the general distribution of goods in certain ways by limited liability companies. There was fierce competition in every form of trade, and they could only hope to deal with that which bore upon titles and the dispensing and sale of poisons. Whatever measure of success might be achieved, either through Parliament or otherwise, it must be borne in mind that competition on ordinary trade lines with regard to everything which did not come within the domain of poisons, would probably remain as it was. However, he thought, in any case, the effect of the Bill for amending the Companies Acts, whether it specially dealt with the points mentioned in his statement to the Committee or not, would be to benefit the trade at large, because the facilities for the formation of companies would almost certainly be materially lessened. Then there was the Early Closing Bill, which it was desirable that the Sub-Committee should watch and see if any amendments were necessary. Their brethren were probably divided in opinion with regard to that measure. The Bill introduced by Sir John Lubbock dealt with chemists and druggists very much on the lines suggested by himself some years ago. Many thought chemists should be exempted entirely from the operation of the Bill, while many others thought on the whole it would be beneficial, and with such divided opinions he thought it would be impossible to produce any effect on Parlia-

ment, except in the direction of securing the safety of the public. The principle of the Bill was somewhat new, because it sought to protect grown-up people by legislation in a way which had heretofore been confined to protecting women and children, but one could not lose sight of the fact that the tendency was to employ young people for a good many hours, and very many people besides Sir John Lubbock were beginning to think that the principle underlying the inspection of factories and workshops should be extended to retail businesses. A Select Committee had been appointed to deal with the law relating to adulteration, and probably evidence would have to be given before the Committee. Another Committee had been appointed to enquire into the working of the Petroleum Acts, in which many of the trade were interested, and on that matter also evidence might have to be collected and offered. Under all these circumstances he hoped it would be considered that the Parliamentary Committee had acted wisely in recommending the appointment of this Sub-Committee to watch the interests of chemists and druggists in parliamentary matters.

Mr. STORRAR said he supposed it might be understood that the delay in producing a Pharmacy Act Amendment Bill arose from the desire to see what was done directly or indirectly by any Government Bill which might be introduced, but it was just as well that it should be stated that this was the case, and that in the opinion of the Parliamentary Committee it was the wisest course to pursue.

Mr. MARTINDALE remarked that in some respects pharmacists and the proprietors of stores stood in an entirely different position. The latter looked simply to the total amount of turnover to be obtained on their capital and wished to make it as large as possible, whereas the chemist recognised that with regard to certain articles in which he dealt, such as poisons and nostrums containing poisons, certain restrictions on their sale were necessary in the interest of public safety, and that the sale ought not to be pushed by every possible means, regardless of consequences. It was very desirable that co-operative stores and limited companies should be bound to strictly observe the letter of the law in the distribution of such articles.

Mr. HAMPSON very much regretted that the Committee was content, so far as any expression of opinion went at present, not to oppose Sir J. Lubbock's Early Closing Bill. He altogether objected—not merely as a chemist, but from the point of view of an ordinary trader—to the interference with liberty which would arise if this Bill were passed. He understood the promoter of this Bill was very tender with regard to the sale of tobacco and newspapers, and the sellers of drink were also to be exempt from its operation, but it appeared to him to be a very unsatisfactory and abject position for the Council to assume, simply folding its hands and doing nothing in the interests of chemists and druggists. The members should at least attempt to do something, though he very much doubted if they would be able to. There was a great tendency at present, whatever Government was in office, to pander to the taste for State interference and the restriction of individual liberty and the natural growth of manhood. In every direction this was seen, but he thought it degrading for any class of English people to acquiesce in it. For many years it had been supposed that English people were able to take care of themselves without this grandmotherly interference, but nowadays the old flag of liberty was being furled, and men were content to be legislated for as to what time they should begin business, when they should shut up, and eventually, no doubt, at what price their goods should be sold.

Mr. ATKINS, in presence of the difference of opinion which notoriously prevailed throughout the country on these subjects, feared that unless they could present a more united front their influence would be largely nullified. He thought the peculiar needs of their craft might well be urged in the House of Commons, and was glad to have heard what the President had said, because there was a good deal of anxiety in the country and some expectancy as to what might become of this Bill, and as to their action in regard to it. He gathered from what their President had said that their position was recognised by what he believed to be one of the ablest men of the present day, Mr. Ritchie. At the same time he agreed with the President that they must not expect too much in regard to the excessive, and he would venture to say, unfair competition to which the trade is exposed; he thought their President exercised a wise discrimination in guarding them from expecting too much relief in respect to the Companies Acts. The matter being *sub judice*, he was glad of

the proposed appointment of what he might call a watch committee, who, he trusted, would be strengthened by the advice and co-operation of the members of the Council resident in London, and he heartily agreed to its appointment.

Mr. NEWSHOLME regretted to find himself in what he feared would prove a hopeless minority on this question. Side by side with a desire for earlier closing he felt there was so much difference as to details in various localities that without some kind of legislation there was no prospect of anything like unanimity. In reference to their own profession there was a saving clause. He did think they could carry out their business in very much less time than was now the case, but he also thought some means could be devised for meeting their special needs as chemists and druggists.

Mr. SOUTHALL agreed with Mr. Newsholme that chemists wanted a little of what had been styled grandmotherly legislation. Women and children were now being protected, and he thought it time that something should be done in the same direction for men. They were so little united as chemists and druggists that he thought the law might come in and make them a little more united. It was nothing short of dreadful to see the poor chemist and druggist regularly open till nine and ten o'clock, and suitable legislation might remedy that state of things to a considerable extent.

Mr. MARTIN said he entirely agreed with the President. He did not see how it was possible to draw the exact line in their trade where medicine ended and other sales begun, as for instance in the case of a bottle of eau-de-Cologne being asked for simultaneously with the making up of a prescription, and he thought it would be placing pharmacists in an invidious and humiliating position to be subjected to the surveillance of an inspector. Other trades could take care of themselves, and on this ground alone he should have hoped the Council would have opposed the suggested legislation. There were already so many flaws in the administration of the Pharmacy Act that he should have thought they might have proceeded in a more direct manner, and not wait for any amendment of the Companies Acts.

The VICE-PRESIDENT said he did not agree with the view that the Law and Parliamentary Committee showed any want of wisdom in deferring the matter until they had heard the decision of the President of the Board of Trade. If the evils from which they at present suffered should be accentuated, so much the better, as perhaps leading them to combine with others in demanding a remedy, and so approaching the Legislature with a force greater than they themselves could command, and with a greater prospect of success. He believed this was the first time a Government department had been officially made aware of their needs, and that there were such grievous defects in the Companies Acts. With other bodies similarly affected, they would have greater justification in asking Parliament for a remedy, and, for his part, he was content to wait till they got an answer from the Board of Trade and the decision of what had been described as one of the best business men of the day, before attempting to proceed with legislation on their own account. With other bodies similarly affected as themselves it might be that they could incorporate their whole needs in one measure. As to early closing, he had listened with great interest to what he might call the sermonette of their Treasurer, for it was long since he had heard anything finer than his protest on behalf of liberty against the restriction of the growth of manhood. Although he was not quite sure what that magniloquent phrase meant, he thought it very finely expressed a state of things not consistent with present-day tendencies, and so far he was in accord with it. But there was another tyranny besides Parliamentary enactment which he thought it important equally to guard against—namely, the refusal on the part of certain ill-regulated members of society to give the reasonable and proper relaxation which was necessary, and the people had a right to demand. He could not help thinking that in this matter a uniform system would be one of extreme difficulty, and that perhaps something more on the lines of local option would be preferable. There being so much to be said for and against questions of this kind, he hoped the Committee, which he felt sure would be appointed, would look very carefully indeed into the question, specially as it affected chemists and druggists. The result of excluding them from supplying medicine at any hour of the day and night would probably be that doctors would open departments to supply that which properly belonged to the chemist to provide.

Mr. ALLEN said he had not intended to take part in the discussion, but as one of those suggested to form a sort of committee to watch measures passing through Parliament affecting their

trade, he should have pleasure in giving as open a mind as possible to any question brought before it. As regarded early closing, as pharmacists he thought they were specially affected, and that they might reasonably ask for separate treatment from other shops, seeing that illnesses would occur at all times and hours, and that it was necessary in the public interest to be able to secure medicines accordingly.

Mr. HILLS, as one of those named for the watch committee, agreed with Mr. Atkins that they should not expect too much from an alteration of the law; but competition, especially from what were called drug stores, seemed to call for some amendment of the law, though at the same time he agreed with those who thought what was called grandmotherly legislation should be avoided. He agreed that pharmacists required, in the matter of early closing, special attention as compared with other businesses, but that did not prevent him from sympathising with the desire for more time for relaxation than now prevailed. For this he looked to a healthier state of public opinion, not only as regarded shops, but as the question bore on other occupations.

Mr. GOSTLING said he was quite in accord with the Treasurer.

The PRESIDENT, in closing the discussion, said in view of the fact that the intentions of the Government were not yet known he hoped the Council would appreciate the fact that it would be of advantage to have the ear of the Government in legislating on subjects which appealed to them as chemists and druggists; and he thought it would be unwise of them not to encourage every effort which should tend to that end.

The resolution was then put and carried unanimously.

DIVISIONAL SECRETARY.

Mr. A. J. Wing, of Powis Street, Woolwich, was appointed Divisional Secretary for Woolwich, in place of Mr. Carter.

LOCAL SECRETARY.

Mr. D. L. Lewis, of the Broadway, Ealing, was appointed Local Secretary, in the room of Mr. Curtis, who had left the neighbourhood.

The PRESIDENT in putting the motion, referred to the services rendered by Mr. Curtis, who was not only a good pharmacist, but had a good knowledge of affairs generally.

CORRESPONDENCE.

The PRESIDENT said a letter had been received from the Secretary of the Bristol Pharmaceutical Association enclosing the following resolution which had been passed at a large meeting, representative of the chemists in the district. The resolution would be referred to the Law and Parliamentary Committee—

“That this meeting of registered chemists pledges itself to support the Council of the Pharmaceutical Society in its efforts to amend the proposed Companies Acts Amendment Bill, which it is intended to introduce into Parliament during the present session.”

The PRESIDENT then read the following memorial, forwarded by Mr. J. Anderson Russell, of Glasgow:—

“In view of the very great and increasing evils connected with proprietary medicines, more particularly with the prescribing of these by medical men, we, the members of the Glasgow and West of Scotland Pharmaceutical Association, urge the Council of the Pharmaceutical Society of Great Britain to take the matter into its very serious consideration. We are aware it is a matter for which the medical profession is more directly responsible, and to that body we must look for effectually dealing with it, nevertheless, as it is a procedure having a most baneful influence upon the practice of pharmacy, as well as upon ‘medical’ practice, it appears to be the duty of pharmacists to grapple with it. Since it affects both callings we respectfully suggest that the Pharmaceutical Society’s Council, as officially representing pharmacy, should direct the attention of the General Medical Council to this matter, and in combating the evil should use its influence to secure the sympathy and co-operation of medical organisations and governing bodies throughout the country. We further suggest that it would be advisable were the Pharmaceutical Council through the facilities at its disposal, and with the approval of the General Medical Council, authoritatively to compile and publish formulæ for medicinal preparations for which considerable demand had arisen.”

The PRESIDENT suggested that the above be referred to the General Purposes Committee for consideration and report. The memorial covered a good deal of ground, and some important principles were involved;

This was agreed to.

RETIREMENT OF A MEMBER OF COUNCIL.

The PRESIDENT said he had to read a letter which had been in his possession for forty-eight hours, although he had not mentioned its existence, and before doing so he ought to say that he had conferred with the writer, who desired to adhere to it, and wished it to be taken as his deliberate decision.

The letter was as follows:—

“1, Windsor Terrace, Clifton.

“March 1, 1896.

“The President of the Pharmaceutical Society.

“Sir,—The time has again arrived when in due rotation I have to retire from the Council, and I beg to state that it is not my intention to offer myself for re-election.

“My chief reason for this conclusion is the feeling that, being no longer in any way connected with the business of pharmacy, I do not consider myself to be in the list of fittest persons to represent pharmacists on the Society’s Council.

“I take leave of my duties with regret, for I have learned to believe that in fulfilling them I was helping to provide some good for others, and much wholesome training for myself.

“I take leave of my colleagues with a pain that would be great indeed were it not for the hope that I carried with me some measure of their esteem and, perhaps, some of their affection—sentiments which I earnestly assure you I sincerely cherish for them.

“I shrink from the trial of making this announcement in person, and therefore, sir, beg you to receive it and to read these few lines to my old friends and colleagues, and thus add one more to the many courtesies for which I am your debtor and which I most gratefully acknowledge.

“Believe me to be, dear Sir,

“Yours very sincerely,

“G. F. SCHACHT.”

“Michael Carteighe, Esq.”

The PRESIDENT said it was not usual to move any resolution in such cases until the term of office had expired, but as Mr. Schacht’s retirement from the Council room a few minutes ago was actually his retirement from the Council, he would move:—

“That this Council deeply regrets the proposed retirement of Mr. G. F. Schacht, and desires to give expression to its high appreciation of the valuable services he has rendered in every department of pharmaceutical work. As a member of the Board of Examiners, as member of the Council for twenty-five years, and as Vice-President of the Society for three terms, he has devoted the highest powers of a vigorous and well-endowed mind to the furtherance of the best interests of pharmacy. The unwearying efforts of Mr. Schacht in the cause of pharmaceutical education will be always gratefully remembered by every member and associate of the Society.”

No words of his could express in suitable form what they all felt for Mr. Schacht, but, in proposing the resolution, he would remind the younger members that Mr. Schacht was one of the earliest examined men, in fact, the earliest one still living, and he had shown that he possessed not only great natural gifts, but that he had made good use of his early education in that house. He followed the science of chemistry and other sciences bearing on pharmacy with continuous interest all through his life, and probably one of his greatest regrets in early life was that in leaving London he was going away, as he thought, from the centre of scientific activity. Those who had been associated with him at meetings of the Conference and socially, knew him as a man of strong will and of considerable personality. He was gifted with great power of observation, and it was a matter of deep regret that he had thought it necessary to retire now, as he still possessed those gifts to a marvellous degree, and in the deliberations of the committees yesterday he showed his usual activity and knowledge. However, as he had said, Mr. Schacht was a man of strong will, and, having carefully thought this out, he had deliberately come to the conclusion that it was the proper time for him to retire, and he had authorised him to say that this was his final decision. In reviewing the work he had done, he should be disposed to regard him as one of the most successful and most elegant adapters of

scientific methods in pharmacy they had had amongst their numbers. The preparations with which his name was associated evidenced a considerable amount of originality and chemical skill, but the features of all others that endeared him to his colleagues were his *bonhomie* and his unwearied exertions to be perfectly just and true to everybody; in fact, sometimes he appeared to be almost too conscientiously just to others. He knew no man who could receive a mild castigation, either privately or in public, with so much consideration, or who was so free to admit where differences of opinion prevailed that he might be wrong. It would be inappropriate to say more on this occasion, and he should be sorry to say anything which would imply that Mr. Schacht in retiring from the Council would cease to take an interest in pharmacy; on the contrary, he believed that as long as Mr. Schacht lived he would exert himself as far as practicable with pharmacy, especially in its educational aspects. In his own neighbourhood he was highly respected. He was treasurer of the Bristol University College, and visitor of some of the local schools connected with it, was leading an active educational life there, and was highly esteemed by all around him.

The VICE-PRESIDENT said, as a very unworthy occupant of the chair which Mr. Schacht held for some time with great distinction, he felt he ought to second the motion. They were called upon to bear a very serious loss, for it was not every day they could find a man with the educational attainments, scientific ability, and courteous character to be found in Mr. Schacht. He had been brought into close contact with him for some time, and could endorse every word in the resolution, though he deplored the necessity for passing it.

Mr. BOTTLE said he could only express his extreme regret at the loss of a member of the Council, of such attainments and abilities. He had rather thought that he (Mr. Bottle) would be the first to retire, and that Mr. Schacht would continue his work there for many years to come, because he was almost a boy compared to him, remembering him as he did as a student. If he thought he could influence him in any way he would do anything and everything he could to induce him to reconsider the matter, for his usefulness, especially in connection with educational matters, was beyond expression.

Mr. ATKINS said he hoped the retirement of Mr. Bottle might long be deferred. It was difficult to say what one felt on this matter, on the spur of the moment, coming as it did so unexpectedly. He felt, without any disrespect to his colleagues, that no small part of the pleasure with which he looked forward to these meetings would be gone when he knew that he should no longer meet Mr. Schacht there, for he knew of no man for whom he cherished a deeper respect and affection. The one thing which had impressed him most through many years' friendship was the absolute honesty with which he expressed himself and transacted all public business. The President had borne testimony to the position which Mr. Schacht had occupied in pharmacy for so many years, and, in truth, he might be said to be a typical pharmacist. He hoped his retirement did not involve the conclusion that all who had retired from business should follow his example, and as there was no abatement of his natural force or clearness of judgment, he hoped that his services to the Society would still be continued for many years. His loss it was impossible to exaggerate; it was to him a most painful bereavement, and he could only give very imperfect utterance to the feelings of his heart.

Mr. HILLS said he could not let the occasion pass without echoing what had been said in much better terms than he could use. He was sorry that they had not known what was coming, so that they might all have had an opportunity to use what little influence they possessed with Mr. Schacht to make him reconsider his determination. The Council would be much poorer by the absence of Mr. Schacht, for whom he had the greatest veneration, both as a pharmacist and a man.

Mr. HAMPSON thought the word bereavement was scarcely an appropriate one to use, for it was quite possible that Mr. Schacht in leaving his duties there would have more leisure, and be able to increase his usefulness in his own locality. He could not believe for a moment that a man of his calibre would cease his efforts for the good of a cause which he had so much at heart. He could only say that he should miss him very much, and he thought Mr. Hills' last observation covered the whole ground.

Mr. MARTIN said the shock of this announcement was so great that he felt it impossible to express what he felt in fitting words. Personally Mr. Schacht had been to him for twenty-five years his ideal. Though they had often differed in opinion, he always felt

that he was dealing with a man who was absolutely honest in his opinions, and having served pharmacy as he had, he had a right to his own opinion. He thought the fact of his being no longer in business was rather an advantage than otherwise for a member of Council, as it left him more leisure, but they were bound to respect his decision, which he was sure had not been arrived at lightly. He was sure that his sympathies and affection would always be with the Society, and that he would do everything he could to promote its best interests.

Mr. YOUNG, at the risk of saying imperfectly what had been already gracefully expressed, felt it only right, as one of the younger members, to express his own sincere sense of personal loss. Since he first knew Mr. Schacht he had felt that if an object lesson were needed to indicate that which was lofty, high-minded, free from all pettiness, scholarly, and fair, it was to be found in Mr. Schacht, and since his closer acquaintance with him at the Council table that feeling had been accentuated.

Mr. GOSTLING also expressed in a few words his deep sense of the loss which the Council had sustained.

The resolution was then put, and carried unanimously.

GENERAL PURPOSES COMMITTEE.

The Council, as usual, went into Committee to consider the report of this Committee, which dealt with legal matters only. On resuming, the report and recommendations were adopted, and special resolutions were passed authorising the Registrar to take proceedings against certain persons named therein.

EVENING MEETING IN EDINBURGH.

Friday, February, 28, 1896.

MR. W. L. CURRIE IN THE CHAIR.

The third evening meeting of the present session was held in the Society's hall, 36, York Place, on Friday, Feb. 28, at 8.30.

The minutes of last meeting having been read and approved, apologies for absence were intimated from Messrs. Coull, Ewing, Fraser, Garvie, Heron, McGibbon, Maclaren, Macpherson, Nesbit, Noble, Stephenson, and Wylie. Mr. Ewing in his letter expressed his indebtedness to Mr. Currie for coming from Glasgow to take the chair in his unavoidable absence, and said he was sure the meeting would give a cordial welcome to one who has done so much to advance the interests of pharmacy in the west of Scotland.

The CHAIRMAN then briefly introduced Dr. Lockhart Gillespie, who contributed the first communication, "Notes from Some old Edinburgh Case-Books," which is printed at page 183.

Mr. BOA said he had greatly enjoyed this paper. It was one thing to read these old recipes in a book and another thing to hear their application presented in such an interesting way as had been done by Dr. Gillespie. With regard to the *vinum domesticum* mentioned by Dr. Gillespie, he thought it would probably be a generic name for any of the home-brewed wines, such as gooseberry, raspberry, elderberry, or ginger wine.

Mr. HILL said Dr. Gillespie had made an apology on the ground that he had a great many matters in hand, and he could well appreciate that, for the other night he listened to a most elaborate and interesting paper read by him before the Royal Society of Edinburgh on a subject in which pharmacists took considerable interest, namely, the relationship between weather conditions and disease. That paper had been completely misunderstood by some casual readers, who came to the conclusion that Edinburgh must be a very dreadful place to live in, because when they had cyclonic weather people suffered from coughs and colds, and when they had anti-cyclonic weather they had influenza. They knew, as pharmacists, that such a statement was groundless, for though they had had a great deal of anti-cyclonic weather in Edinburgh this winter, they had practically no influenza, and he doubted if ever the chemists had had less dispensing to do. He believed Dr. Gillespie was continuing his researches, and they would follow his work with very great interest. He might mention that they had in the North British Branch Library a large number of those old pharmacopœias, many of them annotated in handwriting which might be that of Dr. Cullen or others of similar eminence, and anyone inclined for antiquarian research in that department would find

ample material in that Library With regard to the remark made by Dr. Gillespie as to the recent published statement that a firm in Edinburgh had been supplied with the stalks of *Angelica* from the garden at Croft-au-Righ, beside Holyrood Palace, it was interesting to remember that the celebrated Dr. Sibbald, one of the founders of the Royal College of Physicians in Edinburgh, was the means of having a garden established just about that spot by the Royal College, and in that garden all kinds of medicinal plants were cultivated. This angelica might very probably be a survival from that old garden. One could not help being struck by the great size of the pills prescribed in Cullen's time. If such pills were sent out now they would be returned with an intimation that nobody could swallow them, and that we did not know how to dispense pills. Brandy seemed to have been very commonly used, and one wondered why so potent and popular a remedy had almost entirely disappeared from the Pharmacopœia. He was inclined to agree with Mr. Boa as to the meaning of the term vinum domesticum. It would mean a wine made by fermentation of a saccharine solution, as distinguished from natural wine imported from foreign countries.

The CHAIRMAN said he had been struck by the extraordinary doses mentioned in the paper. He was reminded of a story told in Glasgow about a certain Dr. McEwan who carried with him an antimony bullet or perpetual pill. It had been administered to a patient suffering from constipation, and after twenty-four hours had produced no effect. The patient expressed a fear that the bullet would never be seen again, but Dr. McEwan promptly dispelled the fear by assuring his patient that it had already passed through at least one hundred, and would certainly not fail now. As he listened to the paper he thought some of them would prefer even now to have the various concoctions referred to to dispense rather than the factory-made, elegant preparation of to-day. He also was at a loss to know why brandy had so entirely disappeared from pharmacy.

Dr. GILLESPIE in replying, said as medical registrar at the Infirmary, he had come across these curious prescriptions, and Mr. Alexander, the chief dispenser, had told him they would be of interest, and he was very pleased to have given them. With regard to vinum domesticum, they had to remember that these case-books were dated just ten years after the time of Prince Charlie, when French wines were drunk in Scotland not by the bottle but by hogsheads, and possibly a light claret might go by the name of vinum domesticum. It was a London newspaper which represented him as saying Edinburgh was a dreadful place to live in, and it was predicted that rents would immediately fall. They knew how wide of the mark such an idea was, and for this winter the experience of doctors, he suspected, was very like that of pharmacists. It was interesting to note that Dr. Cullen came from Glasgow in 1755, and was at once put in charge of wards in the Royal Infirmary. Nowadays a man might wait thirty or forty years to get such a chance. As to the size of pills, he had seen a recent case in which an experienced prescriber ordered pills with 10 grains of quinine in each. He thought brandy had disappeared because whiskey was better.

The next communication was on "Spiritus Ætheris Compositus, B.P.," by W. Inglis Clark, D.Sc., and D. B. Dott, F.I.C., F.R.S.E., and is printed at p. 182.

The next communication was a "Note on Papain," by D. B. Dott, F.I.C., F.R.S., and is also printed at p. 182.

Mr. HILL said they might be inclined to ask why the spirit referred to should be retained in the Pharmacopœia, but it was not their duty to settle such a question. If it was to be retained, it was desirable that they should have a formula which would give a definite and uniform result in an economical and reasonable way. This, he thought, the process now suggested would do, and no doubt it would receive due notice, and be utilised in the proper quarter. With regard to papain, they in Edinburgh were specially interested, for they had been prominent in adversely criticising its alleged powers as a digestive agent resembling pepsin. He had felt, on hearing Dr. Rideal's paper, that he would like to have some further work done before feeling quite satisfied that the matter was clear. He had only had very limited experience of papain, but what he had seen tended to confirm Mr. Dott's conclusions. He thought papain might possess medicinal value, indeed they knew it had a very special value in the treatment of diphtheria, though a more recent remedy might have slightly displaced it in that department, but it did not seem to be a powerful agent in the digestion of albuminoid substances. That side of the question seemed pretty well settled by Mr. Dott's results.

The CHAIRMAN said doubts might well arise as to retaining the

spiritus ætheris compositus in the B.P. He had only seen it once prescribed in five or six years in the west. Recently, when it was prescribed he found his stock unsatisfactory and had to procure a fresh supply. The B.P. directions struck him as incomplete and the mode of preparation suggested in this paper was a distinct gain. With regard to papain he could not speak of its use as a digestive agent but he had seen a lot of it used for eliminating the diseased growth in diphtheria. It was used in five per cent. solution in glycerin and removed the growth in ten or twelve hours, and was followed by antiseptic treatment.

Mr. DOTT, in replying, said that the spiritus ætheris compositus had been condemned as a discredit to the Pharmacopœia, but when this was brought under the notice of the Committee they said it could not be left out. He regretted that Dr. Clark had not been able to come to the meeting that night.

Mr. BOA asked the Chairman how often the papain solution was applied, and the Chairman said "every three hours." As to the spiritus ætheris compositus, he often dispensed it. In conversation with a medical man the other day, he was told he got better results from it than from the simple spirit of ether. Then in Ireland he had seen it prescribed almost every day, and sometimes almost in every other prescription under the name liquor Hoffmani. He did not think, under these circumstances, it could be left out.

The last communication was a "Note on Commercial Litmus," by D. Rainy Brown, and is printed at p. 181.

Mr. DOTT said there could be no doubt commercial litmus did vary very much, and some samples were very difficult to filter. A neutral solution prepared from the aqueous extract of litmus he found to answer very well, but it might, perhaps, be desirable to work with a more definite substance.

Mr. HILL said one striking point in Mr. Brown's results was the great disproportion in percentage of colouring matter between samples 5 and 9, and all the other samples examined. These two were very close to one another, and it almost seemed as if they had been made by the same process. There did seem to be an absence of science in any of the methods of preparing this substance which he had seen. The gypsum, sand, etc., seemed to be added in a haphazard way, and there was probably a needless waste of colouring matter. A very pure azolitmin could be prepared with comparatively little trouble, and as it was always best to work with definite substances when these could be conveniently had, he thought that substance should be adopted for the preparation of a standard litmus solution for analytical purposes.

The CHAIRMAN said they were much indebted to Mr. Brown for this practical note.

Mr. BROWN, in replying, said he could not give the history of samples 5 and 9 further than that the former was obtained from a German firm, and the latter from an English firm.

The ASSISTANT SECRETARY then exhibited a specimen of a new mineral which had been found on the Calton Hill, Edinburgh, when excavating the foundation for an addition to the observatory buildings. The mineral had not been identified. Some thought it was agathite, but a very rough examination which he had made of it showed that to be impossible. It had also been described as obsidienne, but that also did not appear to be correct. It occurs in laminated crystals of a bluish-green to steel-grey appearance, and is very brittle and infusible. It seems to float on strong sulphuric acid (sp. gr. 1.843) which it colours deep brown, but it does not sensibly dissolve, nor is it dissolved on the addition of potassium bichromate. It yields a trace of iron to hydrochloric acid, but is not dissolved either by it or by nitro-hydrochloric acid. Strongly heated in the blow-pipe it seems to be slowly burned away, and on attempting to fuse it with sodium carbonate and potassium nitrate, it seemed to deflagrate like carbon. The examination was only very superficial, but pointed to a graphite form of carbon though different from any descriptions of graphite he had seen. A gentleman who had been in the South African diamond fields said had he not been told what it was, he would immediately have called it a specimen of diamond matrix. The specimen had been kindly lent by Mr. William Hume.

The ASSISTANT SECRETARY then drew attention to the books recently added to the Library.

On the motion of the Chairman, votes of thanks were awarded to the authors of papers and the donors of books.

Mr. BOA, in moving a vote of thanks to the Chairman, said he believed this was the first occasion on which a Glasgow man had presided at their evening meetings. He hoped this new departure would be continued.

The vote of thanks was cordially awarded, and the meeting closed.

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THE COUNCIL MEETING.

At the opening of the meeting on Wednesday last, after the reading of the minutes of the previous meeting, the PRESIDENT announced that as President of the Society he had received a cheque for the amount raised for the Burroughs Memorial, and that in due course the money would be invested.

The additions to the Society comprised one Member, thirty-two Associates, and fifty-two students.

The report of the Finance Committee was without any exceptional feature. It stated that the accounts of the Executive of the Society's North British Branch had been received, examined, and found satisfactory. The chief expenditure, apart from that for the new buildings, has been for furniture and equipments for the use of the examiners. In answer to an inquiry by Mr. STORRAR respecting the income of the Society, the PRESIDENT explained that, in speaking of the subscriptions as the largest part of the Society's income, he referred especially to the receipts during the months of March and April.

On the recommendation of the Benevolent Fund Committee two grants were ordered to be paid, one of £10 and one of £5. Mr. BOTTLE, as acting Chairman of the Committee, remarked that he believed the report was a record one in regard to the amount voted in grants being less than on any previous occasion, and he hoped that might be regarded as a sign of better times. He also mentioned the assistance that has been rendered, in connection with the administration of the Benevolent Fund, by a corresponding member of the Society residing in Sydney, as an instance of advantage derived from the appointment of corresponding members. Attention was called to the case of Miss ALICE COULSON, the daughter of a deceased chemist and druggist, who, though an orphan, is not eligible under the existing regulations for relief from the Fund for orphans, and Mr. BOTTLE solicited on her behalf the assistance of any members or their friends who may be able to promote her candidature for admission to the British Home for Incurables at Streatham.

The report of the Library, Museum, School and House Committee furnished the usual statistics of attendances at

the Library and Museum, a statement of donations received, recommendations for the purchase of books, and for the discontinuance of the gift of books to the second and third prizemen. The decrease in the interest received from the Hills Fund has rendered that course necessary, but it is not anticipated that it will entail a loss of interest in the prizes awarded.

It was resolved that the preparation of the Annual Report should be referred to the Library, etc., Committee, and that the annual meeting of the Society shall be held at noon on Wednesday, May 20, next.

On the recommendation of the Law and Parliamentary Committee it was resolved that the PRESIDENT and Vice-President, with MESSRS. ALLEN, HILL, MARTINDALE, SAVORY, and WARREN should form a Sub-Committee to watch the progress of Parliamentary business, and be empowered to take such steps as might be necessary in regard to any measure affecting the trade. In reference to this arrangement a long discussion took place chiefly relating to the attitude of the Council to particular measures before Parliament. The PRESIDENT pointed out that it is a reversion to the plan which was generally adopted some years ago in order that the London members of Council might interview members of Parliament at any moment. At the present time several measures are before Parliament in which the trade is interested. The Bill to amend the Companies Acts is of especial importance, and, in association with representatives of dentists, veterinary surgeons, and others, the views held on the subject of amendment of the Companies Acts have been fully expressed to the President of the Board of Trade, at a conference with him, so that it is at least certain they are understood by him. Though not at present in a position to state the result of the interview, the PRESIDENT hopes to have a reply to a communication that has been sent to the Board of Trade, by which future procedure may be regulated. Under such conditions it is desirable that a small Committee should be readily available to act with the PRESIDENT as occasion may require. That is also the case in regard to the Early Closing Bill which proposes to deal with chemists and druggists. On the subjects of adulteration of food and drugs and petroleum, committees have been appointed, and probably there will be necessity for evidence to be given in relation to those matters.

In connection with the Companies Bill, Mr. STORRAR explained that the delay in producing a Pharmacy Act Amendment Bill has arisen from the desire to see what is done by any Government measure, and though that might be understood, he thought the statement should be made. Mr. MARTINDALE drew attention to the different positions of proprietors of stores and pharmacists, the former being influenced only by trade considerations, while the latter recognise the necessity of restrictions, in dealing with certain articles, out of regard for public safety. Mr. ATKINS and Mr. HILLS, in referring to the evils of company trading and to the feeling of expectancy prevailing in regard to the amendment of company law, expressed the opinion that, although the peculiar needs of the craft have been recognised by Mr. RITCHIE, the trade should not look to the Government for much relief in respect of the Companies Acts, unless the influence of a more united front could be brought to bear. The Vice-President, while approving postponement of action by the Council until the decision

of the Board of Trade is made known, thought that in any event there would be greater probability of combination among those suffering from the evils now complained of, and a consequently greater prospect of success in seeking to obtain a remedy from the Legislature.

On the subject of Sir JOHN LUBBOCK'S Early Closing Bill, the differences of opinion prevailing in the trade were fully represented, Mr. HAMPSON uttering a protest against State interference with individual liberty, in which he had the concurrence of Messrs. MARTIN, ALLEN, HILLS, and GOSTLING. While in apparent opposition to Mr. HAMPSON'S belief that Englishmen should be able to take care of themselves, Mr. SOUTHALL was in favour of extending even grandmotherly protection to the "poor chemist," and the Vice-President humorously criticised Mr. HAMPSON'S "sermonette" upon the restriction of the growth of manhood.

The reading of a letter from Mr. SCHACHT, announcing his intention of retiring from office, produced an entirely unprecedented sensation in the Council. After inquiries by Mr. BOTTLE and Mr. SOUTHALL, as to the possibility of inducing Mr. SCHACHT to alter his decision, had been replied to by the PRESIDENT, to the effect that his efforts in that direction had failed, a resolution was passed expressing regret at Mr. SCHACHT'S retirement and high appreciation of his long services in connection with the Society. This was warmly supported by several members of the Council, who spoke of Mr. SCHACHT and his work in highly eulogistic terms.

EARLY CLOSING FOR CHEMISTS.

LAST week reference was made to the curiously varied and sometimes humorous reasons advanced by chemists for objecting to support the Pharmaceutical Society, and on page 200 of this week's Journal will be found a letter which affords ready confirmation of the statements then made. The writer's name, it may be observed, appears in the Society's Calendar as an associate not in business and, presumably, he is engaged as an assistant in the place where he undergoes what he is pleased to term "slavery." Under the circumstances, therefore, his expression of opinion may be somewhat excusable, since he probably suffers under an arrangement in the making of which he has no voice. It must be pointed out, however, that an assistant is usually a free agent, and not bound to continue in a place where the conditions are objectionable to him. That the conditions prevailing in any given situation which it suits the convenience of an individual to fill for the time being, are not always to his liking, is but natural. If, however, in such a case the strain becomes intolerable, would it not be much simpler for that individual to effect a change than to have a special Act of Parliament passed to relieve him? Would it not also be wiser for him to help himself in the manner indicated than to sit down and call in question the attitude of the governing body of his craft, without first ascertaining the extent of his ignorance respecting matters that he ought to be fully conversant with?

Chemists' assistants have yet much to learn from workers at other crafts, more especially in regard to the preservation of professional dignity and to combination for self-defence. It yet remains to be told also why so large a proportion of registered chemists, who suffered under grievous restrictions when assistants, persist in maintaining the old obnoxious

system when themselves in a position to arrange matters differently. Perhaps it is reserved for "Early Closing" to inaugurate a new era in this respect, in his particular district, when he commences business on his own account. The reason usually alleged for long hours, and now repeated by our correspondent, is "because others keep open," but this is not in any degree a valid reason. Besides savouring too much of a jealous and parsimonious spirit to be at all worthy of members of a semi-professional body, many who, under similar circumstances to those detailed by "Early Closing," have boldly faced the difficulty and closed their establishments at a reasonable hour, save for cases of urgency, have proved by their experience that the dread of other shops remaining open is for the most part a harmless bogey.

With regard to our correspondent's complaint of lukewarmness on the part of the Journal in connection with the Shops (Early Closing) Bill, no expression of opinion on the Bill appeared in the paragraph referred to, though the language employed fairly represents the position taken up by many leading pharmacists. Moreover, it should be clear that the Editor is in the hands of his readers in this matter. The Bill, as a whole, proposes legal restraints upon trade. The question, then, naturally arises are chemists inclined to quietly submit to such restraints? So far, we are not aware that they have taken any action in the matter worth mentioning, though the Pharmaceutical Council would doubtless be glad to receive general expressions of opinion on this point, as on all other matters affecting pharmacy, and the columns of the Journal are open week after week for similar expressions of opinion. If, out of the fifteen thousand registered chemists in Great Britain, not half a dozen trouble their heads about a matter of vital importance to the craft, it can hardly be wondered at if they find apparent lukewarmness manifested on the part of those who are only too anxious to be instructed regarding the wishes of the whole body. But would it not be well for "Early Closing" and others to act upon the view expressed by Mr. HAMPSON and do something in this matter for themselves before they condemn others for assumed inaction?

THE RETIREMENT OF MR. SCHACHT.

THE announcement made at the Council meeting on Wednesday will undoubtedly be received with profound regret and, as an event of more than ordinary importance, Mr. SCHACHT'S retirement from office also calls for brief mention of the fact being placed on record in this place. As a student in the Society's School during its earliest days, as one of the Society's first graduates, and as having for many years held important official positions, Mr. SCHACHT occupies an almost unique position as a bond of personal connection between the present and the past. Without disparagement of his colleagues, it may be said that he has been the most zealous promoter of the educational principle by which the Pharmaceutical Society has acquired its present position. His whole career has furnished eloquent testimony to the soundness of that principle and it may with confidence be predicted that when, in time, nothing shall remain of the past but history, the name of GEORGE FREDERICK SCHACHT will still continue to stand out prominently as one of its most distinguished landmarks.

ANNOTATIONS.

THE ANNUAL DINNER.—As briefly announced last week, the preliminary arrangements in connection with the annual dinner of the members of the Pharmaceutical Society and their friends will be discussed at a meeting to be held at 17, Bloomsbury Square, W.C., on Wednesday next, March 11. Former stewards and others interested in the success of the annual gathering are invited to support the President, Mr. Michael Carteighe, who will take the chair on this occasion at 11.30 a.m. precisely.

KINNINMONT PRIZE, 1896.—Intending competitors for this prize are reminded that the examination will be held in May or June, and that their names should be sent to the Secretary, Mr. W. L. Currie, Dowanhill, Glasgow, before the end of April. All information in connection with the prize will be sent by him on application.

SEEING THE INVISIBLE.—By the use of a similar arrangement to that recently described by Professor Salvioni, of Perugia, Mr. A. A. C. Swinton has succeeded in rendering visible coins inside a closed leather purse, and metal instruments in a wood and leather case, besides being enabled to see a coin through a piece of wood half an inch thick or a sheet of aluminium. A tube of opaque pasteboard was employed, with a simple aperture at one end, to which the eye was applied. The other end was provided with an opaque diaphragm of double black paper, upon the inner side of which was laid a piece of blotting paper impregnated with barium platino-cyanide in a crystalline state. On holding the purse or other object against this diaphragm, and directing the rays from a Crookes' tube upon it, a shadow of the coins, etc., was cast upon the platino-cyanide paper, which fluoresced brightly under the stimulus of the rays, and so rendered visible the form of the metallic object. Non-metallic objects were less clearly seen, their greater transparency to the Röntgen rays causing the images to be more faint.

"PHARMACEUTICAL EDUCATION IN A COUNTRY TOWN."—Considerable interest was manifested in the article by Mr. George Vogt with the above title, published in the *Pharmaceutical Journal* for September 14 last. The writer showed that, with satisfactory local arrangements, it is quite possible for chemists' apprentices to prepare themselves for the qualifying examination during the period of pupilage without the necessity of attending a special school. It was pointed out, too, that "the knowledge gained by this steady process during the apprenticeship contrasts vividly in its solidity against the flimsiness of the six months' education or cram." Pleasing testimony of this fact, and at the same time a clue to the reason of the success attained, is now afforded by the report of the inspector under the Department of Science and Art, who, speaking of the chemistry class conducted by Mr. Vogt at the Kendal Science and Art School, says: "This is one of the best classes, if not the very best, in elementary practical chemistry that I have seen. Simple preparations, devised with a view to encourage observation, and simple quantitative determinations were done by all the students before analysis was attempted. I was assured by the teacher that the analytical work is now done much more thoroughly and with much more interest and ease as a result of the preliminary training gone through. I examined the work of several of the students, and I am of opinion that the instruction is in every way highly satisfactory."

EVENING MEETING IN LONDON.—A meeting of the Pharmaceutical Society will be held at 17, Bloomsbury Square, W.C., on Tuesday next, March 10, at 8 p.m., the President in the chair, and a paper on "The Pharmacy of Phosphorus" will then be read by Mr. William Martindale.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.—This is the youngest of our local associations and, naturally, one of the most active. Great promise has been shown by its work up to the present, and now it is proposed to celebrate the triumphs of the first session by the inevitable dinner. This will be held at the Colonnade Hotel, Birmingham, on Wednesday, March 25, and tickets (3s. each) may be obtained from the honorary secretary, Mr. H. M. Bindloss, 17, Bull Street, Birmingham, or from any other member of the Committee of the Association.

THE ANTITOXIN TREATMENT.—The delay of the report on the antitoxin treatment of diphtheria in the hospitals of the Metropolitan Asylums Board may be unavoidable, observes the editor of *the Practitioner*, but it is none the less unfortunate. The apparent reticence is regarded in certain quarters as implying that the results are the reverse of brilliant. It is noted, too, that whilst Mr. Boulger has stated in the *Contemporary Review* that he has reason to think the special report, when issued, will show a higher rate of mortality for the "antitoxined" patients than for those not so treated, so far his statement has not elicited any contradiction.

HUXLEY FROM A DISCIPLE'S POINT OF VIEW.—In the current issue of *Natural Science*, Professor T. J. Parker, F.R.S., of Dunedin, N.Z., points out that it is obviously upon Huxley's technical and non-popular writings, and upon the character of his teaching, that his reputation as a man of science must stand or fall. He considers that, judged by Huxley's original contributions to science, there can be no doubt that the late professor's performance falls far short of his capabilities, and that there is hardly a man of first-class ability among his contemporaries who has not produced more. The names of Leuckart, Koelliker, Haeckel, and Gegenbaur are mentioned in this connection as those of contemporary professional zoologists who have left deeper marks upon zoology than Huxley, and looking at the matter from rather a narrow and professional standpoint, the writer is inclined to think that modern biology owes a larger debt to Huxley the teacher than to Huxley the investigator. "His lectures were like his writings, luminously clear, without the faintest disposition to descend to the level of his audience; eloquent, but with no trace of the empty rhetoric which so often does duty for that quality; full of a high seriousness, but with no suspicion of pedantry; lightened by occasional epigrams or flashes of caustic humour, but with none of the small jocularities in which it is such a temptation to a lecturer to indulge." Huxley's iconoclastic tendencies peeped out in his lectures, the mitral valve of the heart being explained by him as deriving its name from a supposed resemblance to a bishop's mitre. "You know the sort of thing I mean—a sort of cross between a fool's cap and a crown." Likewise, he observed that when he was a student, he always remembered which side the mitral valve was on by saying to himself "a bishop's never in the right." In] conclusion, Dr. Parker states that he has never ceased to be impressed with the manliness and sincerity of Huxley's character, his complete honesty of purpose, his high moral standard, his scorn of everything mean or shifty, his firm determination to speak what he held to be truth at whatever cost of popularity.

CYLINDERS FOR COMPRESSED GASES.—After the explosion at Fenchurch Street Station, Mr. Asquith appointed a Departmental Committee of inquiry into the causes of such explosions, and the precautions necessary to ensure safety in dealing with cylinders of compressed gas. The Committee, which consisted of Professors Unwin, Boys, and Dixon, with Mr. Dupré and the Rev. T. J. Smith (Lecturer on Mechanics, Oxford), has just issued its report and recommendations. A general official inspection of all factories manufacturing compressed or liquefied gases is recommended as being desirable, and it is suggested that such inspection might be conducted under the Factory Department of the Home Office, or even by a department of the Board of Trade.

RECOMMENDATIONS REGARDING GAS CYLINDERS.—For cylinders intended to contain oxygen, hydrogen, or coal-gas, the greatest working pressure recommended by the Committee is 120 atmospheres, or 1800 lbs. per square inch, the cylinders to be permanently marked with a rotation number, a manufacturer's or owner's mark, an annealing mark with date, and a test mark with date. Testing is recommended to be repeated every two years, and annealing at least every four years, a record being kept of all tests. Hydrogen and coal-gas cylinders should have left-handed threads, and be painted red, whilst a minimum weight should be fixed for each size of cylinder in accordance with its required thickness. The greatest working pressure recommended for cylinders for carbonic acid is also 120 atmospheres, and it is stated that no cylinder ought to contain more than $\frac{3}{4}$ lb. of carbonic acid per pound of water capacity, if for this country, or $\frac{2}{3}$ lb. if for the tropics. A notice ought to be affixed to the cylinder stating that it contains carbonic acid and should be kept cool, and not exposed to the sun. Ammonia cylinders are recommended to have a working pressure not exceeding 1000 lbs. per square inch, and they should not contain more than $\frac{1}{2}$ lb. of ammonia per pound of water capacity, whilst a similar notice should be affixed to that recommended for carbonic acid cylinders. No oil or similar lubricant should be used for cylinder valves, pressure gauges, regulators, or other fittings; pressure gauges should have a check to prevent a sudden inrush of gas, and those for hydrogen and coal-gas should have left-handed screws and be painted red. Several other recommendations are made with regard to minor details, and it is stated that, subject to a reasonable guarantee that all the specified conditions are complied with, the Committee will be prepared to recommend that cylinders should be distributed by road or rail unpacked.

"REQUIREMENTS" REGISTRY.—With the object of affording Fellows of the Imperial Institute and the general public resident in the United Kingdom an opportunity of making known special "wants" or "needs" in the British Colonies, India, and foreign countries, space is to be regularly devoted in the *Imperial Institute Journal* to approved notices in a column reserved for that purpose. Announcements are not to exceed twenty-five words in length, and advertisers may have their replies addressed to them direct, or care of the Imperial Institute, London, S. W., under a distinctive number and initials.

FESTIVITIES AT BIARRITZ.—On Shrove Tuesday evening the Central Hotel, Biarritz, was brilliantly illuminated and decorated with flowers, the occasion being a *soirée* given by the employés of the English pharmacists of the town. More than 150 invitations were accepted, and dancing to the strains of a fine orchestra continued until early morning, supper being served about one o'clock at small detached tables. The singing of the English national anthem brought the proceedings to a close, general satisfaction being expressed at the manner in which the affair had been organised.

PROCEEDINGS OF SOCIETIES.

Chemists' Assistants' Association.—At the meeting held on the 27th ult., when the President (Mr. E. W. Hill) occupied the chair, Mr. R. H. Jones read a paper entitled "The Digestive Ferments of the Pancreas."

After a brief description of the pancreas itself, the processes involved in the digestion of food after leaving the stomach were described. The chyme, as this partially digested food is called, on entering the small intestine, excites the pouring out of the alkaline secretions of the pancreas, which neutralise the acidity previously acquired from contact with the gastric juice. These secretions are four in number, namely, the diastatic, proteolytic, fat-splitting, and milk-curdling enzymes. The first of these, to which the name amylopsin is applied, appears to have been first studied by Bouchardat and Sandras in 1845, but attempts to separate the ferment in a state of perfect freedom from the other enzymes have so far proved unsuccessful, although Wittich claims to be able to prepare a solution free from the proteolytic enzyme by dehydrating the divided pancreas with boiling alcohol, and then macerating in glycerin. The fact that a solution can be thus obtained far more rich in one particular enzyme than the other points to the independence of the two ferments, as does the fact that the richness, absolute and relative, differs in different animals, being ten times more active in the pig than the sheep. Although zymogens of pepsin and trypsin have been obtained, conclusive proof is yet required of the existence of a zymogen of amylopsin, but it is considered probable that one does exist. The diastatic action of this enzyme is almost identical with that of the enzyme of the saliva, the greater portion of the final product of digestion being maltose, although some small amount is transformed into dextrose in contradistinction to malt diastase, the final product of which is entirely maltose. It may be noted that a prolonged digestion of starch with salivary diastase is said to yield a similar result to amylopsin, a small proportion of dextrin being formed. The latter enzyme is capable of hydrolysing dry starch, whilst it has also been observed that the most favourable temperature for digestion is between 30° to 45° C., which is quite the reverse of malt diastase, which acts most favourably up to 60° C.

The proteolytic enzyme of the pancreas, called trypsin, was discovered in 1836, but it was left for Heidenham to show that this body does not exist in the pancreas ready formed (except in traces), but is formed from the corresponding zymogen by the action of acids or alkalis. It is said to be insoluble in pure glycerin, whilst an aqueous solution can be maintained at 40° C. for a long period without decomposition, but when boiled yields 20 per cent. of albumin and 80 per cent. of peptone. Alkalis up to 1 per cent. aid digestion, whilst over 0.5 per cent. acidity has an inhibitory effect. According to Roberts, the activity of trypsin increases up to 60° C., but Mr. Jones' experiments point to the conclusion that above 54° C. the activity decreases.

The existence of a fat decomposing enzyme in the pancreas was first indicated by Eberle in 1837, but although it seems likely that such a ferment really does exist, from the fact that activity is affected by temperature, some well-known workers, amongst them Roberts, have expressed doubts upon the subject. However this may be, there is no doubt but that the pancreatic juice has a most important part to play in regard to the assimilation of fat, this fact being clearly proved by cases in which the pancreas has been removed from animals, when it was noted that no absorption whatever of fat took place.

Mr. Jones devoted the latter part of his paper to the use of the pancreatic ferments in medicine, the so-called pancreatin, which is a mixture of the enzymes, being taken as a typical representative. The fact that this preparation appears to gain ground but slowly in this country as a medicine seems to be due to the uncertainty which exists as to the destruction of the enzymes when it is taken by the mouth. The author's experience was that several well-known physicians prescribed it regularly, with alkalis and aromatics as well as alone, without any keratin coating, from which it was to be concluded that the good results which apparently accrued were due to its proteolytic property, since the action of the trypsin would not be destroyed so long as the medium did not contain above 0.5 per cent. of acid. On the other hand it should be borne in mind that the action of the pepsin, especially if a large amount of proteid were present at the same time, would probably have a deterrent influence upon the pancreatin. This point has unfortunately never been cleared up, although Schweitzer (*Ph. J.*, August 20, 1887, p. 149) published some results carried on *in vitro*

which are not conclusive. The characters and tests applied to pancreatin in the last edition of the U.S.P. were, in Mr. Jones' experience, not a success. He had never met with a single sample which was odourless or completely soluble in water, although several of American manufacture were guaranteed to be up to or above the standard. For the purpose of carrying out the valuation of pancreatin, he had been accustomed to use the following modification of the U.S.P. test:—The milk and most of the water, with the soda dissolved in it, is raised to a temperature of 52° 5 C., when the pancreatin, previously mixed with the remainder of the water, is added, the whole being maintained at the above temperature. From time to time a measured quantity is added to a measured quantity of acid in a test tube. When no coagulation occurs the time is noted, a comparison being thus established between samples. No sample has been examined complying with the U.S.P. test, which appears to be too stringent. This state of things is probably due to the interpretation put upon the word coagulation, since many would disregard a separation of fine curd and take the operation as finished when bulky coagulation ceases. Mr. Jones suggested that the temperature of 52° 5 C. would be an improvement, as being the most favourable to digestion, that half quantities of water, milk, and pancreatin should be used, and that a fixed quantity should be tested with acid every five minutes in a test tube. When no coagulation was apparent on standing for ten minutes digestion was regarded as complete, since the whole of the casein was converted into peptone, which is not precipitated from its solution by acids. Some idea of the power of starch digestion would also have been an improvement, *e.g.*, "should digest 100 times its weight in 30 minutes." The sample should not give a nauseous taste to milk, and the reference to rancidity applies to this also. The result of an examination of a number of samples by the U.S.P. test are given below:—

1. Took 90 minutes.
2. " 90 "
3. Not done in 4 hours.
4. " " 65 "
5. " " 50 "

Midland Chemists' Assistants' Association.—At the meeting held on Wednesday, February 26, at Exchange Rooms, Birmingham, the President, Mr. T. C. Clarke, occupied the chair, and a paper, entitled "A Botanical Romance," by Mr. A. McDonald Cobban, was, in the unavoidable absence of the author, read by Mr. R. M. Williams.

In the paper the author explained that it was his endeavour to show a few of the romantic instances of the diversities of plant life. He would first take a few instances of the vast, and then give a brief description of the infinitesimal.

Among the mammoths of plant life, he was sure most of his hearers had, in their junior days, made acquaintance with the Ratan cane, and had had its striking peculiarities impressed upon them by their various schoolmasters. Yet this short instrument of torture was only a small portion of a long trailing palm, growing in Continental and Insular India to the length of over 5000 feet, trailing on the ground and ascending trees, never increasing in thickness, and each of its nodes marking where foliage had been. This peculiar lengthening was also noticed in certain seaweeds, the *Nereocystis*, growing on the N.W. shores of America, having an unbranched stem 300 feet long, no thicker than whipcord, and bearing at its summit, growing from a bladder-like enlargement, upwards of fifty forked leaves, each from 30 to 40 feet long.

The *Macrocystis*, another seaweed, exceeded this by rising to the surface of the ocean by many branchings from a depth of as much as 1500 feet, and forming a floating mass of foliage, some hundreds of yards in extent. The Baobab, a native of the tropics, had a trunk sometimes seventy to eighty feet in circumference, yet the height was little more. The branches, which were of great length, drooped to the ground, and at a distance gave the appearance of a green hillock. In Australia one specimen of *Eucalyptus robusta* (measuring two feet from the ground) was 102 feet in circumference. In the district of Calaveras (Upper California), known as "Mammoth Tree Valley," were a group of some ninety trees, not one less than 90 feet in circumference, and a clear stem for from 150 to 200 feet from the ground. One specimen which was blown down had a hollow centre for about 200 feet, large enough for a person to ride through on horseback. After describing many other giant specimens, the paper went on to describe two floral wonders, one, the *Rafflesia arnoldi*, bearing a flower of fungoid texture, 3 feet across,

weighing 14 lbs., and emitting a most offensive odour; the other the *Aristolochia gigas*, which flowered last year at the Sheffield Botanical Gardens. One flower was over 23 inches in diameter, and the bottom edge of the petal was elongated into a tail-like appendage some 31 inches longer.

The author then went on to consider the other side of the picture, the minute organisms. Until recent years it was the subject of much controversy as to whether certain of the flowerless plants, particularly the natural order Diatomaceæ, with its sub-orders Diatomæ and Desmidiæ, were really plants or not. It was now conceded that these minute inferior organisms were plants, and were found to exist both in fresh and salt water all over the world, presenting a diversity of species as well as of colour and marking. They consist of a glassy shell of a silicious nature, enclosing a soft coloured substance of a golden or brown hue, called endochrome. Henfrey mentions this peculiarity of the Diatomaceæ, the existence of a silicious deposit in their cell walls, which remains as a skeleton after the plant decayed. It has been stated by Dr. Barclay Montgomery that the bed of the ocean was made up of these bodies. The town of Richmond, U.S.A., has been built of a stratum of these bodies, 20 feet in thickness. These minute organisms form the principal food of the minor aquatic animals. The stomachs of shrimps have been found filled with them.

The members desired that a hearty vote of thanks be conveyed to Mr. Cobban for the interesting paper; after the reading of which Mr. F. Casson demonstrated and explained a quick method for the detection and estimation of lead in tartaric acid. The analyses of forty-two samples were shown, which varied from .0016 to .0065 per cent. of lead, with an average of .0037.

Royal Institution.—On Thursdays, February 20 and 27, Professor Marshall Ward concluded his lectures on "Some Aspects of Modern Botany." He first dealt with the physiology of plants, and showed how plants had been used as subjects for experiments. Pointing out the tendency to select external stimulating influences, and, by varying the conditions under which they were allowed to act, to determine their effect upon the plant, light was taken as an illustration and its influence on the plant under certain conditions was explained. The lecturer then proceeded to speak of the life histories of the lowest plants, pointing out the care with which they had been studied, and describing the methods adopted for separating these minute plant forms from all others with which they might be associated, and for studying their development. After alluding to the effect of the stratum upon which a fungi is cultivated, Professor Ward showed that the hyphæ of a fungus could be induced to enter the tissues of a particular leaf, which would otherwise be left uninjured, by injecting certain substances, as, for instance, sugar into the tissues of that leaf; by cultivating on artificial media, such hyphæ exhibited the power of discriminating between media containing different proportions of sugar. Even the enzyme ferment secreted by the cells appeared to vary with variation of the substance upon which they grew.

The aspect of modern botany to forestry was demonstrated by an account of the life-history of a species of *Polyporus* that attacks pine trees and destroys the timber by penetrating the cell-walls. The means the botanists had proposed for preventing the spread of the disease had been found unsuccessful by foresters; such failures had led to further investigation of the life-history of the fungus, and the discovery of other facts. Professor Ward concluded his lectures by a lucid explanation in a few words of the division of the cell-nucleus and the light such knowledge threw upon the facts of heredity.

Bristol Pharmaceutical Association.—The members of this Association held a meeting to discuss the recent developments of company pharmacy on Wednesday evening, February 26, Mr. Allen presiding. All registered chemists in the district, including Bath, Clevedon, and Weston-super-Mare, were invited, and a large and representative meeting assembled. A discussion took place on the question of company pharmacy, and the efforts that were being made by the Pharmaceutical Society to amend the new Bill dealing with limited companies, and on the motion of Mr. Plumley a resolution was passed pledging the meeting to support the Pharmaceutical Council in any action it might take towards amending the Bill. The resolution, which was seconded by Mr. Hart (Cleve-

don), supported by Messrs. Isaac, Young, Keen, and others, and carried unanimously, was in the following terms: "That this meeting of registered chemists pledges itself to support the Council of the Pharmaceutical Society in its efforts to amend the 'Companies Act Amendment Bill,' which it is intended to introduce into Parliament during the present session." Mr. Glyn-Jones, Secretary of the Proprietary Articles Trade Association, and Mr. G. R. Barclay, of the firm of Barclay and Sons, Limited, Farringdon Street, and Mr. Norris, of the Condal Water Company, afterwards addressed the meeting on the anti-cutting movement and the advantages to be derived from supporting the Association named with respect thereto. Co-operation was strongly advocated, and Mr. Glyn-Jones argued that as retailers their goodwill was of infinite value to proprietors, and that if the latter ensured fair profits, the interests of the retailer lay in the direction of willingly distributing their articles; that if the articles were allowed to be sold without profit they must expect retail chemists to use their skill in pushing articles the sale of which would help to pay their expenses. A discussion followed, and a resolution was unanimously passed pledging the meeting to support the Proprietary Articles Trade Association. The Council of the Bristol Pharmaceutical Association was also asked to consider the advisability of co-operating with the London Association in the matter. At the close of the meeting a vote of thanks was passed to the representatives of the Trade Association.

ENGLISH NEWS.

THE SALE OF CHLORODYNE.—At Darwen, on Monday, February 24, an inquest was held on the body of Florence Ainsworth, aged one year and eleven months. It appeared from the evidence that deceased was recovering from measles, and had been given some chlorodyne, from the effects of which she died. A Mr. Grime, described as a chemist, but not registered as a chemist and druggist, said his traveller sold the chlorodyne wholesale to a Mrs. Leach, who gave some of it to the mother of the deceased child. He made it a rule when selling chlorodyne to caution people, and put red labels on the bottles. Mrs. Leach, however, deposed that there was not any red label on the bottle. The jury returned a verdict of "death from narcotic poisoning," and exonerated Mr. Grime from any responsibility in the matter.

LORD RAYLEIGH ON LIGHT.—In the second of his course of lectures at the Royal Institution on Saturday afternoon last, Lord Rayleigh made further interesting experiments to illustrate the qualities of light. In the first instance, he went back to the principle by which the colours of the spectrum may be cut away—red and orange by sulphate of copper, and blue by bichromate of potash. Having also shown how yellow might be produced by mixing, he went on to say that if they considered the action of a single coloured body upon light, the question might arise, How were they to define with accuracy the colour of any given body? If they began with that body in extremely thin layers or in an extremely diluted state, they would begin with a light that differed only a little from white. As they increased the thickness of the layer, however, the colour would deepen. If they began with a piece of blue glass and then made that glass thicker and thicker, they would find at last that it turned to an extremely deep red. The glass apparently changed colour according to the thickness that the light had to penetrate. He illustrated this with a liquid of a light green colour, which, on being gradually thickened became red. Which, he asked, was the colour of the liquid? Red, because red was the part of the spectrum to which the liquid was most transparent, and therefore asserted itself most when the liquid was increased. In a brief allusion to the effect of light in photography, he said the theory that blue and violet rays were exclusively or chiefly photographic rays was an error. He showed, however, that on photographic paper blue had a much greater effect than any other colour. He had spoken in his previous lecture of the law of refraction and its formulation as the law of sines by Snell and Descartes. He now remarked that if they took water and caused light to penetrate it obliquely, they would find the ray bent or refracted at the point where it entered the water. If they took the sines of the angles of incidence and refraction, then the ratio was called the refractive index of the substance. What did that mean from the point of view of the wave theory? The interpretation was that light moved less quickly in water than in air, so that a wave of light, if it met water, was retarded. The effect of that might easily

be traced in what was usually considered the simplest case—where light passed from a large body of air to a large body of water without a break. But they were most concerned with refraction when light went into water or glass and came out again; and the interpretation from the point of view of the wave theory was somewhat easier in that case. Lord Rayleigh gave an illustration of this by a prism of small angle. The wave of light was bent on passing through the prism, and always away from the thin end. The effect was much the same with a lens, which, thicker in the middle than at the edges, turned the light inwards till it met at the focus. Why? Because the part of the wave of light which passed through the thick part of the lens was retarded more than that which passed through the thin ends, and of course they were enabled to calculate the focal length of a lens. Lord Rayleigh then went on to consider another effect of the various component rays of the spectrum—the production of heat. All the rays of the spectrum produced heat in different degrees. By an interesting experiment with the spectrum and thermal pile, he showed that the heat effect of the violet ray was least, green coming next, then red, the region of the ultra-red being decidedly the most powerful. This last point had given rise to much speculation, and upon it he gave the views of Young, Sir W. Herschel, Professor Langley, and others. Another matter to which he drew attention was the way in which powdered glass could be mixed with a liquid of the same refractive index as itself so as to have almost the same effect as one continuous body.—*Daily News.*

AN OVERDOSE OF MORPHINE.—Mr. A. C. L. Glubb, County Coroner, held an inquest at the Guildhall, Saltash, Cornwall, on Monday morning, respecting the death of Dr. Richard C. Revell (Mayor of Saltash), aged 40, of Alexandra House, who died last Sunday. It was stated in evidence that deceased was in the habit of taking sleeping draughts, and on a previous occasion he had taken too much morphine. Dr. Robert Thornton Meadows said deceased had died through an overdose of morphine, and a verdict of death from an overdose of morphine, taken by misadventure, was returned by the jury.

ACCIDENT WITH VITRIOL IN A CHEMIST'S SHOP.—A boy named William Stanmore, aged 13, an errand boy in the employ of Mr. W. Mingot Tucker, chemist, of Fore Street, Knightsbridge, had a narrow escape of being seriously injured on Saturday last, February 29. He was in the act of carrying a half-gallon bottle of oil of vitriol from the shop to the stores at the back, when he walked, while looking backwards, against a wall. The bottle was smashed, and a portion of the contents went over the boy. His cries brought Mrs. Cove, a neighbour, and the boy's employer to his aid, and they put the poor lad under a pump which was close by, and so stopped the progress of the burning fluid. Meanwhile, Dr. W. H. Webb was sent for, and, on examination, it was found that both the lad's eyes were badly burnt, and both wrists scorched. The wounds were dressed, and the lad was put to bed, and he is now making favourable progress towards recovery. Mr. Tucker himself burnt his wrists rather badly while in the act of assisting the boy.

WHAT IS WHITE WAX.—One of the anomalies of the law was beautifully illustrated the other day when a St. Pancras and Marylebone chemist was fined £2 for selling white wax, stated to be adulterated to the extent of 38 per cent. with paraffin. Although it was shown that the article was only sold for laundry and artificial flower-making purposes, and not at all for pharmaceutical use, the defendant was fined as stated. He had on his premises pure beeswax, which was sold to the general public when asked for. Both kinds were labelled "white wax." This seemed to have been the gravamen of the offence. But how were they to be otherwise described? Would you have a man describe an article which is white as black? It was admitted by the prosecution that the same article sold by Mr. Jefferson Dodd (the defendant) could be sold in an ordinary oil-shop without risk of prosecution. Here is a gentleman who has passed the examinations of the Pharmaceutical Society, who is experienced in drugs and is possessed of a liberal education, subjected to the indignity of a fine, while a man with the knowledge of an opossum is at liberty to sell the same article (at perhaps a higher price) with impunity.—*St. Pancras Guardian.*

RESEARCHES AT LOW TEMPERATURES.—It was not to be wondered at that Professor Dewar would sit calmly down beneath the storm of criticism regarding the priority of his researches on low temperature. In a recent paper read before the Chemical

Society, he reviews all the forms of apparatus which have been used since Pictet liquefied oxygen in 1878, and places the originality of his own modification in a strong light. He refers to the fantastic claim put forward by Professor Olszewski, of Cracow, that because he used in 1890 a steel tube combined with a stopcock to draw off liquid oxygen, he had taught the world, to use his own language, "the method of getting large quantities of liquid gases." But when, in addition, Olszewski alleges, four years after the event, that the experiments made at the Royal Institution since 1891 are chiefly borrowed from Cracow, and that he is entitled to the credit of all low temperature research subsequent to 1891, because of his steel tube and stopcock invention, one can only wonder at the meagre additions to knowledge that in our time are unhesitatingly brought forward as original, and more especially that scientific men could be got to give them any currency in this country. Such persons should read the late Professor Wroblewski's pamphlet entitled 'Comment l'air a été liquéfié' (Paris: Libraire du Luxembourg, 1885), and make themselves generally acquainted with his work before coming to hasty conclusions on claims of priority brought forward by the Professor of Chemistry at Cracow. In the discussion which followed, Lord Playfair, Professor Armstrong, and others paid well-deserved homage to Professor Dewar on account of his magnificent researches on the liquefaction of gases.—*Electrical Review*.

AMMONIA FOR WINE.—A singular accident occurred on February 27, at Bolton-le-Sands, near Lancaster. James Higginson, 77 years of age, was about to leave home for work, after having taken his wife a cup of tea upstairs, when, at the latter's suggestion, he went to the cupboard to get a glass of wine, as the morning was raw and cold. He got hold by mistake of a bottle containing liquid ammonia, and did not find out his error until he had drunk a glassful. The bottles were very much alike, but the one containing ammonia had a label on, and was marked "poison." An emetic was given to the patient, a doctor was sent for, and ordered plenty of oil to be given. This was done, but the old man died three hours after the occurrence.

ROYAL INSTITUTION.—A general monthly meeting of the members of the Royal Institution was held on Monday, the 2nd inst., Sir James Crichton-Browne presiding. The following were elected members:—Mr. H. J. Allcroft, Mr. R. L. Andrews, Dr. Ernest Clarke, F.R.C.S., Mr. Mayo Collier, F.R.C.S., Mr. H. E. Fry, Mrs. Francis Gaskell, Mr. E. Gimmingham, Mr. A. Glegg, Sir Cameron Gull, Bart., M.P., Miss Catherine Imray, Mr. C. W. Keighley, Dr. Edward Law, M.R.C.S., Mr. C. Letts, Mr. M. Micholls, Mr. R. E. Middleton, M. Inst. C.E., Dr. A. Paine, Mr. G. H. Sykes, M. Inst. C.E., and Mr. W. L. Wise, J.P.

SHEFFIELD COLLEGE OF PHARMACY.—On Thursday last, the students of the Sheffield College of Pharmacy, accompanied by one of the principals, had their second botanical outing this term. After taking train to Totley, they walked across the moors, passing over Totley tunnel (the second longest in England) to Fox-House, thence forward to Hathersage (the burial place of Little John, of Robin Hood fame). A substantial tea was had at the Station Hotel. The return journey was made by train after a very enjoyable day.

DEATH OF A WELL-KNOWN "PILL DOCTOR."—Doctor Gilbert, well known throughout the Western Counties as a "pill doctor" and herbalist, died on Monday last in Bridport Workhouse, in his 104th year, after an apoplectic seizure. He was, it is believed, a native of Wincanton and was married at Totnes. He has travelled throughout the south-west of England ever since he was twenty years old, and the distances he covered on foot were remarkable. His uncle was the late Dr. Gilbert, author of 'The History of Cornwall.'

THE DISPENSING OF DRUGS AT EXETER WORKHOUSE.—The Exeter Corporation of the Poor, at their weekly meeting on Tuesday afternoon (March 3), discussed the question of the dispensing of drugs at the city workhouse, on a report being brought up by the Management Committee on the subject. It appears that the present male nurse (Mr. Clarke) has always assisted the medical officer (Dr. J. Woodman) in dispensing the drugs, but Mr. Clarke and his wife (the female nurse) have obtained the appointments of master and matron of the Okehampton Workhouse, and the committee having resolved to recommend the Board to employ only female nurses in future, Dr. Woodman brought forward the matter of dispensing for the committee's consideration. Having discussed

the matter at some length the committee decided to recommend that if the medical officer required assistance in dispensing, the duties should be performed by a person from outside the workhouse and not by nurses. On the recommendation coming up for adoption at the Tuesday meeting of the Board, Mr. H. P. O. Hamlin (the deputy governor) stated that the remuneration of the proposed new dispenser had not yet been fixed, but the question could be easily got over. The committee had partly considered the matter, and they were in a position to name a person who would do the duties at "a very trifling cost." The recommendation was adopted, and the appointment will be made in due course.

SCOTTISH NEWS.

MESSERS. DUNCAN, FLOCKHART, AND COMPANY, of Edinburgh, are opening a wholesale depot for their specialties at 38, Snow Hill, London. Mr. A. Proctor Atkinson, their present city traveller, leaves next week to act as manager.

A DANGEROUS TRAP.—Before Sheriff Henderson at Cupar, on February 25, David Peebles, farmer, Belliston, Carnbee, was charged with leaving the carcass of a sheep, impregnated with strychnine or poison, exposed on Greenhill Farm. A collie was found dead next morning beside the carcass. Peebles pled guilty, stating that he had had much trouble with dogs worrying sheep, but was now sorry for what he had done. The Sheriff said the consequences might have been far-reaching and dangerous. He fined Peebles £3, with an alternative of twenty-one days' imprisonment.

IRISH NEWS.

THE NATIONAL HOSPITAL FOR CONSUMPTION FOR IRELAND, at Newcastle, county Wicklow, is to be opened on the 19th inst.

DR. R. J. MONTGOMERY, F.R.C.S., lately Botany and Materia Medica Examiner to the Pharmaceutical Society, has been unanimously appointed Ophthalmic Surgeon to Drumcondra Hospital, Dublin.

FOREIGN NEWS.

LITHIUM AS BALLAST.—In connection with the researches of M. Moissan it is interesting to note the proposed utilisation of that savant's discoveries by M. Andrée during his projected aerial voyage to the North Pole. Consequent on the publication by M. Moissan of a method for manufacturing by the electric process lithium in large quantities, the idea occurred to M. Andrée that this metal might be utilised as ballast for his aerial machine on account of its light specific gravity and its enormous power of generating hydrogen when in contact with water (1 kilogramme of the metal yielding 1600 litres of the pure gas). M. Berthelot was applied to for his opinion on this matter, and his reply was read before the last meeting of the French Aerial Navigation Society. The eminent scientist, while considering the idea good in theory, considered that the advantage gained by the small weight of the metal would be more than counterbalanced by its bulk and difficulty of manipulation, as a cage to submerge it in water would be necessary when the chemical action was required. Magnesium he thought might be advantageously substituted. Its greater specific gravity obviated the use of a cage and would compensate for the increased weight.

THE PRESERVATION OF SURGICAL DRESSINGS.—The French troops for Madagascar were furnished for the first time with packets of surgical dressings, ordered by the Government to be supplied to each soldier and to be carried by him with his kit. Drs. Baille and Chavigny have tested dressings which have undergone the vicissitudes of the campaign in order to ascertain if any deterioration had taken place. They found only a very small percentage out of the numerous samples examined to be well preserved, the remainder having become completely useless from water, rough usage, etc. Of those well preserved, the wool, bandages, and gauze remained aseptic and still retained some of their antiseptic properties. A curious effect, however, was observed to have taken place in the different dressings, the materials in the centre of the packets retaining a small proportion only of the

corrosive sublimate originally present, whilst the remainder of it was found in the impermeable material in which the dressings were enclosed. The result was to leave the gauze, etc., with insufficient sublimate to be actively antiseptic. The perchloride of mercury had undergone no chemical change, and until the cause of its displacement is known and can be remedied it is proposed to increase the strength of medication.

PHOSPHORUS-FREE MATCHES.—It will be remembered that a Commission was appointed by the French Government to investigate processes for manufacturing matches free from phosphorus. The manipulation of this substance had such deleterious effects on the health of the workpeople engaged in the industry, that legislative action was found necessary. As an outcome, the Commission recommended the products of M. Haebecke and M. Delpy for trial, and consequently the public has been supplied during the last two months with matches prepared according to the process of M. Haebecke. The experiment has not proved entirely successful, several accidents having occurred from sparks flying in the user's face, unopened boxes suddenly exploding, and the matches have also the disadvantage of not readily igniting with slight friction. The method of M. Delpy is said to be very similar to the above, and both are considered objectionable on account of salts of lead entering into their composition. A process has, however, been invented by M. Pouteaux, of Dijon, which is entirely innocuous to workers, and no phosphorus or other poisonous or explosive chemicals are employed. Experiments have been made at the Pantin factory, and the matches proved to be easily made whilst possessing a fragrant instead of a disagreeable smell, due to the acetate of amyl, which, with permanganate of potassium, enters into the composition used. M. Pouteaux has generously made a gift of his discovery to the Government, and a test supply will shortly be issued for sale.

CERIUM CARBIDE.—At the Académie de Sciences, M. Moissan stated that he had obtained carbide of cerium in the crystalline state by heating in the electric furnace oxide of cerium with carbon. Carbide of cerium decomposes water at ordinary temperatures, with production of 75 per cent. acetylene, 20 per cent. methane, and 5 per cent. of other hydrogen carbides. Variation of temperature and the presence of hydrochloric or sulphuric acid affect the proportion of acetylene generated. He has likewise obtained carbide of lithium by means of the electric furnace and by heating the metal in a current of acetylene. Carbon is present in this compound in the proportion of 66 per cent. Carbide of lithium burns in iodine or sulphur vapour, and decomposes water with production of pure acetylene; 1000 grammes yields 387 litres of the gas.

PROCEEDINGS UNDER THE PHARMACY ACT.

CASE UNDER SECTION 17.

At Tenbury Petty Sessions, on Tuesday, February 18, George Turley, of Teme Street, Tenbury, was charged by P.S. Hardwick with keeping an open shop for the retailing of poison, not being a duly qualified pharmaceutical chemist or chemist and druggist, and with selling to one Francis Edwards, a quantity of "strychnine," without labelling the bottle or cover in which it was contained, with the name of the article, the word "poison," and the name and address of the seller.—Francis Edwards, of Broadfields, Little Hereford, farmer, said that on January 13 last he purchased a shilling's worth of strychnine at Mr. Turley's shop. Defendant said he would say he had not sold him any strychnine. He did not see any label on it. Superintendent Long took the bottle from him at the Swan Hotel in the presence of Mr. Hardeman and two other officers.—P.S. Hardwick said he and Superintendent Long visited defendant's shop on the 15th, and asked Turley to produce his poison book, but he replied that he had not one.—Mr. Long said "You sell poison."—Defendant said he did not.—Superintendent Long said, "You sold some to a gentleman a few days ago," and defendant said, "He said I sold it, did he?" On January 20, the witness received the bottle produced.—At this stage the Bench adjourned the case until March 17 next, as there was no evidence to show whether the article sold was a solution of strychnine, water, or any other fluid.

PARLIAMENTARY INTELLIGENCE.

EXPORTS TO JAPAN.—A Blue Book has just been issued giving the supplementary convention between Great Britain and Japan, respecting the duties to be charged on British goods imported into Japan. The convention re-adjusts the *ad valorem* tariff of a Protocol of 1894, and was ratified in November last. The following duties are now enforced:—

Caoutchouc, manufactures of	<i>Ad val.</i> , 10 per cent.
Indigo, dry	12 953 yen per 100 cattiee.
Leather, other than sole leather	<i>Ad val.</i> , 10 per cent.
Mercury or quicksilver	5·048 yen per 100 cattiee.
Paraffin oil	<i>Ad val.</i> , 10 per cent.
Paint in oil	1·304 yen per 100 cattiee.
Salt tre (nitrate of potash)	0·490 yen per 100 cattiee.
Wax, paraffin	0·544 yen per 100 cattiee.

A catty is equal to 600 grammes, and the silver yen is equivalent to about 4s. 3d. English money.

FOOD PRODUCTS ADULTERATION.—Sir W. Walrond's Committee of inquiry into the law relating to adulteration, to which allusion was made last week (Supp., p. liii.), has now been constituted. The members of Committee are:—Capt. J. F. Bagot (C), Kendal; T. B. Bolitho (U), St. Ives, Cornwall; R. K. Causton (L), West Southwark (a Treasury Lord in the late Administration); F. A. Channing (L.), Northampton, E.; E. C. Colston (C.), Thornbury Division of Gloucester; Lewis Fry (U.), Bristol, W. (J. S. Fry and Sons); A. F. Jeffreys (C.), Basingstoke; H. E. Kearley (L.), Devonport (Kearley and Tong); W. Kilbride (N), Galway, N.; G. Lambert (L), South Molton; Sir John Leng (L.), Dundee; P. A. M'Hugh (N.), Leitrim, N.; F. A. Newdigate (C.), Nuneaton; D. N. Nicol (C.), Argyll; Herbert Roberts (L.), Denbighshire, W.; T. W. Russell (U.), Tyrone, S. (Secretary Local Government Board); Sir Mark Stewart (C.), Kirkcubright; J. A. Willox (C.), Everton Division of Liverpool; and R. A. Yerburgh (C.), Chester. It will be seen that very little regard for party has been exercised in the selection of the Committee, and that each division of the United Kingdom is represented. All the members, with the exception of Mr. Fry and Mr. Nicol, have sat in previous Parliaments.

COMPANIES ACTS—WINDING UP.—Sir Seymour King (C.), Hull Central, has moved for the introduction of a Bill to sanction the publication, by official receivers and other persons, of official reports and observations in winding-up proceedings under the Companies Acts. The knowledge that free publication can be given to official discoveries would possibly do something towards raising the standard of commercial morality among limited liability companies.

SHOPS (EARLY CLOSING) BILL.—Amendments to this Bill have multiplied rapidly, and the conviction that a measure of this kind needs very careful handling has become so general in Parliamentary circles that by agreement the order for commitment was on Friday last read and discharged, and the Bill referred to the Standing Committee on Trade.

PETROLEUM.—A Select Committee has been appointed to inquire into the working of the law relating to the keeping, sale, use, and conveyance of petroleum and other inflammable liquids. Doubtless the inquiry will have a special bearing on the question of accidents arising from the use of petroleum lamps, but the terms of reference are broad enough to make the labours of the Committee of the highest interest to those who deal in or use inflammable liquids. The Committee will consist of thirteen members, who will be selected in due course, and power is given to take evidence from experts on the subject under enquiry. It is satisfactory to learn that the interests of chemists in this respect will be carefully safeguarded by the Law and Parliamentary Sub-Committee of the Pharmaceutical Society, which has just been appointed.

PHENOCOLL HYDROCHLORIDE IN PERTUSSIS.—Vargas reports that with phenocoll hydrochloride he has obtained more prompt relief and quicker cure in whooping-cough than with any other remedy. It is given in daily doses of 15 to 30 grains, water or mucilage being the vehicle, and 2½ grains being given at a time, repeated every two hours (*Therapist*, vi., 14).

NOTES AND QUERIES.

[The information given in this column includes both notes of practical interest to pharmacists, and replies to queries which seem to possess sufficient interest to readers generally. Readers requiring working formulæ for special preparations should intimate their wants to the Editor, who will be pleased to assist them to the best of his ability. The word "parts" invariably indicates parts by weight.]

MALTED FOOD FOR INFANTS.

Practice appears to vary considerably with regard to the amount of malt in prepared infants' foods, as little as 5 per cent. being used in some cases. Probably the following formula, or some modification of it, may serve your purpose:—

Baked wheat flour	10 oz.
Ground malt	2 oz.
Sugar of milk.....	4 oz.

There is no necessity to add phosphates. A more palatable food can be prepared by adding desiccated milk, but this, of course, is not essential, as fresh milk is always added before use. Dry all the ingredients before mixing, by spreading on large flat dishes in a moderately cool oven. [Reply to A. Russell.]

PETROLEUM EMULSION.

The following formula is given in the 'Extra Pharmacopœia':—Mix soft paraffin, 5 oz., and powdered acacia, 2½ oz., then add water, 4 oz. Next dissolve sodium and calcium hypophosphites, each 2 drachms, in water, 6 oz., and add to the paraffin, with constant trituration. Finally, make up to 15 oz. by adding water. An alternative formula is as follows: Mix liquid petroleum, 4 oz., with powdered acacia, 2 oz., then add water, 5 oz., all at once. Dissolve sodium and calcium hypophosphites, each 1-2 drachms, in water, 2½ oz., add glycerin, 1 oz., and add to the emulsion, finally making up to 15 fl. oz. with water. A third formula (*vide Era Formulary*) is: Liquid petrolatum, 4 oz.; oil of sweet almonds, 2 oz.; powdered acacia, 1½ oz.; glycerin, 1½ oz.; sodium and calcium hypophosphites, each 128 grains; lime water, enough to make 1 pint. A peculiarity of petroleum emulsions is that they are rendered more permanent by continued stirring. For this purpose a mechanical stirrer is preferable. [Reply to Quæsta.]

BALSAM VARNISH FOR DENTISTRY.

The antiseptic varnish recommended by Dr. Howard consists, according to the *Dental Practitioner*, of Canada balsam heated to drive off its volatile constituents, then dissolved in chloroform, after which mercuric chloride and thymol are added. The varnish is intended to aid in the adaptation of fillings, and to act as an anti-thermal and protective coating.

IMPROVED MOLYBDIC REAGENT.

Meillère employs the following formula for preparing molybdic test reagent, which he finds more stable and more delicate than that usually employed (*Journ. de Pharm.* [6], iii., 61). It can, moreover, be kept raised to a temperature of 100° C. for some time without undergoing decomposition. Solution of ammonium molybdate, 15 per cent., 200 parts; sulphuric acid, 50 per cent. by volume, 20 parts; mix and add pure nitric acid, 30 parts.

INCOMPATIBILITY OF NEW REMEDIES.

Mœrck points out that TRICHLORIDE OF IODINE is decomposed by alcohol and partially by water; the aqueous solution liberates iodine from iodides; ammonia added to it forms the explosive iodide of nitrogen; reducing agents liberate the iodine; and many organic bodies, among others the fatty oils and alcohol, decompose it. HYDROXYLAMINE HYDROCHLORATE is very unstable, and readily forms explosive mixtures; it is a powerful reducing agent; alkalis liberate the base, which is unstable and explosive. FORMALIN is incompatible with ammonia, the alkaline bisulphites, and reduces alkaline metallic solutions, and gelatin becomes insoluble through its action. IODOPHENIN is decomposed by water, liberating iodine. As it readily parts with its iodine, it should not be mixed with any body which has a strong affinity for that metalloid. (*Journ. de Pharm.* [6], ii., 536).

NOTICES TO CORRESPONDENTS.

All Articles, Letters, Notices, and Reports intended for publication in the Journal, Books for Review, and communications respecting Editorial matters generally must be Addressed "Editor, 17, Bloomsbury Square, London," and not in any case to individuals supposed to be connected with the Editorial Staff. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

ANY INSTRUCTIONS from Members, Associates, and Students of the Pharmaceutical Society, with reference to the transmission of the Journal, should be sent to the Secretary—Mr. Richard Bremridge,—17, Bloomsbury Square, London.

BUSINESS communications—including advertisements, orders for copies of the JOURNAL, and instructions from Subscribers respecting transmission of same—must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London. Cheques and money orders should be made payable to "Street Brothers."

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

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

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

QUERIES addressed to the "Editor" will be replied to in the Journal as early as possible after receipt; answers of sufficient general interest being given under the heading "Notes and Queries." The Editor cannot undertake to reply to queries through the post.

REPRINTS of articles cannot be supplied unless authors communicate with the Editor before publication.

LETTERS.

UNDUE CUTTING IN THE RETAIL TRADE.

Sir,—Unfortunately for us analysis has not yet reached the high standard of perfection which Mr. Ferguson suggests as a remedy for extreme cutting. How would he propose to make an accurate and undisputable determination of, say, a complex organic chemical compound in combination with perhaps half a score of remote difficulties in the way of the vegetable side of materia medica. As long as isomerism and polymerism have to be reckoned with and a host of other difficulties, both microscopical and chemical, in a complicated mixture, analyses, to be of any real value, are impossible. Then what about the consequences of a published mistake?

March 1, 1896.

ANALYST.

Sir,—You published in the *Pharmaceutical Journal* of date February 29 a very interesting letter on the above, by Mr. Ferguson, of Cheapside. It is not my intention at present to criticise his proposals either one way or another, but rather to draw a moral from them. The letter, readers will remember, suggested the formation of a company of chemists, the objects of which should be the analysis of proprietary medicines and publication of the results. This scheme is, to my mind, one more illustration of the antagonism which cutting has aroused amongst retailers against proprietaries, the owners of which allow them to be cut. It is an additional evidence that retailers are ripe for a revolution of some sort. Fifteen or twenty years ago, when a living profit was obtainable, such a scheme would scarcely have been dreamed of, far less published. Now, I do not know if Mr. Ferguson is a worker or only a talker, but I am bound to say that if his powers of initiation and organisation are equal to his ingenuity, and he makes an attempt to float his company, he will meet with considerable support from the more exasperated members of the retail drug trade. In view of such a possibility, I wish to ask proprietors if it would not be good policy on their part to get ahead of Mr. Ferguson. In the matter of catering for retail favour, they have a decided advantage over him in the fact that there is a "goodwill development association" all ready to hand for their immediate use. I refer, of course, to "The Proprietary Articles Trade Association," of 2, Stonecutter Street, London. Whether this big analytical order ever gets executed or not, there remains abundance of reason why advertisers of patent medicines, foods, etc., should try to conciliate the retail trade. Substitution, at once the retailer's life-blood and the proprietor's bane, is more rife than ever, and is now directly fostered by several large houses, which put up neatly packed goods

for the very purpose. If proprietors want a remedy, they have it in their own hands. When they forbid undue cutting and ensure a fair profit, substitution will dwindle and goodwill return. I do not mean that the chemist will cease to advertise and push his own specialties; I mean that he will cease to set them up as direct barriers between the proprietor and the public. Therefore I say again, "Join the anti-cutting brotherhood, good sirs, and we will forgive and forget the past." I warrant those who do that they will steal the wind from Ferguson's sails, and that their own "sales" will be fuller thereby.

69, Loughborough Road, Brixton, S.W. WILLIAM JOHNSTON.
March 2, 1896.

EARLY CLOSING FOR CHEMISTS.

Sir,—I was not a little surprised when I read your remarks in the column headed "Parliamentary Intelligence" anent the "Shops Early Closing Bill," and am very much disappointed to find you throwing cold water on what would be a real *magnum bonum* for the majority of chemists. I have turned up the indices of the Journal for the last two vols., and can neither find a word of praise nor of support for a measure which so materially affects the interests of chemists. You need not be surprised at so few becoming connected with the Society when it does so little for the sake of the trade. True you say it has petitioned in favour of certain measures enumerated on page 172; it has also consistently promoted the higher education of chemists, but how can that be accomplished except by having shorter hours, and therefore time for study? I must say, further, you can have the interests of the trade very little at heart when you find "it difficult to see why chemists should not enjoy the same degree of freedom from the pains and penalties of the Bill as that accorded to refreshment house keepers, publicans, tobacconists, and newsagents." Well, after this, I can only think of your higher education fads as a delusion, for to class an intelligent body of men like chemists along with publicans, etc., passes my comprehension. Why should chemists be exempted from the provisions of the Bill, and where is the freedom they would have in being exempted, and what time is there for freedom after nine, and, in some cases, nearly ten o'clock at night? Freedom you call by the wrong name, I would call it slavery. Here am I engaged every night until after nine, Saturdays until eleven, all because others keep open, besides Sunday duty. Where is the time for freedom or recreation even after hours like these, either here or anywhere else? I sincerely trust that the saving clause for chemists will not be deleted, but will pass in spite of the protest (*sic*) of the *Pharmaceutical Journal*. In conclusion, I will earnestly consider whether or not I ought to renew my subscription to the Society for the current year.

Dundee, March 3, 1896.

EARLY CLOSING.

"CASH CHEMISTS."

Sir,—Mr. Leech's query and Mr. Jackson's reply to the question whether or not limited liability companies can legally use the title of "chemists" opens up an interesting and important subject. Lord Selborne and Lord Blackburn decided in the famous case of *Pharmaceutical Society v. London and Provincial Supply Association*, that limited liability companies could sell poisons, provided they did so by means of a qualified assistant, and as the use of titles and the selling of poisons are referred to in the same sections of the Act it might appear that this decision covered both points. There is, however, a difference between the two cases, and this difference might, in my view, influence the decision of the matter should a case be brought forward. Had Lord Selborne and Lord Blackburn decided that the limited companies were the sellers and could sell poisons then it appears to me such companies could use the titles of chemists, druggists, etc. The decision, however, was to the effect that the qualified assistant was *de facto* the seller, and the question arises, Are limited liability companies *de facto* chemists? Surely not. In the one case the public are so far protected by the poison being sold by the hands of a qualified chemist. In the other case the public are misled and deceived when "Smith, Jones, and Robertson, Limited," use the title of "chemists," when none of them has passed the necessary examinations. If these companies can use the titles of "chemists" or "druggists," what is to hinder them also using those of "pharmaceutical chemists" or "pharmacists"? The evil is spreading, and it seems to me that the sooner a test case is proceeded with to settle the point, the more easily will it be settled in the end.

Edinburgh, February 24, 1896.

CLAUDE F. HENRY.

"CASH CHEMISTS."

Sir,—I think the above title requires further attention than it has yet received, so far as limited companies are concerned. Although the House of Lords ruled that a Corporation could carry on the business of chemists without qualification, providing they did so under qualified management, these limited companies can scarcely be acting legally when they use the word chemist in connection with any of their establishments which are not under qualified management. To my mind, the decision of the Lords was never intended to apply to companies composed of seven unqualified individuals only (in many cases one-man companies), but to such concerns as the Civil Service or Army and Navy Stores, where perhaps a thousand or more shareholders are trading with themselves, and where the drug department is under the management of a chemist whose name appears on all the labels sent out from that department. If this is the correct reading of the law there should be plenty of scope for action, the sooner the better. Whilst dealing with this subject of company trading, there is one little matter connected with it which I have never seen or heard satisfactorily answered; and that is the labelling of poisons. As a rule, the labels of these proprietors of many shops bear only the name of the company, followed by a list of towns in which they have establishments. Whilst an individual chemist is compelled to exhibit his name and address on the label attached to each article sold. How is it these companies are not compelled to do the same? For the sake of argument we will suppose a case of poisoning occurs in some remote village, and the article employed bears the name of a Drug Company, with shops in perhaps twenty different towns, without any address except perhaps the names of half a dozen of the principal towns, etc.; how are the authorities going to trace the sale? This may seem only a trifling matter, but the trade throughout is hampered by trifles, and I do not see why these companies should go clear of them. The remarks of Mr. Jackson, of Blackpool, in a recent issue, as to our "newly-fledged" members adopting the title of "cash chemist" are uncalled for. When we are fully protected, as are the professions he mentions, we will then avoid these "distasteful" titles.

Hull, February 25, 1896.

A. RICHARDSON.

ANSWERS.

"QUESTA."—The date of publication is very uncertain. A sufficient interval is always allowed to elapse before it is used in the connection you mention. See answer to other question under "Notes and Queries."

T. W. WHITE.—We fail to recall the statement you refer to. The salt you require is the acid potassium metantimonate, $K_2H_2Sb_2O_7 \cdot 6H_2O$.

ERRATA.

BENEVOLENT FUND.—The Secretary of the Pharmaceutical Society requests us to note that in the list of subscribers to the Benevolent Fund, published as a special supplement to last week's issue of the *Pharmaceutical Journal*, the following names were omitted:—Halifax, Brierley, J. B., 2s. 6d.; London, Dunn, E. B., 5s.; Winchcombe, R.S.O., Hall, A. L., 10s.; Wolverhampton, Weaver, A. C., 10s. 6d. The following amendments are also necessary:—Page xv., Wells, A. J., Great Yarmouth, 10s. 6d. instead of 2s. 6d.; page ii., Watts, J. W., should be under Bristol, not Beaminster.

OBITUARY.

SMITH.—On February 29, Walter Smith, Chemist and Druggist, Glasgow. (Aged 41.)

WARDROPPER.—On February 29, Paul Wardropper, Chemist and Druggist, Cullercoats. (Aged 92.) Mr. Wardropper was a native of Sunderland, and until a short while ago took an active part in business. It is said that he was the oldest chemist and druggist in the United Kingdom. The veteran pharmacist was of the most kindly sort, and when a circular calling the trade together reached him, never failed to express his regret that he could not meet his fellow pharmacist. He has been able to say "I am too old to be out of my home at night" for a wondrously long time.

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs. Bennett, Bindloss, Brown, Clague, Clarke, Grierson, Harrison, Henry, Hill, Johnston, Keen, Knight, Morris, Parkinson, Polley, Reynolds, Russell, Turner, Walker, Wretts.

THE PHARMACY OF PHOSPHORUS.

BY W. MARTINDALE, F.C.S.

Phosphorus and its compounds have been used for about a century and a half as medicinal agents. Interesting papers have lately appeared* on the history of the use of phosphorus in medicine and pharmacy, but my intention is to refer more particularly to its present use.

The compounds of the oxides of phosphorus—phosphates, pyrophosphates, phosphites, and hypophosphites, and also those of its chemical ally arsenic, which it somewhat resembles in its therapeutic action in skin and other diseases, and of which, commercially, it is apt to contain traces of impurity—are relatively not so poisonous as the elements in their free state; in fact, the higher oxides of both are comparatively non-poisonous as compared with the pure metalloids.

Phosphorus exists in two, or probably three, allotropic conditions, but in pharmacy we only use phosphorus in its ordinary condition as stick or vitreous phosphorus. The red or amorphous phosphorus is rarely prescribed, and is supposed to be, if pure, physiologically inert.

The salts of the oxygen compounds are mostly soluble, there is no difficulty in dispensing them in aqueous solution, and on the whole they are comparatively palatable, but the administration of phosphorus in a free state, or in solution in a free state rather than chemically combined, presents pharmaceutical difficulties, as it is an acrid poison and causes gastric derangement with unpleasant eructations, which render its agreeable administration in large doses hardly possible.

Phosphorus does not melt below 111° F., and unless it be administered in the state of solution, or in very fine sub-division by emulsion or otherwise, it is doubtful whether it is completely assimilated or produces all its therapeutic effect. It would be preferable to administer it in solution if the solvent were otherwise suitable. At the ordinary temperature it requires about 320 volumes of absolute alcohol, 200 volumes of absolute ether, 50 volumes of chloroform, 100 of Dutch liquid, and about 100 parts of most fixed oils and fats to dissolve it, but the exact solubilities are difficult to ascertain. Being insoluble in water, it is thrown out of solution when added to this as a vehicle for administration, if the solvent be miscible with water. It is soluble also in, or rather combines with, several essential oils, such as those of turpentine, peppermint, neroli, bergamot, lavender, rosemary, etc. It is also soluble in melted resins, but not unchanged in some. These, therefore, essential oils and many resins would appear to be incompatible with phosphorus, either as excipients or correctives.

My first pharmaceutical experience in working with it was for the use of the lower animals, making phosphorus paste, in fact, for the purpose of destroying rats, mice, and blackbeetles. This was composed of phosphorus, comminuted by shaking it in hot water until cold, and mixed with sugar, lard, and oatmeal. This compound is said to prevent the mal-odour of decomposition.

Since then we have had preparations of it in the free condition made official in the British Pharmacopœia, two formulæ for phosphorated oil and also two for phosphorus pill.

The Unofficial Formulary of the British Pharmaceutical Conference has a compound tincture and an elixir, and the United States Pharmacopœia has an elixir, a pill, and a spirit or tincture. I mention also in the 'Extra Pharmacopœia' the following as being used medicinally:—Æther phosphoratus (French Codex, 1839), perles of phosphorated oil, phosphorated cod-liver oil, a phosphorus pill (special), sebum phosphoratum, and compound pills of this containing iron, quinine, and strychnine or nux vomica.

Some of the before-mentioned are liquid preparations, and on this account, notwithstanding their being active therapeutically, are repugnant to the taste and stomach, and generally considered unpalatable. Others are in a pilular form, or perles, and are apt to be quickly oxidised from the great affinity of phosphorus for oxygen, unless well protected from the air, or, if so protected, the composition or covering may be so perfect that it may withstand the digestive action of the system when it is administered, as was the case with the pill in the 'Additions to the British Pharmacopœia' of 1874 (*Ph. J.* [3], iv., 902).

Phosphorated Oil.—Of the liquid preparations, this, which is official—containing about 1 per cent. of phosphorus dissolved in prepared almond oil, and the dose of which is stated to be 5 to 10 minims (greatly too much)—is exceedingly nauseous, administer it as you will. Dr. Redwood suggested its being emulsified with yolk of egg, liquor potassæ, syrup of tolu, and chloroform water (*Ph. J.* [3], iv., 991), but it is never employed medicinally. It may be used as a toy, exhibiting its peculiar phosphorescence, or for producing evanescent "writing on the wall," but the medical profession and the public refuse it. It appears to be a nearly saturated solution at the ordinary temperature; although as much as 2 per cent. of phosphorus can be dissolved by the aid of heat and the exclusion of air, nearly one-half crystallises out on cooling. It, however, may be conveniently administered in the form of perles or capsules, which are largely used, containing a dose equal to 1/100th, 1/65th, or 1/32nd grain of phosphorus respectively; but, unfortunately, they are irregular both in size and in the amount of contents, still they are well protected from the air.

Phosphorated Cod-Liver Oil contains about 1/100th grain in a drachm. It may be made by adding one volume of the official phosphorated oil to fifty-nine volumes of cod-liver oil. It is unpalatable, and quickly oxidises and coats the sides of the bottle. Still it may be kept reasonably stable in capsules, containing one drachm in each.

Æther Phosphoratus.—This is best prepared by comminuting the phosphorus, 1 part, in warm absolute alcohol, 4; decanting and adding absolute ether 20; then macerating one month, and decanting. It is better to decant it when dispensed, keeping the excess of phosphorus in the bottle; about 1 part in 200 volumes is dissolved. It is an active but an unstable preparation, and has been deleted from the last edition of the French Codex.

Spirit of Phosphorus, U.S.P., contains 0.12 per cent., dissolved in absolute alcohol; it too is unstable. A similar preparation has been recommended here (*Ph. J.* [3], xi., 468), but as it quickly oxidises it is an unsatisfactory preparation.

Compound Tincture of Phosphorus, B.P.C., is prepared by dissolving phosphorus, 1 part, in chloroform, 30 volumes, and adding it to absolute alcohol so as to contain 1 part of phosphorus in 600 volumes. Although it keeps without depositing, it becomes acid, and requires to be freshly prepared. When diluted with four volumes of glycerin, it forms the *Elixir of Phosphorus*, B.P.C., which contains 1/50th grain in a fluid drachm. If freshly prepared this is palatable and well borne by the stomach.

Various other formulæ for liquid preparations of phosphorus have been suggested. The late Mr. John Williams recommended (*Ph. J.* [3], v., 210) a solution of phosphorus in glycerin, to which an equal volume of absolute alcohol was added, containing about 1/30th grain in a fluid drachm. It was a modification of a formula recommended by Mr. Ashburton Thompson (*Ph. J.* [3], iv., 684). It is more difficult to prepare, and even more unstable, than the B.P.C. elixir.

Phosphorus appears to form compounds with albumin, which preserves it from oxidation as well as from phosphorescence when

* *Pharm. Journ.* [4], i., 433, 513.

in solution, and Mr. Urwick has suggested a formula in which albumin, cane and milk sugars, and glycerin, are combined with phosphorus to make a comparatively palatable preparation—liquor phosphori albumatus (*Ph. J.* [3], viii., 253).

The avidity that phosphorus has for oxygen renders it necessary that liquid preparations should be as freshly prepared as possible. They should also be kept from the light in a cool place in perfectly closed bottles. The same remarks in a less degree apply to phosphorus in a pilular form.

Pilula Phosphori.—The official pill is composed of phosphorus incorporated with balsam of tolu and yellow wax under hot water. This is directed to be kept under water, and two parts are to be incorporated with one of curd soap when dispensed. It contains about 1 in 90. The addition of soap has been made, as the previously official pill was, as I showed, completely undigested (*Ph. J.* [3], iv., 920). Still, it has never found favour; the mass becomes hydrated by being kept under water, and the pills of special manufacturers, some of which are beyond reproach, while others are at times insoluble, meet with greater demand.

Messrs. J. Bell and Co. had previously published (*Ph. J.* [2], vii., 615), a formula for phosphorus pills made by dissolving 1 per cent. of phosphorus in melted suet, and coating the pills with gelatine; these were very tedious to prepare. As an improvement, in 1866 I devised a mass, using prepared cacao-butter in place of suet, for the late Dr. Tilbury Fox. This contains 1 per cent. of the drug (*Ph. J.* [3], i., 414), the pills of which I cover with sandarach solution. These masses contain the phosphorus in perfect solution, still for general dispensing they are not altogether satisfactory, as they require an even temperature both to make and to keep them, and to be well excluded from the air and light.

As phosphorus dissolves in less than its own weight of bisulphide of carbon, advantage has been taken of such a solution to mix it with an inert powder or suitable mass, so as to obtain the drug in a finely comminuted condition, perfectly distributed through the mass, on the evaporation of the bisulphide. While traces of it are present in the mass it acts as a preservative and checks phosphorescence or oxidation. Some may object to the use of bisulphide of carbon on account of its disagreeable odour, yet if purified it is not so disagreeable, but has an agreeable chloroform-like taste, and I think it is not so deleterious as has been supposed.

Mr. R. H. Parker suggests the employment of such a solution by diffusing it through liquorice powder, as in the following formula (*Ph. J.* [3], xxv., 197):—

Phosphorus.....	The prescribed quantity for 24 pills.
Bisulphide of carbon	30 minims.
Liquorice root in powder	24 grains.
Glycerin	4 minims.
Tragacanth in powder.....	2 grains.
Syrup	A sufficient quantity.

This formula has the disadvantage of using a large excess of the bisulphide, and the tendency to deflagration of the phosphorus as the latter evaporates. It is true the pills apparently keep well, as after nearly seven years I find they still contain phosphorus in its free condition. Probably some of the bisulphide gets locked up in the interior of the pills, and thus fixes the phosphorus, as they have the aromatic taste of the bisulphide still, and if cut in two are phosphorescent in the dark.

Messrs. Allen and Hanburys also published a formula, in which they employed the phosphorus solution in bisulphide. This mass, I am told, works well on a large scale, but it is not advisable, as I have before mentioned, that phosphorus should be combined with resins, which may interfere with its therapeutic activity. These pills are better adapted for pearl-coating than for covering with varnish

extemporaneously. Pearl-coating covers a multitude of imperfections. The formula is as follows (*Ph. J.* [3], vi., 921):—

Pil. Phosphori cum Sapone.

Phosphorus	2 grains.
Bisulphide of carbon	10 minims, or <i>q.s.</i>
Hard soap in powder,	
Guaiacum resin in powder, of each ..	35 grains.
Glycerin	12 drops.
Liquorice root in powder	12 grains, or <i>q.s.</i>

to make a mass of 100 grains. To be divided into pills of the strength required, and varnished or "coated" in the ordinary way.

Many pharmacists have written on the subject of phosphorus pills, including Messrs. Proctor, A. C. Abraham, Gerrard, Haffenden, Appleby, and Millhouse, most of whom recommend the use of bisulphide of carbon as a first solvent. Many of their formulæ I have tried, but to meet the requirements of an official formula, after numerous tentative experiments, I suggest the following:—

Pilula Phosphori.

Phosphorus.....	10 grains.
Oil of theobroma, cut small	490 grains.
Bisulphide of carbon	200 fluid grains.

Dissolve the phosphorus in the bisulphide of carbon contained in an amber-coloured stoppered phial, add the oil of theobroma, and dissolve by agitation aided by the heat of the hand: then, if necessary, increase the volume to 750 fluid grains by the addition of more bisulphide of carbon. This solution will contain 1 part by weight of phosphorus in 75 fluid parts. If cooled below 59° F. it partially solidifies, but readily liquefies at a slightly higher temperature.

When dispensed, after liquefaction by the warmth of the hand, take of—

Above solution.....	54 fluid grains.
Gum acacia in powder	18 grains.
Syrup, by weight.....	18 grains.

Mix the solution quickly with the acacia, add the syrup, triturate into a uniform mass, and when most of the bisulphide has evaporated, roll it into twenty-four pills.

The mass of which these pills are composed will contain about 1 per cent., and each pill about 1/33rd grain of phosphorus. Pills of other strengths may be prepared by dividing the mass into a proportionate number of pills.

The pills, after a little exposure to allow still more of the bisulphide of carbon to escape, may be coated with an alcoholic solution of sandarach, or other covering; they should be freshly prepared, and kept in a dark place in well-closed amber-coloured bottles.

The quantity of syrup I have suggested is 18 grains; this may be added from a dropping tube after ascertaining the weight of a drop. In practice, I find a large drop weighs 2 grains.

If varnished, the pills should be thoroughly dried before being bottled, else the traces of bisulphide left remaining in them may soften the coating, and cause them to adhere. They keep well if the covering be perfect. They take a pearl coating without much difficulty. They should, of course, be kept cool, and not carried in the waistcoat pocket, or the grease may permeate the coating.

These pills have the advantage over the ordinary cacao-butter pills that they are much more easily made, and are more gradually assimilated; and as they are not so quickly dissolved they are less likely to upset the stomach. More than half of the phosphorus will be in solution in the cacao-butter, the remainder with the cacao-butter solution forms a solid emulsion with the acacia and syrup.

It may be objected that the quantity of bisulphide of carbon recommended is excessive. I tried experiments to lessen this by using an equal quantity of the bisulphide to that of the phosphorus and adding the cacao-butter, melted at 100° F., to this solution contained in a bottle, and shaking well. At first a perfect solution was obtained, but gradually about one-third, apparently, of the

phosphorus separated out in a solid granular condition. I tried even three times this quantity of bisulphide, but still much of the phosphorus separated. As I before said, the solubility of phosphorus, although difficult to ascertain, is only slightly over 1 per cent. in such a fat as cacao-butter. In the pill mass, it is true, it is present to the extent of 2 per cent. of the fat in it, or about 1 per cent. of the whole, but what has separated will be in a very finely comminuted condition. If a small quantity of the bisulphide would have answered, the mass could have been weighed when dispensed; this would have been more convenient. Less, I dare say, may answer the purpose, but my desire is to make a mixed liquid solution containing 1 part of phosphorus in 75 volumes, which on evaporation of the bisulphide will yield 2 per cent. in the cacao-butter, and 1 per cent. in the finished mass. Then again there is the uncertainty of the strength of the cacao-butter and bisulphide solution after having been frequently warmed; still, this can vary but little, as the warmth of the hand, as I have said, is sufficient to liquefy the mixture, and the fat will have a tendency to prevent quick evaporation. Working on a large scale, the rounding of the pills might be difficult, as they want body, and the pearl-coating of them might not be so easily done as of pills containing resin; they might in fact if slightly heated during this process, stick together owing to the melting of the cacao-butter. The use of syrupy glucose to replace the syrup and part of the acacia would give more "body" to the pills, and enable the mass to be better worked in quantity; glucose is much in favour with the large pill-makers, but it is not official, and not easily defined, still it might be used as an excipient.

This mass is best worked at a temperature a little over 60° F.; there might be an objection to their being not easily prepared in warm climates. I find, practically, if coated with sandarach, they soften about 90° F. in water, but are probably much more permanent in the air.

The difficulties in exhibiting phosphorus in pilular form are numerous, and the above is the best I can suggest for the practical retail pharmacist. In this formula he has a solution in which the phosphorus is kept from oxidation, is fairly stable, and can be dispensed into pills in a short time. Furthermore, the excipients acacia and syrup may be lessened to give place to other medicaments that the prescriber wishes to combine with phosphorus.

Sevum Phosphoratum (10 per cent.).—This I have recommended elsewhere for preparing a mass to blend with other medicaments with which the phosphorus may be prescribed. It is prepared by dissolving phosphorus, 1 part, in bisulphide of carbon, 5 parts, adding suet, 9 parts, mixing thoroughly, and allowing the bisulphide to evaporate. It contains the phosphorus in a finely comminuted condition, and if mixed with an equal quantity of compound tragacanth powder, together with the other drug—quinine, reduced iron, or strychnine—adding a few drops of chloroform, the vapour of which prevents phosphorescence or oxidation—it can be readily massed by the addition of mucilage of acacia or syrup. Such pills, if covered with sandarach solution or pearl-coated, will keep a reasonable time, but the suet, like the liquid preparations of phosphorus, and all pills containing phosphorus, are better freshly prepared. This phosphorated suet is unnecessarily strong, and for making compound pills might be replaced by a 4 per cent. oil of theobroma solution produced by bisulphide, similar to the 2 per cent. solution previously recommended for an official pill of phosphorus alone.

I had intended to chemically test the preparations as to their strength, but pressure of other work, and the short time I have had to prepare my paper, have prevented my doing so.

NOTES ON THE PREPARATIONS AND FORMULÆ OF THE BRITISH PHARMACOPŒIA.

SYRUPS.*

The syrups of the Pharmacopœia form a group of preparations of considerable importance both to the medical practitioner and the pharmacist. Whilst several of their number rank amongst the most frequently prescribed of official galenicals, a glance at the indexes of current pharmaceutical literature reveals the fact that many of their formulæ are found more or less imperfect and demand revision. Indeed, the *syrupus ferri iodidi* may be said to divide the honours with *spiritus ætheris nitrosi* in periodically furnishing food for pharmaceutic thought or discussion.

Many of the syrups are extremely prone to undergo decomposition or fermentation. In order, therefore, to avoid the vexatious inconvenience and loss incidental to such changes it is essential, firstly, that the official formulæ be as perfect as possible, and, secondly, that strict attention be paid not only to the methods of preparation indicated, but also to the subsequent storage of the syrups themselves. With a few exceptions the present formulæ are susceptible of improvement either in permanence, elegance, or palatability.

The Pharmacopœia makes no reference to the storage of syrups, although in many cases this point is almost as important as care in manufacture. Generally it may be said that the finished syrup should be allowed to become quite cold, and the specific gravity adjusted, if necessary, before being bottled. The bottles should be quite dry, filled almost to the neck, well corked, and stored in a place not subject to any great variation of temperature. If a syrup be bottled whilst warm, aqueous vapour condenses on the upper interior surface of the vessel, and, trickling down on to the syrup, forms a weak saccharine layer, extremely favourable to fermentative change. A similar result is brought about by the influences of light and heat, as is often noticed in the case of partially filled bottles of syrup kept in exposed positions.

Syrupus.—The most suitable sugar for use in the preparation of "simple syrup" is that known as "granulated pure cane sugar," and not lump sugar, which constitutes the official variety. It should be practically free from glucose by the sulphate of copper test, and should be dissolved at a gentle heat in the distilled water, the latter having been previously well boiled and poured on the sugar whilst warm. Boiling the syrup itself, as is sometimes recommended, is not advisable, unless care be taken to maintain the gravity low by the occasional addition of water during ebullition, otherwise a certain amount of darkening in colour is liable to take place. It is quite exceptional to meet with a commercial sugar which answers to the Pharmacopœia description of "forming a clear bright syrup" by mere solution in water.

Clarification by filtration is at once the simplest and best means of ensuring a brilliant product. The following method works well, even with small quantities:—Add to the warm syrup pulped white filtering paper, with a very little washed French chalk in fine powder. Pour the mixture on to a moistened flannel bag or strainer, returning the first portions which come through until the syrup passes bright. Finally wash the strainer with boiled distilled water to make up the required weight. The contrast between two syrups prepared by the simple admixture of a chemical or other solution (see suggested formula for *syr. ferri phosph.*), in the one case with filtered and in the other with unfiltered simple syrup, is very marked; absolute brilliancy can only be secured by careful filtration. The preparation of syrups by cold percolation is given as an alternative process in the U.S. Pharmacopœia, but

* This article has been in type several weeks, but publication has been deferred through lack of space.—[Ed. *Pharm. Journal*.]

trial in this country has not shown it to possess any advantage over the foregoing.

Syrupus Aurantii.—This syrup is a great favourite with the medical practitioner, being more frequently prescribed than any other official syrup. A more palatable article might be prepared by using tincture of fresh orange peel in the place of the present tincture. This produces a more aromatic and less bitter preparation, somewhat approaching that given in the United States Pharmacopœia, which is made from the rind of the sweet orange. An elegant and finer-flavoured preparation may be made by the following formula:—

Simple syrup 7 fl. ozs., 5 fl. drs.
 Concentrated infusion of orange peel 2 fl. drs.
 Soluble essence of bitter orange 1 fl. dr.

Mix thoroughly.

Concentrated infusions (or "essences") will, it is hoped, find a place in the forthcoming Pharmacopœia.

Syrupus Aurantii Floris.—This formula does not appear to call for any alteration. It might, however, be as well to state under "Aqua flor. aurant." that the kind intended to be used for the syrup is that known commercially as "triple," the present B.P. description being somewhat ambiguous. This syrup is not much in vogue, which is somewhat remarkable, seeing that the "water" is so popular as a medicinal flavouring agent. Perhaps this may be due to the method of preparation, which does not commend itself to the pharmacist or to the prescriber on account of its weakness of flavour.

A distinctly pleasant syrup can be made by dissolving the sugar without heat in the water of triple strength as imported, without dilution:—

R. Aq. flor. aurant. trip. 2 parts.
 Sacchar. alb. 3 "

This will produce a syrup of a similar gravity to that now used, but decidedly stronger in flavour, and since it contains a larger percentage of oil of neroli, of a superior keeping property.

Syrupus Chloral.—This form possesses many good points. It is a simple preparation and accurate; this last feature is a great desideratum in dealing with a more or less potent substance, such as chloral. It lacks one thing, that is, delicacy of flavour, which is of paramount importance with this class of galenicals. The syrup does not cover the nauseous taste, and invariably some flavouring agent is added to mask the pungency. The palatability of this syrup might be increased and the peculiar acrid taste of the chloral hydrate better disguised, either by the substitution of syrup of orange flower for the simple syrup in the formula, or the addition of a flavouring agent, such as tincture of lemon peel. Mr. C. Umney, as far back as 1870, proposed that it should be flavoured with cinnamon, nor is precedence wanting with regard to flavouring this syrup, for the French 'Codex' and the Belgian Pharmacopœia have theirs flavoured with peppermint, also the Dutch Society for Advancement of Pharmacy have one made with oil of curled mint, and in America a flavoured syrup has been advocated (*American Journ. Pharm.*, Sept., 1881). It would not therefore be a very radical innovation if the B.P. syrup were flavoured. This would effectually mask the unpleasant taste, described in the B.P. as a "pungent bitter flavour." The neroli flavour has not that distinctly medicinal taste which is so characteristic of cinnamon, etc.

Syrupus Ferri Iodidi.—Many and varied have been the plans suggested for overcoming the instability of this troublesome member of the group of official syrups, and although the present formula is to a certain extent an improvement on the 1867 one, it has not been quite as successful as was anticipated, and will bear further revision. The chief objections to the B.P. process as it stands are these:—(1) The direction to boil the solution of ferrous

iodide with a portion of the syrup is of questionable utility as a means of preservation, and especially on the large scale, tends to discolour the product; (2) The specific gravity is too high, crystallisation of the sugar taking place sooner or later; (3) loss of iodine results from volatilisation by the heat generated during digestion of the materials in a flask, also as hydriodic acid during the subsequent boiling, and finally as ferrous iodide absorbed by the filter paper. No allowance being made for this loss, the syrup cannot contain the stated amount of FeI_2 , as 4.3 grains per fluid drachm is the exact equivalent of the quantity of iodide produced by the 2 ozs. of iodine in the formula.

A far more permanent and elegant syrup of iodide of iron may be obtained by the use of a small proportion of hypophosphorous acid. Pharmacists holding strictly purist views have severely discountenanced such an addition, but until the minute amount present (about 1/12th per cent. real H_3PO_2) can be shown to have the slightest physiological effect, or to modify in any way whatever the therapeutic action of the syrup, no serious objection can be raised to the authorisation of this process in the Pharmacopœia. Solution of ferrous iodide preserved from oxidation by hypophosphorous acid has been in general use by medical practitioners and pharmacists throughout the country for years past, and there is no evidence to show that the medicinal value of syrup prepared from it is not equal in every respect to that of the official syrup.

The following is suggested as an amendment of the present formula:—

Take of—

Iron (wrought nails) $\frac{1}{2}$ oz.
 Iodine 2 "
 Refined sugar 26 "
 Distilled water 13 fl. oz., or a sufficiency.
 Hypophosphorous acid 40 m.

Place the iron in a porcelain dish with 3 fl. ozs. of the water, and add the iodine in three or four successive portions, allowing combination to take place and the liquid to cool between the additions. When a drop of the liquid taken out on a glass rod is seen to be free from yellow tint, heat the contents of the dish to gentle ebullition for five minutes. Filter the hot liquid, washing the dish and contents of filter with distilled water to make the filtrate measure $3\frac{1}{2}$ fl. ozs. To this add the hypophosphorous acid, and mix thoroughly. Prepare a syrup by dissolving the sugar in 10 ozs. of water with the aid of a little heat. Filter whilst warm, and wash the filter with distilled water to $27\frac{1}{2}$ fl. ozs. Mix with the solution of iodide of iron, and make the product weigh 2 lbs. 10 ozs. by the addition, if necessary, of distilled water. The specific gravity should be about 1.355. It contains about 4 grains of iodide of iron in 1 fl. drachm. A quantitative test for FeI_2 might also be inserted here.

(To be continued.)

DETERMINATION OF CREATININE.—R. Kolisch proposes for the determination of creatinine in urine a new method, by precipitation with mercuric chloride. Two hundred C.c. of urine is precipitated with milk of lime and calcium chloride (together 20 C.c. of solution) and filtered. Of the filtrate 200 C.c. is acidified with acetic acid and concentrated; the residue is exhausted with alcohol, and to the solution the following reagent is added: Mercuric chloride, 30.0; sodium acetate, 1.0; acetic acid, 3 drops; absolute alcohol, 125.0. The creatinine is precipitated and can be determined by determining the nitrogen or by decomposing the precipitate with sulphuretted hydrogen and titrating the creatinine. Kolisch finds that a concentrated solution of mercuric chloride precipitates both creatinine and urea, but the urea precipitate dissolves in acetic acid, whilst the creatinine and mercuric chloride compound is insoluble (*Wiener Klin. Rundsch. and Pharm. Centralh.*, xxxvi., 323).

THE OLD FIRM OF GODFREY.

BY JOSEPH INCE,

*Late Director of Godfrey's Laboratory.**(Continued from page 169.)*

Godfrey viewed in his trade relations was wise even in his generation, for he recognised the value of bold advertisement. He informs his customers that, as "Chymist in London," he continues to prepare faithfully all sorts of remedies, Chemical and Galenic. Good cordials may be had at his establishment, as well as Royal English Drops, Powders of Kent, Zell and Contrajerva, Cordial Red Powder, Gaskoin's Powder, with and without Bezoar, English Smelling Salts, true Glauber Salt, Epsom Salt, and Volatile Salt of Ammonia, stronger than the former. Human Skull (quoted as Mummy in the old price book, at 2s. 6d. per ounce), Essence of Ambergris, a list of Essences, including Essence of Viper and Essence for the Hair, together with Sundry Spirits and Arquebusade, are respectfully offered to the public.

Godfrey also adds, "for the information of the curious," that he is the only one in London who makes inflammable Phosphorus which can be preserved in water, Phosphorus of Bolognian Stone, Flowers of Phosphorus, Black Phosphorus and that made with Acid Oil, and other varieties. All unadulterated; every description of good drugs. He sells wholesale and retail.

N.B.—He sells solid Phosphorus wholesale, fifty shillings an ounce, and retail, three pounds sterling the ounce. It is clear that Ambrose had an eye to business; his view was, not so much to keep a shop, but that the shop should keep himself and family, and these prices rendered the matter feasible. Contemporary records prove that this was about the character of the pharmacy of the seventeenth and eighteenth centuries. Besides the dispensary of the Society of Apothecaries, established in 1623, and the manufacturing chemical laboratory added to it in 1671, establishments, such as that of Godfrey, were few. There was little competition, and success depended upon the personal reputation of the proprietors. Some of these were probably apothecaries who preferred to confine their attention to pharmacy rather than follow the prevailing tendency to cultivate medical practice. But at the same time a class of men rose who were totally disconnected from the medical profession, and were not apothecaries; they prided themselves on choice drugs and special preparations, and to them we may trace the origin of pure pharmacy as a separate and honourable calling. Some light will be thrown upon the actual condition of pharmacy by recollecting that this special period marks the date of the commencing distrust in, and final emancipation from, the belief in alchemy, a creed hard to die; a creed, moreover, which had previously influenced some of the wisest and best men of the age.

Alchemy was a groping after truth, and it ceased naturally when science step by step was based on accurate investigation and direct experiment. Medicine, chemistry, and pharmacy threw off the yoke of empiricism, and there began to appear the true physician, chemist, and pharmacist. The intermediate stage was the apothecary: but soon individual chemists became famous not only for their preparations, but for the character of their drugs. They found sufficient scope for their exertions in this enlarged field of labour, and to them is due the foundation of Historic Houses and the creation of the class now called Chemist and Druggist.

It is unnecessary to enter into details, as the history of this period has been graphically described by Mr. Jacob Bell in his 'Historical Sketch of the Progress of Pharmacy in Great Britain.' It may be mentioned that the House of Corbyn was founded about 1690; Plough Court, circa 1715, by Sylvanus Bevan, an apothecary, the establishment being rendered famous by the admission of William Allen in 1794, who for a time was in partnership (1797) with Luke Howard. Still later in date came the House of Savory, founded in

1794 by Mr. Paytherus, surgeon and apothecary, and that of John Bell and Co. in 1798.

Some few establishments in the country also trace their origin to this period—for instance, Randall and Son, Southampton; Reynolds and Branson, Leeds; Southalls, Birmingham, and others, to which future reference will be made.

It can hardly be said that contemporary medical literature was much help to the progressive chemist. Most of the works belonging to the close of the seventeenth and the commencement of the eighteenth century are disfigured by puerilities which first excite amusement and then weariness. Samuel Smith,

bookseller, in St. Paul's Churchyard, published his list of medical books imported into England from different parts of Europe, 1687, at the Sign of the Prince of Wales. In the list we find 'Saxonix Opera Medica,' 1680; 'Collectanea Chymica Leydensia,' 1684 Charas, 'Pharmacopeia Regia,' 1683 (a modern translation); in its day a celebrated treatise, with regard to which Professor Tilden writes, that in the fourth part we have a collection of recipes, amongst which, whatever its value, an "Ointment to catch Fish," compounded of man's and cat's fat and powdered mummy, can hardly be thought to hold a fitting place in a Royal Pharmacopœia. 'La Chimie de Lemery,' 1685. Van Helmont, 'Fundamenta Medica,' 1682. Matthœi 'Experimenta Chymica,' 1683.

We must not forget to mention an edition of 1685 of 'Sydenhami Opera Omnia,' nor the first edition of Pomet's 'Histoire Générale des Drogues,' published in Paris in 1694. Pomet kept a shop in the Rue des Lombards, which corresponds to our Mincing Lane. Daniel Hanbury remarks (1870), "No work of its class has enjoyed a more deserved and extensive reputation than Pomet's 'History of Drugs.'" The Dispensatorium of Valerius Cordus, 1690, is a remarkable

21 March 1740

To the Church Wardens & Overseers of St. Paul
Covent Garden

Gentlemen

Whose names are unwritten do desire ye will
get Jonathan Probach, a Lunatick, an Inhabitant in the said
Parish, to Bethlem; we having procured a Petition for that
purpose. He who are near neighbours to him, and in continual
fear of his setting his dwelling on fire. If timely care be
taken of him, he may be cured, & be enabled to get his bread,
& ease the parish of the daily troubles & fears he gives it.

Yrs

SPECIMEN OF GODFREY'S HAND-WRITING.

treatise, containing as it does the description of the "Perfect Pharmacist," who should be the right hand of the physician.

In these and similar productions we have no longer the amazing disquisitions which abound in the sixteenth century, but we may take the 'Pharmacopœia Bateana,' edition 1688, the book on which Godfrey had to depend for his pharmacy, as typical of the rest; the well-known Dispensatories and Pharmacopœias, John Quincy; 'The New,' James Alleyne, Dr. Radcliffe's 'Practical,' and others appeared at a later date. Dr. Bate had been physician to Charles I., Cromwell, and Charles II. His Pharmacopœia is a collection of recipes now obsolete. Dr. William Salmon brought out an amended edition, "completed with above six hundred chemical processes, and their explanations at large, various observations thereon, and a rationale upon each process." To these were added, with much vaunting, Goddard's Drops. As these turned out to be a product of the distillation of Humane (*sic*) Bones, or rather Skulls, well dried, we may gauge how far Godfrey was indebted to the medical literature of the age for his ultimate success.

Right down to the time when Godfrey became a business man, alchemy had not quite passed away. There is a pamphlet written in his own handwriting describing how a charlatan had possession of Boyle's laboratory for some months, and endeavoured to palm off to distinguished visitors, the philosopher included, his method of transmuting the baser metals into gold. I gave the manuscript to Daniel Hanbury. The style of handwriting is shown in the reduced, facsimile (see p. 205). It may be admired as being extremely legible and also for perfect uniformity.

Ambrose Godfrey died in January, 1741. He left three sons: Boyle Godfrey, the eldest, turned physician, and he wrote a book [Miscellanea vere Utilia] under the title of 'Observations.' John, the third son, came to grief. The second son, Ambrose, succeeded literally to his father's name and

to the business—his career was prosperous and uneventful, and he wrote a book, 'The Compleat Course of Chymistry.'

The accompanying illustration is taken from the Prospectus of the work.

The sons of the second Godfrey had the misfortune to inherit a business for which they had little taste; they started life with too much money, an open door to poverty, and gradually they were bought out by Charles Gomond Cooke, so, for the second time, an assistant became the sole proprietor of the ancient firm.

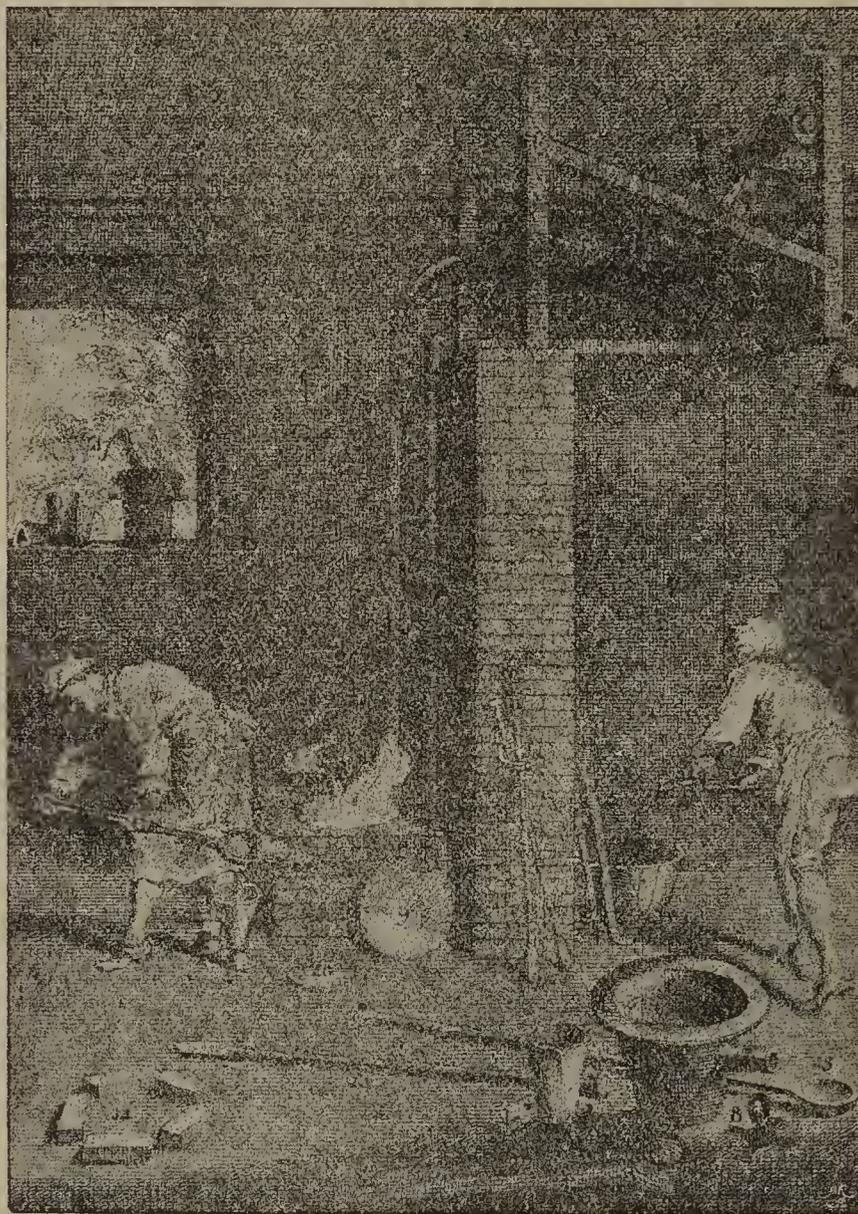
One of these last descendants of the Godfreys devised a Fire-Annihilator, which was brought under the notice of William Pitt.

It was on the plan of a hand grenade, which, on being flung into the flames, would burst with explosive violence and thus subdue the conflagration. The apparatus proved a failure.

On the succession of Mr. Cooke a new phase of pharmacy began and the mediæval ended. This third representative of the house, though short in stature, was an extremely handsome man, whose manner inspired a sort of reverential feeling, which, indeed, was characteristic of the age.

The "Master" was a personage surrounded by respect akin to awe, and was looked up to as a superior being by his subordinates. I never saw him in his own business, but once a year we, as children, were admitted to the august presence, the interview being terminated by the gift of a newly coined sovereign.

There were occasions on which the great man went to church — St. Paul's, Covent Garden, described by the giver, a former Duke of Bedford, as the handsomest barn in England. There was Godfrey's pew in the front gallery, and there on the cushion were the stately row of Bibles and Prayer-books, bound in elaborate and costly fashion. No sooner did Mr. Cooke make his appearance than the ancient dame who was pew opener made a bee-line to "Mr. Godfrey's" seat, and was rewarded with a golden honorarium. Sincere was her regret that he was not more



FROM THE PROSPECTUS OF 'THE COMPLEAT COURSE OF CHYMISTRY.'

as a superior being by his subordinates. I never saw him in his own business, but once a year we, as children, were admitted to the august presence, the interview being terminated by the gift of a newly coined sovereign.



Sic Ignis. Igne.

FIRE ANNIHILATOR. TEMP, CIRCA 1784.

constant in his devotions. One day he went down into the cellarage and quickly reappeared, saying that he felt cold. He sat down by the counting-house fire and shivered; urged to go to bed he reluctantly complied, but the chill proved fatal.

Mr. Cooke's only daughter, who had become the wife of Samuel Platt, a barrister, now succeeded as sole proprietor of the firm, and so continued until the final exodus from Southampton Street.

(To be continued.)

CASTOR OIL SOAP.

BY J. F. BROWN, DOVER.

Having recently dispensed a prescription for pills, one ingredient of which was saponis castor, which was interpreted to mean a soap prepared from ol. ricini, a brief note of the experience gained in making it may be of some service. One ounce of the oil was boiled in an evaporating basin with 60 grains of caustic soda dissolved in 1 ounce of distilled water, for ten minutes, and then 2 drachms of salt dissolved in another ounce of water added, the mixture well stirred, and let stand until cold; $3\frac{1}{2}$ ounces of firm white soap was obtained, and only a little moisture left in the dish. On the lines of Mr. Wood's instructions for making an almond oil soap, *Ph. J.*, 2nd series, vol. xi., p. 415, I dissolved the cake in half-a-pint of boiling distilled water, and stirred in another 2 drachms of salt in 1 ounce of water. After cooling it appeared that the whole of the soap was held in solution, as only a very light flocculent precipitate was perceptible. The same quantities of oil and soda solution formed on cooling a soft semi-transparent jelly, with a somewhat tough skin, which appeared ineligible for pharmaceutical use. On heating it and adding 4 drachms of salt dissolved in 2 ounces of boiling water a cake of soap formed, which when dried in blotting paper weighed $3\frac{1}{2}$ ounces; three-quarters of an ounce only of liquid was left in the dish. When air-dried the soap weighed 3 ounces, and when, after slicing, it was dried again— $2\frac{3}{4}$ ounces. The product is white and firm, but rather crumbly. In order to fit it for use in pharmacy the removal of the remainder of the salt seems necessary, but how to accomplish it in the face of its solubility in a larger quantity of brine is not apparent.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

DONATIONS.

At a meeting of the Library, Museum, School, and House Committee, held on Wednesday, the 11th inst., the Librarian presented the following report of donations:—

To the Library (London).

H.M. Secretary of State for India:

Report of the Indian Hemp Drugs Commission, 1894.

Surgeon-Major C. J. H. Warden, Calcutta:

Seventeen Photographs taken for the Indian Hemp Drugs Commission.

Pharmaceutical Society of Ireland:

Calendar, 1896.

Royal College of Physicians of London:

List of Fellows, etc., 1896.

Kaiserliche Leopoldinisch-Carolinische Deutsche Akademie der Naturforscher, Halle a/S.:

Nova Acta, Bd. 61-64.

Katalog der Bibliothek, Lief. 5-6.

Professor Ed. Schär, Strassburg:

Neuere Beobachtungen über Alkalinität von Pflanzenbasen.

Ueber die Anwendungen der Guajakharz-Lösung (Guajak-tinctur) als Reagens.

Professor François Gay, Montpellier:

Une lignée d'apothicaires Montpelliérains, 1896.

Herr A. Schlickum, Marburg:

Morphologischer und anatomischer Vergleich der Kotyledonen untersten Laubblätter der Keimpflanzen der Monokotylen, 1895.

The following report of donations was presented by the Curator:—

To the Museum.

Sir F. von Mueller, K.C.M.G., M.D., F.R.S., Melbourne:

Kino of *Eucalyptus regnans* and *E. globulus*.

Messrs. Horner and Sons, London:

Specimen of Oil of Aniseed, and of the "Green Aniseed from Cyprus," from which it was distilled.

To the Herbarium.

Messrs. Parke, Davis and Co.:

Specimens of *Grindelia robusta*.

EVENING MEETING IN LONDON.

The evening meeting for March was held on Tuesday the 10th, at 8 o'clock, Mr. Michael Carteighe, President, in the chair. The paper read was on "The Pharmacy of Phosphorus," by Mr. Martindale. It is printed at p. 201, and gave rise to the following discussion:—

Mr. PARKER said phosphorus was very freely prescribed in combination with other ingredients, and he should doubt whether there would not be a difficulty in using the oil of theobroma formula where it had to be mixed with aqueous extracts. The strength of the solution, 1 in 75, might be open to objection, as being an odd number, and he did not see why 1 in 100 should not be employed. He thought there was an objection to having an official formula for solution of phosphorus at all, particularly one containing so volatile a constituent as carbon bisulphide; this would naturally evaporate, especially in the summer, and it would be difficult to know what the exact strength of the solution was except by the fluidity or otherwise of the solution, which was rather a hap-hazard way of judging. He preferred making phosphorus pills *ab initio* from a clean cut piece of phosphorus weighed at the time of dispensing. He had found the formula he worked with very satisfactory, the only objection brought against it being that there was a very small trace of the bisulphide left; but that was not really material, because an almost odourless bisulphide could now be obtained, and the trace which was locked up in the mass could only be found by cutting the pill in two. He had a sample made the previous day in a bottle, which he would hand to the President to open, and see if any smell were perceptible. He had submitted a sample of the mass after it had been made an hour to three pharmacists, and they reported that any smell of bisulphide there might be was completely covered by that of phosphorus.

Mr. JOSEPH INCE thought it very undesirable to have any official solution of phosphorus to be used for the purpose of making pills. It was infinitely preferable to make them from fresh, perfectly unoxidised phosphorus. He knew nothing about the making of such pills on a large scale, but only in retail dispensing, and he was glad to see the three formulæ shown, any one of which might be used in place of the undesirable B.P. method. It was absolutely necessary with phosphorus to have it equally disseminated throughout the entire mass, and from that point of view the B.P. formula was, to his mind, unsatisfactory, and even dangerous. No doubt with extreme care and skill satisfactory pills could be made, but it would be much better to have a method which could be used by anyone of ordinary skill. There was extreme difficulty in getting the phosphorus in such a comminuted form that it could be dispersed with absolute regularity throughout the mass, and he knew of no better way of accomplishing that than by dissolving it in carbon bisulphide. He found Allen and Hanburys' method gave a very good result. Phosphorus had sometimes to be administered in cases of mania and insanity in a more concentrated form in solution, and he remembered such a case where it was required to be given in combination with strychnine, iron, and chloroform. He dissolved the phosphorus in the chloroform, the strychnine in rectified spirit, and those two solutions being mixed, the iron was added in the form of the old tinctura ferri muriatis. The result was a perfect solution, which, on being kept five months, showed no change, and was then used, and continued to be employed for a long time. An attempt was made to use perchloride of iron, but that was a perfect failure. At the same time it was desired to exhibit a dose of 1 grain of phosphorus by itself and in very small bulk, and that was accomplished by dissolving it in oil of cloves.

The PRESIDENT asked if the preparations described by Mr. Ince were found to produce beneficial results.

Mr. INCE said he presumed so. They were prescribed by Dr. Forbes Winslow, and were used by him up to the time of his death.

Dr. SAINSBURY said it was very interesting to a medical man to hear of these difficulties and the way they were overcome by pharmacists. It made him appreciate more than before the meaning of the words *secundum artem*, as used in prescriptions.

Mr. MACEWAN said the chief objection to the formula suggested by Mr. Martindale was that it was not adapted to pill-making by machinery. Possibly it would be better if in such a case manufacturers went back a bit and had all the pills made by hand, but still it would be well if present-day requirements could be met. A large quantity of medicines—he thought too large a quantity—was distributed by medical men, who were bound to procure them from

large manufacturers, and therefore unless they went back to hand-made pills, some other formula must be devised. He did not quite appreciate Mr. Parker's objection to the solution method, as it was quite possible to prevent evaporation either by capped-stoppered bottles, or a good cork. Still, for extemporaneous dispensing, he preferred Mr. Parker's method, which he used to a considerable extent some years ago and found quite adequate. It was absurd to look for mathematical accuracy in such matters; a pill said to contain $1/33$ grain might probably vary from $1/28$ up to $1/40$, and it was doubtful whether the human system was capable of taking in even $1/33$ grain of phosphorus daily, so that a certain amount of oxidation might occur without any great disadvantage to the therapeutic result. He heard what Mr. Martindale said about Mr. Ashburton Thomson's solution with great interest, because at one time he made large quantities of it, and, until Mr. Williams read his paper, used to follow Mr. Thomson's directions, dissolving the phosphorus by prolonged boiling in alcohol, and afterwards adding the glycerin, etc. Mr. Williams then suggested dissolving the phosphorus in the glycerin, which reduced the time required from hours to minutes, the only difference in the result being that there was a very fine deposit of phosphorus on cooling at the bottom of the bottle. Now in Mr. Thomson's process there was undoubtedly a solution of a small amount of free phosphorus with much larger quantities of phosphorus oxides, and the question arose whether it was quite right to adopt Mr. Williams' improvement, because it might possibly be that the therapeutic effect was as much due to the oxides as to the free phosphorus; that was a question for medical men to decide. Mr. Martindale's formula was a great advance on that of the Pharmacopœia, but he still had a hankering after the old one of Mr. Parker, and thought if it were possible to combine the two it would be an advantage. Mr. Ince did not state how much oil of cloves was required to dissolve the grain of phosphorus, but he feared any preparation of phosphorus and oil would not contain much phosphorus after standing for five months.

Mr. COLLIER asked if the demand for phosphorus in prescriptions was as great as formerly. For many years he had not been called upon to dispense it, though some years ago it was a very fashionable remedy. At that time they used a considerable quantity of phosphorus pills, but the great objection to them was that they were not soluble, and he did not see how pills containing yellow wax could be, and should prefer pills containing phosphorated oil. But his idea was that phosphorus was going out of use.

Mr. WRETTS said phosphorus was still prescribed not infrequently. In his opinion phosphorated suet was the best form in which to exhibit it. He had found Mr. Parker's method answer very well in the winter, but in the height of summer he often noticed considerable phosphorescence in the mass. The great objection to the Pharmacopœia mass was that it was extremely difficult to ensure an even diffusion of the phosphorus.

MR. MARTINDALE, in reply, said he quite agreed with Mr. Wretts. There was a considerable demand for phosphorus amongst surgeons in the West-End, either alone or in combination with iron, nuxvomica, etc. With regard to the pill mass made by his method, he understood from manufacturers that it piped fairly well, and that the only difficulty was with the cutters. In fact, he borrowed the idea from what he saw in Vienna, where acacia and oil of theobroma in combination were used for making bougies, being passed through a kind of piping machine. It had been suggested that the substitution of syrupy glucose for the syrup, and about half the acacia, would give the mass a greater body, so that it would not block the cutters, and the pills could be rounded more easily, as they would not be so sticky. There was no difficulty in combining the emulsion of the fat, acacia and syrup, or glucose with aqueous extracts, but a 40 per cent. solution would probably be preferable for combining with other medicaments. He suggested that the strength should be 1 in 75, because 1 in 100 would require a still larger excess of carbon bisulphide, which would be objectionable. On the other hand, with a less proportion of bisulphide there was a difficulty in keeping the phosphorus in solution, even in combination with the oil of theobroma. The advantage of using the latter was that it tended to fix the bisulphide and prevented evaporation. This solution would keep well for a good time, but it need not be made in very large quantities, and if it deteriorated a fresh supply could be made, and it would greatly facilitate the making up of prescriptions which were wanted immediately.

The PRESIDENT said of all the drugs which he had read about or handled, he had been more puzzled by phosphorus than any. He

had satisfied himself by personal experiment that certain reputed potent drugs did produce certain effects, but with regard to phosphorus he was completely puzzled. He felt more difficulty in conceiving how it acted therapeutically than any other drug, but it was certainly regarded as a very useful medicine either alone or in combination. A number of careful observers were satisfied that good results followed its use in their practice, and that being so they were perfectly right to continue its use, and it was highly desirable that pharmacists should be able to supply it as far as possible in an unoxidised condition. He proposed a hearty vote of thanks to Mr. Martindale for his paper.

Mr. BOTTLE remarked that in his early days phosphate of soda was largely in demand, and was apparently regarded as a very useful drug, but as far as he knew, it had quite gone out of use in his district.

The PRESIDENT said it was the same in London.

Crystalline Carbonate of Lime.

Mr. BOTTLE then exhibited a specimen of a substance which had been found choking the feed-pipe of a new boiler recently put up by the Dover Gas Co., the feed-pipe being at the top of the boiler instead of at the bottom, as had been the case with the old boiler. He said it was a lump of flocculent material, which was easily broken down, and then had much the appearance of Gregory's powder, but on investigating he found it was crystalline carbonate of lime, slightly stained with iron from the boiler. The water from which it was deposited came from a chalk well, and had seventeen and a half degrees of permanent hardness and eleven and a half degrees of temporary hardness, which he was accustomed to have removed by boiling for washing purposes. That morning he tried some of the water from the Dover Waterworks, and found that just before it boiled a light scum rose to the top, and on gathering some of this and putting it under the microscope he found it was perfectly crystalline. It occurred to him whether this was a sesqui-carbonate, because they looked upon bicarbonate of lime as a soluble substance and carbonate as that which settled at the bottom, but here was something which floated on the top in considerable quantity. He thought the matter would be worth further investigation by those who had to deal with chalky waters.

The PRESIDENT said this observation confirmed many which he made many years ago when experimenting on the influence of carbonic acid gas under pressure on various forms of calcium carbonate and the corresponding alkaline earth, popularly known as magnesia. It was then believed that there were such things as bicarbonate of calcium and magnesium, but later knowledge showed this to be an error. A solution of carbonate of magnesium or calcium, in water saturated with carbonic acid gas, was nothing more than a solution, not a definite compound, but the process of solution gave a hydrous carbonate in transparent crystals.

Mr. MACEWAN remarked that most of the precipitated chalk in the market was really made in the process of softening water at large waterworks, and it was crystalline, though one might expect that it would be thrown down in the form of an amorphous powder by the addition of lime.

Mr. BOTTLE said he hardly knew how to reconcile the influence of the chemical union of a second equivalent of carbonic acid with the difficulty he always found in getting still water from a chalk water free from carbonic acid. They were always obliged to boil it for a quarter of an hour or longer, simply because it was so highly charged with carbonic acid.

The PRESIDENT said it was open to doubt whether perfectly normal carbonate of magnesium was soluble in a mixture of water and carbonic acid gas or not. He was disposed to think it was not, and that the solubility of any form of the so-called commercial carbonates, which were really hydro-carbonates, in water containing carbonic acid gas, was in direct proportion to the amount of magnesium hydrate, and not magnesium carbonate. He had been unable, with a perfectly neutral carbonate, grinding it as fine as possible, and rubbing it down with water, to produce the slightest effect, as regarded solubility, by a pressure of gas of 120 lb. to the square inch. Probably, early notions about bicarbonates were derived from the fact that oxy-carbonates existed which remained in solution, and when the gas was boiled off a crystalline hydrated carbonate was thrown down. He had been unable to make bicarbonate of either calcium or magnesium by evaporation over sulphuric acid at

normal pressure, or by evaporation *in vacuo*. He proposed a vote of thanks to Mr. Bottle for his communication.

The New Photography.

Professor GREENISH then exhibited on the screen a series of photographs taken by Mr. A. A. C. Swinton with the X or Röntgen rays, including the following:—Coins, etc., in purse; spectacles in case (very good); corkscrew, etc., in pocket; rat; frog; puppy dog, two days old; plaice; sole (bones very distinct); hand; foot; ankle; elbow; injury to index finger of hand. A vote of thanks was passed to Mr. Swinton for the loan of the slides.

PROCEEDINGS UNDER THE PHARMACY ACT.

CASE UNDER SECTION 17.

THE SALE OF WEED-KILLER BY SEEDSMEN.

At Chester City Police Court on Thursday, March 5, before Mr. Alderman Charles Brown and Dr. Stolterforth, the firm of Messrs. Dicksons, Limited, seed growers and nurserymen, carrying on business at Chester, was summoned at the instance of the Pharmaceutical Society of Great Britain, for contravening Section 17 of the Pharmacy Act, 1868.

Mr. E. L. Vaughan Williams (instructed by Messrs. Flux, Thompson, and Flux, London) prosecuted, and Mr. Frank E. Roberts, of the firm of Roberts, Dickson, and Barnes, Chester, defended.

Mr. Vaughan Williams, in opening the case, said that the object of the Pharmacy Act of 1868, as their Worships would be aware, was to protect the public against the sale of poisons by other than qualified persons. The present proceedings were taken under Section 17 because that Section had been held to be the one which peculiarly applied to limited companies. In this case the learned counsel contended that the Section had not been complied with in several material respects. From information that came to the knowledge of the Society they caused the purchase to be made at the shop of Dicksons, Limited. On January 31 this year Mr. Foulds went to the shop and inquired for an article known as "Smith's Perfect Powder Weed-Killer." He obtained a tin, and on its being subsequently analysed by the analyst of the Pharmaceutical Society it was found to contain a very large quantity of arsenic, 80 per cent. of the whole being composed of that very dangerous poison. On going into the shop, Mr. Foulds asked one of the assistants if they kept the weed-killer. The latter seemed to be in doubt about it, but after speaking to the manager, he asked who it was for. Mr. Foulds then gave the name of "Mr. Johnson, of Frodsham." The assistant then said if he would pay for it then he would send the weed-killer on to him, but Mr. Foulds said that would not do, as he wanted to take it with him. The assistant then asked what time his train went. Mr. Foulds replied "2.50," and the assistant said he would send it down to him at the station. Mr. Foulds agreed to that, and a boy met him at the station with the weed-killer, which was wrapped up in brown paper, on the outside of which there was a label bearing the words "From Dicksons," and addressed to "Mr. Johnson, Frodsham." That constituted beyond all doubt a sale by Dicksons, Limited. It might be contended that Dicksons were not liable for what their assistant did, but the Act provided that "for the purpose of this Section the person on whose behalf any sale is made by any apprentice or servant shall be deemed to be the seller." From the evidence he would call he thought it would appear that Mr. Foulds was in no way known to the seller of the poison, that there was no introduction of Mr. Foulds by anyone, that no entry was made in the book by the seller, and that the name and address of the seller was not upon the tin. The name and address of the manufacturer was on the tin, and, if necessary, he should quote the case of *Templeman v. Trafford* to show that that was not sufficient compliance with the Act, which required the name and address of the actual seller to be placed on the tin, the wording of the Act being that "any person selling otherwise is liable to a penalty."

Evidence bearing out this opening statement having been given, Mr. Roberts said defendants admitted that the preparation contained arsenic, though they had no personal knowledge of it. He submitted, however, in the first place that this was not a sale within

the meaning of the Act by Messrs. Dicksons. Proceeding to explain his clients' mode of conducting this branch of their business, he said they had been most anxious to avoid any possible infringement of the Act. These weed-killers had been advertised all over the country, and a trade got up for them by seedsmen for the benefit of the original chemists who compounded them, and it was a little ungenerous on the part of chemists that they should thus utilise all the expense incurred for the benefit of themselves. These tins of weed-killer were supplied by Messrs. Dicksons to their customers through Messrs. Cheers and Hopley, chemists, Chester; defendants adopting that step in order to be as exactly within the Act as they could, and any order received for weed-killer, as this was received on the evidence which had been given, was not taken as an order for an article to be supplied by Messrs. Dicksons, but as one for an article which they had to obtain.

Proceeding, Mr. Roberts said that defendants had most honourably endeavoured to prevent any possible infringement of the Act, and the following notice was displayed in their shop: "Please note that none of the undermentioned articles can under any circumstances be sold to any customer across the counter: Weed-killers, ant destroyers, and wasp destroyers." Therefore, he submitted, on the merits of the case, defendants had done all in their power to prevent any infringement of the Act, and if there had been an infringement, it had been done unwittingly, and contrary to their urgent instructions and strong wish. Mr. Roberts went on to argue that this Section did not refer to corporations and companies, in proof of which he quoted from the judgment of Lord Justice Bramwell in the case of the Pharmaceutical Society *v.* the London Provincial Supply Association, Limited, in which it was held that the word "person" did not include a corporation.

Mr. Vaughan Williams did not think his friend's attention had been called to a further report of the case. The case afterwards went to the House of Lords, where it was held that the word person in this particular Section of the Act included a corporation.

The Magistrate's Clerk further pointed out that subsequent to that decision the Interpretation Act had been passed, which said that in the construction of every enactment relating to an offence punishable on indictment or summary conviction the word "person," unless a contrary intention appeared, included corporations.

Mr. Roberts was not aware that the case had been to the House of Lords, and he admitted that that being so it ended the point he had raised. He submitted, however, that in this case the sale was not made by Messrs. Dicksons, who had in the most careful way guarded themselves against a charge under the Act. They had since done away with a good many of the things sold which contained poison, and had taken steps to ascertain from the manufacturers what the ingredients were, so as to prevent anything of the kind from occurring in the future. He submitted, in conclusion, that Messrs. Cheers and Hopley were the vendors in this case.

Mr. G. P. Miln, one of the managers of the defendants, stated that he had taken steps to prevent the possibility of the Pharmacy Act being infringed in respect of these weed-killers. A considerable sale had sprung up for these weed-killers with seedsmen, and when they became aware that the sale came under the Pharmacy Act they agreed with Messrs. Cheers and Hopley to stock them for them. They had done so, and Messrs. Dicksons had not kept any weed-killer on their premises. Consequently their assistant was unable to supply the gentleman who procured the tin in question, but had to get it from Cheers and Hopley. The latter handed it to them and they simply sent it to the station. They had taken every precaution not to stock anything of the kind, and to comply with the Act as far as their knowledge went. Every assistant in the shop had verbal as well as written instructions that nothing of the sort was to be sold over the counter, and also that they were not to hand over the counter anything of the kind obtained from Messrs. Cheers and Hopley. That system was most carefully adhered to. The witness stated that the notice read by Mr. Roberts was affixed to every counter in the shop, and also that the bill-heads referred to were in use.

After some argument as to who were the actual sellers—in the course of which it was explained that Messrs. Cheers and Hopley allowed a commission on all sales effected by Dicksons, Limited—the Bench retired, and on their return the Chairman said: The magistrates, after due consideration of the case, feel they are bound to convict. We have decided to inflict a penalty of 20s. against Dicksons, with the costs of the court.

REVIEWS AND NOTICES OF BOOKS.

CHEMICAL RECIPES. By the Atlas Chemical Company, Sunderland. Pp. 316. (Sunderland: Hills and Co., 19, Fawcett Street. 1896.)

The recipes published in this book are in great measure of a nature not usually found in such works, and should prove of especial value to the proprietor of what is euphoniously known in the trade as a "mixed" business. The actual value of the recipes can, of course, only be determined by practical experience, but many of them bear the stamp of feasibility. Amongst the subjects treated are pigments; glazes for pottery, etc.; liquid gold; carbonated drinks, essences and cordials; paints; metal polishes, blackings, etc.; varnishes, stains and lacquers; printing and other inks; sealing waxes, soaps, dyes, lubricants, and the innumerable articles concerning which interest the druggist more or less, such as baking powders, starch gloss, spices, relishes, disinfectants, essences, extracts, scents, beverages, etc., etc. In most cases, all that one can reasonably expect from a recipe is an idea on which to base a working formula, and the reader of this book should reap a rich harvest of such ideas.

GLEANINGS FROM THE PATENT LAWS OF ALL COUNTRIES. By W. LLOYD WISE. First portion: Argentine Republic—Germany. Pp. 208. Price 2s. (London: Cassell and Co., Ltd. 1895.)

Judging from his varied experience, the pharmacist of this country would appear likely to develop into a prolific inventor, and in many cases there is little doubt that large sums might have been secured to members of the craft had they protected ideas that occurred to them whilst pursuing their daily round behind the counter. To realise the benefit of legal protection to the fullest extent, it is of course necessary to patent an idea abroad as well as at home, and in such a case the book now under consideration should prove of the greatest possible utility. Twenty-two countries are dealt with in this first portion of the complete work, and in each case the information given is classified under the following heads:—Application, procedure, grant, area, population, productions, etc., of the country; assignment and transfer of patents; dates of laws, fees; kinds of patents; subject matter; term; who may obtain a patent; working. The would be patentee is thus enabled to decide upon the adaptability of his idea to the purposes of the inhabitants of any given country and the possible extent of business to be done there, in addition to finding in a concise form all the particulars he can possibly need regarding the methods of procedure. The book should have an extensive sale and the succeeding portion, including Great Britain and Ireland, will be awaited with much interest.

THE DYNAMICS OF LIFE: An Address delivered before the Medical Society of Manchester, October 3, 1894. By W. R. GOWERS, M.D., F.R.S. (London: J. and A. Churchill.)

In this address we have a profound and philosophic consideration of that extraordinary physiological process which is called a stimulus, from one who may be justly regarded as the ablest of living neurologists. A very large part of the address is devoted directly and indirectly to the discussion of that "most obtrusive manifestation of energy" known as an epileptic fit. Dr. Gowers acted very wisely in publishing this admirable brochure, and all who read it cannot fail to profit by it. To young physicians and physiologists it will act as a powerful stimulus and encourage them to study the sources of the wonderful energy connected with nervous and muscular tissues.

PARLIAMENTARY INTELLIGENCE.

SELECT COMMITTEE ON ADULTERATION.—The first meeting of this Committee was held on the 5th instant, when Mr. T. W. Russell, Parliamentary Secretary of the Local Government Board, was elected chairman, and the course of the Committee's procedure was agreed upon. As a large amount of expert evidence given before the Select Committee which sat during 1894 and 1895 is available, it is probable that very little additional oral evidence will be necessary, and the Committee does not propose to call for much personal testimony. It will be remembered that the Committee of 1894 was far advanced with its labours, and, indeed, was almost ready to report when the General Election occurred; in fact, the present Committee may be regarded as having been appointed chiefly to complete the interrupted work of its predecessor. Evidence from the druggist's point of view was very ably put before the Committee by Mr. Charles Umney on May 22 last (*Ph. J.* [3], xxv., p. 1078). Mr. R. A. Robinson was also heard on behalf of the Kensington Vestry (*Ph. J.* [3], xxv., p. 1186). The Committee has, however, heard some evidence during the past week, and on Tuesday, Mr. Otto Hehner attended to present the views of the Society of Public Analysts. Mr. Hehner's remarks were more or less confirmatory of what has been previously said by Mr. Umney, but the position he assumed in respect of the qualification necessary for a public analyst may not be pleasant to every chemist and druggist. He is reported to have expressed the opinion that a number of chemists and druggists who had been appointed were not fully qualified, and that in his opinion no one should be appointed who was not a Fellow of the Institute of Chemistry and had not passed an examination as a competent analyst.

SHOPS (EARLY CLOSING) BILL.—Reference has already been made (*ante*, p. 198) to the commitment of this Bill to the Standing Committee on Trade. The Committee has now been allotted its chairman in the person of Mr. John Ellis, who represents Rushcliffe, Nottingham. Fifteen additional members have been placed on the Committee in respect of the consideration of the Shops Bill, and as these gentlemen represent all shades of opinion there should be ground for hope that what is good in the Bill will be separated from that which is calculated to prove harassing. No doubt the Committee will give due weight to the fact that petitions in favour of Sir John Lubbock's Bill have been presented to the House from Birmingham and Glasgow.

AMENDMENT OF THE COMPANIES ACTS.—The Bill to amend the law relating to limited liability companies, to which reference was made in the Queen's Speech, has now been introduced into Parliament. It made its *début* on the 15th inst. in the House of Lords, under the guardianship of Earl Dudley, Parliamentary Secretary to the Board of Trade, and was then read a first time. No date has been assigned for the second reading. The clause providing for the winding-up of companies in certain cases remains the same as in the draft Bill, referred to in the Journal for August 10 last (page 129). With reference to this Bill, which, by the way, is officially styled the Joint Stock Companies Law Amendment Bill, it is noteworthy that on Monday last Sir Albert Rollit elicited the reply from Mr. Ritchie that it had been thought best to follow the usual practice and have the Bill referred to Committees of both Houses.

METRIC SYSTEM.—According to the *Times*, Mr. Arnold Forster, M.P. for West Belfast, will take an early opportunity of ascertaining the opinion of the House as to the use of metric measures in specifications by promoters of private Bills. The Examiners of Bills have decided that the employment of such system of measurements constitutes non-compliance with Standing Orders. That decision is perfectly logical under the present law regulating to weights and measures, but there will be many persons in the United Kingdom whose sympathy will be with Mr. Forster in his efforts to remove what he thinks is an absurd restriction.

THE SELECT COMMITTEE ON PUBLIC PETITIONS has just made its first report on petitions presented to Parliament from February 11 to March 2. From the report it appears that four petitions with 6448 signatures have been presented in favour of the Early Closing Bill, and that four petitions with ten signatures have been submitted urging the House to sanction the adoption of the metric system of weights and measures in this country.

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THE AUSTRIAN 'ARZNEI-TAXE' FOR 1896.

A GLANCE over the 'Arznei-Taxe,' or regulations affecting the dispensing and sale of medicines in the Austrian Empire, shows, as might be expected, a very marked difference between the methods in vogue there and those to which we in this country are accustomed. The practical monopoly which the apotheker enjoys is rather dearly bought by the rigid and numerous rules to which he has to conform. A few extracts from the book may be of interest. The preface recites that this 'Arznei-Taxe' for the year 1896, based on the Austrian Pharmacopœia for 1889, shall come into force on January 1, 1896, and directs that every apotheker shall provide himself with a copy. It contains copies of various Ministerial decrees affecting pharmacy which are now in force; a list of the prices to be charged for drugs and chemicals; the charges to be made for various pharmaceutical operations; for the vessels in which medicines are dispensed; for bandages; and for veterinary medicines. Four schedules are appended. The first gives a list of the most dangerous poisons, which are directed to be kept in a locked-up cupboard; the second, a list of strong medicines, which are to be kept apart from others; the third, a table of the maximum doses; and the fourth, a list of articles which may only be sold by the order of a medical man.

It is directed that all prescriptions shall be clearly and legibly written; and that no medicine shall be dispensed from a prescription the meaning of which is not clear to the dispenser, without previously seeing the prescriber. If the physician has omitted to write the name and address of the patient on the prescription, this is to be done by the dispenser. In case the patient refuse the information it is ordered that a private mark be put on the prescription, so as to evade any chance of substitution or alteration. Repetition of prescriptions is only allowed for the original possessors. Where there is reason to fear misuse of the medicine, the physician is to write *ne repetatur*, and the apotheker is forbidden to repeat a prescription so marked. Before sending out any medicine the prescription from which it has been prepared must be clearly marked with the price of ingredients, labour, and containing vessel—bottle, box or pot. In open pharmacies the person who prices the medicine must also mark on the prescription the date when dispensed,

the name of the firm, and his own name (? initials). The sender-out of the medicine must put the date of despatch and his initials on the label. Doses in excess of the pharmacopœial maximum may only be dispensed if the sign (!) is appended; and the quantities must be written in words as well as expressed in figures. (This is an excellent regulation, and would save dispensers much doubt and worry if it were in force here.) The use of the words *Secundum meam prescriptionem*, or of any sign denoting a private understanding between prescriber and dispenser is forbidden; but if the physician wishes a specially low charge to be made to a patient he may write *Fiat expeditio simplex*, and the dispenser may then give the medicine in its cheapest form, and charge accordingly. Prescriptions may be dispensed below the official prices, but the ingredients must be of full weight and of best quality. In this case the rebate must be marked on the prescription. Any infraction of the foregoing regulations is punishable with fine up to 200 gulden (£20), or fourteen days' "arrest." Preparations for which formulæ are given in the Pharmacopœia must be prepared and sold in exact accordance with it. Newly introduced and untried remedies (*e.g.*, in 1889, resorcin, thallin, sulphonal, etc.) may only be supplied on the order of a practising physician.

Inventors of pharmaceutical specialties must content themselves with devising improved methods of administration of recognised medicines—such as copaiba, sandal, cubeb, and male fern—as for instance in capsules, dragées, coated pills, etc., calculated to make them pleasanter to the eye and taste. When a physician prescribes a remedy which is found in the shops in both the refined and crude states, but omits to say which he means, the purer or more refined is always to be used. (This rule would settle the question of what should be used when chrysarobin is ordered.) Similarly, when there are two or more dilutions or degrees of strength of a pharmacopœial preparation, the weaker should always be used in case of doubt. A complete set of reagents and apparatus for testing must be kept in every pharmacy, and must be in good order. The articles in the price-list, which are printed in heavy type, may only be sold on the order of a physician; with the exception of carbolic acid, zinc sulphate, and copper sulphate, when used as disinfectants, and of chloroform, when forming a part not exceeding 20 per cent. of a liniment. The right of preparing and selling medicines and pharmaceutical preparations is reserved to the apotheker, as is the sale of drugs and chemicals, except for use in the arts; but dietetic and cosmetic articles, most dental appliances, mineral waters, and surgical bandages, may be sold by others. Certain herbs, also, of which a list is given, may be sold by herbalists, who, however, must prove their competency to recognise them. The charge for preparing an ordinary decoction (up to 800 grammes) is 18 kreuzers; the charge for preparing an infusion, 15 kreuzers; dispensing a simple powder in paper (up to 200 gr.), 3 kreuzers; dispensing an ointment (up to 200 gr.), 5 kreuzers; making an emulsion (up to 200 gr.), 12 kreuzers; making an electuary (up to 200 gr.), 15 kreuzers; spreading a plaster (100 C.c.), 15 kreuzers; the leather for the same, 10 kreuzers; making a pill mass (up to 10 gr.), 10 kreuzers; rolling thirty pills, and dusting with lycopodium, 10 kreuzers; making a suppository mass (up to 15 gr.), 10 kreuzers; making the suppositories, each 5 kreuzers; each weighing a drug, or counting of drops, 1 kreuzer. The kreuzer is worth about a farthing.

THE SHOPS (EARLY CLOSING) BILL.

IN view of the interest now being manifested in Sir JOHN LUBBOCK'S Bill by correspondents, it may be useful to recall attention to its original provisions. Section 1 provides that on written application being made.

"and on being satisfied that not less than two-thirds in number of the occupiers of shops within the district, or the part thereof belonging to the class or to each of the classes to which the application relates, have signed the application, the local authority may if they see fit make an order giving effect to the application."

The hour to be fixed for closing may on any one specified day of the week be any hour not earlier than 2 p.m., and not earlier on any other day than 7 p.m. Section 6 provides that the penalty for a first offence under the Act shall not exceed five shillings, in case of a second conviction the limit may extend to twenty shillings, and in the case of a third or subsequent conviction the penalty may be increased to five pounds. If the offence has been committed by some agent or servant of the occupier, he shall be liable to the same fine as if he were the occupier. The saving clause for chemists, in Section 9, provides that—

"A pharmaceutical chemist or chemist and druggist shall not be liable to any fine under this Act for supplying medicines, drugs, or medical appliances after the hour appointed by an order made under this Act for the closing of shops, but this Section shall not be deemed to authorise the shop of a pharmaceutical chemist or chemist and druggist to be open after the said hour, save so far as may be necessary for the purpose aforesaid."

The Bill has been referred to the Standing Committee of the House of Commons on Trade, particulars regarding which will be found on page 210 of this week's Journal.

PHARMACISTS AND THE PHARMACY ACT.

THE weed-killer case, reported on page 209, affords an apt illustration of the difficulty experienced in proceeding under the Pharmacy Act against limited liability companies. It is remarkable that evasion of the provisions of the Act should be encouraged and assisted by those who might naturally be expected to take pains to secure their due enforcement. But there is reason for believing that the case now referred to is not an isolated instance of facilities being afforded by registered chemists and druggists to persons desirous of evading the Act, and the question may fairly be asked, what is the use of the Pharmaceutical Society endeavouring to persuade the public of the desirability of confining the retail trade in poisons to the hands of examined and registered individuals, if the latter countenance the delegation of the duty to unregistered persons, and even aid and abet them in breaking the law? From the chemists' point of view, also, it is clear that, whilst such conduct does not tend to secure the safety of the public, it prevents the due application of the provisions of the Act for the protection of those engaged in pharmacy.

CHLOROFORM FROM ACETIC ACID.

IN the latest number of the *Ephemeris*, Dr. E. R. SQUIBB, publishes a paper on the manufacture of acetone and of acetone-chloroform from acetic acid. A large rotary still, 12 feet long and 2 feet in diameter, is employed, which can decompose, in 126 hours, about 1700 pounds of absolute acetic acid, giving about 90 per cent. of the theoretical yield of acetone. The patentees of processes for making acetone from acetates, however, object to this process and to the use of the new apparatus, as being in conflict with their patents.

ANNOTATIONS.

THE ANNUAL DINNER.—A general meeting was held at the Pharmaceutical Society's house, 17, Bloomsbury Square, W.C., on Wednesday, with the object of making preliminary arrangements for the twenty-fourth annual dinner on Tuesday, May 19 next. Mr. M. Carteighe, the President of the Society, was in the chair, and there were present a number of prominent pharmacists. It was decided to hold the dinner in the King's Hall, Holborn Restaurant, and to have arrangements similar to those adopted in former years as to meeting the expenses of entertaining guests. The price of the dinner tickets is one guinea, and the Honorary Secretary, Mr. R. Bremridge, is the only person from whom tickets can be obtained. The following Committee was appointed to carry out details:—The President, Vice-President, and Treasurer of the Pharmaceutical Society, Messrs. C. B. Allen, Attfield, Bourdas, Butt, Feaver Clarke, Albert Cooper, Eastes, Hills, Hopkin, Paul, R. A. Robinson, Taylor, C. Umney, and Warren. Gentlemen desirous of assisting in making the twenty-fourth annual dinner a successful one are invited to send their names to Mr. R. Bremridge for addition to the list of stewards.

PHARMACEUTICAL DEGREES.—A grotesque example of the ineptness of the desire manifested by certain institutions in the United States to grant degrees to pharmacists who have undergone a course of instruction, is referred to by *Merck's Report*. It appears that an institution in New York State has a Bill before the Legislature by which powers are sought to confer the degree of Doctor of Pharmacy. The equipment of this College (or is it a University?) is described as barely sufficient for present purposes and wholly unfit for an advanced course of work. Moreover, it has no reserve fund, and is unable to pay its professors \$400 per annum.

'SCIENCE PROGRESS' for March opens with an article based on a lecture delivered at the Royal Institution by Dr. J. Burdon Sanderson, in which he shows how the science of physiology as we know it came into existence fifty years ago with the beginning of the active life of Karl Ludwig, in the same sense that ontology as we know it came into existence with the appearance of Darwin's 'Origin of Species.' In the order of time physiology had the advantage, for the new physiology was accepted some ten years before the Darwinian epoch. The introduction to the article is followed by a section devoted to Ludwig as an investigator and teacher, and finally the old and new vitalisms are discussed. Professor Reynolds Green's survey of what is known concerning the reserve materials of plants is concluded in this number, Professor J. Bretland Farmer writes on recent advances in vegetable cytology, W. Garstang on the morphology of the Mollusca, and G. F. Scott Elliott on African grass fires and their effects.

CRYPTOGAM EXCHANGE.—An exchange office for Cryptogams exists in Vienna, by means of which botanists are enabled to exchange or sell specimens. Every member is expected to send before September 15 two lists of those plants he undertakes to furnish until October 15, such list containing the name and address of the remitter, the Latin name and author of the plant, the place of origin, the number of specimens available, and any special information that may be useful. The plants are valued by the director of the exchange office, and an annual catalogue is published every December. Full particulars of the exchange will be sent to anyone interested on application to the Director, J. Brunthaler, IV., Wiedner Hauptstrasse 91, Vienna.

MR. M. A. LAWSON, F.L.S., the Government Botanist and Director of the Cinchona Plantations on the Nilgiris, died at Madras on February 14. Mr. Lawson was formerly Professor of Botany at Oxford, and went to India in 1883, where he formed an extensive herbarium of plants, and interested himself in the manufacture of quinine at Naduvatam. He was a corresponding member of the Pharmaceutical Society.

PHARMACEUTICAL FOOTBALL AND CRICKET CLUB DINNER.—The annual dinner of this Club will be held at the Holborn Restaurant, on Wednesday next, March 18, when the chair will be taken by Professor Attfield, at 7 p.m. The members of the Dinner Committee, Messrs. Senter, Stamp, and Tickle, will be glad to receive applications for tickets (5s. each) without further delay, at 17, Bloomsbury Square, W.C. Old students of the School of Pharmacy are specially invited to join their successors on this occasion.

"ETIDORPHA, OR THE END OF THE EARTH."—Some time ago a book with the above title was privately published by Professor John Uri Lloyd, of Cincinnati, U.S.A., whose long and wide connection with pharmacy renders any work produced by him of interest to pharmacists. In a large and handsome volume, perfectly printed, magnificently illustrated, and altogether elaborately produced, the author interweaves romance with science and mystery in a skilful and remarkable manner. He reveals himself as possessing a considerable grasp of science and philosophy, conjoined with an attractive literary style. The author's edition of the book having been exhausted, it is to be reprinted by the Robert Clark Company, of Cincinnati, at the exceedingly moderate price of \$2.

THE RESPONSIBILITY OF THE UNITED STATES PHARMACIST.—Pharmacists, observes *Merck's Report* (U.S.A.), are now all expected before the law to test their drugs. If they do not they cannot shift their responsibility on to the shoulders of others. The patient and his friends have a case against the pharmacist, and the outcome would be doubtful if the latter afterwards brought an action against the wholesale dealer or manufacturer, in view of contributory negligence on his part in not testing his goods. The higher the average education of pharmacists becomes, concludes our contemporary, the greater their responsibilities in this direction are sure to be.

MR. P. L. SIMMONDS, F.L.S., has been elected an honorary member of the Philadelphia College of Pharmacy as a mark of respect for his scientific researches and acquirements.

BRITISH ASSOCIATION.—The following is the list of sectional presidents for this year's meeting of the British Association, to be held at Liverpool in September, under the presidency of Sir Joseph Lister, who it will be remembered is also President of the Royal Society for the year:—Section A (mathematics and physics), Professor J. J. Thomson; section B (chemistry), Dr. Ludwig Mond; section C (geology), Mr. John Edward Marr; section D (zoology), Professor E. B. Poulton; section E (geography), Major Leonard Darwin; section F (economics), Leonard Courtney; section G (mechanical science), Sir Charles Douglas Fox; section H (anthropology), Mr. Arthur Evans; section I (physiology and pathology), Dr. Walter Holbrook Gaskell; section K (botany), Dr. D. H. Scott. It is expected that the evening discourses will be given by Professor Flinders Petrie and Sir Andrew Noble, and the lecture to working men by Professor Fleming.

PROCEEDINGS OF SOCIETIES.

Chemical Society.—An ordinary meeting of the Society was held on March 5, Mr. A. G. Vernon Harcourt, President, in the chair. The Röntgen rays were the attraction at this meeting, and it was very clear that the new photography was responsible for the almost overflowing meeting and the good sprinkling of ladies among the audience. Although the subject had not been published in the list of papers to be read, it was evident that the absorbing interest attaching to the subject justified its being sandwiched between two of Professor H. B. Dixon's papers. Mr. Jackson, of King's College, was the author of the paper on the "Use of Phosphorescent Substances to Show the Röntgen Rays," and he came to the meeting equipped with a full set of the apparatus necessary for an effective demonstration. Of the many fluorescent substances he had tried, he had found the platino-cyanide of potassium by far the best. A solution of the salt was painted on the cardboard screen, and was only effective when moist—a condition of things very difficult to keep up. It had to be kept constantly moistened with water. Crookes' tubes were considered the best, but as many as seventy tubes had been tried in order to get a perfectly satisfactory result. Mr. Jackson had tried almost every gas in the tubes to ascertain whether they would influence the rays in any way, but they made no difference whatever. Argon was the only one that had not been tried. Mr. Jackson, after having all the lights turned out, proceeded to demonstrate. The phosphorescent disc was quite visible, and so were sundry objects seen moving about in front of this disc. They might have been fingers or somebody's razor-case, but however plainly the anatomy or the metal blade stood out to those within half a dozen inches of the screen, the experiment did not by any means satisfy those outside of this somewhat short range.

In the discussion which followed, Professor Armstrong complimented Mr. Jackson, and paradoxically remarked that he had not been working in the dark, a piece of humour keenly appreciated by the audience, who were still blinking their eyes from the effects of the newly turned-up lights.

Sir Joseph Lister, at the President's request, made a few remarks as to the possible applications of the new photography in surgery. He said nothing, however, that has not already been suggested, merely emphasising the desirability of its being readily applied in the case of the whole body.

Professor H. B. Dixon's papers on "The Explosion of Cyanogen" and "The Mode of Burning Carbon" were of a somewhat controversial nature. He had worked for many years on these subjects. A large spark is necessary for the explosion of cyanogen, a small spark having no effect. In the presence of a certain amount of oxygen the carbon burns first to carbonic oxide, but if oxygen be in excess, the carbonic oxide formed in the first instance burns to carbon dioxide. Carbon monoxide and oxygen would not explode with moisture, or in the presence of bodies which would give up the elements of water. The drawing out of the flame is a problem, and there seems to be no explanation of the cause. It appears that the length of the pipe makes no difference. In the carbonic oxide explosion the flame is hardly perceptibly drawn out, it is a mere speck, whilst with carbon dioxide the flame is drawn out some three or four feet. Several photographs and diagrams of these flames were thrown on the screen.

A paper on "The Combination of Carbon and Hydrogen," by Dr. W. A. Bone and Mr. D. S. Jerdan, was read. The authors had been investigating the action of hydrogen and carbon (1) at a red heat, and (2) at the temperature of the electric arc. The carbon and hydrogen for these experiments were purified from all hydrocarbon substances. The purified gas was conducted through a porcelain tube (of the apparatus shown on the bench), in a suitable condition to prevent diffusion. Much difficulty was found in introducing the carbon into the tube quite dry. The products of the action contain roughly 1 per cent. of methane. No other unsaturated hydrocarbon was produced. The percentage of methane rose in other experiments. In the arc experiments the carbon was heated very strongly to expel gases. The apparatus was filled with hydrogen, and the arc passed from half-an-hour to two hours at 40 to 160 volts. The authors invariably found methane in the gas, and it increased with the time of the arc passed from 1.3 per cent. up to 3 per cent. Acetylene was found in considerable quantity, from 7 to 8 per cent. in several hours.

This terminated the business, and then there was a rush for the bench where Mr. Jackson was to show the Röntgen rays again.

The following papers were taken as read:—"Note on the *αα*-Dimethylglutaric Acids," by W. A. Bone, and W. H. Perkin, jun.

"The Symmetrical Dimethylsuccinic Acids," by W. A. Bone, and W. H. Perkin, jun.

"The Cis- and Trans-Methylisopropylsuccinic Acids," by W. H. Bentley, W. H. Perkin, jun., and J. S. Thorpe.

Plymouth, Devonport, Stonehouse and District Chemists' Association.—The junior section of this Association held its monthly meeting, last Thursday, at the Foresters' Hall, Plymouth Octagon. Mr. C. J. Park, President, presided, and a lecture was given by Mr. J. Kinton Bond, B.Sc., on "The Metric System." He fully explained the decimal system in weights and measures as used in France and many other countries, and pointed out the distinct advantage of such. Mr. Bond's address was thoroughly comprehensive throughout, and the members present were afforded an interesting and at the same time clear view of the whole affair. Mr. Bond was warmly thanked for his services.

Plymouth, Devonport, Stonehouse and District Chemists' Association.—A special committee meeting of this Association was held last Monday night at the Foresters' Hall, Octagon, Plymouth, to consider the candidature of the President of the Association (Mr. C. J. Park) for the Council of the Pharmaceutical Society, to take the place of Mr. G. F. Schacht, of Clifton. The following resolution was proposed by Mr. J. G. Netting (Vice-President):—"That this Committee heartily approves of Mr. C. J. Park, pharmaceutical chemist, 1, Mutley Plain, Plymouth, as a candidate for the Council of the Pharmaceutical Society, and strongly recommends the members of the Plymouth, Devonport, Stonehouse and District Chemists' Association to give him their hearty support."—Mr. H. D. Davey seconded, and the resolution was unanimously carried.—Mr. C. J. Park, when called before the Committee, returned thanks for the hearty support accorded him, and expressed his desire, if elected, to represent the commands of the members of the Society, and particularly those situated in the West of England.—It was agreed to issue notices calling a general meeting of the Association at Plymouth next Monday, March 16, to confirm the action of the Committee.

Leeds Chemists' Association.—A committee meeting was held on Friday, March 6, Mr. G. Ward, President, in the chair, when the following resolution was carried:—"The Committee of the Leeds Chemists' Association having met for the consideration of the subject of the Proprietary Articles' Trade Association's proposal, wishes to express its sympathy with the objects of the Association, and will be glad to call a meeting of the trade if the details of the scheme, when prepared, meet with its approval." Moved by Mr. Ward, seconded by Mr. Yewdall.

Midland Chemists' Assistants' Association.—A musical and social evening of this Association was held on March 4 at Exchange Rooms, Birmingham. Mr. John Barclay, B.Sc., occupied the chair. Several artistes whose names were on the programme were unfortunately unable to be present. Nevertheless, Mr. P. C. Arlaster, who had the arrangements in hand, was able to present some excellent performers, among whom were:—Messrs. Rogers, Williams, Firkin, France, Cornish, Osborne, Jones, Bindloss, and Ash (who accompanied). During the evening, it was announced that Mr. R. Darton Gibbs, President of the Midland Pharmaceutical Association, had consented to preside at the forthcoming dinner.

Edinburgh Chemists', Assistants', and Apprentices' Association.—The seventh meeting of the eighteenth session was held in the Pharmaceutical Society's Hall, 36, York Place, on Friday, March 6, at 9.15 p.m. Mr. J. Mackintosh Cameron, President, in the chair.

The minutes of last meeting having been read and approved, Mr. A. S. Birnie read a paper on "The Darwinian Theory," in which he subjected to a critical examination the arguments for and against the evolutionary theory as applied to the descent of man, and concluded by citing certain objections to the theory which have been satisfactorily dealt with by its supporters.

Mr. A. Thwaites then read a paper on "Fluid Extracts," in which he advocated the process of percolation as preferable to the present official methods. He illustrated his remarks by reference particularly to fluid extracts of cascara and ergot, of which he exhibited

samples. He expressed a hope that fluid extracts would be more largely introduced as a feature of British pharmacy as a means of attaining greater uniformity in the strength and greater reliability in the action of drugs.

The reading of the papers was followed by a discussion, taken part in by Messrs. Birnie, Cameron, Dey, McBain, Reid, Rowlands, G. Sinclair, D. Sinclair, and Thwaites, and on the motion of the Chairman, hearty votes of thanks were awarded to the authors.

Glasgow and West of Scotland Pharmaceutical Association.—At the usual fortnightly meeting, held on Thursday the 5th inst., Mr. W. L. Currie presiding, notes were submitted on "Aromatic Waters," by Mr. Alexr. Boyd, and on "Mucilage of Gum Acacia," by Mr. A. McKellar.

Before these were called up, the Secretary was desired to submit the following memorial to the meeting, as it had been drafted by the Law and Parliamentary Committee, and approved by the Council:—

"We, the members of the Glasgow and West of Scotland Pharmaceutical Association, urge upon the Council of the Pharmaceutical Society of Great Britain the advisability of directing the attention of the Home Office to the manner in which the Pharmacy Acts are represented in the Scottish Law Courts. In our opinion, the Pharmaceutical Society, to which the enforcement of these Acts has been entrusted, is unduly hampered in its administration, and its purpose in prosecuting offenders is misrepresented by the Judges, so that the public sympathies are abused; and convictions against offenders are not represented by the Bench in a manner calculated to prevent further offences, or to give due significance to the fact that the law has been infringed. These circumstances are subversive of a due regard for the observance of the law, and wanting in the spirit of equity. We particularly cite the following trials:—

"1. On October 23, at Dundee, before Sheriff-Substitute Campbell Smith, in the case of the Pharmaceutical Society v. Stewart; and also on the 25th, v. Finlayson.

"2. On October 26, at Edinburgh, before the Lord Justice Clerk, Lord Young and Lord Trayner, in the appeal cases the Pharmaceutical Society v. Turnbull and v. Hume.

"3. On December 16, at Glasgow, before Sheriff Fyfe, in the case of the Pharmaceutical Society v. Kerr.

"From these cases it will be seen that the comments made and the modified penalties inflicted are calculated to negative the good effects sought to be produced by securing convictions.

"We regard amendment of the Pharmacy Acts as being urgently needed; but, while they remain on the Statute Book we look to seeing them enforced in legal equity with a view to the attainment of that at which they are aimed."

The President rose to move the approval of the memorial.

Mr. A. Laing, in seconding the motion, said he would have preferred the responsibility to have rested on the Association rather than on the Pharmaceutical Society, and that it had gone forth in the name of all the chemists in Scotland. He did not think a single chemist would be contrary minded; even the *Chemist and Druggist* had written leaders condemning the procedure on the part of the judges.

The motion was carried unanimously.

At this point the President had to leave the meeting, and Mr. Jas. Robb occupied the chair, and Mr. Boyd introduced the first subject—"Aromatic Waters." He regretted that chemists were not freely allowed to use the still, as he considered distillation the best method of impregnating water with aromatic oils. Of other methods, if the oil were dissolved with alcohol and shaken with water, acetic acid developed after a time. He had tried pumice, phosphate of lime, precipitated chalk, carbonate of magnesia, and paper pulp. The powder in the finest state of comminution best fulfilled the requirements, but there was the objection that the powders were slightly soluble. If one drop of rose otto were shaken up with an ounce of hot water, the aroma was finer than by using powder, and he found paper pulp not nearly so good as magnesium carbonate. The method he adopted was to put the oil in a stone jar, with capacity for twice the quantity to be made, add the water at the boiling temperature, and shake.

Mr. McKellar then gave notes on mucilage of gum acacia, stating its weaknesses, that it turned strongly acid, and developed sugar. Various plans had been tried to prevent these defects, such as storing in six ounce bottles and keeping in a cool place, using lime water or solution of tolu. He had tried a saturated solution of acetanilide (2 grains to the ounce), which prevented mould, but the

mucilage ferments. Aluminium sulphate was a good preservative for paste, and might be for mucilage, though it was not desirable for medicinal use. He had a sample of chalk mixture made two days previously, and already a strong smell of SO₂ was evident. He could not detect the presence of sulphur in any of the ingredients. It had been suggested to him that the acacia powder might have been bleached with sulphurous acid.

Comments were made by various members, and several points of interest brought out. Mr. McKellar prepared aromatic waters by putting the oil on a plug of absorbent cotton and running the water through, and Mr. Blair, of the Western Infirmary, said chalk mixture made with chloroform water kept a reasonable time; several made their mucilage from the powder as required. Mr. Laing thought mucilage kept best uncorked, with a plug to keep out dust and microbes. Mr. Robb thought gum acacia had not been so good since the Soudanese war. The Chairman intimated the business for next meeting, "Coal and Coal Gas," by Mr. R. Tocher, of Maybole. Votes of thanks were accorded to Messrs. Boyd and McKellar for their notes, and to Mr. Robb for presiding over the meeting.

Liverpool Chemists' Association.—The first general meeting of the forty-seventh session of this Association was held on Thursday evening, February 20, the President, Mr. M. Conroy, F.C.S., in the chair. Messrs. C. A. Bentley and Harry Dyson, were admitted under the new rules as Associate members. A couple of good prints from Röntgen negatives were exhibited by Dr. Symes—one of a human hand, and the other a set of metal mathematical instruments in a wooden case.

An instructive and highly interesting lecture by Professor Boyce, of University College, was then delivered on the "Bacterial Analysis of Water," during which the lecturer rapidly and lucidly demonstrated the presence of various bacteria in water, described the commoner types, discussed the conditions favourable to their growth and development, their probable number and means of ascertaining it, their distribution, and lastly the absolute necessity of carefully conducted bacteriological examinations of drinking water generally.

Micrococci and bacilli of the common types, non-pathogenic, were shown on the screen with the optical lantern, and various chromogenic, gas-forming and phosphorescent bacteria were mentioned as among what might be called the weeds of the water, bacteria multiplying so rapidly that they absorb the pabulum necessary to bacterial life, and therefore crowd out and soon starve the more highly-developed pathogenic bacteria, such as those of typhoid fever. Cultures of the principal chromogenic bacteria were handed round, some reared on gelatin, others on agar-agar. The rapidity of growth of ordinary micro-organisms in water was explained by means of diagrams, as was also the effect of crowding out the typhoid bacillus by the bacteria of ordinary sewage. The excretory products of these common bacteria had a very destructive action on the pathogenic or highly-specialised bacteria, quite irrespective of this crowding or starving out, and it was stated that the purer the water was, and the freer from these bacterial weeds, the better it was adapted to the growth of the higher and dangerous bacteria, distilled water being the most favourable medium to their rapid development. Among the factors to be considered as unfavourable to the growth of bacterial weeds were high temperatures and sunshine, this latter being especially antagonistic to their propagation, and consequently vegetative activity of water micro-organisms is much less in summer than in winter. The life history of a bacterium was then shown by an excellent series of micro-photo slides, which gave a very clear idea of the numerous shapes and modifications a bacterium takes on at different stages of its life. The methods of estimation, counting, isolating, and obtaining pure cultures of the noxious bacteria in water were touched upon, the various pieces of apparatus were shown and explained, and the lecturer in conclusion reminded his audience that chemical analysis could only indicate the probable suitability of water for potable purposes, but it was only by a thorough bacteriological examination that such a water could be absolutely pronounced upon. The recent epidemic at Worthing was an exemplification of this. The town was being supplied with water which was certified by analysts as pure, until Dr. Klein on a bacteriological investigation isolated the typhoid bacillus.

In the discussion following the paper, Mr. Edward Davies, F.I.C., F.C.S., said that whilst being quite prepared for Professor Boyce's deprecation of the mere chemical analysis of water as a means of discovering pollution, he was somewhat surprised to have the

Worthing case given as an example of what bacteriology could effect where chemistry had failed. Three doubtful bacilli found in the water after the epidemic had been rampant for months and previous examinations had been fruitless, could scarcely with justice be claimed as a triumph of the bacterial examination of water over the chemical. The most fruitful source of the failure of chemical water analysis was the incompetence of the chemist who undertook it. When Medical Officers of Health were supposed to be competent to undertake water analysis after two or three weeks' experience in a laboratory before obtaining their diploma, it was not to be wondered at that chemical analysis should fall into disrepute. He held that given a competent and properly trained analyst water pollution could be detected with ease chemically, in all but very exceptional cases, whilst bacteriology only answered in exceptional cases, and then only when too late to be of utility. He proposed a vote of thanks to Professor Boyce for his interesting paper, and for the excellent manner in which the various points had been illustrated.

The vote was seconded by Mr. A. C. Abraham, F.I.C., F.C.S., who had intended, he said, to traverse much the same ground in his remarks as Mr. Davies had already done in such an able manner. He would draw attention to an extract from a paper by Dr. Thresh in the *Analyst*, for May, 1895, page 98, bearing on the points Mr. Davies had mentioned.

Professor Boyce shortly replied, assuring Mr. Davies that he did not imply that the chemical analysis of water was useless to detect pollution, but that it should always be followed by bacterial analysis, when from the united results an accurate and true estimate of the water's value could be obtained.

Chemists' Assistants' Association (London).—The eighteenth annual dinner of this Association, held on Thursday, March 5, was a brilliant success. The place of entertainment was the fine new King's Hall, at the Holborn Restaurant, and for what is believed to be the first time on record the chair was taken by the President of the Association. The results of this experiment proved completely satisfactory, the duties of the position being fulfilled by Mr. E. W. Hill in a manner that left nothing to be desired. The number present was about 240, the visitors including Professor F. T. Roberts, M.D., Mr. Michael Carteighe, Mr. John Harrison, J.P., Mr. Wm. Martindale, Mr. C. B. Allen, Mr. Richard Bremridge, Professor J. Reynolds Green, Professor H. G. Greenish, Mr. J. C. Hyslop, and many prominent members of the wholesale trade, including Messrs. Francis, Rogerson, J. C. Umney, and Slinger Ward. The toast of the "Medical Profession," proposed by Mr. A. R. Melhuish, was responded to in a happy fashion by Professor Roberts, who concluded by a sympathetic reference to one of his former pupils—Dr. Jameson—which was received with enthusiastic applause. Mr. Carteighe responded for the Pharmaceutical Society, in a speech that was remarkably non-didactic and of commendable briefness. Mr. John Harrison proposed the toast of the "Chemists' Assistants' Association," and Mr. Hill, in responding, referred to the ever-changing nature of the membership of the Association, some sixty new members joining every year and as many old ones resigning. The last toast—that of the "Visitors"—was proposed in a humorous speech by Mr. T. Morley Taylor, and Mr. Martindale briefly responded. The musical programme was excellently rendered by Messrs. J. C. Lyons, Wallis Arthur, S. W. Dawson, and Miles, the harp solos by the last-named performer being much appreciated, and the proceedings were brought to a close by the singing of "Auld Lang Syne."

Liverpool Pharmaceutical Students' Society.—A conversation was to have been held by the members of this Society on Thursday evening, March 5, but in consequence of the visit of the Pharmaceutical Conference to Liverpool later on in the year it was decided to postpone the function until then, and, instead, to have an exhibition of lantern slides on the night in question.

The exhibition was held in the Lecture Theatre at University College, the President, Mr. T. S. Wokes, in the chair, and was honoured by a good muster of members and their lady friends.

Mr. H. Wyatt, jun., gave a short communication to the effect that he had been experimenting with the prescription brought before the members at the last meeting by Mr. Mitchell (*ante*, p. 177), with the object of finding a method of preventing the decomposition taking place between the ingredients without having recourse to the use of mucilage. The result was that it was found possible to obtain by the use of glycerin a clear and elegant mixture, which would stand with but a faint deposit, easily diffused by shaking even after a lapse of a week. The formula advised was:—

℞ Ferri et quiniæ cit.	gr. 80.
Butyl chloral hydrat.	gr. 90.
Tinct. gelsemii.....	℥ 120.
Glycerini	ʒiv.
Aquæ, ad	ʒviii.

Heat the butyl chloral and glycerin with ʒii. of water in a capsule until solution takes place, then put into the bottle, and add half the water (ʒiv.); when cold, add the rest of the water with the citrate of iron and quinine dissolved in it and shake.

Mr. Jackson, whilst admitting that the sample passed round showed the modification to be both practical and elegant, thought that mucilage was preferable, as it was the most used in such cases. A prescription dispensed as Mr. Wyatt suggested would have an entirely different appearance to one in which mucilage had been used, and might lead to friction with the customer in case of a repetition at another chemist's.

In reply, Mr. Wyatt reminded Mr. Jackson that the first dispenser, if a member of the Liverpool Students' Society, would certainly not neglect following the good advice so often given by their President, Mr. Wokes, but would mark any such addition or alteration on the prescription for the guidance of future dispensers.

The lantern slide exhibition was then opened by an interesting series of Spanish views, explained by Mr. T. H. Wardleworth, who had visited the places shown and taken many of the photographs himself, concerning which he related several amusing anecdotes. Some well-selected bits in Wales, others from Bolton Abbey, and rural pictures taken in the neighbourhood of Liverpool were next exhibited by Mr. R. H. Mitchell, several of the plates toned to a warm sepia tint by the uranium process having a very pleasing effect. Pictures from the Wirral peninsula, and some excellent Italian architectural views and landscapes taken by Mr. H. B. Morgan, the Honorary Secretary of the Society, then followed, the final portion of a very enjoyable and instructive evening being occupied by Mr. Penketh, who showed pictures illustrating a tour in the Isle of Man, which were, without exception, well-finished and artistic productions. Refreshments were served at the close of the meeting. The University authorities are deserving of the gratitude of the "students" for the readiness with which they provide the optical lanterns, electric light, and other necessaries used during these meetings.

Exeter Association of Chemists and Druggists.—A meeting of chemists and druggists in the Exeter district, organised by this Association, was held at the Arcade Lecture Hall, Exeter, on Thursday afternoon, March 5, to consider the objects of the Proprietary Articles Trade Association. Mr. G. R. Barclay (Barclay and Sons, Limited, a member of the Council of the Trades' Association), presided, and there were also present Messrs. H. Gadd (Evans, Gadd and Co., President of the Exeter Association), A. Tebbutt (W. Sutton and Co.), and H. S. Norris (Condal Water Co., also members of the Council), Glyn-Jones (Secretary), J. H. Lake (Vice-President, Exeter Association), P. F. Row-ell (Hon. Secretary, Holman, Ham and Co.), Jackson (Crediton), Dyer (Honiton), J. Bartleet (Heavitree), W. F. Sanders (Budleigh Salterton), J. Foster (Collumpton), H. W. Gadd (Exeter), Robson (Tiverton), D. Reid (Exeter), T. C. Milton (Exeter), Lake, junr. (Exeter), E. R. Hoblyn (Exeter), and E. F. Stone (Exeter).

Mr. Rowsell read letters, regretting inability to be present, from Messrs. E. Lemon (Exeter), S. Thornton (Exmouth), J. Cornelius (Newton Abbot), N. V. Stone (Newton Abbot), A. Richards (St. Thomas), H. B. Penberthy (Sidmouth), O. W. Catford (Crewkerne), Vinden (Exeter), W. Wright (Newton Abbot), and Pratt (Barnstaple).

In calling upon Mr. Glyn-Jones to address the meeting, the Chairman said he was sorry to say that up to now the movement had not had that ready support as they expected it would have had from the trade. Several manufacturers and most of the London wholesale houses had, however, he was glad to say, joined the Association, and since they had been holding such meetings as this a large number of retailers had joined.

Mr. Glyn-Jones, after thanking the Exeter Association for organising the meeting, and having given a *résumé* as to the origin and history of the anti-cutting movement, said it had often occurred to him that the bulk of the three branches of the trade were really anxious that something should be done with respect to the sale of proprietary articles. He believed that the manufacturers had at last come to the conclusion that their best friends were the legitimate trade, and that if they were prepared to ensure a living profit on the sale of their goods, retailers were prepared to handle them, but

they one and all would say that they would not keep open shop and stock their goods without any remuneration whatever being received. They who used to be the friends of the proprietor had become the greatest stumbling blocks to the sale of his goods, and he candidly confessed he hoped it would go on until every manufacturer under the sun recognised that it was to his interest to guarantee to men who would distribute his goods fair profits for distributing them. He believed eighty or ninety per cent. of the trade were quite willing to distribute these goods, provided they received fair profits. The wholesale trade, he was glad to say, were with them. Mr. Gadd for instance, had taken a most lively interest in the movement from the beginning, and had, with other gentlemen, given valuable support. If goods were to-day distributed at five per cent. profit upon the price originally paid for the articles, he asked how on earth could the wholesale distributors make a profit, and give the retailer a profit too? On the previous Tuesday they had a very important meeting of the manufacturing section of their Council, and at that meeting they decided unanimously to adopt the principle of a minimum price being fixed for each article. As an Association they strongly advocated that the minimum price should be the full price; that if a man advertised the article to the public he should advertise and sell it at its proper value. There were some manufacturers who were prepared to say their goods should not be sold under market price. These manufacturers would combine together for this purpose:—A man who cut one of these goods would not be able to obtain any of them except at such prices as would prevent him cutting. In order to do that it was necessary to have the support of the wholesale houses and retailers in this matter. He could not help feeling a certain amount of sympathy for the Pharmaceutical Society. He candidly confessed that he used to be one of those men who did nothing else but growl at that body. He now found that the Association could no more do what they wanted to without the assistance of the retailer than they could without the Pharmaceutical Society. This was a question the Pharmaceutical Society could not very well take up, but now it had been taken up, he looked to them for support. They had succeeded well at Bristol and at Plymouth. At Bristol they had enrolled twenty-five members, and at Plymouth over thirty, whilst Mr. Norris, who had been in the neighbourhood for the past week or two, had obtained about twenty more members.

Mr. H. Gadd then proposed the following resolution:—

"That this meeting, having heard the report of the representatives of the Proprietary Articles' Trade Association, pledges itself to support the organisation in its endeavour to place the trade in proprietary articles upon a sound and equitable basis."

On behalf of the Exeter Association Mr. Gadd thanked the deputation for coming there to address that meeting, which he was pleased to say was thoroughly representative of the district. Friends at Dawlish and Teignmouth, who were unable to be present that day, but who had been seen by Mr. Norris, had promised to support the movement. His opinion was that cutting was going from bad to worse, and by and bye they would be left something like the proverbial animal that had subsisted on a straw a day. But they did not want to feel that the profit they were making in one section was being lost in another. How was it possible to pay rates, rent, taxes, and salaries out of the profit they got in handling those articles? If it was a severe punishment to the retail chemist, how much more so must it be to the wholesale chemist! Their loss was far greater, and he pitied any firm that had to entirely depend on the sale of patent medicines and proprietary articles. He admitted that at first he looked with suspicion on the movement and thought it was doomed to failure, but after meeting with Mr. Barclay and other gentlemen, he felt that the scheme was not so unpracticable as it at first appeared to be. Whilst there were thousands of articles which came under the head of proprietary articles and were liable to be cut by the trade, the articles on which they depended for the principal sale were very few indeed, and if they could get a small number protected at first, they would be on a fair way to having their wishes realised with regard to the rest. With respect to the Pharmaceutical Society, if one and all had joined that Society instead of so many remaining outside, more would have been done for the retail chemist in the past, and if they were all united on this question, he quite hoped and believed there was a better day in store for them.

Mr. J. H. Lake seconded, and spoke of the value of the Pharmaceutical Society. It would be better for the trade if outsiders joined the Society. He thought that in supporting this new Association they were doing a right thing.

The resolution was carried unanimously.

Mr. D. Reid then moved the following resolution:—

“That this meeting of registered chemists in Exeter and its neighbourhood requests the Council of the Exeter Association of Chemists and Druggists to act as a local executive in connection with the Proprietary Articles' Trade Association.”

He thought they would be standing in their own light if they did not take advantage of the present scheme in order to get something like a fair profit on the sale of proprietary articles. Therefore he had pleasure in supporting the movement, and hoped it would be brought to a successful issue. He, however, did not think for a moment that many chemists who had spent a good deal of talent and time in getting some preparations of their own would abandon them in favour of these articles. Retail chemists would do well to stick to their own preparations, but, still, if the manufacturers were willing to give them a decent percentage for retailing proprietary articles they would sell them without demur.

Mr. Dyer seconded the resolution and Mr. Tebbutt supported. It was his firm conviction that with the support of the trade the Association would put the sale in proprietary articles upon a more equitable basis. It could only be done by strong combination between the manufacturers, wholesale distributors, and the retail trade.

The resolution was carried unanimously.

Mr. Norris then proposed the following resolution:—

“That this meeting of registered chemists in Exeter and its neighbourhood desires to express its pleasure at seeing that a large number of influential manufacturers have already joined the Proprietary Articles' Trade Association, and to assure them and all other manufacturers that any steps they may take in connection with the Association to ensure fair profits would meet with the approval and cordial support of every legitimate retail trader.”

He thought that the placing of a minimum price on the article made a loophole for cutting, and that it should be sold at the price which was put on the label. He had maintained his prices in face of the store trade. The movement was solely in the hands of the retail traders, and the manufacturers. If the retailer did not support the proprietor and the manufacturer he would have no hesitation for one in dropping the scheme. They could only have, say, 25 per cent. profit by combining together to forward the objects of this Association.

Mr. Milton seconded the resolution. He came to the meeting with a certain amount of suspicion, but Mr. Glyn-Jones had placed the matter clearly before them, and he, equally with others, would be only too glad to subscribe to any association which would help them to increase their profits. He dared say he was regarded in Exeter, to an extent, as one of the cutters, but he denied that. He had traded for many years on one system, and he would continue to do so. His system was not to allow chemists, grocers, or the stores to cut below his prices. He had never cut anyone knowingly. He thought there should be two prices. Every cash payer should be encouraged. He considered that 1s. 1½d. articles should be booked at 1s. 1½d., but that the cash price should be 1s. They would, he thought, be satisfied if they got 15 per cent. clear profit.

Mr. Hoblyn complained of the manner in which poisonous patent medicines were being cut. He thought the full and proper price should be put on them.

Mr. J. H. Lake said the sale of poisonous patent medicines was entirely in the hands of chemists themselves.

Mr. Jones, in reply to various questions, said he did not suggest that chemists should not push the sale of their own preparations, but he thought that without any binding clause they would be prepared to sell without question over the counter any goods upon which they made a clear profit of 20 or 25 per cent. What they wanted was for everyone to be on the same level, and making a profit. If they would give an undertaking not to sell the goods under a certain price, they would promptly deal with the cutters. If they found a man cutting they would at once communicate with the Secretary, who would investigate the case. If they could not get the man to conduct his business in a fair way, his name would be added to a list of persons to be debarred from obtaining goods at other than the full or maximum prices. With regard to the question of poisons, he must say they stood before the country in a ridiculous attitude. They had organisations on all hands, and even the dock labourers could put their heads together and get 6d. where before they used to get 4d. But there were eight or nine thousand chemists in the country who had the sole right to sell poisonous patent medicines, and yet they allowed them to be cut. He suggested that a personal canvass of the chemists in the district should be made, with a view to getting them to support the movement.

Mr. Rowsell said he thought the margin of profit should not be less than 20 or 25 per cent.

Mr. Milton said he suggested 15 per cent. as the minimum, not the maximum margin.

Mr. Rowsell here read a letter regretting inability to be present from Mr. Holloway, of Fleet Street, Torquay, who said: “It has been suggested to me that mine is an ambiguous position as a member of your Council, I being a leading cutter, but it seems to me these are the very men you want in this scheme, with which I am in full sympathy.”

The resolution was carried unanimously, and on the motion of Mr. Bartleet, seconded by Mr. Jackson, a vote of thanks was accorded the representatives of the Proprietary Articles' Trade Association, and the meeting terminated.

ENGLISH NEWS.

LORD RAYLEIGH ON LIGHT.—In his lecture on light at the Royal Institution on Saturday afternoon, Lord Rayleigh remarked that colours on passing through a lens were dispersed and the rays bent. If the bending was greater for one colour than another no perfect image could be formed. They might, however, by an arrangement of glasses overcome all that, and also all the refraction, as in the telescope. He went on to speak of the discussion of this which took place in the time of Newton, and said it had been determined that it was possible to make achromatic glasses, and that the eye was not achromatic. By experiments with crown and flint glasses he showed how the dispersion of colours was overcome, and remarked that the same thing applied to lenses. Turning next to speak of the colours of thin plates, he said that the main facts were developed with much success by Newton in his “Optics,” but Young was the first to explain the colours of these plates from the point of view of the wave theory, and to show that on that basis all the complicated effects admitted of simple explanations. Lord Rayleigh exhibited some figures of “Newton's rings” on the screen, and said that in order to analyse the phenomena Newton suggested light from one side of the spectrum only. By the way in which he thus used the red and the blue Newton got the key to the formation of colours when white light was employed, and so established the scale of colour. Lord Rayleigh next proceeded to make some interesting experiments by means of films or bubbles, which proved most successful, notwithstanding his promise that it was difficult to get a good soap solution for the purpose, and that a chemist who devoted his attention to that point would confer a great benefit. They wanted soap film, he said, that would stand some amount of knocking about. The first of these rings or bubbles was shown with the Newton rings of colour brightly marked at the top, but fading away towards the bottom. To the next a little air was applied, and some really fine effects of colour were obtained, the difference in the thickness of the colours being described as due to differences in the thickness of the film. One of the best films was spoken of in general terms as made of collodion, though there were certain details of preparation that had to be followed, a final step being to lift it off the surface of water by means of a ring, when it could be kept for some time. Lord Rayleigh had two of these films prepared, and with them showed some of the most gorgeous effects of brilliant and varying colours. In that case, however, the colour was not due to thickness, but to the film being double. One fact in relation to soap films, he said, was that their capillary tension did not depend on the thickness of the films, as, in spite of different thicknesses of the film, the tension was practically the same. This led him to speak in some detail of the effect of the interference of light and reflection.—*Daily News.*

A COMPLAINT AGAINST THE BRITISH PHARMACOPEIA.—In his annual report to the West Riding County Council, Mr. Alfred H. Allen, the public analyst for the West Riding, says the number of drugs submitted during 1895 was largely in excess of any number analysed in any previous year. He thinks it a misfortune that the current edition of the British Pharmacopœia is very defective in many of its definitions and descriptions of the articles authoritatively recognised therein, and it is additionally unfortunate that the law does not in so many words constitute the British Pharmacopœia the official standard for the drugs described therein.

DEFICIENT SWEET SPIRIT OF NITRE.—Mr. Walter James Ward, chemist, of Conisborough, was charged at the Doncaster Court, on

Saturday, with having sold adulterated sweet spirit of nitre. On February 25, Mr. Wilson, of Rotherham, went to Mr. Ward's place of business and bought 4 ozs. of sweet spirit of nitre. On analysis the liquid was found to contain 65 per cent. of spirit and 35 per cent. of water. The defence was that the spirit was all right when it left the main shop for the branch at Conisborough. Since the nitre was purchased the man in the shop had received notice to leave.—A fine of 40s., including costs, was imposed.

INLAND REVENUE PROSECUTION.—At Marlborough Police Court, on March 4, Richardson J. Dodd, a chemist, of 70, Tottenham Court Road, answered to five summonses taken out at the instance of Thomas Cusack, an officer of Inland Revenue, for selling certain medicines without having the necessary stamp attached to each bottle and box.—Mr. Alpe, barrister, prosecuted on behalf of the Inland Revenue authorities, and Mr. Robert Todd, solicitor, defended.—The defendant pleaded guilty, his solicitor urging that he was not present when the articles were sold to the Inland Revenue officer, and that he was greatly in the hands of his assistants.—Mr. Alpe pointed out that the defendant had been fined previously for a similar offence.—Mr. Hannay imposed fines amounting to £40.

ILLEGAL USE OF METHYLATED SPIRIT.—At Clerkenwell Police Court, on March 6, Ebenezer Marshall, of 36, St. Paul's Road, St. Pancras, was summoned for having on January 1 sold an article capable of being used internally as a medicine, viz., "Marshall's Red Bottle," in the preparation of which methylated spirit had been used, contrary to the Statute.—Defendant pleaded guilty and ignorance of the law.—A solicitor who appeared for the Excise Authorities stated that the penalty was £100. The preparation should have been made with ordinary spirit of wine, which paid duty at the rate of 16s. per gallon. As methylated spirit paid no duty, the Revenue was defrauded. Persons who made the preparation in a proper way were also unfairly handicapped. The defendant sold the stuff at a private house.—Mr. Horace Smith imposed a fine of £10.

THE NECESSITY OF THE POISON LABEL.—An inquest was held at Cockington Farm, Alvington, on March 5, on the body of Studley Lee, aged about three months, son of H. Samuel Lee, farm labourer.—The father of the deceased deposed that his wife had recently been suffering from phlebitis, and had been using a kind of paint. On the previous Monday two of his children drank some of the contents of the bottle.—Dr. Matthew Richard Gooding, of Bideford, stated that the preparation was "belladonna and glycerin," to be used as a paint. It was intended only for outward application, but was a poison in excess. Witness was not in the habit of labelling a mixture of that kind "poison." People knew it was only to be applied externally. He found the deceased suffering from the poison, but the elder child did not seem much affected. He used the stomach pump and antidotes and stimulants, staying nearly an hour. The deceased died from the effects of belladonna poisoning.—The Coroner, in summing up, said he did not think there was much blame attaching to the father for leaving the bottle about.—The Jury found a verdict of "Death from misadventure."

THE HOLBORN EXPLOSION.—Dr. G. Danford Thomas resumed the inquest upon the body of Mr. A. F. St. George, who was killed by the explosion of an iron cylinder while making an experiment in connection with a patent for the manufacture of candles, at 15, Red Lion Square, Holborn, on February 20.—Colonel Sir Vivian Majendie represented the Home Office.—Mr. T. W. Glass, assistant to Messrs. Redwood and Hailes, said the final operation in connection with the work that the deceased was engaged upon was to fill the cylinder with stearic acid, glucose, and alcohol. On the Wednesday night deceased commenced heating the cylinder, but postponed it until next day. He placed the cylinder on the furnace at 12.25 p.m., and twenty minutes later a noise was heard in the vessel. Deceased, however, said he was not of opinion that the noise came from the cylinder, and he was holding an instrument on the top of it when the explosion occurred. Witness was injured about the face.—By Colonel Majendie: There were also a little acetic acid and a few iron nails in the cylinder. There was a valve to the cylinder, but it was closed. Deceased wished to get a pressure of two atmospheres on the substance he was working. Witness did not feel there was any danger, as the deceased was an expert chemist.—Dr. Dupré, chemical adviser to

the Explosives Department of the Home Office, produced the cylinder, which was rent from top to bottom. Stearic acid expanded much more quickly than water when heated, and, in his opinion, the explosion was caused by the overheating of the cylinder, which was a good one of its kind. The mistake lay in filling the cylinder quite full and overheating.—By Colonel Majendie: There was not the slightest fault in the cylinder.—The Jury returned a verdict of "Accidental Death."

SCOTTISH NEWS.

ACONITE FOR HORSERADISH.—A distressing case of poisoning occurred in Aberdeen on Friday last (6th), James Robertson, 20, residing at Mount Street, was working on some ground near the Allenvale Cemetery, and ate a root which he dug up. He was seized with illness, and showed symptoms of poisoning. He went home, where he told his mother that he was dying, having eaten a root which he thought was horseradish. He expired twenty minutes afterwards. It has since been proved that the root eaten was taken from an aconite plant.

PROPOSED REVIVAL OF A WESTERN CHEMICAL INDUSTRY.—Owing to the discovery of a new process of making chlorine and bleaching powder, the industry will in all probability be resuscitated in Glasgow on a large scale at an early date. The new process is the joint invention of Mr. Adolph Vogt, chemical engineer, and Mr. A. Ross Scott, manager of the Carntyne Chemical Works, and experimental plant has been in operation at the works of the Carntyne Chemical Company, Parkhead, Glasgow, with highly satisfactory results. The process is as follows:—Gaseous hydrochloric and nitric acids are brought into contact in a specially designed and constructed apparatus, through which a constant stream of heated sulphuric acid flows. The sulphuric acid absorbs the water formed by the inter-action of the two gases, and while it passes out of the apparatus into an overflow, and is concentrated to be used again, chlorine and a compound of chlorine with nitrous oxide go forward to a series of towers. In these the nitrous oxide and some hydrochloric acid are removed, and the chlorine in a pure state passes on, either to be absorbed by lime in the usual way, forming a bleaching powder of high strength, or to be condensed into liquid chlorine. The nitrous gas recovered in the towers is re-converted into nitric acid, to be again used in the process of manufacture. Apparatus for the re-conversion of the nitric acid has also been erected for experimental purposes, and has been found to give thoroughly satisfactory results. As the outcome of the complete process, it is stated that the whole of the chlorine and salt used can be converted into bleaching powder, a result hitherto unattained, whilst only a very small percentage of the acids used in the process is lost.

IRISH NEWS.

PHARMACEUTICAL SOCIETY OF IRELAND.—The monthly meeting of the Council was held on Wednesday the 4th instant, the President, Mr. W. J. Wells, jun., in the chair.

The President expressed regret at the result of the recent case of the Pharmaceutical Society of Ireland *v.* Boyd, in which the Queen's Bench Division of Ireland held that a limited liability company was not a "person" under the Pharmacy Acts, and therefore not liable to be dealt with as such for carrying on the business of a pharmaceutical chemist. The case had been most ably fought for the Society by their counsel, Messrs. Gordon, Q.C., Campbell, Q.C., and Day. Unfortunately as the question was brought before the Divisional Court on a "case stated," there was no appeal. He was bound to say that the judges did not go out of their way to give a decision in favour of the Society. That was hard to understand when the Society was carrying out a duty for the protection of the public. In the smaller courts throughout the country the Society got anything but sympathy. It was the duty of the Council not to take this decision of the question as final, and they waited the advice of their solicitor and counsel as to whether it could not be carried to the House of Lords in some other case. Meantime it would not be a bed of roses with the limited companies, for if they employed unqualified persons to compound or sell poisons, those persons would be liable to prosecution.

Mr. Turkington asked, would not the limited companies have to put the names and addresses of their qualified assistants on the labels they used? The President said that was a nice point which had not yet been raised.

In reference to the case of Mr. Cleeland and the nine assistants and apprentices of Gratton and Co., Limited, who had sent in a memorial asking to be admitted to the examination for the licence, a letter was read from Messrs. Casey and Clay, the Society's solicitors, after which Mr. Beggs moved that the applications of Mr. Cleeland and the nine other memorialists be acceded to. Mr. Grindley seconded the motion. The President said Mr. Clay had told him that the only way in which they could admit these young men was by rescinding the regulation which kept them out. If the Council did that it would be giving up the whole situation. Mr. Turkington and Mr. Conyngham strongly opposed the motion, which after considerable discussion was carried by 7 votes to 2.

ULSTER PHARMACEUTICAL ASSOCIATION.—A social meeting of this Association was held on the 3rd inst. in the rooms of the Society, 5, Royal Avenue, Belfast, Mr. William Prott, M.P.S.I. and E, presiding. There was a very large attendance of Belfast pharmacists. Refreshments were served, after which an excellent musical programme was presented by members and friends of the Association, every item being rendered in artistic style, and well received by the large and appreciative audience.—On the motion of Mr. G. H. Waugh, M.P.S.I., seconded by Mr. R. S. Moore, Ph. Ch., a hearty vote of thanks was passed to the performers for the excellent programme, which was responded to by Mr. F. Picton, Mr. W. Imrie, and Mr. Fred. Smith. Herr Louis Werner, conductor Belfast Operatic Society, and Mr. Picton, Mus. Bac., Oxon, played the accompaniments in a faultless manner.—A vote of thanks to the Chairman, on the motion of Mr. R. W. McKnight, M.P.S.I., seconded by Mr. R. Ritson, M.P.S.I., and the playing of "Auld Lang Syne" by the band, brought a most successful meeting to a close.

A PRESCRIBING CHEMIST.—Dr. Kenny, M.P., Dublin City Coroner, at an inquest, held on Monday last on the body of a girl aged ten, severely censured a Mr. Popham Allen, L.P.S.I., for prescribing for deceased whose death was found to be due to peritonitis. Mr. Allen said as he had served his time to his father, a medical man, he thought he had a right to prescribe in minor cases; but the Coroner told him he had no such right.

NO SECRET MEDICINE will be permitted by the Irish Local Government Board to be charged on the rates; and they have notified the Carlow Poor Law Guardians to that effect regarding "French's Cure for Epilepsy," which the medical officer had requisitioned for.

AN UNOFFICIAL REPORT has been received by the Irish Local Government from an infirm inmate of the North Dublin Workhouse, complaining of the management of the infirmary, of which he had nearly three years' experience. In the course of his letter he stated: "All the medicine and poisonous ointments and lotions for external use are in the hands of inmates, which I believe is contrary to the law of Her Most Gracious Majesty the Queen." On the part of the workhouse officials it was suggested that the complaints were due to the stopping of a "stimulating" mixture, which the inmate had been receiving.

OBITUARY.

ATKINSON.—On February 23, E. S. Atkinson, Chemist and Druggist, Knottingley. (Aged 68.)

SWINGBURN.—On February 27, R. H. Swingburn, Pharmaceutical Chemist, South Molton. (Aged 54.) Mr. Swingburn was local secretary for South Molton, and was a former student in the Society's School of Pharmacy.

BROWN.—On February 27, William Brown, Chemist and Druggist, Monkwearmouth. (Aged 59.)

GRINDELL.—On March 2, William Grindell, Chemist and Druggist, Hull. (Aged 73.)

THOMAS.—On March 3, Henry Thomas, Pharmaceutical Chemist, St. Lawrence. (Aged 85.)

PENTELOW.—On March 8, Harry Pentelow, Chemist and Druggist, late of Lincoln. (Aged 38.)

CORRESPONDENCE.

THE DECAY OF PRESCRIBING.

Sir,—The abolition of pharmacology as an examination subject will, I fear, in the near future exert a prejudicial effect on the work and status of the skilled pharmacist. For many years it has fallen to my lot to have to impart to medical students, on the point of presenting themselves for their final examinations, some knowledge of the art and mystery of prescribing, a subject concerning which they are usually profoundly ignorant. A man may be an accomplished diagnostician and a profound pathologist, and yet be unable to write the simplest prescription. His difficulty is not so much in prescribing the right thing as in prescribing anything at all. If this has been the experience of the past, what are we to expect in the future? What chance is there of teaching therapeutics when the student knows nothing of the very foundation on which it rests? It is true that pharmacology is still retained as a lecture subject, but no student will devote much attention to a subject on which he knows he will not be examined. We can compel his bodily attendance in the lecture-room, but his thoughts will be elsewhere. We may play on the pharmacological pipe, but we cannot make him dance; he will remain ignorant of the action and uses of drugs, and will, in due course, be sent out into the world without knowing how to prescribe for the commonest symptom or the most simple disease. In five or six years from now we shall have growing up around us men who from sheer timidity will rarely venture to prescribe anything but the simplest remedies. The pharmacist may display the time-honoured inscription, "Prescriptions dispensed with care," but there will be no medicines for him to compound. The unfortunate qualified practitioner, whilst cursing the stupidity of the authorities who made him devote the best years of his life to the acquirement of much useless knowledge, and left him ignorant of the means of alleviating the sufferings of his patients, will in despair, fall back on the preparations of the advertising chemist. When he has a case of sciatica he will prescribe someone's "Antisciaticine"; when a patient complains of lumbago he will recommend him to try "antilumbagine," and when hæmorrhoids engage his attention, he will have nothing better to suggest than a careful application of the popular remedy "antipiline." These and similar preparations—all made in Germany and of unknown composition—will be his stock-in-trade. Patients will cease to consult him, unless, perchance, they want an autopsy performed, and the pharmacist finding his occupation gone, will endeavour to eke out a miserable subsistence by competing with the grocer and the oil shop in the sale of patent medicines and druggist sundries "at store prices."

Welbeck Street, W., March 5, 1896. WILLIAM MURRELL, M.D.,
Lecturer on Pharmacology and Therapeutics
at the Westminster Hospital.

SHOPS (EARLY CLOSING) BILL.

Sir,—I have been inclined to believe that the Council of the Pharmaceutical Society was a sufficiently intelligent body to support Sir John Lubbock's Bill *nem. con.*, therefore, the remarks made by Mr. Hampson at the Council meeting were particularly displeasing to me in tone and sentiment. "Individual Liberty" may be a cry in keeping with a trader's sense of liberty, in which character Mr. Hampson uses it and shows a mind undisciplined to an extent I would not have given him discredit for; but when a two-thirds majority of the traders involved is necessary to make the Bill operative individual liberty is amply provided for. It is a senseless cry, suited to an Eastern despot only. I cannot conceive of the English people being degraded by a wise control under statute laws, which the more intelligent Scotch, and English too—else we would never have had this Bill—know to be for the good of the whole. I look to the Council for support of the Bill, strenuous if need be; but certainly unequivocal.

Glasgow, March 10, 1896.

ALEX. LAING.

EARLY CLOSING FOR CHEMISTS.

Sir,—In your article under this heading of last week you court an expression of opinion by those who hold views favourable to the general intentions of the Bill. In my opinion there is very grave reason why we should take advantage of everything that will help us in this way. We are all the time grumbling because the trade is so dissociated, but what time have we for meeting together at an hour which would be generally convenient? As a calling we are largely outside all public bodies and institutions of every description, and we wield by no means the influence that our education and status should carry with it, mainly because nearly all such work is done after other people's business is over, but while we have the full strain. When are our young men to educate themselves for their life's work? In this town we are specially fortunate in having a most highly organised and efficient technical school, but I make bold to say that there are very few pharmaceutical students there. It is all but impossible for them to be spared. Why should they need to be "spared"? They ought to be free to go. "Early Closing," does not appear to me to complain of the place where he undergoes "slavery," but rather seems to complain of the general conditions ruling almost everywhere, which cannot be escaped by going from one employ to another. There is but one pharmacy in this town closed before nine o'clock, and there are several open after ten, and on Saturday nights busy between eleven and twelve midnight. The thing is disgraceful, but no one can help it. You say the Bill proposes legal restraints on trade. We say it does nothing of the sort, but only restraint on the time of trading and of some selfish traders who will always hang about for the last bawbee that is to be had. You want to be told why those who as assistants fretted under these conditions continue the practice as employers. To an extent we do not. Matters are better than a generation ago, but only slightly, and, despite your argument to the contrary, we are all only a part each in a great whole. There may be a strong man here and there who can stem the tide and act individually, but these are few and far between. Let the Council and the Journal act in sympathetic appreciation of those whose business is largely trading, and for the next election let all the grumblers do their grumbling practically by inaugurating a Council more to their ideas. This can be done, but only the grumblers can do it.

Riverside Pharmacy, Cardiff.

W. J. SANDERS.

SHOPS (EARLY CLOSING) BILL.

Sir,—I am amazed at the apathy of the general body of shopkeepers in regard to the Shops "Early Closing" Bill, now being rushed through the House of Commons. A correspondent some time ago in one of the daily papers described it as a "Small Tradesman's Annihilation Bill," a very true and accurate description. I suppose they will continue to slumber on in blissful ignorance until it finds its way on to the Statute Book, and they wake up to the fact of what it means. I have before me a copy of this Bill, which bears upon every page of it the stamp of the professional agitator, who has over everything to gain and nothing to lose; a Bill, I maintain, most unjust, and one calculated to lead to (and will if passed) endless trouble and annoyance—in fact, I believe it will mean simple ruin to numbers of small tradesmen. It is a direct interference with lawful trade. I am obliged to Messrs. Hampson, Martin, Allen, Hills, and Gostling for the stand they have taken upon this question in the Council. I regret exceedingly the Council did not see its way to oppose it to the utmost as a needless, impracticable, and vexatious Bill, a restraint upon honest industry.

I know it is said, "But you will still have the two-thirds majority?" Yes; but I hold, sir, that a two-thirds majority have no moral right to coerce the remaining one-third in a matter so serious—the obtaining an honest livelihood. The stale argument usually resorted to, as you observe, "because others keep open," is simple nonsense, and in no sense a valid reason, but really and truly a bogey. Let those who can afford it close early if they think proper, and be thankful they are able to do so. I confess I cannot afford it (when I can I will undertake to say my neighbour will not influence me), and to coerce the remainder (one-third) will lead to very serious consequences. I, for one, do not think that the shopkeepers in general, and the chemists in particular, will quietly submit to such restraints being put upon legitimate trade. Close early, and the public will shop early, it is said. Nothing of the kind; a great part of it would never be done at all. Is it not a fact that the larger part of the shopkeepers do the bulk of their business in the evening? Are there not numbers of chemists who have no need for an assistant

except at night? Close early, and no assistants would be required in numberless cases. Again, who is going to decide for us this sacred line of demarcation between things lawful and unlawful? That I suppose will be left to the P.C. on the beat, to step inside whenever he may think proper and see what is going on. I am quite willing that the rights of the assistant should be safeguarded to the fullest extent, but that I am not to be permitted to carry on my business as I may choose without his aid is, in my judgment, a unique piece of injustice. Sir J. Blundell Maple and other members also recognise the dangerous character of the Bill, and I am pleased to see their names added to the grand committee, and I trust he will do his utmost, on behalf of the small tradesman, that the principle of his own amendment be incorporated in the Bill. I do not hesitate to say not simply as a chemist, but as a tradesman, that if this Bill becomes law, as it now stands, it will mean simply ruin to large numbers.

May I offer you, Mr. Editor, my respectful sympathy or congratulation on the onslaught "Early Closing" has seen fit to make upon you and the Society, threatening to leave you stranded high and dry; do not fear, we shall not all leave you thus. Let "Early Closing" wait until he is the happy possessor of a model pharmacy of his own, around which there springs up half a dozen cutting stores, coupled with the regular periodic demand for rent, rates, taxes, salary, and sundry other trifles, he will then be competent to express an opinion. You are right, sir, these gentlemen who scream the loudest when they are employed, are the greatest offenders when they are employers. I do not think there are many assistants exhibiting such a dissatisfied spirit as "Early Closing." I know many, personally, who have good reason to congratulate themselves upon the conditions under which they serve.

London, March 10.

M. P. S.

"CASH CHEMISTS."

Sir,—I perfectly agree with Mr. Henry's remarks in last week's issue, and am greatly interested in the matter, as no doubt thousands of other men are. It is high time something was done to prevent limited companies from using the title "Cash Chemists." It is very unfair to men who have been compulsorily educated at considerable expense in order to pass the examinations of the Pharmaceutical Society, and whose prospects in the near future will be entirely ruined if companies are allowed to trade in the same manner as legally qualified chemists. I have been in business nearly seventeen years, and have gradually found my trade going to the so-called cash chemists, Slippers and Boots, Limited. The public are greatly deceived and misled by the above title. The Act was never intended to apply to limited companies but only to individual persons, and why this sort of thing has been allowed to progress, which it is doing to a very serious extent in this city, is a puzzle to many. If the Pharmaceutical Society wish to become popular they must use all the means in their power (and that soon) to stop this company trading under false colours.

Sheffield, March 9, 1896.

SMILAX.

ANSWERS.

"ENQUIRER."—The readiest method is to dissolve an aniline colour in water with the addition of a little gum.

"LIGNUM."—We do not know the formula for "liq. ferri phosph. magnetic, Lightfoot." Possibly some reader of the Journal may be able to oblige, but it is doubtful if the formula has ever been published.

"ASSISTANT."—You might get Gorham's 'Tooth Extraction' (H. K. Lewis, London, 1s. 6d.). Of course, you only require the book for reference, and will learn the art under a skilled teacher.

W. E. MEATS.—Probably during the present publishing season, but the fact is not yet announced.

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs. Bartlett, Bayley, Bindloss, Callis, Cracknell, Dewson, Dixon, Durbin, Ellinor, Ferguson, Hagon, Hill, Hinde, Hoseason, Ince, Laing, Meats, McKnight, Netting, Pollitt, Russell, Sanders, Smith, Volans.

Several communications are unavoidably held over on account of want of space. Correspondents are requested to write as briefly as possible.

JAVANESE PATCHOULI.

BY J. CH. SAWER, F.L.S.

The word "Dilem," which is now rapidly coming into use to designate patchouli leaves from Java as a special production of that island, is very inaptly applied, and very misleading—for several reasons. In the first place, there are two distinct varieties of the plant grown in Java (as hereafter explained and illustrated). Secondly, the word "dilem" is not a pure local word, but a common Malay word, which has long been in use in the Straits Settlements to designate the ordinary patchouli* produced in those districts. This fact came to my certain knowledge quite twenty years ago:—I had been requested by the late Eugène Rimmel to supply to his firm five bales of fine Malayan patchouli herb; fortunately, Mr. John Fisher was then in London, and he kindly gave me the most accurate information concerning the plant. The bales were delivered from a large parcel which had recently been shipped from Singapore to London, and I had one bale opened at the London Docks to inspect and sample. A portion of the sample thus taken I have handed to Mr. E. M. Holmes, F.L.S., for purposes of comparison with more recent importations from the Straits or elsewhere. I venture to state that such comparison will show that the character of the leaf formation has remained constant; also that such character is quite in accord with that of the plants vended by Louis Van Houtte, of Ghent, as *Pogostemon patchouli*.

After minutely describing to me the methods of cultivation of the plant, and distillation of the oil on his estate, Mr. Fisher informed me that the ordinary name of the herb in the Straits Settlements was "Dilem," meaning a mattress stuffed with these leaves (a very common practice, as I explained on page 80 in the last volume of this Journal). Considering that Mr. Fisher was resident for many years in Province Wellesley, and was probably the largest grower and distiller of patchouli, his information was beyond doubt; but yet, finding that great stress is now laid upon

the word "dilem" as meaning purely a Javanese specialty, I wrote to Dr. Romburgh, of the Botanic Gardens, Buitenzorg, Java, for specimens. These he very kindly supplied at once; from these specimens I made the drawings here reproduced, showing the flowering variety, Fig. 1, and the non-flowering one, Fig. 2. The Fig. 2 A is a facsimile of a leaf of the non-flowering plant and Fig. 1 A the same of the flowering one from different parts of the stalk (of course, the nearer the flower-spike the smaller the leaf). Dr. Romburgh says that in the wet season the leaves of the non-flowering plant attain a larger size than the specimen sent.

The main differences in the appearance of these two plants from each other, and from the well-known Malayan plant, are apparent at a glance from the figures here given, but Mr. E. M. Holmes has kindly undertaken to thoroughly describe their botanical structure, and to compare them with already known species of *Pogostemon* and *Plectranthus*.

The oils from these two plants differ from each other very considerably in odour; also from the Malay oil. The odours of both are intensely powerful and persistent, so much so that after sniffing one of them, the second one cannot be fairly appreciated if smelt at once; and if the least particle of oil should come into contact with a hair in the nostrils that nose is good for nothing during the rest of the day. In testing the odours of such powerful oils it is best to smell them in a diluted state, or, by allowing a minute drop of oil to evaporate from a sheet of paper in one room and the same from another sample in another room.

Messrs. Schimmel and Co. state, in their report of April, 1895, that "supplies of the beautiful Java variety of leaves have been completely wanting for a long time"; also, in their report of October, 1895, "the sale of patchouli oil has been greatly affected by the present rage for strong scents, and the oil is one of those in daily use in perfumery."

In view of the large business which may be done in these Javanese oils, it would be well to identify the plants by absolute

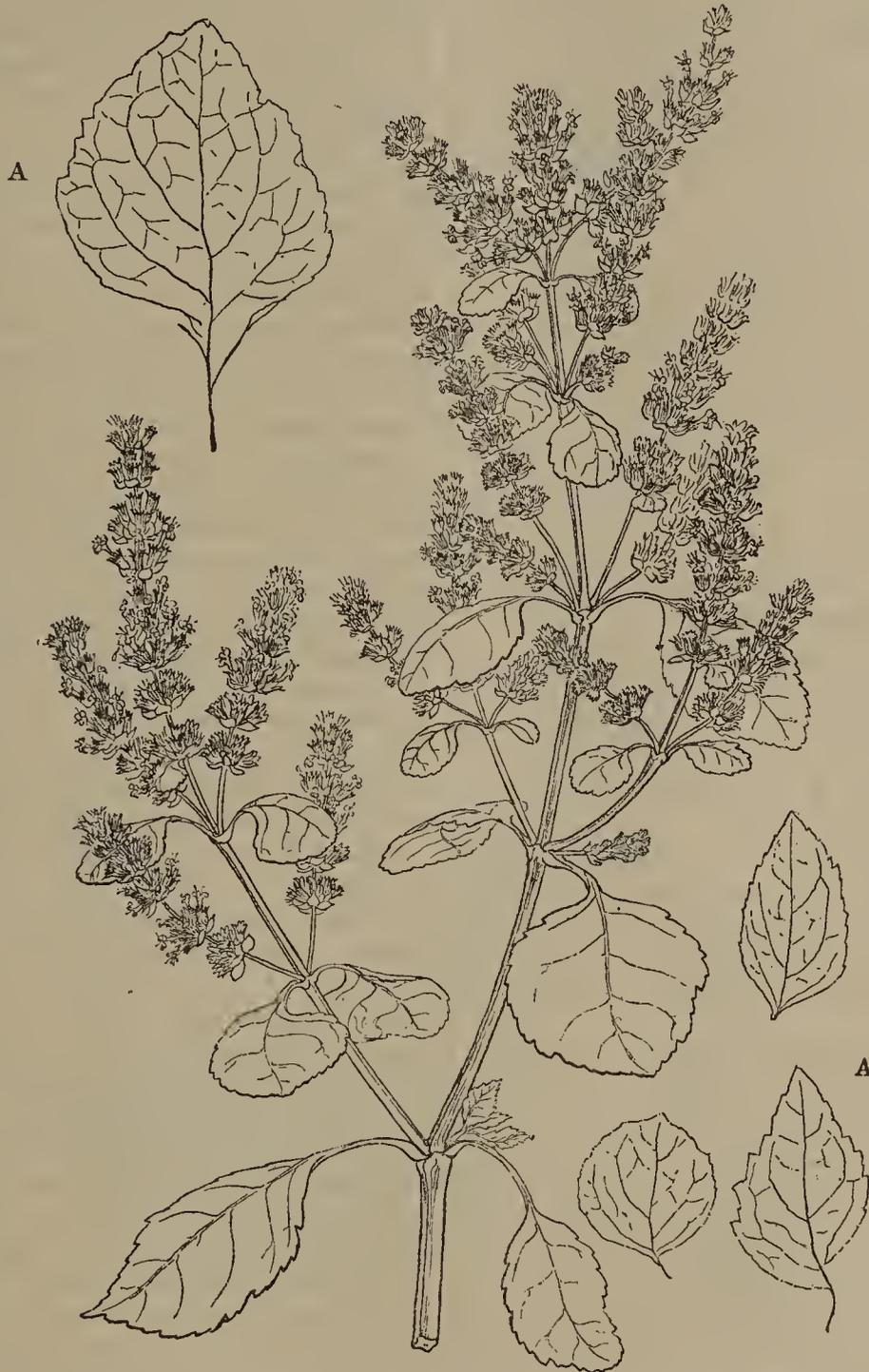


FIG. 1.—JAVANESE PATCHOULI.—THE FLOWERING VARIETY. Two-thirds Natural Size.

* 'Odorographia,' pp. 293-308.

specific names, and to drop the word "dilem" altogether. It is with this object that the present paper is written. The two Javanese



FIG. 2.—JAVANESE PATCHOULI.—NON-FLOWERING VARIETY.
Two-thirds Natural Size.

plants do not appear to have been previously figured in any work or journal, and may therefore be of interest.

NOTE ON DILEM AND PATCHOULI.

BY E. M. HOLMES, F.L.S.

Dilem.—The occurrence in commerce of a volatile oil called dilem, resembling oil of patchouli in odour, but differing from it in some respects, has led, as Mr. Sawyer has justly pointed out, to some degree of confusion, since the name dilem, or nilam, seems to be applied to several plants of the genus *Pogostemon*, as well as to patchouli.

The plants which pass under this name in the Soudanese and Malay languages are *Pogostemon menthoides*, Bl.; *P. comosus*, Miq.; *P. gracilis*, Hassk.; *P. cristatus*, Hassk.; *P. fraternus*, Hassk.; and *P. tomentosus*, Hassk. By the natives of Java the name dilem is applied to *Coleus atropurpureus*, Benth. ('Filet, Woordenboek,' 1888, p. 79). Whether any of these or all of them have the odour of patchouli I have at present no means of ascertaining, but only one of these, viz., *P. menthoides*, is stated by Miquel ('Flor. Ind. Batav.,' (2), p. 962, 964, 1856) to be placed among clothes to keep off insects. It may be here mentioned that the word dilem (or tilam, as it is given in Swettenham's 'Malay Vocabulary,' p. 119) means a mattress, in allusion to this use of patchouli.

The statements concerning the dilem used for distilling the oil are as follows:—In the 'Verslag 'Slands Plantentuin te Buitenzorg,' 1893, p. 53, it is pointed out that the plant cultivated in the garden under the name of *Pogostemon patchouli*, but of which the identification was still uncertain, has a growth less strong than the other (i.e., ordinary patchouli), and that it flowers freely, and can be propagated from seeds as well as from shoots. It would appear that the plant received by Mr. Sawyer as the "flowering plant" is the plant recognised at Buitenzorg as the dilem of com-

merce, for it is further stated in the 'Verslag,' 1893, p. 55, that Messrs. Schimmel have obtained from the "flowering plant" an oil from this plant resembling patchouli, but with a slight anise odour, sp. gr. 0.961, there seems to be little doubt that this is the one yielding the dilem oil prepared by them. In order to determine which species this plant may be it is necessary to know the species of *Pogostemon* which occur in Java, which are given by Miquel as follows:—

1. *P. patchouli*, Pell. (cultivated); 2. *P. heyneanus*, Benth.; 3. *P. plectranthoides*, Desf.; 4. *P. gracilis*, Hassk.; 5. *P. cristatus*, Hassk.; 6. *P. tomentosus*, Hassk.; 7. *P. comosus*, Miq.; 8. *P. menthoides*, Bl., to all of which the name of dilem is applied. The only other species of the genus mentioned, as found in Java, is 9. *P. fraternus*, Miq. The dilem plant would, therefore, appear to be referable to one of these.

On comparing the descriptions given by Miquel with the flowering plants received by Mr. Sawyer, it is noticeable that in the latter the hairs on the leaves and stem are closely appressed, the hairs being so thinly present that the veins show of a red-brown colour. In *P. gracilis* and *P. cristatus* the leaves are glabrous; in *P. menthoides* the hairs are short and spreading, or deflexed; in *P. tomentosus* and *Coleus atropurpureus* the hairs are spreading; and in *P. fraternus* the few hairs present are erecto-patent. The only three species having the hairs closely appressed are *P. plectranthoides*, *P. heyneanus* and *P. comosus*. The first has leaves with a finely biserrate margin, more rigid, and of a lanceolate outline different to that of true patchouli, and large bracts, which exceed the calyx in length. *P. heyneanus* has fewer flowers in the verticillasters, which are from one inch apart below to a quarter of an inch apart at the apices, larger more oval-lanceolate leaves of a thin substance, and bracts equalling the calyx in length. With *P. comosus*, Miq., Mr. Sawyer's plant agrees well in the close approximation of the verticillasters, in the lanceolate bracts equalling the calyces, and in the number of flowers in each verticillaster. The specimen with which I have compared it is one collected in Java, by Horsefield, and is deposited in the Kew Herbarium.

It may, therefore, I think, express the opinion that the dilem plant of European commerce is the *Pogostemon comosus* of Miquel; but how far this species is distinct from *P. heyneanus*, Benth., is another matter. So far as can be judged from herbarium specimens, *P. heyneanus* is a variable species. The typical specimen in Wallich's herbarium,* No. 1532, from Heyne's herbarium apparently consists of two plants, of which the right-hand specimen agrees in the small widely separated verticillasters (in which it resembles *P. paniculatus*, Benth., with the two other specimens in the same herbarium, and may therefore be supposed to be the type of *P. heyneanus*. In the British Museum herbarium, the same form occurs under the names of *P. heyneanus*, Wallich, No. 1532, *P. glabra*, Benth., var., and *P. patchouli*, Hooker and Thoms. In the herbarium of the Pharmaceutical Society there is a specimen of the same form from Singapore, received from Mr. H. N. Ridley, M.A., labelled *P. patchouli*, and I have seen similar plants from Ceylon under the same name. This would, therefore, appear to be a distinct form, if not a species; I therefore regard this plant which has small, distant, few-flowered verticillasters and thin leaves, with sub-entire, or only slightly-toothed margins, as the typical *P. heyneanus* of Wallich. The left-hand plant on Wallich's specimen, No. 1532, from Heyne's herbarium, has more triangular, not linear-lanceolate calyx, teeth, and approximated verticillasters, and appears to correspond well with Wright's figure 'Icones,' 1440), which I should refer to *P. comosus*, Miq., and not to *P. heyneanus*, Wall., as is done in the 'Flora of British

* Wallich's herbarium is in the possession of the Linnean Society of London.

India.' As to the specific rank of the two plants, I can offer no opinion, but as distinct forms met with in different localities, and easily recognisable as different in habit, it is convenient to distinguish the two plants by different names.

With respect to the non-flowering plant from Java, I cannot pretend to offer an opinion. It differs from *P. patchouli*, Pell., in its acute, almost acuminate, sharply serrated leaves and less tapering base, but agrees with it in the character of the densely crowded erecto-patent white hairs, which mark out the lateral veins like white lines.

Patchouli.—In looking through the genus *Pogostemon* in our National Herbarium, I have gained some light on the geographical origin of the true patchouli plant, which has hitherto not been definitely ascertained. Professor Tenore (Parlatore, in 'Giorn. Botanico Ital.', 1847, p. 48) states that he obtained the plant described by him as *Pogostemon suavis* from the Paris Botanic Gardens, but that its origin was not certainly known there is clear from the fact that he suggests China with a note of interrogation (possibly because Chinese ink is known to be perfumed with it?)

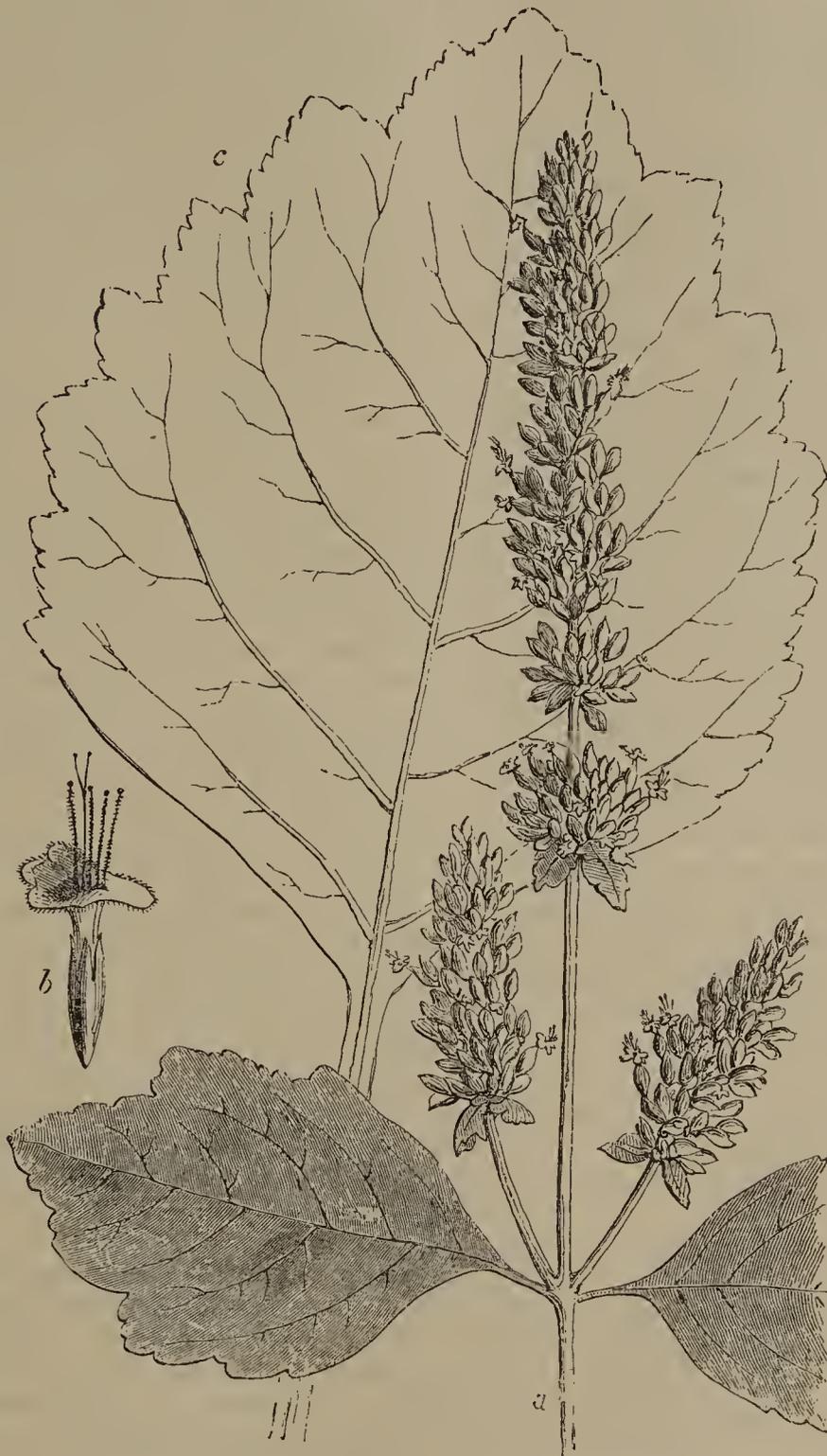
A plant brought by Mrs. Bentham from Professor Tenore and cultivated at Kew subsequently flowered there, and was figured in 'Hooker's Journal of Botany' and 'Kew Miscellany' (1849), i., p. 329, tab. xi., and of which the original is now in the Kew Herbarium. The plant was also figured and fully described by Dr. Pelletier-Sautelet in the *Mem. de la Soc. Roy. des Science d'Orléans*, v., No. 6, 1845; it flowered at Orleans in the month of February. A translation of this article with the figures of the leaves and flowers of the plant appeared in the *Pharm. Journ.* [1], viii., pp. 574-576 (reproduced here). These are, I believe, the only figures of the plant extant. As a rule, it flowers very sparingly, as is the habit of many plants which are cropped before they flower, or which are grown under circumstances calculated to develop foliage luxuriantly. Thus in Mr. Sawyer's 'Odorographia,' pp. 294-295, Mr. Wray, of Perak, is quoted as stating: "Patchouli is a very shy flowerer, so much so that by the natives it is said never to flower, and Mr. Hardouin told me that though he had grown it and bought it for the last thirty years, he had never seen or heard of such a thing as a flower. The plant cultivated on Mr. Fisher's estate at Province Wellesley does not

flower, and a plant introduced from Penang into the Botanic Garden at Calcutta did not exhibit during ten years any disposition to bloom." This plant, *P. patchouli*, is easily distinguished from *P. heyneanus* by its stouter, broader leaves, obtusely crenate-serrate, and by the lateral veins being quite hidden by a dense coating of slightly erecto-patent, not appressed, white hairs, so that the veins look like white lines. The figure of the leaf given in 'Odorographia,' on p. 295 is quite characteristic.

This plant, which was first correctly described as a *Pogostemon* under the name of *P. patchouli* by Dr. Pelletier-Sautelet in 1845, was subsequently described by Tenore in 1847 as *P. suavis*, but by Bentham, in De Candolle's 'Prodromus,' vol. xii, p. 153, the earlier name of *P. patchouli* is rightly retained. At that date Bentham had apparently not seen a plant, which he enumerates as *P. (C) cablin*, described by Blanco in the 'Flora de Filipinas' (1837), p. 473, under the name of *Mentha cablin*. A specimen of this plant appears to have been presented to the Kew Herbarium in 1883, but as Bentham had placed the species in the section of *Pogostemon* having dense, simple, spike like inflorescence, it was far removed from the patchouli plant. On going through the genus, however, I was struck with the remarkable similarity of the plant to the true patchouli, and on comparing it closely I found it agreed in every particular. In this identification both Mr. N. E. Brown and Mr. Rolfe, who were in the Herbarium at the time, agreed. It may therefore be regarded as certain that the plant is indigenous to the Philippine Islands, the plant in the Kew Herbarium bearing the label: "Calamang, Luzon, October, 1833. S. Vidal." The native names for the plant are cablin, carlin, cadlin, catloen, and gablin.

This plant is certainly cultivated at Penang, and in Java as well as in India.

Neither *P. patchouli*, Pell., nor *P. heyneanus*, Benth., nor *P. comosus*, Miq., can possibly be confounded with the patchouli plant of Khasia and Assam (*Kew Bull.*, March, 1888, p. 74, and 'Fl. Brit. India,' iv., p. 624), which is there placed under the genus *Plectranthus* as *P. patchouli*, Clarke. It has cordate-ovate, acuminate, crenate-serrate leaves, with scattered spreading hairs and flowers, in which the upper lip is hooded almost as in *Scutellaria*, whilst the inflorescence forms a loosely-panicked cyme.



Pogostemon patchouli, Pell.; (a) branched inflorescence, (b) flower, (c) leaf (natural size).

It is now placed in the new genus *Microtoena* as *M. cymosa*, Prain. In conclusion, the results arrived at are as follows:—The "flowering" plant from Java is *P. comosus*, Miq. This plant is the dilem of German manufacturers of essential oils. The non-flowering plant from Java cannot be identified at present, in the absence of flowers. The non-flowering plant from Singapore is *P. patchouli*, Pell., which is a native of Luzon, in the Philippine Islands.

The plant known as patchouli in Khasia and Assam is now called *Microtoena cymosa*, Prain.

EUCALYPTUS OINTMENT.

BY J. BOSISTO, C.M.G.,
Victoria, Australia.

Honorary Member of the Pharmaceutical Society of Great Britain.

The diverse opinions expressed by writers in the *Pharmaceutical Journal* of Great Britain upon the subject of eucalyptus ointment appear to refer only to the adjunct best adapted with eucalyptus oil for the purpose of forming the ointment. An ointment of eucalyptus containing simply the volatile oil does not supply the full virtues of its vegetation for ointment purposes. Of the numerous species, all of which contain medical or sanitary properties, none possesses an emollient principle in any degree equal to that of the *E. amygdalina*, which, in conjunction with the oil, produces an unguent of considerable importance. This species presents a delicate leaf surface, differing from most of the other species. It contains an essential oil, 1.30 per cent., an oleo-resin, a persistent liquid acid (termed eucalyptic acid), and tannin (a trace), together with chlorophyll. The chief active agent of amygdalina oil is phellandrene, a much milder principle, and better adapted for the purpose than eucalyptol. It is an antiseptic of no mean order. The abundant oleo-resinous substance in the leaves imparts to an unctuous body its emollient character; the remaining proximate principles assist in forming an elegant and valuable ointment.

Per this mail I have sent a parcel of the leaves of *Eucalyptus amygdalina*, carefully dried for export. The Research Committee can investigate for themselves; and if they so wish can, through the Society, report accordingly to the B.P. commission. In Australia the fresh leaves are employed, but the leaves carefully dried for export will only be at the expense of the pigment of the chlorophyll. The formula here employed is as follows:—

Eucalyptus leaves (green or dried) of the <i>Amygdalina</i> species	1b. i.
Prepared lard	1b. ij.
Yellow wax	2 ozs.

1. The leaves are crushed into a coarse powder.
2. Melt the lard over a water bath, add the contused leaves, allow to simmer for two hours, and strain.
3. Dissolve the wax, add it to 1 and 2 whilst warm, allow it to cool gradually.

It would be advisable when the dried leaves are employed to add say one ounce of the amygdalina oil to the above formula. In Victoria this ointment has been employed with great success in fetid suppurations, indolent wounds, ulcerated sore legs, boils, etc. These observations are presented with the desire that a correct formula (if desired) should be available.

FORMALIN IN OPHTHALMIC PRACTICE.—Dr. Mackenzie Davidson finds a 1 in 2000 or 1 in 3000 solution of formalin an excellent antiseptic in cases of injury to the cornea and other wounds resulting in septic ulcerations. The solution is applied freely once every hour into the eye with a dropper or teaspoon. In a case of corneal ulcer accompanied by pustulous eczema of the eyelids and face, equally good results were obtained with the hourly application of a 1 in 2000 formalin lotion (*Lancet*, I., 96, 145).

NOTES ON THE PREPARATIONS AND FORMULÆ OF THE BRITISH PHARMACOPŒIA.

SYRUPS.

(Continued from page 204.)

Syrupus Ferri Iodidi (continued).—When working on a larger scale the use of calico (washed in boiling water to remove starch) is preferable as a filtering medium for the solution of ferrous iodide, paper filters almost invariably giving way under the weight of the liquid. And as a practical point in connection with the manufacture of iron solutions for syrups by the reaction of metallic iron with either a halogen or an acid, it may be remarked that commercial wrought iron is generally covered with a film of grease and plumbago, the removal of which, by washing with hot solution of caustic soda, facilitates chemical action and materially enhances the brilliancy of the product. As heating may be conducive to oxidation, it may be avoided by adopting a formula based upon that of the French Codex or the U.S.P.:—

R Iodine.....	8	ozs.
Iron wire	4	ozs.
Water, freshly boiled but cold	10	ozs.
Simple syrup to	10 $\frac{3}{4}$	lbs.

Digest the iron with the iodine in the water in the usual way until all free iodine has disappeared. Then filter into some of the syrup, and make up to the given weight or volume, whichever is preferable. This syrup is equivalent to the B.P. one in strength (4 $\frac{1}{2}$ grs. in ℥i.), but has a specific gravity of 1.330.

Several pharmacists have from time to time advocated replacing 50 per cent. of the sugar with glucose (Hammen, *Ph. J.* [3], vol. xiii., 1079; Klié, 'National Dispensatory,' 1559). This is hardly necessary, for if a freshly-prepared syrup and recently boiled distilled water are used, any proneness there may be to the reduction of the iron is greatly reduced. A syrup like the one given will keep for a considerable time in perfectly fresh condition, provided it is not unduly exposed to the air. The opinions as to the best method of preserving this syrup are not concordant. Some observers advocate exposure to direct sunlight, others diffused daylight, and some that it should be protected from the light. The French Codex directs that it shall be protected from the light (*Ph. J.* [3], vol. xviii., 1022; 'Nat. Disp.,' 5th edit., 1559). In the face of such conflicting evidence it would scarcely be expedient that any such directions be given, but let each one use his own discretion. It might be an advantage to give one or two tests to preclude the use of deoxidising agents, such as hypophosphorous acid, citric acid, etc., and also to state a process whereby the strength of the ferrous iodide may be estimated, by titrating with silver nitrate solution or else determine the amount of free iodine liberated by chlorine or hydrogen peroxide. A note as to storage in small bottles filled to the neck would give a finishing touch to the formula.

Syrupus Ferri Phosphatis.—Viewed from the standpoint of our present knowledge of pharmaceutical chemistry, this formula cannot be said to be up to date. The preparation of ferrous phosphate by precipitation is open to objection on the score of inconvenience, trouble of manipulation, and the great difficulty, if not impossibility, of obtaining the precipitate in a well-washed, and at the same time unoxidised condition. As a very small amount of ferric salt is sufficient to communicate a tinge of brown, the official syrup is generally wanting in the pale sea-green tint characteristic of pure ferrous phosphate. The large excess of phosphoric acid employed renders the syrup unpalatable and consequently unpopular; it also promotes discoloration by its action on the sugar.

Alterations appear to be called for in the directions of substituting a better process for the production of the solution of ferrous phosphate, and considerably reducing the phosphoric acid. The process dependent on the direct solution of metallic iron in phosphoric acid has now had many years' trial, and is generally admitted to be the most convenient, reliable, and in every respect the best for the purpose. R. Wright, in a paper read before the British Pharmaceutical Conference in 1888, showed that about half the quantity of phosphoric acid ordered in the B.P. formula was sufficient to ensure perfect solution of the ferrous phosphate and prevent precipitation on dilution. So strongly acid is the official syrup that an ordinary dose, one fluid drachm, contains free acid equivalent to more than the maximum dose of acid. phosph. dil. B.P.

The formula suggested by Wright is as follows:—

Iron.....	45 grains.
Concentrated phosphoric acid	6 fl. drachms.
Distilled water	9 fl. drachms.
Syrup	8 fl. ounces.

Mix the acid with the water, place in a glass flask, add the iron, plug the neck of the flask with cotton-wool, and heat gently until solution is effected. Filter into the syrup, and wash the filter with sufficient distilled water to make the product measure 12 fluid ozs.

Syrupus Ferri Subchloridi (B.P. Addendum).—The number of grains of anhydrous ferrous chloride per fluid drachm which this syrup is supposed to contain might be stated. The form was introduced in the Addendum of 1890, but has not apparently been popular with the medical men; though pharmaceutical it is almost an ideal syrup. It is proposed to delete it in the next edition, and apparently its fellow preparation, the syrup of ferrous bromide, is to take its place.

Syrupus Hemidesmi is now only used as a flavouring agent, and is of little medicinal value. Its omission from the Pharmacopœia would help to make room for more important syrups at present unofficial.

Syrupus Limonis.—Adherence to the official instructions results in a product which, although possessing an excellent taste and aroma of lemon, is also distinguished by its liability to change and crystallise. The lemons ought to be peeled of both rind and pith, then cut into small slices and pressed. The juice thus obtained should be heated in an enamelled pan for about ten minutes, which causes a more complete separation of the albuminoid matter than when simply heated to 212° F., and withdrawn as at present directed. Heat at this point of the process has no deleterious effect on the juice. Then add to the liquor whilst hot the thin peel, allowing it to infuse for fifteen minutes. Strain off the juice on to the sugar whilst hot. When the sugar has dissolved, pass the resulting syrup through a flannel filter. A bright full-flavoured syrup can be readily made this way, which does not become turbid very readily if at all. It is unnecessary to allow the peel to remain in the juice for so long, as now directed, since all the necessary aroma of the peel can be abstracted by a fifteen minutes' infusion without obtaining an unnecessary amount of inert extractive. The quantity of sugar might with advantage be reduced, so as to make a gravity of 1.320.

A better formula, from a pharmaceutical standpoint, is the following:—

Lemon juice strained.....	1 pint.
Refined sugar	2½ lbs.
Tincture of lemon peel	7 fl. drachms.

Heat the lemon juice to the boiling point, and having filtered it quite bright by the aid of a little washed kaolin, allow to cool, and dissolve the sugar in the filtered liquid by agitation without heat. Add the tincture, and, if necessary, make the specific gravity 1.315 – 1.320 by the addition of distilled water.

Syrupus Mori.—This is one of the syrups which the Committee of Revision proposes to omit. It has not acquired a great reputation as a flavouring agent amongst medical men, and only a few seem to appreciate its tinctorial properties. The formula as it now appears is satisfactory, for with ordinary precautions it will keep fresh for at least twelve months, which is essential, since it can only be prepared annually. Pharmacists do not seem to regard with much favour the fermentation process so largely used on the Continent and elsewhere. This preparation is well adapted for it and improved by it.

Syrupus Papaveris.—The essential points to be observed in the preparation of this syrup so that it may be free from any tendency towards fermentation are (1) strict observance of the official instructions, and (2) care in storage. The period of twenty-four hours during which the powdered poppy capsules are to be infused before packing in the percolator, would probably bear reduction, but in other respects the formula is a good one. To make this syrup in small quantities, however, is a matter of considerable difficulty and expense. On the other hand, working on a more extensive scale as a manufacturer does, it is a very simple process, and the product a desirable one. The quantity of water required to properly exhaust the drug is considerable, and the consequent evaporation demands special appliances not generally to be found in a retail business. Then the fact of having to loose the spirit by evaporation is a matter of consequence to the average pharmacist, who cannot generally afford to do so, and seldom has the apparatus to recover it. In a wholesale laboratory both these processes—the evaporation and recovery of spirit—are simple operations of daily occurrence, and consequently they can produce a better article at a less cost than that made in working on a small scale.

Squire suggests dissolving the sugar in the concentrated infusion without driving off the spirit. This is a practical suggestion, and worth consideration. A method similar to that employed in syrup of senna makes a good preparation, viz., evaporate the infusion to the final volume, add the spirit to precipitate the albuminoid extractive, filter, and in the filtrate dissolve the sugar without heat. Finally strain through flannel. In the French Codex this syrup is prepared from the solid extract. This is a good method, for it is easily prepared, and the product is uniform, but it does not appear to be so efficacious as the B.P. form. The remarks on storage made under "syrupus" apply even more forcibly to this syrup and *syrupus rheados*. A short sentence indicating the best manner of preservation might not be out of place amongst the official directions.

(To be continued.)

DETECTING SULPHATES, SULPHITES, AND THIOSULPHATES IN THE PRESENCE OF EACH OTHER.—If preliminary tests indicate the probable presence of thiosulphate, only very dilute solution should be used, according to R. Greig Smith (*Chem. News*, lxxii., 39), or decomposition of the thiosulphuric acid into the sulphur and sulphuric acid will speedily take place. Barium chloride in excess is added together with a good quantity of ammonium chloride, which acts as a flocculant. Hydrochloric acid is then added drop by drop until the barium precipitate is no longer acted upon, and only the sulphate remains undissolved. The solution is then filtered bright through a double filter. To the bright filtrate iodine solution is added until the colour is just permanent. A white precipitate indicates the presence of sulphite which has been oxidised to sulphate. Traces may be detected comparing treated and untreated halves of the filtrate. After again filtering, bromine water is added, when any thiosulphate is oxidised into sulphate, and again a white precipitate occurs.

FLAME TESTS.*

BY GEORGE COULL, B.SC.

There is a tendency among pharmaceutical students to minimise the value of dry-way reactions, and rather to pin their faith on taking a substance, or mixture of substances, through the "chart" by the wet method. One reason, and perhaps the strongest for this mode of procedure, is the scant reference to dry-way tests in most of the ordinary text-books of chemistry,† and also the small amount of attention given to the subject by teachers. On a previous occasion,‡ I am advertised strongly against this method of blindly taking a substance through the "tables" without some previous preliminary testing, which in all probability would give nearly all the information required, and in much less time than by the wet way.

In the *Zeitschrift für analytische Chemie*, 1866, Fresenius edits the report on the progress of the "Caemical Analysis of Inorganic Substances," and says at p. 351:—"R. Bunsen|| has, in a highly interesting communication, shown the great value of flame tests for analytical purposes. The rich contents of this important work do not admit of its being abstracted without losing in value, and I therefore gladly avail myself of the author's permission to reprint it unabridged." These words of Fresenius show the high opinion that he, the world-renowned analyst, held concerning the value of Bunsen's paper. I am informed that dry-way tests are very commonly used in Germany, and most text-books have a section dealing with the subject.

I propose to discuss the matter under the following heads:—

- A. Flame of Bunsen lamp.
- B. Heating substance by itself.
 1. Infusible bodies.
 2. Flame coloration.
 - (a) Blue glass.
 - (b) Spectroscope.
 3. Film tests.
- C. Heating substance with reagents.
 1. Cobalt nitrate on charcoal.
 2. Sodium carbonate.
 - (a) On platinum.
 - (b) On charcoal (match test).
 3. Borax.

Bunsen's complete list contained thirty-five elements, with all their flame tests. It will be sufficient now to mention only those elements which are comparatively common and likely to be met with in ordinary practice.

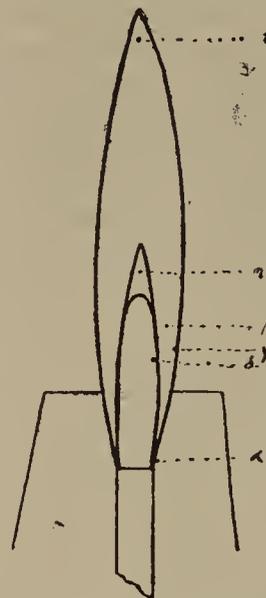
All the tests may be performed by means of the flame of a Bunsen lamp. The lamp ought to be provided with a sliding regulator at the air-holes and have a conical tin chimney on a gallery to steady the flame, which should not show the slightest trace of luminosity when the air-holes are fully opened. When the regulator is turned a little to partially cut off the supply of air and give a slightly luminous tip to the flame, the latter is seen to consist of three parts.

1. The *dark inner cone*, which is comparatively cold and contains a mixture of unburnt gas and air.

2. The *flame-mantle*, containing a mixture of gas and air in a state of combustion.

3. The *luminous point*, in which there is not enough air to completely burn the gas.

Examining the diagram of the flame more in detail, we find in the above three chief parts the following six reaction zones.



a. The *base of the flame* is the coldest part, this is due to the conduction of heat by the metal tube and to the ascending current of cold air. Many easily volatilised substances may be recognised here. In a mixture containing potassium and sodium chlorides heated cautiously in the base of the flame the colour due to the more volatile potassium salt is seen first.

β. The *fusion zone* is the hottest part of the flame, it is at about three-fourths of the height of the dark cone, where the flame-mantle is thickest; there is complete combustion of the gas here.

γ. The *lower oxidising zone* is at the outer margin of the zone of fusion, and is hotter than the next, ε.

ε. The *upper oxidising flame* is the highest point of non-luminous flame when the air-holes are wide open.

δ. The *lower reducing flame* is on the inner margin of the zone of fusion, and owing to the presence of some oxygen from the air, its power as a reducing agent is not so great as the next.

η. The *upper reducing flame* lies in the luminous tip formed by lessening the supply of air, and though containing a considerable quantity of unburnt hydrocarbons, it ought not to deposit any soot on a cold porcelain basin held in it. It is such a tip that must be used for performing Bunsen's film tests.

Behaviour of substances by themselves at high temperatures.—In order to take full advantage of the Bunsen flame, one must work with very small quantities, and use very thin platinum wire. If one worked with large quantities of material and a thick wire, there would be so much heat lost by radiation and conduction as to lower the temperature below the point at which the reaction occurs. Bunsen says the wire used must not be much thicker than a horse-hair, and one decimetre should weigh not more than 34 milligrammes. For substances which attack platinum, fibres of asbestos may be used.

By heating a substance by itself in the flame, we may obtain information as to its nature by observing its light emission, fusibility, volatility, or the colour it communicates to the flame. Infusible bodies, such as lime, magnesia, silica, and alumina emit intense white light when heated in the zone of fusion, *i.e.*, the hottest part of the flame; others, erbia, for example, emit coloured light. The relative fusibility may be roughly determined by exposing the substance in different parts of the flame and noting the kind of light emitted by the platinum wire—not by the substance—when the latter fuses. Bunsen distinguishes the following six grades:—(1) Below red heat; (2) Commencing red heat; (3) Red heat; (4) Commencing white heat; (5) White heat; (6) Strong white heat.

Characteristic colours are imparted to the flame of a Bunsen lamp by many substances, notably the metals of the alkalis and of the alkaline earths. Sodium gives a yellow colour; potassium, violet; lithium and strontium, crimson; calcium, reddish; barium, yellowish-green. In a mixture containing potassium and sodium, the latter, when heated, completely masks the violet colour of the flame, due to the former; by viewing the flame through blue glass, the yellow sodium rays are absorbed, and the potassium rays transmitted appearing of a crimson-red colour. Other substances, such

* Lecture delivered before the Edinburgh Chemists', Assistants', and Apprentices' Association, February 7, 1896.

† Attfield makes only one reference to the borax bead, namely under *malgarese*.

‡ *Pharm. Journ.* [3], xix., 359.

|| *Annalen*, 138, 3.

as chloride, bromide, and iodide of copper, indium, tellurium, selenium, antimony, arsenic, thallium, and lead can be distinguished by the practised eye.

The only way to attain perfect certainty, however, is to analyse the colour by means of a spectroscope, and compare the spectrum obtained with the diagrams in the various text-books. With some of the simpler spectra, such as those of sodium, potassium, and lithium, there is no difficulty, but when we come to examine complex spectra containing many lines it is advisable to identify the several lines by comparison with the spectra of known pure substances. This may be done by covering one-half of the slit with a reflection-prism, and adjusting it to receive the light from a flame containing the known body, so that the rays are reflected in the direction of the axis of the tube, the light from the flame containing the substance under examination being received directly in the line of collimation of the spectroscope. It is evident that two spectra will be seen one above the other. If all the lines of the known body are found in the spectrum of the unknown coinciding exactly, then the presence of the former in the latter is proved. Another device for measuring the position of the lines is to have a tube fitted with a lens at the end nearest the prism and a transparent scale at the other, which can be illuminated by a lamp, the focal length of the lens being equal to the length of the tube. By moving this tube and focussing it we can get a clear image of the scale in the telescope, and by this means the position of any line is referred to the same place on the scale.

It is to be noted that it is as a rule the metal that determines the colour. If a metallic compound gives no colour, heat it in the reducing flame and moisten with hydrochloric acid, a volatile chloride will be formed and the colour may be observed. The extreme delicacy of these spectroscopic tests is shown when it is said that 1/3,000,000th milligramme of sodium chloride and 1/100,000th milligramme of lithium chloride, inconceivably minute quantities, can be detected.

Film tests.—When the oxides of certain volatile metals (or the compounds of these metals that are easily changed into oxides in the flame) are heated in the luminous tip of a Bunsen flame, they are reduced to the metallic state in the condition of vapour. The condensation and collection of these vapours form what are called metallic films.

Metallic films.—The *modus operandi* is as follows:—Regulate the air-holes of the lamp to form a luminous tip which should be just visible and no more, and should not cause a deposit of soot on a glazed porcelain basin held in it. Place a very small portion of the substance under examination on the end of a filament of asbestos and heat it in the upper reducing flame (the luminous tip). Hold a glazed porcelain basin—containing cold water if necessary, to cool it—close above the asbestos, when the presence of any volatile metal is indicated by a dark deposit on the dish. These deposits may be divided into three classes according to their behaviour with cold 20 per cent. nitric acid.

Insoluble.....	Arsenic, antimony.
Very slowly dissolved.....	Bismuth, mercury.
Instantly dissolved.....	Lead, cadmium, zinc.

Antimony may be distinguished from arsenic by its insolubility in sodium hypochlorite, and mercury from bismuth by its grey colour, all the others being black or brown, according to thickness of film. By observing the colour communicated to the flame when performing the test the presence of lead and arsenic may be indicated. Arsenic colours the flame lavender, giving off white fumes of arsenic trioxide, and lead colours it pale blue.

(To be continued.)

REVIEWS AND NOTICES OF BOOKS.

THE VALLEY [OF KASHMIR. By WALTER R. LAWRENCE, I.C.S., C.I.E., Settlement Commissioner, Kashmir and Jammu State. Pp. 478, with illustrations. Price 12s. net. (London: Henry Frowde, Oxford University Press Warehouse, Amen Corner, E.C.)

Situated among the Himalayas at an average height of about 6000 feet above the sea, the valley of Kashmir is approximately eighty-four miles long and twenty to twenty-five miles broad. It is described in this most interesting book as a resting-place for adventurous traders who seek the distant markets of Yarkand and Central Asia, whilst it furnishes a base whence military operations have been in recent years directed against the wild and turbulent tribes of the Shinaki country to the north and north-east.

Commencing with an attractive descriptive chapter, mainly geographical, the author successively turns his attention to the geological features of the district, the flora, fauna, archaeology, political and physical history, statistics, social life, religions, races and tribes, agriculture and cultivation, live stock, industries and occupations, trade, and government of "Cachemire, the Paradise of the Indies." Here, then, it will be seen, is much matter for criticism. The vast amount of information supplied, however, arouses genuine interest and disarms criticism, besides which it would be beyond the capacity of the most captious and versatile critic to deal satisfactorily with such varied matter. The most that can be attempted in the limited space now available is to give a somewhat faint idea of the valuable contents of the book under consideration.

In discussing the geological features of the Kashmir valley, the author devotes some attention to the mineral resources of the country. Sulphur, saltpetre, salt, gypsum, copper, iron, and gold are said to exist, but the Kashmiris are said to detest the very name of mining, and little or nothing appears to be done in the direction of realising this hidden wealth. The plants observed in the valley are classified according to their economic uses and properties. Thus we find the seeds of *Carum* sp. and *Daucus carota* mentioned under the head of condiments; *Cannabis indica* and numerous other plants are classed as drugs (see *ante*, p. 131); *Datisca cannabina*, *Rubia cordifolia*, and *Geranium nepalense* appear to be employed as dyes; and deodar, spruce, apricot, alder bark, and pomegranate rind as tans. Kashmir is also very rich in fibres, more than a dozen native plants yielding suitable material for ropes, etc. Fodders, foods, and fruits are plentiful; *Euphorbia thomsoniana*, *Aconitum* sp., and *Corydalis falconeri* are used to make hair washes; the roots of *Jurinea macrocephala* furnish incense; *Pedicularis brevifolia*, *Saussurea lappa*, and *Salix caprea* are esteemed for their perfume; whilst a great variety of timber is produced in the extensive forests. The *jamen* or wild thyme is commonly employed for *hhamir* or leaven, and other plants serve a similar purpose. Finally, it is stated that adulteration prevails to some extent, yew bark and strawberry roots being used as a substitute for, or adulterant of, tea, the dried leaves of *Rhododendron campanulatum* is added to snuff to increase its sternutatory action, and the seeds of *Daucus carota* are used as an adulterant of caraway seeds, whilst many roots find their way into parcels of the valuable *chob-i-kot* (*Saussurea lappa*). The extended tabular list of the Kashmir flora occupies twenty-two pages of the book, full particulars being given in each case.

The fauna includes monkeys, leopards, the mongoose, martens, otters, bears, porcupines, and the musk-deer. Two hundred and eight species of birds were noted, and numerous reptiles, insects, and fish. The archaeological and historical details are of more than

ordinary interest, as indeed are the contents of several subsequent chapters on social life and customs, etc. The saffron crocus, tobacco plant, and opium poppy are amongst the regular crops, and very detailed information is given respecting the cultivation of the first named. Above all else, however, Kashmir appears to be a country of fruits, the apple, pear, plum, vine, walnut, and pomegranate being indigenous, whilst many others have spread from cultivation. Almost all the vegetable products that exist in a temperate climate can be grown in the district, and there is every prospect of a great future for agriculture. The book is concluded with a glossary of English words and phrases, with their Kashmiri equivalents. The numerous plates that illustrate the work are excellent specimens of photogravure, and these are supplemented by charts, and an excellent map. Indeed, everything has been done that the publisher's art could suggest to make the volume complete, and the result is highly creditable to everyone concerned.

THE ART OF COMPOUNDING: A Text-book for Students, and a Reference Book for Pharmacists at the Prescription Counter. By WILBUR L. SCOVILLE, Ph.G. Philadelphia. Pp. 264. Price 12s. (Philadelphia, U.S.A.: P. Blackiston, Son, and Co. London: Kegan Paul, Trench, Trübner and Co., Ltd., Charing Cross Road.)

This is a book which will be found useful to a student somewhat advanced in the ordinary practice of compounding. There are treatises already which relate chiefly to the practical side of dispensing and modes of manipulation; excellent guides some are, and indispensable; while much current pharmaceutical literature has the same object.

Dispensing pharmacy has assumed such proportions, and so great attention is now devoted to its details as a distinct study, that there is almost a necessity to limit the range of instruction, and keep to one definite department. Still it has been a matter of regret that information has been too scanty with regard to the principles on which Compounding should be based; and the young pharmacist has to rely on long and varied experience before he can gain a sure knowledge of his art.

Skill he can never get without constant practice and equally constant observation. No book, discourse it ever so wisely, can be a substitute for work behind the counter; but it is a step in the right direction to teach him the reasons on which that work depends; the only means by which he will be saved from perpetual error, and acquire an intelligent control over what otherwise must be a series of mechanical operations.

Professor Scoville states in his preface the two objects he has had in view: first, "to enunciate and classify the principles underlying each subject, so that the student may understand the reasons as well as the facts of dispensing; second, so to illustrate and detail the principles as to show their range and variety of application, and make them of practical utility at the prescription counter." Hence he divides his chapters into explanatory lectures, followed by more than the usual number of practical illustrations. Both are good and are comprehensive without the fault of being too diffuse.

They treat of introductory matters and proceed to mixtures, emulsions, confections, pills, lozenges, powders, suppositories, ointments, sundries, and homœopathic pharmacy, concluding with a more elaborate study of the vexed question of incompatibility.

It appears that infusions are much less frequently prescribed in America than in England and Europe, and that they are considered rather as an annoyance. Yet they are not to be classed as weak galenic preparations, for they have a specific therapeutic action; only the water-soluble principles are desired, and a diluted tincture or fluid extract is never a proper substitute; both the tincture and

fluid extract of digitalis lack principles which are contained in the infusion. Percolation is advocated in making certain cold infusions. The novel term bacills is applied to short, rod-like lozenges, the form in which the smallest troches are sometimes made. The method of mixing powders suggested by Mr. Peter Boa is wisely recommended.

The hot and cold process for chloral suppositories may also be noted. For the former, melt 2.5 grammes of spermaceti, and mix with 4 grammes of warm cacao butter. Dissolve the chloral in the warm (not hot) mixture, add enough cacao butter to make up to the full volume of the moulds, mix well, and pour into the chilled moulds. For the cold process, the chloral is powdered and incorporated with cacao butter and formed into suppositories. Exception must be taken to the Table of Latin Terms, which seems to need revision as far as printer's errors are concerned. Whatever view may be taken of nomenclature, uniformity should be observed in the system which has been adopted. On page 33 are found granum, grana, a grain, grains; a form in general use and accepted in the United States, hence so given in Remington; while on page 15 there is the following prescription:—

℞ Morphine Sulphatis, granas duas.

In the preceding paragraph, "fiant in pilulæ xx. numero," let them be made into twenty pills, can hardly pass. Fac suppositorias vj. numero, for suppositoria, one is not disposed to question, though it is not in accordance with other standard authorities. The following is submitted as an amendment to the text (pp. 29-40):—

Ad secundam vicem; ad gratam aciditatem, agita donec refrigerat; aqua gelida, concusus; concute, conserva, conterantur, donec leniatur dolor, hora decubitûs, horis intermediis, horæ unius spatio, ingerendo capsulas gelatinosas, in lagenâ bene obturâ, inoruntur [? invergantur], lapideus a-um, macerentur, macera per sextam horæ partem, misceatur, misceantur, misceatur fortiter, omni nocte, retineatur, scrupulus, stibium, vomitus-ûs, or vomitio-onis.

'The Art of Compounding' is a valuable addition to galenic literature, and will repay an attentive perusal of its contents, both for purposes of study and as a reference book.

MNEMONIC AIDS IN PHARMACY FOR THE USE OF MEDICAL AND PHARMACEUTICAL STUDENTS. By E. L. HENRY. Part I.—Tinctures and Ointments. Pp. 8. Price 6d. (London: Bowles and Co., Brushfield Street, E.C. 1896)

In the brief space of eight pages the author classifies the tinctures according to strength and method of preparation, and then gives mnemonic rhymes for learning the strength and composition of official tinctures and ointments. Here are some specimens of the new pharmaceutical poetry:—

"Friar's Balsam contains these ingredients few,
Powdered Benzoin, Storax, Soc. Aloes, Tolu."

"Paregoric has Camphor and Opium as well.
Both the Acid Benzoic and Anise we smell.
The spirit is proof, and the strength don't neglect;
A fourth of a grain in a drachm is correct."

"With Simple Ointment Plumbi Carb.'s allied
Hyd. Ammon. Lead and Red Mercuric Iodide.
Then Elemi and Antim. Tartar. note,
Resinæ, Hamamelis, Creosote."

Presumably, the demand for such effusions as this will continue so long as students preparing for examination are led to consider it necessary that they should burden their memories with a mass of details, which every sensible individual is content to know can be found in the pages of the Pharmacopœia. Seriously, however, it can hardly be maintained that students will either economise time or develop their intellects by assimilating such doggerel.

SOCIÉTÉ DE PHARMACIE DE PARIS.

At the annual general meeting of this Society, M. Julliard, the retiring President, in his address felicitated the Society on the number of distinguished names on the roll of pharmacists who had by their researches assisted in the advancement of science. Professor Villiers being elected to the chair, a review of the contributions during 1895 of the members to the knowledge of pharmacy and allied sciences was read by the Secretary, M. Patein, some of the most important features of which are given below:—

Mineral Chemistry.

Mention was first made of the revolution effected in metallurgy by M. Moissan by the agency of his electric furnace. During the year he has made known a method for the isolation on a large scale of several of the rarer metals, such as titanium and molybdenum. He manufactures the latter by fusing molybdate of ammonium, mixing the resulting oxide with carbon procured from sugar, and subjecting the mixture to the action of the electric furnace, when the metal is obtained entirely free from carbon. M. Moissan found that when charcoal is exposed to an enormous heat in his furnace it is partially reduced to vapour without previously passing into the liquid state. On collecting the vapour it was observed that condensation took place in the form of graphite. The question presented itself, was it possible to obtain carbon in a liquid state? M. Moissan states that to do so would necessitate the use of immense pressure, such as is produced by the congelation of iron in masses (the process which has resulted in the formation of small diamonds). M. Moissan has also published two methods for making boride of iron, one of which yields yellow crystals of the salt several millimetres in length.

Turning his attention to the newly-discovered element—argon, he demonstrated the resistance of this gas to form chemical compounds, and that, when mixed with fluorine and submitted to the induction spark at ordinary temperatures, no combination of the elements took place.

The presence of argon in mineral water has been observed by M. Bouchard in the Raillère Spring, and a mixture of argon and helium was found by M. Moureu in a gaseous emanation from the lithiated water of the Maizières Spring (Côte d'Or).

Professor Villiers has contributed to our knowledge of mineral analysis by a process for the detection of minute quantities of nickel in a cobalt solution. Tartaric acid is first added to the presumed nickel and cobalt solution, and soda in large excess. Potash must not be used, and the tartaric acid prevents precipitation of the metallic oxide by the alkali. A stream of H_2S to completely precipitate the cobalt is passed through, and the liquid quickly filtered. If the filtrate is colourless, entire absence of nickel is proved; that metal may be recognised by the fluid assuming a more or less brown or black colour, according to the quantity present.

In making this experiment, an interesting fact was observed by M. Villiers, which was that the sulphide of nickel formed remained dissolved in the alkaline sulphuretted solution, whilst precipitated sulphide of nickel would not dissolve in the same, if care be taken to avoid presence of free sulphur and access of air. From this he deduced that at the moment of its formation, the precipitated sulphide of nickel behaves differently in the presence of the sulphide of sodium, and he explains this difference by a molecular modification which takes place almost immediately, the rapidity of which change is increased by a rise of temperature, so that at boiling point the whole of the salt is precipitated. This action is not peculiar to the sulphide of nickel. Sulphide of zinc, which is amorphous when first formed, and dissolves in the sulphuretted sodium solution, becomes after a time insoluble, and takes a crystalline form.

M. Villiers gives the name of proto-morphic state to the condition of salts at the moment of formation, and shows that the same molecular modification can be produced by cold as well as by heat. The amorphous sulphide of zinc is changed into crystalline sulphide, pink sulphide of manganese into green sulphide, and ordinary copper oxide into a crystalline variety, turquoise blue in colour.

Absolutely nothing is known of the complex physical and chemical action which takes place during contact of medicinal agents with the tissues of the body. All that is known is that isomeric bodies are frequently vastly different in their physiological properties. M. Prunier has shown that this same difference occurs also in simple bodies in their various allotropic forms. Sulphur may be taken as an example, and he has given some interesting information concerning this element from a therapeutic point of view.

Of the three varieties which occur in pharmacy, he states that the roll sulphur or octahedric modification is almost medicinally

inert. Flowers of sulphur, or prismatic, is the most used, and is very active when recently manufactured, but on keeping it changes to the octahedric form. Precipitated sulphur, which is amorphous, contains, according to M. Prunier, hydrogen bi-sulphide, from which H_2S is generated, and to this it owes its peculiar activity, but this form by a gradual constant process is also transformed to the octahedric.

Thus while the two latter sulphurs are the more active, yet, from being unstable, their degree of activity is necessarily indefinite. M. Prunier considers that some combinations of this body in a crystalline state, such as the iodide, where the elements are present in an easily dissociable condition, appear most favourable to therapeutic action.

Organic Chemistry.

M. Behal, by working on camphoroxime, has prepared two campholenic amides, one fusible at $86^\circ C.$, the other at $130^\circ.5 C.$ The latter is convertible into the former, and both combine molecule for molecule to produce a third amide, fusible at $106^\circ C.$, which crystallises from water or toluene without dissociation, but breaks up when crystallised from alcohol.

E. Moureu has supplemented the work of Tiemann upon the chemical constitution of eugenol and methyl eugenol present in the essential oil of *Asarum europæum*, which is largely used for the artificial manufacture of vanillin. He has synthetically prepared methyl eugenol by causing iodide of allyl to react on veratrol with powdered zinc. Hydriodic acid was eliminated, but instead of being liberated, demethylised a portion of the veratrol, and gave guaiacol and pyrocatechine. By this process methyl eugenol was proved to be allyl-veratrol and eugenol allyl-guaiacol.

Many readers will have been surprised to find in the more recent standard works mention made of chemical compounds with no indicated formulæ, whilst some of the combinations included do not even exist. As an example, MM. Patein and Dufau have demonstrated that the so-called valerianate of antipyrine is nothing more than antipyrine tainted with valerianic acid, consequently had this substance been carefully investigated, its name would not have figured as a definite chemical in any work.

It having been shown that antipyrine combines in the cold with the naphthols, molecule for molecule, and stated by MM. Roux and Barbey that it forms crystalline bodies with the phenols, mono, di and tri atomic, without formulæ being given, MM. Dufau and Patein have investigated the subject in order to find what rules were followed by antipyrin in these latter combinations, and further, whether there was no variation according to the number of the phenylic hydroxyls. They have arrived at the conclusion that whilst pyrocatechine and hydroquinone combine with two molecules of antipyrin, resorcine and its homologues combine with one only; that the monatomic phenols combine with one molecule, the diatomic with two molecules (with the exception of resorcine and its homologues), but the triatomic phenols do not combine with three, but molecule for molecule only.

Pharmacy.

M. Bourquelot, comparing the formulæ given in the various pharmacopœias for syrup of iodide of iron, remarks that the proportion of ferrous iodide differs in an extraordinary manner, so much so that a syrup prepared in Holland is 38.5 times stronger than one prepared in Greece. Such diversity of strength shows the necessity of an international understanding among pharmacists. At the last Congress held at Buda Pesth, the project of a universal pharmacopœia was discussed, but no signs are yet shown of its possible realisation. M. Bourquelot, passing in review the various explanations given for the discoloration of the syrup, considers as the most plausible, that ascribing it to the absorption of oxygen from the air, this is corroborated by the alteration being retarded on the addition of a small quantity of citric acid, as recommended in the Swiss Pharmacopœia. A little inverted sugar is formed, which, acting as a reducing agent, hinders the oxidation of the ferrous iodide. He has also given an interesting method for the estimation of the iodine present.

MM. Bertrand and Bourquelot have pointed out the active part taken by laccase in the change of colour produced in certain vegetables when cut and exposed to the air. Besides laccase, they contain a colourless substance which can be isolated by macerating the vegetable in alcohol. This substance does not change in colour on exposure to the air, but darkens quickly under the combined influence of air and laccase.

Among the many bacteria found in the mouth the coli bacillus had hitherto only been observed in cases of persons suffering from

certain throat affections. MM. Grimbert and Choquet have collected statistics of its occurrence in the healthy subject. They found that out of sixty persons examined it was present in twenty-seven, *i.e.*, 45 per cent., and that the germ was encountered principally on the tonsils.

Analytical Chemistry.

M. Burcker, occupying himself with analyses of wine, announces that the total volatile acidity of sound wine should not exceed 0.70 gmes. per litre (expressed as H_2SO_4) for that produced in France, and 1.6 gmes. per litre for the Algerian and Tunisian wines.

The presence of boric acid in wine having been frequently pointed out, MM. Villiers and Fayol have decided the question that had arisen, whether the chemical occurred as a natural product, or had been added for purposes of adulteration. They have been unable to find a trace of it in genuine French wines, but in some produced in Algeria small quantities were found, and its origin was attributed to the substances used in clarification.

The attention of the Society has been called by M. Bourquelot to the necessity of including in the French Codex simple tests for the recognition of galenic preparations, such as are found in most pharmacopœias, and also to the advisability of defining the percentage of the active substances in pharmaceutical preparations in the manner that the strength of the solutions is indicated at present. Mention was also made of the tables formulated by M. Bocquelin for indicating the yield of aqueous and alcoholic extracts prepared from plants recently introduced into pharmacy; and to the facility with which physicians' prescriptions may be photographed when necessary by means of a simple system proposed by M. Guichard.

A list was read of the foreign and corresponding members who had contributed papers, of the awards given by the Society, and the names of the members by whom honours had been received. The Secretary next referred to the pleasant manner in which their séances had been relieved by the interesting lectures of M. Planchon (Director of the École de Pharmacie) on the "History of Pharmacy." In one of these he described the relaxations of apothecaries three centuries ago, and the honours to which their profession entitled them. They constituted one of the six guilds to whom the privilege was accorded of attending State ceremonies, and supporting the canopy on the entry of royal processions into Paris. In concluding the report, the Secretary indulged in a prospective view of the state of pharmacy after the lapse of a century, depicting in a sanguine manner the progress which will have been effected in the knowledge of remedial agents. He alluded as an example to the possible perfection of serumtherapy, at present in its infancy. He terminated by congratulating the Society on the uniformity with which its scientific traditions had been upheld, and asserted the right of the members to command the respect of their successors by the disinterestedness of their work, and their honourable efforts on behalf of humanity.

FORMIC ALDEHYDE IN THE PRESERVATION OF MILK, AND ITS DETECTION THEREIN.—Since a dilute solution of formic aldehyde (formalin) is being used as a milk preservative, R. T. Thomson has contributed to the *Chemical News* (vol. lxxi., 247) a note on its preservative action and an analytical method for its detection. The author finds that a 40 per cent. solution of formalin is at least four times as effective as a mixture of boric acid and borax and equal to salicylic acid; he also notes that boric acid alone is much less effective than when used with borax. To detect the presence of formic aldehyde in milk, 100 C.c. are distilled until about a fifth comes over; this is transferred to a stoppered tube, and about 5 drops of ammonio-nitrate of silver solution added. This solution consists of 1 part of nitrate of silver in 30 parts of water, dilute ammonia being added until the precipitate at first formed is dissolved, care being taken to avoid an excess, then the whole is made up to 50 parts with water. The mixture of milk distillate and silver solution is then allowed to stand for from 12 to 18 hours in a dark place, when if formic aldehyde is present, a strong black colour or deposit will be produced. A light brown colour must be disregarded, nothing short of a distinct black tint being sufficient to indicate the presence of formalin. When as little as 2 grains of formalin per gallon of milk has been used, a distinct reaction is obtained. The author finds that 4 or 5 drops of formalin added to 100 C.c. of milk will enable samples to be kept for six weeks, which have given the same results on analysis after that time as were obtained from the samples when fresh. Formalin should therefore, prove useful in preserving samples of milk which may be required at a later period for analytical reference.

PARLIAMENTARY INTELLIGENCE.

THE INSPECTION OF BOILERS.—A Bill to effect the inspection and registration of boilers has been introduced into the Commons, and bears the names of several Lancashire members of Parliament as supporters. The title is not one that is likely to attract the attention of chemists, but, nevertheless, the measure is, by the meaning given to the word "boiler," invested with a certain degree of interest to them as manufacturers of pharmaceutical preparations. Clause 16 defines "boiler" to mean "any closed vessel which is used for generating steam or for heating water or for heating other liquids." It would not be just to charge the framers of the Bill with a desire to interfere with the calling of pharmacy or the work in chemical and other laboratories, but it should be made clear to them that the above definition might bring an ordinary retort under the necessity for registration, and that chemists making their own pharmaceutical preparations would certainly employ utensils in the nature of a legal "boiler." There is a special exemption in favour of domestic boilers in private houses (too often a highly dangerous form of the genus), but no expressed saving for any scientific or pharmaceutical apparatus. True there is the following general provision:—"That where the Board of Trade are satisfied that owing to the special character of any boiler or class of boiler it is expedient that the same should be exempted from all or any of the provisions of this Act the Board may make an order" to that effect. But as this safety valve is only operative after representations to a Government Department, many persons would prefer a speedier and less troublesome alternative. The object of the Bill, as stated by its promoters, is to prevent boiler explosions and to save human life, and it does not seem inconsistent with that object to have a saving clause inserted for the prevention of a possible hardship to pharmacists, analysts, or chemical investigators.

MANUFACTURING CHEMISTS using steam power, and others similarly situated would, of course, be directly affected by the Bill referred to in the above paragraph. It may, therefore, be apropos to briefly sketch its salient features. In the first place, boilers are to be periodically examined and certified as safe by competent and fit inspectors selected by the boiler owner, who is responsible for the fitness of the inspector employed. (2) Certificates of safety are to be granted by the inspectors and forwarded to the Board of Trade, which Department will issue, in exchange, a certificate of registration. (3) Certificates of safety are to be renewable every thirteen months, with certain exceptions. (4) It is to be illegal to work a boiler without a certificate of registration; maximum penalty, £1 a day before notice, £5 a day afterwards. The explosion of an unregistered boiler would involve the owner in a penalty not exceeding £100. (5) The boiler owner is to pay his inspector for each examination, and the Board of Trade a fee of one shilling for each certificate of registration. The Bill is down for second reading on April 22.

THE SELECT COMMITTEE ON PETROLEUM has now been nominated. The following members have been selected:—Rt. Hon. Jesse Collings, Under-Sec. Home Office; Sir T. Carmichael (L.) (Midlothian); Alexander Cross (U.) (Camlachlie, Glasgow), of A. Cross and Sons, seed merchants, Glasgow; J. F. Flannery (U.) (Shipley); Col. Sir E. Hill (C.) (Bristol, S.); F. Wootton Isaacson (C.) (Stepney); J. Keynon (C.) (Bury, Lancs.); Rt. Hon. A. J. Mundella (L.) (Brightside, Sheffield); H. F. Pollock (U.) (Spalding); Harold Reckitt (L.) (Brigg); J. Compton Rickitt (L.) (Scarborough); Sir J. B. Stone (C.) (Birmingham, E.); and J. Kelly (N.) (S. Leitrum). Mr. Jesse Collings is placed upon the Committee because of his official position in the Home Office, and not on account of any unsuspected connection between agriculture and petroleum, but the special qualification of the other members of the Committee for dealing with the subject under inquiry is not readily apparent to the uninitiated.

THE COMPANIES BILL, to give it the short title, is down on the House of Lords Orders for second reading on the 19th instant. The question as to the sufficiency of the winding-up clauses from a pharmaceutical point of view is understood to be occupying the attention of the Pharmaceutical Society's Law and Parliamentary Watch Committee.

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THE PHYSIOLOGICAL CHEMISTRY AND PHARMACOLOGY OF THE THYROID TREATMENT.

WITH the view of extending what is known of the mode of action of thyroid preparations when administered by the mouth, E. ROOS (*Zeitschr. für Phys. Chemie*) has made a series of investigations on dogs; some in a state of health and others after they had been deprived of their thyroid glands. The food was measured so that the quantity and composition remained uniform during the period occupied by the investigation, the urine was carefully collected and the daily output of nitrogen, sodium chloride, or phosphorus pentoxide carefully determined. The general results of a laborious series of observations, which are recorded in tabular form, are somewhat as follows:—Large doses of dried thyroid gland cause increased output of nitrogen, sodium chloride and phosphorus pentoxide, after allowing for the amounts of these substances contained in the dose of dry thyroid. The marked increase in the separation of chlorine was of shorter duration than that of the nitrogen or phosphorus pentoxide. In animals that had been deprived of their thyroids the increase of excretion of nitrogen and sodium chloride was more, and that of phosphorus pentoxide less than in the case of the normal animal. Thus it would appear that thyroid substance increases proteid metabolism, and in this respect its action may be compared to that of phosphorus. The thyroid substance would also seem to have a decided influence on fat, since the body-weight of the animals experimented on sensibly diminished, but the doses were relatively large, and before thyroid treatment can be regarded as established as a remedy for obesity, careful observations of the effects of smaller doses on human subjects must be tried.

The effect of removal of the thyroid is to diminish the amount of phosphorus pentoxide excreted to one-half. After administration of thyroid the quantity of phosphorus pentoxide in the urine increases in a marked degree. This seems to show that thyroid has a definite influence on the metabolic processes which lead to the formation of phosphoric acid in the body. Two different hypotheses may be framed to explain the fact; either (1) in the absence of sufficient

thyroid secretion an inadequate amount of phosphorus is used for the nourishment of the tissues, or (2) there is a retention of phosphorus pentoxide in the body. The first supposition would explain many of the features of cretinism and myxœdema, such as the arrested development of the bones in the former, and the defective cerebration in the latter; but the second view would better explain one symptom observed after removal of the thyroid, viz., tetany, as the result of acute retention of phosphorus pentoxide—a result which may be compared to the convulsions of uræmia. That phosphoric acid plays an important part in affections of the thyroid seems also to be shown by an observation due to KOCHER, who found that sodium phosphate greatly alleviated all the symptoms of a patient suffering from GRAVES' disease, which is marked by an increase in the activity of the thyroid gland. The explanation of this course of events may be that the disease was associated with a too rapid using-up of phosphorus compounds in the body, and that the administration of the phosphate supplied phosphorus to the tissues. So little is known of phosphorous metabolism that the author can only regard his results as suggestive rather than conclusive.

A second series of experiments was made with a view of testing the efficacy of thyroid preparations made in various ways. For this purpose the preparations were administered to patients suffering from goitre—

1st method.—4.1 grammes of dried sheep's thyroid was rubbed up with 10 C.cm. 5 per cent. hydrochloric acid and allowed to stand twenty minutes, neutralised with sodium carbonate, evaporated on a water bath, and dried over sulphuric acid. This preparation proved effective in diminishing the size and consistency of the goitres of two patients.

2nd method.—4.1 grammes dried thyroid rubbed up with 10 C.cm. of 10 per cent. hydrochloric acid and allowed to stand for one hour, neutralised and dried as before. This preparation proved equally effective with the first.

3rd method.—This experiment was made with a view to ascertain to what extent the active principle can be obtained by water extraction; 16 grammes of fresh crushed gland was digested for twelve hours with 200 grammes of water, then digested on the water bath, and finally boiled for a short time over the flame and filtered. What remained on the filter was again digested with water extracted by boiling, and filtered.

The reddish grey opalescent filtrate, when evaporated and dried, yielded 3.4 grammes of extract, was mixed with 1.6 gramme of milk sugar, and divided into five parts in order that each part should be equivalent to 1 gramme of dried thyroid (16 grammes of fresh thyroid being equivalent to 5 grammes of dried gland). This water extract proved effective in reducing the goitre in the case in which it was tried. The remains of the 16 grammes of gland left after the double water extraction were dried and administered to another patient. The tumour in this case also diminished appreciably in size. Thus the author concludes that the active principle is soluble in water, but after two extractions it is not wholly removed. The fact that the active principle of the thyroid resists boiling proves that it does not belong to the class of ferments, such as pepsin, etc.

PRESENTATION TO MR. J. R. YOUNG.

MANY readers of the Journal will be greatly interested in the report of the presentation to Mr. J. R. YOUNG, of Edinburgh, which appears on p. 237, and older members of the Society generally will recall the excellent work done by Mr. YOUNG for pharmacy, which rivals that so handsomely acknowledged by his medical friends.

SHOPS (EARLY CLOSING) BILL.

THE Standing Committee on Trade met on March 12, and again on Monday last. Several amendments to Clause I. were dealt with, and the clause as amended in Committee is as follows, the added words being in square brackets:—

1.—(1.) If an application in writing is served on the local authority of any district, praying that, as regards all shops within the district (or any part of the district) belonging to any class or classes specified in the application, an order may be made for the closing of such shops on each day or any specified day or days of the week at such hour or hours, not earlier than the hours hereafter in this section mentioned, as the local authority may determine, the local authority shall give such public notice of the application as will enable those interested to appear before them; and on being satisfied that [the occupiers of] not less than two-thirds in number of the shops within such district, or the part thereof belonging to the class or to each of the classes to which the application relates, have signed the application, the local authority may [after due consideration of the area and of the classes affected by the application, and of any other matter affecting the question], if they see fit, make an order giving effect to the application. [Where an application is made as regards any part of a district, the proposed boundaries shall, if required by the local authority, be shown by reference to a map.]

(2.) [Provided that, save as otherwise expressly provided in this Act, an order made in pursuance of this section shall not apply to shops belonging to any of the classes mentioned in the Schedule to this Act.]

(3.) The hour to be fixed for the closing of shops in pursuance of this section may on any one specified day of the week be any hour not earlier than one (originally "two") o'clock in the afternoon, but save as aforesaid shall not on any day be earlier than seven o'clock in the evening [and in neither case shall be earlier than any hour named in the application].

PHARMACY STUDENTS' DINNER.

THE annual dinner of the Pharmaceutical Football and Cricket Club was held in the Duke's Salon, Holborn Restaurant, on Wednesday evening last, when the chair was taken by the President of the Club, Professor ATTFIELD, F.R.S. The Pharmaceutical Council was represented on this occasion by Mr. WALTER HILLS, and Mr. C. B. ALLEN; the School of Pharmacy by Professors ATTFIELD and GREENISH, Mr. JOSEPH INCE, Mr. E. J. EASTES, and Mr. H. A. D. JOWETT; the Board of Examiners had a solitary representative in Mr. W. MURTON HOLMES; and Mr. RICHARD BREMRIDGE, the Secretary and Registrar, was also present with other members of the Society's permanent staff. Mr. C. B. ALLEN, in proposing the toast of the "Pharmaceutical Football and Cricket Club," commended indulgence in such games as likely to conduce to better school work. Mr. FOTHERGILL, the Captain of the Club, and Mr. G. SENTER, honorary secretary, responded, and showed that the season's record was a good one. Mr. F. U. STAMP proposed the next toast, that of the "Pharmaceutical Society of Great Britain," in a neat speech, and Mr. WALTER HILLS, in responding, proved the fallaciousness of Mr. ALLEN's suggestion that members of Council, except one, no longer knew how to make speeches. He briefly indicated how the Society had fulfilled its three objects—benevolence, education, and defence—and pointed out how much more thoroughly pharmaceutical interests could be defended if the Society received more general support. Mr. HILLS was also delegated to propose the last toast—that of "The Chairman"—and Professor ATTFIELD, in responding, dwelt upon his long term of service with the Society and the various organisations in the institution of which he had been instrumental. He concluded by inculcating the necessity of loyalty to one's fellow-craftsmen. The musical programme was exceptionally attractive, and, except for a somewhat unnecessary array of empty seats round the tables, the arrangements reflected great credit on those responsible.

ANNOTATIONS.

MR. EDWIN WHEELER, chemist and druggist, Clifton, has presented to the British Museum 2449 water-colour drawings of British fungi. They are contained in twelve large volumes, and are now at South Kensington. Sir W. H. Flower, director of the Natural History Museum, in conveying to Mr. Wheeler the special acknowledgments of the trustees of the British Museum for his generosity in presenting the drawings, observes that the serious difficulty in the way of preserving colour character in herbarium specimens makes the donation one of particular value and importance. The trustees have expressed their high appreciation of the extreme accuracy and beauty with which the characters of the fungi are delineated.

THE NEW PHARMACOPŒIA.—According to the *British Medical Journal*, whilst "satisfactory progress" is being made in the task of preparing a new edition of the British Pharmacopœia, it is hardly probable that the work can be completed in time for the autumn session of the General Medical Council. It is hoped, however, that the volume may be ready for presentation to the Council at its meeting in May, 1897.

THE CHOLERA IN HONG KONG.—It is satisfactory to learn that the services rendered by Mr. Crow, of the Government Civil Hospital at Hong Kong, and his assistant, Mr. Frank Browne (both old "Square" men), in connection with the stamping out of the plague lately raging at Hong Kong, have been suitably recognised by the Government.

FRIENDLY SOCIETIES AND THE SALE OF DRUGS.—Scottish pharmacists are threatened with a new source of danger, one of the speakers at a meeting of delegates of Dundee friendly societies on Saturday last having proposed that dispensaries should be founded in connection with the societies, and that they might then sell drugs to the general public at a reasonable profit. If the societies supplied the drugs, the speaker continued, all ground would be removed for the suspicion that the doctors were inclined to give inferior drugs in order to benefit their own pockets. This motion was seconded and agreed to unanimously, a committee being appointed to prepare a schedule for the establishment of a dispensary in Dundee.

INDIAN HEMP DRUG LEGISLATION.—It has been officially stated in the House of Commons that the Bill to amend the Excise Act, 1881, introduced into the Legislative Council of India by Sir James Westland, was introduced to give effect to the restrictive suggestions of the Hemp Drugs Commission, and that object will be kept in view. Lord G. Hamilton remarked that, as regards Burma, the existing law gives powers to grant licences for the growth, preparation, and possession of ganja, which are not now exercised. The amending Bill introduces no change in this respect, and it is not proposed to make any use at present of those powers. As regards the rest of India, the Bill does not alter the existing law, and it renews the provision that no unlicensed person may have in his possession more than five tolas of the drug.

SERUM IN DIPHTHERIA.—During the year 1894-95, 411 diphtheria patients were treated at the Am Urban Hospital, Berlin, and 245 of these were subjected to the serum treatment. According to the Berlin correspondent of the *Standard*, the number who succumbed under serum treatment was 28 per cent., and of the others 41.9 per cent. No injurious after-effects from the use of serum were observed, and the general deduction is that, though not infallible, serum is a highly valuable remedy in diphtheria.

EVENING MEETING IN EDINBURGH.—There appears little probability of any Evening Meeting of the Pharmaceutical Society being held in Edinburgh this month, the arrangement depended upon having fallen through on account of ill-health and pressure of work affecting the gentleman who had promised to lecture. In addition, the incidence of examination work and other official matters has prevented other arrangements being made in the limited time remaining before the usual date of meeting.

UNIVERSITY COLLEGE, LIVERPOOL.—The arrangements in connection with the new pharmaceutical department at University College, Liverpool, are being actively proceeded with, and it is hoped that a prospectus of the classes will be issued shortly. The medical faculty of the College has invited Mr. Prosper H. Marsden, of the Royal Infirmary, Liverpool, to undertake the duties of lecturer on pharmacy and demonstrator in materia medica.

THE CAUSE OF SUNBURN.—At the Camera Club, last week, Dr. Bowles gave an interesting account of the results at which he has arrived after investigating the subject of sunburn for the past fifteen years. He considers that the violet or ultra-violet rays, after reflection from snow, water, mist, etc., behave very like x -rays in their power of penetrating human tissues, and that sunburn, snowburn, snowblindness, sunstroke, and sun fever may all be associated with penetrating light rays instead of being due to the action of heat. To prevent the action of the rays upon the skin the use of pigments is recommended, something a little deeper than flesh colour having been found quite effectual in preventing sunburn.

WHAT IS A POISONOUS DOSE OF OXALIC ACID?—If the report in a local newspaper is to be credited, the house surgeon at the Royal I.W. Infirmary and County Hospital, Ryde, requires some education with regard to poisonous doses. A patient at the infirmary who had swallowed some oxalic was charged with attempted suicide, and the house surgeon is reported to have said, in giving evidence, that he should hardly think an ounce (!) of oxalic acid would be sufficient to destroy life. Cases are recorded in which a similar quantity of the acid has been swallowed and the patients have recovered after prompt treatment, but on the other hand as little as sixty grains has proved fatal. Is there a decay of medical posological knowledge as well as of prescribing?

MR. FREDERICK BIRD, chemist and druggist, of Spon Street, Coventry, has been unanimously elected chairman of the Coventry School Board. Mr. Bird, who was elected to membership of the Pharmaceutical Society in 1873, has been a member of the School Board ever since its formation in 1870, and became vice-president in 1891.

THE APRIL EXAMINATIONS.—Pharmacy in Great Britain would appear to be yet far from the least desirable of occupations, if one may judge from the number of names entered for the April examinations. The entries are as follows:—

	London.	Edinburgh.	
Minor	240	191	= 431
Major	28	5	= 33

Total number of entries 464

The above is probably a record number for the Minor examination. The figures for the Major examination, however, appear to indicate as clearly as ever of late years that students either do not appreciate the advantage of advanced knowledge, or require some extra inducement—say a Fellowship—to tempt them to proceed,

PATHOGENIC YEASTS.—Disease-producing characteristics have only quite recently been imputed to the yeast class, no species possessing pathogenic properties having been known until Busse last year announced the existence of one such species. Colpe and Sanfelice have described others, and seven out of fifty varieties examined have since been found by Dr. L. Rabinowitsch to possess pathogenic properties. These yeasts appear, observes *Nature*, to be distinct from the pathogenic varieties isolated by other observers. One variety, *Monilia candida*, was found to be fatal to rabbits and mice, but not to guinea-pigs. Another yeast, fatal to mice, was obtained from figs which had been allowed to ferment, whilst a so-called "wild" yeast found on grapes, and a form isolated from ale by Professor Delbrück, killed both rabbits and mice. The effects produced are apparently due to direct infection through copious multiplication of the yeast cells within the animal's system rather than to intoxication from products elaborated by the yeasts.

THE HUXLEY MEMORIAL.—The amount promised and received in connection with the Huxley Memorial Fund now exceeds £2300, a sufficient sum being thus guaranteed for two objects the Committee definitely decided upon—a statue at the British Museum of Natural History, and a medal at the Royal College of Science, London. A further appeal is now being made for the third object proposed by the Committee—the furtherance of biological science in some manner. The foundation of exhibitions, scholarships, or lectureships has been proposed, but a considerable sum will be required for this purpose. Local committees are being organised, however, in all parts of the world, and it is trusted that their efforts will effect the desired result. Donations may be sent to the honorary treasurer, Sir John Lubbock, Bart., to Messrs. Robart, Lubbock and Co., 15, Lombard Street, E.C., or to the honorary secretary, Professor G. B. Howes, Royal College of Science, South Kensington.

THE RÖNTGEN RAYS have, it is reported, been successfully applied by Dr. Hall-Edwards, of Birmingham, to obtain prints showing the human vertebræ and spinal cord in full detail. The Birmingham postal authorities have also been shown how the rays may be utilised to detect coins and other forbidden articles enclosed in letters. The position of a sovereign wrapped in several folds of newspaper was clearly revealed in a print, and by means of the cryptoscope a sixpence was found between the leaves of a book containing more than nine hundred pages. At St. Thomas's Hospital, London, much interest is being taken in this subject, and elaborate arrangements are being made to conduct experimental work. Mr. A. F. Stanley-Kent, working there, is said to have secured prints showing the bone of the pelvis, the spinal column, and the lower ribs. The position of the kidney is also indicated, whilst renal calculi have been found to be sufficiently opaque to the x -rays to render it possible to differentiate them clearly from the surrounding tissues.

AN "ELECTROGRAPHIC" LABORATORY.—Acting on the advice of several eminent physicians and surgeons, Mr. A. A. C. Swinton has decided to equip a special laboratory at 66, Victoria Street, Westminster, S.W., for the practical application of the Röntgen rays in surgery and medicine. The laboratory is being fitted with the most improved and up-to-date apparatus, and is expected to be in working order in the course of a few days. The work will be conducted by Mr. H. L. Tyson Wolff, under the direct supervision of the director.

MADAME PASTEUR has had the pension voted by the French parliament to her late husband, settled upon herself. The annual value of this pension is 25,000 francs.

PROCEEDINGS OF SOCIETIES.

Linnean Society of London.—At the meeting held on March 5, Mr. W. Percy Sladen, Vice-President, in the chair, Mr. Ivor Richards was admitted, and Mr. S. H. Bickham was elected a Fellow of the Society. On behalf of Capt. J. Marriott, Mr. Harting exhibited an antler of the Burmese deer (*Cervus Eldi*), and described a singular condition in another example which for eight years had continued to exude a blood-coloured liquid from a puncture on the under surface of the brow-tine. Professor Stewart, to whom some of the substance had been submitted for examination, had found no blood-corpuscles therein, and considered it to be grease in a semi-fluid condition, the nature of the colouring-matter being as yet undetermined. Mr. Druce thought the substance exuded might be the excretion of the larvæ of some insect feeding upon the internal surface of the horn, and suggested the examination of a section, if possible. Mr. Harting exhibited a drawing from life of a Klipspringer antelope (*Oreotragus saltator*), lately received (for the first time in this country) at the Zoological Society's Gardens. He directed attention to the singular position of the hoofs and the enlarged condition of the fetlocks, suggestive of injury during capture. It was difficult to believe (as alleged) that this was the natural condition of the animal, so very dissimilar to that of other species allied to it. Mr. Thomas Christy exhibited several cases of butterflies collected by Mr. Horace Billington in Old Calabar, on which remarks were made by Messrs. W. F. Kirby and H. Druce. Mr. B. D. Jackson, in directing attention to an English translation by Mr. J. Lucas of that portion of Pehr Kalm's "Travels" which relates to England, remarked that few persons were aware that Kalm, a pupil of Linnæus, had in 1748 spent six months in this country and had diligently noted the plants which he met with. Thus he had recorded no less than sixty plants for Hertfordshire alone, deriving some of his information from an examination of the contents of two haystacks in that county—in this way anticipating by more than a century one of the methods employed by Sir John Lawes and Sir J. H. Gilbert, and also by Professor Fream.

On behalf of Professor Gustav Gilson, of Louvain, two papers entitled "Studies in Insect Morphology" were communicated by Professor Howes. In the first of these—"On Segmentally Disposed Thoracic Glands in the Larvæ of *Trichoptera*"—the author found that in *Limnophilus flavicornis* the prothoracic prominence gives exit to an underlying tubular gland. In *Phryganea grandis* each thoracic sternum gives exit to a glandular apparatus of the same category, the prothorax alone developing a prominence. Passing on to a consideration of the glands themselves, it was shown that in *Phryganea* they are slightly monilated branching tubes of a paired nature, which unite in the middle line. They were found to bear a cuticular lining, and to secrete an "oily" fluid, which Dr. Hanseval had found, on analysis, to be identical with the secretion of the maxillary glands of *Cossus*. The author gave reasons for regarding these glands as inherited structures, preserved under the tubiculous habit, and not as organs newly acquired in correlation with that. In discussing the homology of the glands, he instituted comparisons with the "Bauchdrüse" of certain non-tubiculous caterpillars and the "salivary glands" of *Peripatus*; and concluded that they are nephridial rather than coxal, pointing out that by their discovery representatives of segmentally-disposed glandular organs may be said to occur throughout the length of the Hexapodan body. In the discussion which followed, Mr. A. R. Hammond referred to the saccular reservoir on the ventral surface of the prothorax of the larva of the Puss Moth (*Cerura vinula*), from which an acid fluid is said to be ejected; also to the large pear-shaped glandular cells which underlie the integument of the thoracic segments in the larva of *Dicranota bimaculata*, as described by Professor Miall ('Trans. Entom. Soc.,' 1893, p. 235). The function of these cells appeared to be the secretion of an oily fluid.

In the second paper by Professor Gilson and M. J. Sadones—"On the Larval Gills of *Odonata*"—the authors described in each branchial lamella of *Libellula depressa* three conical processes which are functional in preventing adherence of the lamella to its fellows, and in maintaining full exposure to the surrounding medium. The authors showed that the tracheal ramifications are looped tubules running parallel with the surface of the gill, which at all points lie embedded in a subcuticular protoplasmic syncytium. Stress was laid upon the fact that the in-and-out-going tracheal tubules are related to one and the same branchial main tracheal trunk, and that the air within the gill does not circulate regularly

through the tracheal system. Turning to physiological considerations, it was pointed out that gaseous interchange between the contents of the gill-laminæ and the surrounding medium must of necessity take place through the living protoplasm of the lamellar syncytium; and, on consideration of the fact that the death of an epithelium is known to profoundly alter the osmotic properties of the tissue which it composes, the conclusion was drawn that absorption of oxygen must here involve something more than a mere physical process. Attention was then directed to the existence of a "pre-rectal vesicle" from which there depend into the lumen of the guts a couple of epitheloid disks. It was suggested that this structure, together with a similarly differentiated epithelium lying about the bases of the gills, might be possibly concerned in the removal of carbonic anhydride. The authors accordingly discriminated between the air-vascular (tracheal) system, as concerned in the absorption and dissemination of oxygen, and the blood-vascular as concerned in nutrition and the removal of waste. In the discussion which followed, Mr. A. R. Hammond expressed his satisfaction at finding that the author's observations on the gills of *Odonata* confirmed to some extent his own views as to the syncytial condition of the hypodermis in aquatic larvæ. In the larvæ of the red-blooded species of *Chironomus* this condition appeared to be most strikingly exemplified.

School of Pharmacy Students' Association.—A meeting of this Association was held on Thursday, March 12, Mr. Harold Brown occupying the chair. After the minutes of the previous meeting had been passed, a "Report on Inorganic Chemistry," by Mr. H. Read, was read in his absence by the Secretary. The report dealt with argon, helium, the oxidation products of ammonium hydrosulphide, and the metallic carbides. Observations on the report were made by Messrs. Henry, Spurge, Senter, Grier, Tickle, and the Chairman.

A "Report on Pharmacy" by Mr. W. Moore, followed. In this the controversial points recently brought forward with regard to the constituents of ergot were summarised, and Cripp's work on belladonna was fully dealt with and favourably commented upon. Caseinate of iron, hæmol, and several other of the newest preparations of iron came in for critical comment. The method of preparing and using the solutions suggested by Dr. Schleich for producing local anaesthesia by infiltration was explained. A "Finot" cachet apparatus recently introduced was shown, and the method of using it explained. It was examined at the conclusion of the paper by several of the members, who admired the elegant way in which the machine served its purpose. Remarks were offered by Messrs. Grier, Henry, Tickle, Senter, Spurge, Umney, Wilson, and the Chairman, after which the meeting adjourned.

Midland Chemists' Assistants' Association.—On Wednesday of last week, at Exchange Rooms, Birmingham, Mr. R. M. Williams, Vice-President, occupied the chair, and the following short papers were read:—

"PHOTOGRAPHIC NOTES," BY F. FOSTER.

The author devoted his paper to the new so-called photographic light. The materials required for producing photographs by the x -rays were enumerated and described. The exposure might vary from three or four minutes to half an hour or more. The time might be shortened by warming the plate to about 100° F. It was found that collodion plates were remarkably insensitive to the x -rays; on the other hand, gelatino-bromide, gelatino-bromo-iodide, and gelatino-chloro-bromide plates were all sensitive to the rays. A pure gelatino-bromide emulsion in the form of a highly-sensitised plate gave the best results. An apparatus has been lately devised for examining with the naked eye shadows of articles without going to the trouble of exposing and developing the plate. This was recently described in the *Pharmaceutical Journal* (see *ante*, p. 193). By means of this apparatus it can be ascertained whether the Crookes' tube was working to the best advantage. After explaining at some length the various theories put forward as to what these x -rays actually were, Mr. Foster gave his opinion that they might be ascribed to the longitudinal waves in the ether, although he was conscious that this hypothesis required more solid foundation. A spark (he said) would not pass through a perfect vacuum, therefore it was necessary for molecules of some kind to exist in the Crookes' tube, but these molecules were as far removed from gaseous matter as gaseous is from liquid.

The next paper read was on—

“GRANULAR EFFERVESCENTS,” BY W. T. C. CLARKE.

Mr. Clarke first called attention to the B.P. process for making eff. sod. phosph. The object of heating the phosphate of soda until it had lost 60 per cent. of its weight was simply to render it anhydrous, and in the second stage the ingredients were heated to about 212°F. to drive off any water retained mechanically and absorbed from the air. This was best done by a water bath. The sifting was a point of nicety of appearance rather than a necessity. The granulation might be done admirably with a fork having three or four prongs so bent as to be from 3/16th to 1/4th inch apart. In effervescent salts there were briefly two essentials, namely the base (consisting of the acid, carbonate and sweetening agents, to which the preparation owed its effervescence and palatability) and secondly, the active principle. With regard to the base there was no hard and fast formula for general use. After many experiments he had found the following the best:—Bicarbonate of soda, 17 parts; citric acid, 6 parts; tartaric acid, 6 parts; white sugar, 9 parts. The finished preparation would be slightly acid, which he considered an advantage. Concerning the second essential, the active ingredient, this had merely to be weighed and mixed with the base in the proportion required.

The mixture was granulated thus:—Place an enamelled basin with an oval bottom over a water bath, and when quite hot and dry add, say, half a pound of the ready mixed powder. Allow to remain about a quarter of a minute (longer or shorter according to temperature), when the powder begins to “cake.” Now take the fork and so manipulate it as to make the whole of the salt pass through its prongs. Remove from source of heat and continue trituration, gradually diminishing the pressure until the granules become cold and brittle. The size of the granules depends greatly upon the rate of trituration, therefore too much energy is to be avoided. The drying, it was explained, is best done by the sun, as the preparation should be at normal temperature when bottled. The original salt lost 1/19th of its weight by the granulation.

The author found that mag. cit. efferves. cost him 11d. per pound, against manufacturers’ price, 1s. 3d. Antipyrine, five grains in one drachm, he made at 5s. per lb., against manufacturers’, 7s. As the base was the same for all preparations, the comparison was equally favourable with all other preparations. The reasons he advocated home-made preparations were, apart from the satisfaction of being “up-to-date,” 1st, the strength of active principle is assured; 2nd, the preparations are quite as good as any manufacturers’, and cost less; 3rd, the expense of keeping a large stock (which in the majority of cases will deteriorate on keeping) is obviated. Seven specimens of effervescent salts, made by Mr. Clarke, were exhibited—all excellent samples.

The next paper read was entitled—

“DISPENSING QUERIES,” BY H. M. BINDLOSS.

The author said that in dispensing a bottle of mixture or a pot of ointment there may be several ways—all different—and all probably correct, and it was on account of there being many ways of arriving at a correct result in dispensing that his notes would be particularly open to criticism and discussion.

Bottles for Gargles, etc.

He also called attention to the advisability of some rule being established as to the style of bottle in which gargles, throat sprays, etc., should be dispensed. He was strongly of the opinion that an intermediate bottle between the blue fluted poison bottle and the white glass dispensing bottle should be used for such preparations, the reason of his opinion being as follows:—If a dispenser treated a gargle or throat spray as he would a lotion and sent it out in the usual blue fluted bottle, a patient would naturally hesitate before following such directions as “To be used freely” or “Use frequently,” and then, on the other hand, if he treated the gargle or throat spray as a mixture and sent it out in a clean bottle, exceptions would certainly have to be made to the rule in prescriptions like the following:—

℞ Hydrarg. Perchlor. gr. i
Glycerini ʒi. Solve

“The throat to be painted at bedtime.”

Therefore if an intermediate bottle were used it would obviate that irregularity which we so frequently come across with patients who are travelling from one town to another, as this could be used for all medicines which are taken into the mouth or nostrils, but not into the stomach, and would include, of course, all gargles, spray-solutions, throat-paints, mouth washes, and applications for tongue,

nostrils, and gums. All applications not intended for the mouth or nostrils would be dispensed in the ordinary blue poison bottle. In this way a fast rule could be made, only those medicines which are actually swallowed being treated as mixtures, and the patient would then get his remedies dispensed in the same style everywhere.

Dispensing Alkaloids.

Mr. Bindloss next pointed out the advisability of always attaching a “shake the bottle” label when dispensing an alkaloidal liquor in a mixture containing an alkali. This, he stated, was a safe rule, and one that should always be observed; at the same time it was well to remember that most alkaloids are slightly soluble in water, for instance, morphine, 1 in 1000; strychnine, 1 in 7000, which meant that six ounces of water are capable of dissolving all the strychnine contained in 40 minims of the official liquor, and all the morphine in 280 minims of any of the official morphine liquors, even supposing it were all deposited. Therefore, as far as actual necessity goes, liquor morphine seldom requires a “shake,” and liquor strychnine only occasionally.

Capacity of Ointment Pots.

Attention was then drawn to the mistake in ointment pots being made to contain avoirdupois instead of troy ounces, for to dispense a prescription for 1 oz. of ointment, in most cases a 1½ oz. jar would be required. The opinion was expressed that all ointments should be weighed, and then the smallest jar chosen which would hold that quantity.

Mist. Ferri Co.

Reference was also made to a note on “mist. ferri co.—a wrinkle” which recently appeared in the *Pharmaceutical Journal* (ante, p. 184). This was as follows:—“Dissolve the sugar with the iron sulphate instead of mixing it with the myrrh and potassium carbonate The emulsion of myrrh, pot. carb., and rose water was more easily formed and more milky without the sugar.” This method the writer could not agree with for the following reasons, viz.:—(1) Sugar has without doubt remarkable power in extracting and diffusing the aromatic fragrance of the myrrh when in contact. Its power is noted in similar way with tolu, lemon, and many other odorous drugs. A vanilla bean, Mr. Ince said recently, immersed in powdered sugar diffuses its aroma throughout the whole mass. The better the myrrh, the greater, therefore, is the necessity of using the sugar. (2) If lump sugar be used—which was recommended—the myrrh can be powdered quicker and finer, and the resulting emulsion will be better than that omitting the sugar. Experience led the speaker to think that sugar did not in any way interfere with a gum resin emulsion.

Curious Prescriptions.

In conclusion, Mr. Bindloss handed round copies of several prescriptions having slight peculiarities, which had come under his notice:—

No. 1.

℞ Quin. Sulph. gr. iij.
Ac. Hydroch. dil. ℥v.
Am. Carb. gr. v.
Aq. Chlorof. ʒi.

The only satisfactory way of dispensing this, he found, was to neutralise the acid with the am. carb., rub the quinine down with mucilage, and add one to the other.

No. 2.

℞ Bismuth Carb. gr. 120.
Potass. Bicarb. gr. 90.
Spt. Am. Arom. ʒiij.
Tr. Cardam. Co. ʒiij.
Aq. Calcis ad ʒviiij.

The colour of the tinct. card. co. in above is discharged.

No. 3.

℞ Liq. Potassæ,
Spirit. Ætheris Nitros, aa ʒi

This acquires an amber colour with a slight precipitate.

No. 4.

℞ Zinci Brom. gr. 16.
Sodii Brom. ʒss.
Tr. Nucis Vom. ℥64.
Aq. ad. ʒviiij.

As a flocculent precipitate occurred in this, and two drops of acid. hydrobrom. was sufficient to clear it, that in his opinion ought to be added.

No. 5.

℞ Cocain. Hyd. gr. iij.
Argent Nit. gr. ʒ.
Aq. Dost. ʒss.

In dispensing the last, silver chloride would be precipitated, which he was sure the prescriber did not intend, and therefore, nitrate of cocaine should be used in place of the hydrochlorate.

An animated discussion on each paper was taken part in by the following:—Messrs. Lawton, Shields, Foster, Meggeson, Williams and others.

Plymouth, Devonport, Stonehouse and District Chemists' Association.—A special general meeting of this Association was held last Monday evening, at the Foresters' Hall, Octagon, Plymouth, to consider the following resolution submitted by the Committee:—

"That this Committee heartily approves of Mr. C. J. Park as a candidate for the Council of the Pharmaceutical Society of Great Britain, and strongly recommends the members of the Plymouth, Devonport, Stonehouse and District Chemists' Association, to give him their hearty support."

The chair was occupied by Mr. J. G. Netting (Vice-President), and amongst those present were Messrs. J. C. Park (President); G. Breeze, J.P.; J. Cocks (Secretary), R. H. Bailey, H. O. Westcott, W. H. Woods, Green, R. H. Roper, J. Johnson, A. D. Breeze, H. Hunt, O. A. Reade, Condy U'Ren, F. Maitland, Davey, J. Maurice, and Goddard Clarke, J.P. (London).

The Chairman, having read the Committee's resolution, said that he felt great pleasure in supporting the candidature of Mr. Park for the western district, and for the Pharmaceutical Society in general. He thought Mr. Park was entirely fitted for the post in more ways than one.

The Secretary (Mr. J. Cocks), then read letters from Messrs. Gadd, J. D. Turney, J. Lake (Exeter), and Barge, all regretting absence and wishing Mr. Park every success in his candidature. The minutes of the previous committee meeting were next read, and the Chairman invited questions to be put to Mr. Park.

Mr. Park, in reply to these questions, said he should be pleased to see any chemist and druggist elected on the Council who had been in business previous to and during 1868. With regard to making associates in business members of the Pharmaceutical Society, he thought representation should be proportionate. It was open for every one to rise to the top of the tree, and yet men entered pharmacy simply for commercial purposes. They did not want to pass any examinations at all if they could open a shop and trade without doing so. He would favour any desirable extension of the poisons schedule, and he thought a little favouritism should be extended to chemists in the matter of stamp duty. When a chemist put a recommendation of a medicine into print it was liable to duty—practically, such a duty was a tax on ill-health. He should like to see the Inland Revenue approached on the subject. He was in favour of the Early Closing Bill with the exemption given in a recent issue of the *Pharmaceutical Journal*. He was in favour of a new Pharmacy Act restricting the sale of poisons to qualified men only. If elected on the Council he would always endeavour to represent the views of the majority of those whom he represented. He went primarily as the candidate of the local association, and in important matters where he was in doubt as to the opinion of the Association he should ask to have a meeting called, and vote according to the voice of the majority. He was also in favour of military dispensers being legally qualified.

THE ANTI-CUTTING MOVEMENT.

Mr. Cocks then proceeded to explain that he attended the recent meeting in London of the Proprietary Articles' Trade Association, and as that meeting decided to support any candidate in sympathy with the movement he mentioned Mr. Park, whose name was received with approbation. He afterwards learned, however, that that meeting wanted Mr. Park to run entirely in the interest of the Trade Association. He said that was entirely a matter for Mr. Park, and Mr. Jones (Birmingham) remarked that if Mr. Park would not run as their candidate, they would very soon get another. The "anti-cutting" people were willing to pay Mr. Park's expenses, and felt sure of getting him on the Council if he would stand. He asked that the matter might be allowed to stand over until that meeting.

Mr. C. J. Park said he had received a pressing letter from Mr. Glyn-Jones, asking him to run entirely in the interest of the Proprietary Articles' Trade Association. Mr. Glyn-Jones wanted him to decide as quickly as possible so that he could arrange meetings in the North for him to give election addresses. He said he had decided to write asking him to become a candidate before Mr. Cocks mentioned the matter at the London meeting. Mr. Park then read a letter which he proposed to send to Mr. Glyn-Jones, in which he said that he had been already selected as the candidate of the

Plymouth Chemists' Association, but that if elected he would heartily support the "anti-cutting" movement. He felt sure that if he was returned as the representative of the local association he would have more influence on the Council in supporting the "anti-cutting" movement than if he were merely the representative of the Proprietary Articles' Trade Association.

Mr. G. Breeze next moved—

"That this meeting of the members of the Plymouth, Devonport, Stonehouse and District Chemists' Association heartily approves of Mr. C. J. Park, pharmaceutical chemist, 1, Mutley Plain, Plymouth, as a candidate for the Council of the Pharmaceutical Society of Great Britain, and will support him at the coming election, and strongly recommends all members and associates in business to vote for him at the next election of the Council."

He felt assured that all western chemists hoped to see Mr. Park occupy a very good position on the poll. The opinions of the candidate were sound, and he was pleased at the decision Mr. Park had come to with regard to the "anti-cutting" movement. He would very much like to see the medicine stamp abolished altogether, as it would tend to increase the public confidence in them as chemists and druggists. He suggested that they would be sufficiently protected if a guinea were demanded from everyone dealing in medicines. He had the heartiest sympathy with the resolution, and promised to do his very best to promote Mr. Park's candidature. He believed that chemists below Bristol had never been represented on the Council, and felt it was quite time they were.

Mr. Hunt, of Plymouth, local secretary of the Pharmaceutical Society, seconded the motion, and thought that the Association could not have picked a better man than Mr. Park. He did not think much of the difficulty about patent medicine, and if the stamp duty was abolished altogether believed that street vendors would take to selling patent medicine. He sided with the view Mr. Park had taken in the "anti-cutting" matter.

Mr. Maitland, of Stonehouse, local secretary of the Pharmaceutical Society, heartily supported the candidature, and recognising how difficult it was for any man to leave his business and sacrifice his time, thought special thanks were due to Mr. Park for standing. Mr. W. H. Wood also supported, and the resolution was unanimously carried.

Mr. Park returned his best thanks for their action and their kind promises of support. He was not going to assume for one moment that he could fill the place of so thoroughly capable a man as Mr. Schacht, of Bristol, but promised to do his utmost on behalf of those whom he hoped to have the honour to represent.

Mr. Goddard Clarke, J.P., congratulated the Association on procuring such an excellent candidate as Mr. Park, and promised to give him his best support. It was quite time, he said, that the West of England should have a representative on the Council, and no longer be left out in the cold.

The members of the Plymouth, Devonport, Stonehouse and District Chemists' Association Committee were appointed to assist Mr. Park in his candidature, and a unanimous vote of thanks was accorded Mr. J. G. Netting for presiding.

Chemists' Assistants' Association.—At the meeting held on the 12th inst., when the President (Mr. E. W. Hill) occupied the chair, there was an excellent attendance to hear Mr. A. W. Gerrard read a paper "On Nutrient Beef Foods."

Allusion was made to the paucity of literature dealing with the subject, and surprise was expressed that pharmacists have shown so little desire to improve the existing methods of preparation, and thus identify themselves prominently with such a rapidly extending industry. This is especially remarkable in England, where joint considerations of climate, pasture, and breeds of cattle supply advantages far exceeding those of other countries, and the author expressed the opinion, derived from a lengthy and intimate acquaintance with the medical profession, that the use of good nutrient foods of English manufacture would be heartily welcomed and encouraged. After a description of the chief constituents of beef muscle, the effect of water at different temperatures was described. Thus, if finely minced lean beef muscle is placed in water heated to 60° C., and well stirred for ten minutes, a large portion of the albumin and albuminoids, together with some of the extractives, pass into solution, whilst the myosin and much of the gelatin is left unchanged. The result is different if boiling water is used, coagulation and fixation of the albumin in the muscle taking place, the latter becoming hardened. If the boiling is prolonged for several hours, gelatin, extractives, and salts pass into solution, leaving behind the insoluble myosin and albumin. It will therefore

be seen that a proteid or albuminous beef-tea fairly rich in nitrogen can be prepared by infusing beef below the coagulating point of albumin, but on the other hand boiling the beef merely yields a solution of the extractives, accompanied by some gelatin. Hence it follows that the most abundant and valuable constituent of beef—myosin—does not pass into solution in the processes either of infusion or decoction, and recourse is had to the agency of the gastric and pancreatic juices in order to convert this substance into peptone. It should be noted that it is not advisable to carry the conversion further than the formation of proteoses, because complete peptones are bitter, unavoury products, partaking more of the nature of poisons than foods. Mr. Gerrard then proceeded to describe processes for preparing meat peptone and essence, and the peptonisation of beef by means of the pancreas, formulæ being given and full details regarding the methods of procedure. These we are unavoidably prevented from publishing in the present issue of the Journal.

In the discussion which followed, the President, Messrs. Robins, Guyer, Taylor, Moore, Crouch, and Roberts took part, and a hearty vote of thanks was awarded to Mr. Gerrard, on the proposition of Mr. Moore, seconded by Mr. Robins.

FOREIGN NEWS.

MEDICINE IN THE COLOMBIAN REPUBLIC.—The political troubles which have recently upset and paralysed scientific work generally in Santa Fé de Bogotá being at an end, the *Revista Médica*, the organ of the National Academy of Medicine, has again resumed circulation. According to that paper, a medical institution called La Policlínica has just been called into existence in Bogotá, mainly by the endeavours of Doctors Lisandro Reyes and Eduardo Herrera, for the purpose of providing lectures in special medical subjects. Bacteriology will be undertaken if the Government will assist with a grant of money to form a laboratory. Chemical analysis has been made a special feature, and a well-equipped laboratory has been inaugurated for the examination of urine and other organic liquids of importance pathologically. Doctor Fortunato Pereira is the director.

PINE SEEDS AS AN ANTHELMINTIC.—In a letter to *La Revista Médica de Bogotá*, Doctor Eloy E. Gonzalez suggests that the fruit called "piñuela," from a species of pine tree growing in Colombia, should be examined by the Academy of Medicine with a view to discovering its active principle, as he has noticed in the case of three children that the consumption of the fruit caused the expulsion of large quantities of tæniæ. He hopes that the piñuela will provide an efficient and indigenous substitute for the expensive imported pelletierine.

ASSAY OF IODINE IN COD-LIVER OIL.—M. Gorges, pharmacien at Saint Mandé, publishes in the *Journal de Pharmacie* an improved method for determining the amount of iodine in cod-liver oil. Twenty-five grammes of the oil are weighed into a shallow capsule with 25 grammes of nitrate of potash and 5 grammes of caustic potash, previously dissolved in 25 grammes of alcohol. This is saponified in a water bath and the soap desiccated by means of a sand bath, and subsequently incinerated at a low red heat. The residue, consisting principally of carbonate and iodide of potassium, is treated with dilute acetic acid until a slight acid reaction is obtained and the solution transferred to a glass separator. Five C.c. of 5 per cent. solution of persulphate of ammonia is added to liberate the iodine, which is then absorbed by agitation with bisulphide of carbon. The iodine solution, after separation, is titrated with centinormal solution of hyposulphite of sodium.

SCOTTISH NEWS.

SERIOUS EXPLOSION WHILE PREPARING OXYGEN.—Mr. Arthur Allan, Gorebridge, Midlothian, met with a serious accident on Saturday night, 14th inst., while preparing some experiments for exhibition during a lecture on "The Air we Breathe," which he was to give in Heriot Schoolhouse, about five miles from Gorebridge. He was engaged in mixing in a mortar what was understood to be chlorate of potassium and black oxide of manganese to be used in the preparation of oxygen gas. Mr. Allan lifted the pestle in his right hand, and on allowing it to drop again with some force into the mortar the mixed powders exploded violently, and several people were attracted by the report. Mr. Allan's right hand was severely burned and otherwise wounded, and he received the force of the explosion

chiefly on the right cheek, his eyes being burned and filled with black débris. He was immediately driven five miles to Gorebridge, but he seemed so severely injured that the medical attendant had him immediately removed to the Royal Infirmary, Edinburgh, where an examination showed that his eyes were fortunately not so seriously injured as at first sight appeared. The chemicals employed by Mr. Allan had been procured for him by a gentleman, not a chemist, who had arranged for the lecture. It is supposed that some error may have occurred, and an inquiry is being made to determine the purity of the substances employed. Mr. Allan is quite a young man and fortunately very tall, otherwise the accident would almost certainly have had more serious consequences. He had only recently been appointed an assistant in the analytical laboratory of Messrs. Tatlock and Readman, F.C.S., Edinburgh. This case illustrates the value of the caution given by Bloxam ('Chemistry,' page 38) as to the necessity of trying the effect of heat on a small quantity of the potassium chlorate and the supposed black oxide of manganese before working with a large quantity.

MR. WILLIAM WRIGHT, chemist and druggist, High Street, Lockerbie, has been appointed travelling secretary to the Scottish National Union of Y.M.C. Association, and S.M.F. Associations.

ROYAL MEDICAL SOCIETY OF EDINBURGH.—The annual dinner took place in the Royal Hotel, Prince's Street, Edinburgh, on Friday, 13th inst., Dr. Joseph E. Bowes, senior President, in the chair. These was a distinguished company, including Dr. Watson Cheyne, of London; Professors Crum Brown, Rutherford, Greenfield, Chiene, and Simpson. In the course of the evening, Professor A. R. Simpson, M.D., in the name of the fellows and members of the Royal Medical Society, presented to Mr. J. R. Young, pharmaceutical chemist, 17, North Bridge, Edinburgh, a handsome silver bowl on ebony stand, in token of their high appreciation of the manner in which he had filled the position of honorary treasurer to the Society during the long period of twenty years. Mr. Young said Professor Simpson had been appointed as successor to the late J. F. Macfarlan. The splendid work he had done for the cause of education in connection with the Edinburgh Merchant Company was well known to them all. He was one of their best known and most honoured citizens, and for many years had filled the position of a Justice of the Peace for the City of Edinburgh. The bowl, which was specially designed and manufactured by Brook and Son, George Street, measures 11½ inches in height by 14 inches in diameter, and weighs about 90 ozs. There was also presented at the same time by the Society to Mrs. Young a handsome gold and diamond bracelet. Mr. Young, who, in his reply, exhibited much of his old eloquence and vigour, gave many interesting reminiscences of the history and progress of the Society during his tenure of office.

ODONTO-CHIRURGICAL SOCIETY OF SCOTLAND.—The annual dinner of the Society took place on Friday, 13th inst., in the Balmoral Hotel, Edinburgh, Mr. J. S. Amooore, Vice-President, in the chair, and Mr. O. Fergus, as croupier. Among others present were Emeritus Professor Struthers, President of the Royal College of Surgeons; Dr. P. A. Young, Treasurer of the Royal College of Physicians; Mr. Rees Price, Secretary Scottish Branch of the British Dental Association; Mr. J. Laidlaw Ewing, Chairman of Executive North British Branch of the Pharmaceutical Society, etc. Dr. James proposing the toast of the evening, "The Odonto-Chirurgical and Sister Societies," said that they—dentists, physicians, surgeons, and pharmacists—were all of one lot as it were, because they were all directly concerned in utilising their energies for the benefit of humanity. The dental profession was simply a part of the great medical profession, and he thought its members, in their department, might reasonably claim pre-eminence over every other. Mr. Oswald Fergus, Glasgow, proposed the toast of "The Licensing Bodies," coupled with the names of Professor Struthers, for the Royal College of Surgeons; Dr. P. A. Young, for the Royal College of Physicians; and Mr. J. Laidlaw Ewing, for the Pharmaceutical Society of Great Britain. Mr. Ewing, in replying, said like other licensing bodies the Pharmaceutical Society had recently adopted the plan of appointing outside examiners, who were engaged as professional teachers of the respective sciences in which they examined. Speaking from what he had seen of the working of the new plan in Scotland, he was able to say that it worked well. He had observed that previous speakers had referred somewhat pointedly to the advertising dentist, and it occurred to him to suggest that they should also remember the unqualified practitioner of dentistry,

who was no less objectionable than the unqualified practitioner of pharmacy. He had noticed that quite recently the dental profession had, like the Pharmaceutical Society, been appearing before Sheriff Campbell Smith at Dundee, in an endeavour to prevent the illegitimate assumption of a professional function by unskilled persons, who, in the interests of public safety, were legally prohibited from so acting. They were equally unfortunate to find that the Sheriff in both cases seemed to think the unqualified person was as good as the duly qualified, and that he was equally inappreciative of the legislative restrictions applying to both professions was shown by the fact that in each case he imposed the nominal penalty of one shilling and costs. Other toasts were honoured, and songs and recitations were contributed at intervals.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION.—The annual supper of the Association took place in the Imperial Hotel, Market Street, on Friday, the 13th inst. Mr. J. Mackintosh Cameron, President, occupied the chair, and Messrs. J. McBain, Vice-President, and G. Sinclair, Hon. Sec., acted as croupiers. About eighty gentlemen sat down to supper, including Messrs. W. L. Currie, Vice-Chairman North British Executive Pharmaceutical Society, and President of the Glasgow and West of Scotland Pharmaceutical Association, Peter Boa, President, J. Bowman, Vice-President, and C. F. Henry, Hon. Sec. of the Edinburgh District Chemists' Trade Association, Parish Councillor D. Maclaren, G. Lunan, J. A. Forret, Divisional Secretary for Central Edinburgh, J. Brown, President, and J. P. Gibb, Hon. Sec. Edinburgh Pharmacy Athletic Club, W. Duncan, W. B. Cowie, J. Rutherford Hill, etc.

Apologies for unavoidable absence were intimated for Mr. J. Laidlaw Ewing, Chairman of the North British Branch Executive of the Pharmaceutical Society, Mr. D. Storrar, Kirkcaldy, Professors J. Gibson and P. Geddes, and Mr. George Coull, B.Sc.

The loyal toast having been duly honoured, Parish Councillor Mr. D. Maclaren proposed "The Pharmaceutical Society of Great Britain," which was acknowledged by Mr. W. L. Currie, Vice-Chairman of Executive. The toast of "The Edinburgh District Chemists' Trade Association" was proposed by Mr. J. Rutherford Hill, and acknowledged by Mr. P. Boa, the President.

Mr. W. L. Currie, Glasgow, in proposing the toast of the evening, "The Edinburgh Chemists', Assistants', and Apprentices' Association," said the Association had stood the test of time, being now in the eighteenth year of its existence, with the interest in its meetings still maintained, and good work being done. He had to congratulate the members of the Association on the character of their contributions, which indicated that they were alive to the necessity of keeping well to the front in educational and scientific matters. It might not be absolutely novel, but it would be new to some, and it was well to remember, that—

"Thought delivered is the more possessed;
Teaching we learn, and giving we receive."

At the same time it was well to bear in mind that the general goodness of education was not to be tested by the quantity of knowledge acquired. The true test of education was action, and the educated man was he who had all his faculties strong and active, so that he could perform his part rightly and efficiently in whatever sphere he might be placed. Here, he would say, it was of the utmost importance to every young man starting in life to fix in his mind the greatest principle of all moral philosophy, that the real dignity of individuals lies not in what they have but in what they are. In that Association they had a splendid opportunity of acquiring knowledge to fit them for their future work. Possibly some of those he was now addressing might have a vast deal to do with a better conducting of pharmaceutical affairs than existed at present. History might repeat itself, and as Edinburgh had in the past given notable men to the ranks of pharmaceutical politics, such, for instance, as John Mackay, so she might in the rising generation produce a man who would restore to their profession that *esprit de corps* which had in some measure been lost. If he might refer to the modern methods of conducting the business of pharmacy or the remedy for eradicating the evil, he would say that if there existed sufficient *esprit de corps* among those who held the qualification of the Pharmaceutical Society to refuse service with limited companies and drug stores the evil would vanish to-morrow without the aid of legislation. He heartily congratulated the assistants and apprentices of Edinburgh on their pre-eminence, and hoped their Association would continue to flourish. The toast was acknowledged by the Chairman. Other toasts were, "The Edinburgh Pharmacy Athletic Club," proposed by Mr. George Lunan, acknowledged by Mr. J.

P. Gibb; "The Ladies," proposed by Mr. Alfred Thwaites, acknowledged by Mr. Wm. Duncan; and "The Chairman and Croupiers," proposed by Mr. John Bowman, and acknowledged by the Chairman. The very agreeable proceedings of the evening were pleasantly diversified by songs, recitations, and instrumental music contributed by Messrs. W. Duncan, J. P. Gibb, C. Brown, W. L. Currie, J. Robertson, Sid. Cornish, A. Murray, J. Crichton, R. H. Tweedie, R. Butchart, J. Rowlands, and W. Arres, Mr. James Crichton acting efficiently as accompanist.

IRISH NEWS.

PHARMACEUTICAL SOCIETY OF IRELAND.—The Preliminary examination will be held on Tuesday, the 7th proximo (instead of Easter Monday). The last day for lodging applications will be Tuesday, the 24th inst. The Pharmaceutical Licence examinations will be held on Wednesday, the 8th proximo, and following days. The last day for lodging applications for same will be Wednesday, the 25th instant.

PHARMACEUTICAL CHEMISTS' AND APOTHECARIES' ASSISTANTS' ASSOCIATION OF IRELAND.—At Dublin on Friday last the inaugural meeting of this Association in the rooms of the Pharmaceutical Society of Ireland took place in the spacious Council chamber. There was an extremely large attendance, close on 100 being present, the visitors including representatives of the medical profession, Pharmaceutical Council, and a number of leading pharmaceutical employers. Amongst others were Dr. Duffy, Government Inspector (Privy Council); Dr. Ninian Falkiner, F.R.C.P.I.; Dr. H. U. Byrne, M.D.; Dr. J. A. Walsh, L.R.C.P. and S., proprietor of Messrs. Graham's State Pharmacy; Mr. John Smith, Examiner to the Society; Professor C. R. C. Tichborne, LL.D., Governor Apothecaries' Hall; Dr. Lemon, J. S. Corcoran, L.P.S.I., Mr. Corrigan, L.P.S.I., Councillor Henry Conyngham, Mr. James B. Alister, M.P.S.I. (President), etc. On the motion of Mr. J. S. Corcoran, L.P.S.I., Mr. W. F. Wells, President of the Pharmaceutical Society of Ireland, took the chair.

Mr. Wells said his first duty was a very pleasant one, being that of bidding the assistants, in the name of the Pharmaceutical Society, a very cordial welcome to that house. He assured them that the Council was most anxious to assist them in every way in their power. The Council had always recognised the value of such organisations. There was an idea also of again trying the experiment of evening meetings and opening a reading-room for the students, to which assistants and apprentices could resort for friendly intercourse, and it was the hope of the Council that the junior association would further that experiment at the proper time and, with the assistance of the large number of members present, form the nucleus of a Students' Association and induce others to become members of it.

The Hon. Secretary (Mr. W. Hardy, L.P.S.I.) read the minutes of the last meeting, which were signed by the Chairman, and Mr. Wells then called upon Dr. Ninian Falkiner, the Society's Lecturer in Materia Medica and Botany, to deliver his lecture on "The History of Pharmacy"

The lecture, which was of a most instructive and entertaining character, dealt with pharmacy from the most remote antiquity, and it was shown to what a high degree of excellence in some respects the ancient Egyptians had brought the apothecary's art. Much amusement was afforded by the reading of an apothecary's bill some 300 years old, which for five days' supply of medicine to one patient totalled more than £17. The full text of the lecture will be published in the Journal later.

At the close of Dr. Falkiner's lecture, Mr. J. B. Alister, M.P.S.I. (President of the Association), said it was unnecessary to remark how indebted they were to Dr. Falkiner for his very instructive and entertaining lecture. He briefly commented on the various points mentioned by the lecturer, and concluded by proposing a very hearty vote of thanks to Dr. Falkiner for his kindness in delivering the lecture they had the privilege of hearing. Mr. W. Payne, in a few well-chosen words, seconded the vote of thanks, and said Dr. Falkiner as a teacher had a happy knack of imparting instruction, so that even the dullest could grasp it readily. Mr. Ashe, in supporting the previous speaker, said, with the kindness of the Council on the one hand, and the support of Dr. Falkiner and his medical colleagues on the other, he saw no reason why the Association should not improve its members both

mentally, morally, and physically. Dr. Duffy said although an outsider, he felt a very great interest in the Pharmaceutical Society of Ireland. He believed that one of the greatest supports the Society could have was the support of the fine body of young men he saw present. He was glad his name had no terror for the students. It could not be denied that the formation of classes in connection with the Society would be for the benefit of pharmacy. As in most other things, the secret of success lay in general education. He might claim the credit of having inserted one or two things in the pharmaceutical curriculum, and he must say that at all times his suggestions received the support of the Society, and he hoped to be able to still further assist the Society until it became equal in every respect to the sister Association in England. Doctors Walsh and Byrne, and Mr. Henry Conyngham (Councillor of the Pharmaceutical Society), having spoken in felicitous terms of the Association,

Mr. Wells, President of the Pharmaceutical Society, in conveying the vote of thanks, said the lecture showed a great amount of research by Dr. Falkiner. He thought he knew a little himself about the history of pharmacy, but he scarcely expected he would have had the pleasure of hearing a history so far back as the time of the Egyptians. They in Ireland had a grievance in regard to the compilation of the new pharmacopœia. There was not a word of reference in it to the Pharmaceutical Society, but they had some able men on the committee who would do their duty. The present pharmacopœia contained a number of things not used in Dublin. The question suggested itself, did they want a pharmacopœia at all? Some medical men did not seem to be aware that such a volume existed. There were in Dublin, however, a lot of medical men who were loyal to the Pharmacopœia, and who found in its pages enough to suit their requirements. Those who ignored the Pharmacopœia were doing themselves considerable injury. He advised the pharmacist to stick loyally to the Pharmacopœia, and hoped that the medical faculty would follow Sir Richard Quain's example in regard to the use of nostrums. With respect to the students' classes, the Council was anxious to have them. It was the wish of the members of the Council to educate the students, and they had in view the formation of pharmacy classes, besides which they had decided to offer a prize of a gold medal for the best score in the twelve months' examination, and if the funds permitted they would also award a silver and a bronze medal.

Dr. Falkiner, in replying, hoped the Association would not merely consist of assistants and students, but that it would include many of the employers and others. He suggested that the Council would take a lively interest in the Association, and look up pharmaceutical points of interest for discussion. He would gladly help in that direction.

Mr. Wells was heartily thanked for his kindness in presiding, and Dr. Walsh and Mr. Henry Conyngham having been unanimously elected as honorary vice-presidents, the meeting then terminated.

A SHORT VISIT to the United States is being paid by Mr. Henry Dixon, B.A., Assistant Professor of Botany in the Society's School. His duties are being temporarily taken by Mr. R. A. Rossiter, T.C.D.

OBITUARY.

MILLHOUSE.—On January 27, at Heckington, Lincs., Henry How Millhouse, Pharmaceutical Chemist. (Aged 37.) Mr. Millhouse joined the Society in 1872, and continued his connection through the various stages of studentship, associateship, and membership until his death. The deceased gentleman, who was a past-president of the London Chemists' Assistants' Association, took a great interest in pharmaceutical matters, and would undoubtedly have taken a prominent position in the craft but for his long-continued ill-health. His death will be regretted by all who knew him.

JONES.—On March 11, T. Glynn-Jones, Chemist and Druggist, Stockton. (Aged 42.)

MILLS.—On March 12, John Mills, Pharmaceutical Chemist, Chester. (Aged 56.) Mr. Mills had carried on business for about 32 years, and was one of the earliest members of the Chester Society of Natural Science, in the affairs of which he took very great interest.

GOWANS.—On March 12, James Gowans, Chemist and Druggist, Perth. (Aged 79.)

BEARD.—On March 16, Albert Edward Beard, Pharmaceutical Chemist, Norwich. (Aged 31.) The late Mr. Beard was a life Member of the Pharmaceutical Society.

CORRESPONDENCE.

UNDUE CUTTING IN THE RETAIL TRADE.

Sir,—Referring to "Analyst's" reply to my letter, I am quite aware that difficulties would arise with some organic compounds, but the bulk of the so-called "patent" medicines are not of the complex character that "Analyst" depicts. As a matter of fact, they are usually composed of one or two potent or active ingredients and a diluent, all of which yield to expert analysis. I can take a patent medicine list and mark dozens that will present little or no difficulty from an analytical point of view. I know from practical experiment that the qualitative difficulties in a great number of preparations are almost *nil*; when quantitative results are required more labour is involved. Patents obtained at different times often vary in strength considerably. The analyst also has the advantage of using his synthetical skill and differentiating the results. A few experts at £5 per week each would get through such difficulties quite comfortably. "Analyst" says, "what about the consequences of a published mistake"? Probably the plaintiff would say defendant's analysis is wrong. Defendant would ask him to prove it. When he had proved it, the analysis would be right. I am afraid Mr. "Analyst" if I appeared before you with a patent medicine in one hand, and two £10 notes in the other, your isomerism, polymerism, and other dreadful difficulties would perform a similar feat to Macbeth's witches—vanish into thin air. Ultimately you would have the notes, and I the analysis.

Mr. Johnson's moral deductions, and the suave manner in which he introduces his pet association of manufacturers of so-called "Patent" medicines is unique. I agree with him on one point, however; he says "Retailers are ripe for a revolution of some sort." I take it that the object of the association he mentions is to prevent cutting by controlling the supply of patent medicines, etc., and that they bind themselves together by rules or laws, and that manufacturers who do not join the association will be classed as Patent Heathens, and that the association will from time to time send out missionaries to try to convert them, and should any member disobey the laws of the association he will be at once excommunicated. But that will not stop cutting. Practically, a law ceases to be a law when the power to enforce it ceases. The association has no legal power. Consequently it would be as easy for the leader to stand on his head on the cross at the top of St. Paul's as for the association to stop cutting by such means. It simply temporises with the difficulty and will ultimately resolve itself into a kind of elaborate confidence trick. Chemists consider the matter well before you step into that "Little parlour." The process that will stop cutting must, to a certain extent, be automatic and not dependent on the caprice of a few interested manufacturers. I again repeat that patents are the principal cause of the retailers' troubles; in my letter of February 29 I propose a radical cure. I should like to hear the opinions of some gentlemen in business on the subject, or perhaps they will propose some more simple scheme.

56, Cheapside, E.C., March 9, 1896.

WM. FERGUSON.

PHARMACIST OR CHEMIST?

Sir,—Mr. Martindale in a speech reported in the issue of the Journal for March 7 remarked: "That in some respects pharmacists and the proprietors of stores stood in an entirely different position. The latter looked simply to the total amount of turnover to be obtained on their capital, and wished to make it as large as possible; whereas the chemist recognised that with regard to certain articles in which he dealt, such as poisons and nostrums containing poisons, certain restrictions on their sale were necessary in the interest of the public safety. . . . It was very desirable that co-operative stores and limited companies should be bound to strictly observe the letter of the law." It will be noted that Mr. Martindale used the terms "pharmacist" and "chemist" alternately, thereby implying that they are one and the same. Again, Mr. Martin stated that "he thought it would be placing the 'pharmacist' in an invidious and humiliating position to be subjected to the surveillance of an inspector." Further, Mr. Allen remarked, in regard to early closing, "that he thought 'pharmacists' were specially affected, and might reasonably ask for separate treatment from other shops."

My object for intruding on your space is to try to obtain some clear definition of the meaning of these two terms, "pharmacist" and "chemist," for Mr. Allen's remarks would seem to indicate that in his opinion pharmacists occupy a position totally different from

that of the proprietors of "other shops," the difference is not very apparent, in view of the fact that, according to the Pharmacy Act, all persons carrying on a chemist's business must be properly qualified and duly registered. I shall be grateful if you, sir, or any of your numerous correspondents will kindly enlighten me on these questions:

London, March 11, 1896.

"PERPLEXED."

SHOPS (EARLY CLOSING) BILL.

Sir,—I am strongly of opinion that earlier closing would be an unmixed benefit, and that it cannot be obtained by any other method than an Act of Parliament. My reasons are—That the present hours of the drug trade are such that in the majority of cases the chemist is debarred from taking any active interest in the affairs of the community, entailing a consequent narrowing of his own views on general subjects. He is debarred from enjoying active outdoor exercises. He is debarred from social gatherings. He is debarred from attendance on lectures or any of the evening classes arranged for the instruction of men whose position necessitates their daily labour. As educated men, chemists are fitted to occupy prominent positions, but owing to the disadvantages under which they labour—the hours of business especially—it is the exception rather than the rule for such to be the case. I think it quite beside the mark to cite what some chemists have done in the shape of earlier closing—the question is what can the majority do? A few of the favoured ones may, without loss, disregard what their rivals do, but the number is infinitesimal.

March 7, 1896.

WALES.

Sir,—I for one would be only too pleased for an Act to be passed to-morrow compelling all chemists to close daily at 6 p.m. Talk about infringing the liberty of the subject and grandmotherly legislation! Why, we should then enjoy a good deal more liberty and freedom than is at all possible under present conditions. Now we chemists are kept in to sell night-lights, etc., "because the grocers are closed," and only yesterday (Sunday) I had a customer, who usually buys tea at a grocer's, come for $\frac{1}{4}$ -lb. tea; of course "because grocers are closed." That is the point of the whole question. We are kept in late every night for the convenience of those white slave drivers, the B.P., not for anything ever required to be made up according to the B.P. If you knew retail chemists as I do you would know that nothing can remedy the present "slavery" but legislation, and as you ask for opinions I send mine, and do not fear to state that they are what are held by retail chemists generally. Perhaps you will allow me to add that, as an assistant in good dispensing businesses, my hours were very reasonable, but the businesses that employ assistants are not ordinary retail chemists but the exception to the rule. I now close at 6 p.m. once a week, but am the only one in this town—where there are thirteen chemists—who does so. Is this as it should be?—Yours faithfully,

Lowestoft, March 9, 1896.

A. H. HINDE.

Sir,—I was glad to see among your correspondence a letter signed "Early Closing," calling attention to your remarks on the Early Closing question, although I cannot see why those remarks should make him consider whether he will remain connected with the Society or not. . . . I would like to urge upon all readers of the Journal who are interested in the Bill to make their opinions known. Already in the Council Meeting Messrs. Hampson, Martin, Allen, Hills, and Gostling have objected to the State protecting assistants from the greed of employers. These gentlemen have not the welfare of the assistants at heart, and I would ask your readers to remember them at the next election of the Council.

Putney, March 6, 1896.

H. E. DURBIN.

Sir,—I strongly disapprove of an "early closing" Bill as applied to any body, as I think such a Bill belongs to a class of legislation tending to interference with the liberty of the subject; it is a pity our legislative body is not occupied continuously with really urgent reform instead of so much of the "grandmotherly" type. That pharmacists should be included in this Bill is derogatory to their status as professional business men, but that they should tamely submit to it is still more so. What the Society can do in the matter I do not know, but I have every confidence in the Executive. The policy of the Society, what little time I have observed it, is expressed by the motto "Fortiter sed Suaviter"; what can be done for the general welfare of the body, under the circumstances, is

undoubtedly being done by the only body which can or ever has done anything for pharmacists. No registered chemist has any excuse for not joining and supporting his representative headquarters, and it is a standing reproach to him all the while he remains an alien.

Forest Hill, S.E. March 16, 1896. C. GARRETT WILLISHER.

EARLY FLOWERS.

Sir,—As an example of the extremely mild winter, I send you a list of flowers picked in January and February by a friend and myself in this district. Most are extremely early, as the usual time for flowering will be found between June and October:—*Chrysosplenium oppositifolium*, *Luzula campestris*, *Lychnis diurna*, *Veronica hederifolia*, *Veronica polita*, *Lamium purpureum*, *Viola canina*, *Potentilla tormentilla*, *Fussilago farfara*, *Heracleum sphondylium* (pink), *Ruscus aculeatus*.

8, Edgcombe Street, Plymouth,
March 16, 1896.

J. A. BUCKLEY.

MAJOR EXAMINATION.

Sir,—I have often wondered how it is that in the Major examination a little latitude is not given in the answering of materia medica and botany questions. In chemistry and physics a choice of questions is given, the candidate is required to attempt not more than six out of eight or nine. This, I think, is much fairer all round, and is adopted by most examining bodies. Why should one course be followed in chemistry and physics and another in botany? Surely materia medica and botany are wide subjects, and a candidate can hardly be expected to be equally well up in every question that may be asked. Botany of late years has made enormous strides, and different botanical terms are continually being given. In fact, if an old student who had let the subject drop for a time were to pick up some of the new editions of well-known botanical works, he would be puzzled with some of the terms used; a student may be very well up all round and yet be unfortunate in getting one or two questions he is not familiar with, whilst another student may just happen to know the questions asked, although his general knowledge is far below that of the other man. Many will say, But every man has an equal chance, and it is as fair for one as another. Quite so, but the element chance ought to be done away with as far as possible. Of course the examining body may have, and I have no doubt have, very good reasons for the course they adopt. I have often had the same question asked, and not being able to give a satisfactory answer, thought I would try and hear the opinion of others on the subject. I shall be pleased if you or any of the readers of the Journal can give any information.

Liverpool, March 7, 1896.

ENQUIRER.

ANSWERS.

GLYCYRRHIZA.—It is difficult to suggest any book which covers exactly the ground required. A good book for the inorganic is Fisher's 'Chemistry,' and any of the recently published small organic chemistry books, such as Remsen, Turpin, or Scarf, will contain more than enough for the organic part of the syllabus. Everett's 'Physics' is also required.

E. T. ELTONIAN.—We are hardly competent to express an opinion in the matter you mention.

E.R.S.—We cannot say if the oleate would be of any use, but no ill-effect would be likely to accrue from trying it. The other preparation you mention is undoubtedly the best.

QUERIES.

"D.M." wishes to know if any correspondent can give information concerning the hanging of anaglypta paper on match boarding, particularly whether the boards cause it to crack?

"SEARCH LIGHT" asks if any reader can give good formulæ for *mistura bismuthi et pepsinæ*, *liquor papain et iridin co.*, and for *chrysarobinum glycerinum saponatum* of Hebra.

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs. Bennett, Bosisto, Buckley Bennett, Cocks, Coleman, Cope, Cox, Dott, Gilligan, Happold, Hardy, Hill, Hinde, Ince, Jasper, Jones, Line, Lucas, Miller, Reynolds, Rook, Shepherd, Simmonds, Strachan, Thompson, Willsher.

Several communications are unavoidably held over on account of want of space. Correspondents are requested to write as briefly as possible.

“THE MONTH.”

Reduction of $\text{AgNO}_3 \cdot 2\text{NH}_3$ by Sugars. J. Henderson finds that when dextrose, levulose, and galactose are heated with ammoniacal silver nitrate, under certain given conditions, a definite factor can be obtained in each case.

Cane sugar, starch, and dextrin, however, exert no reducing action when heated with the nitrate under the same conditions, and in the case of lactose and maltose a definite factor cannot be got, owing to gradual hydrolysis of the disaccharide molecules by the ammonia (*Journ. Chem. Soc.*, lxi., 145).

Luteolin. A. G. Perkin has studied the behaviour of the yellow colouring matter obtained from “weld” (*Reseda luteola*), when acted upon by acids.

Luteolin was isolated from “weld” by Chevreul, and subsequently studied by Moldenhauer, who assigned it the formula $\text{C}_{20}\text{H}_{14}\text{O}_8$. Schützenberger and Paraf, however, thought the formula should be $\text{C}_{12}\text{H}_8\text{O}_5$, whilst Hlasiwetz and Pfaundler later ascribed to it the formula $\text{C}_{15}\text{H}_{10}\text{O}_6$, which is isomeric with paradiscetin, obtained by the action of fused alkali on quercetin. Acting on luteolin with nitric acid, Rochleder obtained oxalic acid, and with fused alkali protocatechuic acid and a substance considered to be in all probability phloroglucin. The results of Perkin’s analyses agreed well with the formulæ $\text{C}_{15}\text{H}_{10}\text{O}_6$, and $\text{C}_{20}\text{H}_{14}\text{O}_8$, but he has been able to prepare a sulphate, hydrobromide, hydrochloride, and hydriodide of the compound, the first of which is of a normal character and shows that the true formula of luteolin is $\text{C}_{15}\text{H}_{10}\text{O}_6$. The compounds with the haloid acids are peculiar, as they appear to crystallise with one molecule of water, differing in this respect from the corresponding compounds of quercetin, fisetin, and morin, which do not contain water of crystallisation (*Journ. Chem. Soc.*, lxi., 206).

Carvacrol and Thymol Derivatives. L. C. Urban has prepared new halogen derivatives of carvacrol and thymol. The substance known commercially as aristol, he points out, is produced by the action of iodine upon thymol in alkaline solution. The same derivative of dithymol is formed by adding a solution of chlorinated soda to an alkaline solution of thymol in which an alkaline iodide has been dissolved. A carvacrol iodide, said to be prepared in an analogous manner to aristol, has been described as a bulky, yellowish-brown amorphous powder, melting at about 90°C .

Urban, however, has prepared a carvacrol iodide, quite different from this, by dissolving carvacrol, 2 Gm., and potassium iodide, 3.8 Gm., in 40 C.c. of a 10 per cent. aqueous solution of sodium hydroxide. He then added gradually a solution of chlorinated soda, and stirred continually until no more precipitate was formed. The precipitate was washed with slightly alkaline water, then pure water, and when dried formed a bulky, greyish-yellow or buff-coloured amorphous powder, having a faint aromatic odour. It is described as soluble in ether, chloroform, benzine, and fixed oils, the iodide being precipitated from the ether and chloroform solutions by alcohol, and a paler product thus obtained. At 200°C . this purified product became black and tarry, but had not liquefied. The same compound results on adding very slowly, and under continuous stirring, an aqueous solution of iodine and potassium iodide to a solution of carvacrol, 2 Gm., in 40 C.c. of a 10 per cent. aqueous solution of sodium hydroxide. It combines the antiseptic properties of carvacrol with those of iodine, is four times as bulky as iodoform, and nearly odourless. Analogous bromine and chlorine derivatives have also been prepared from both thymol and carvacrol (*Pharm. Review*, xiv., 58).

VOL. LVI. (FOURTH SERIES, VOL. II.). No. 1344.

New Metallic Carbides.

H. Moissan has been successful in preparing cerium and lithium carbides by the aid of the electric furnace. Cerium carbide, CeC_2 , is a crystalline body analogous to calcium carbide, and is decomposed in the presence of cold water, a gaseous mixture of acetylene, ethylene, and methane being evolved, and a mixture of liquid and solid carbides left. The density of the compound is 5.23. Lithium carbide, LiC_2 , is obtained as a transparent crystalline mass, its density being 1.65 at 18°C . When decomposed by water it yields pure acetylene gas, the reaction being rapid at ordinary temperatures and violent at 100°C . One kilogramme of it yields 587 litres of acetylene gas. This carbide is comparable in every respect with the carbides of calcium, barium, and strontium. Manganese carbide, Mn_3C , discovered by Troost and Hautefeuille, has a density of 6.89 at 17° , according to Moissan. A temperature of 1500° to 3000°C . is required to produce it. Water reacts with it to form a white hydrated oxide, and the gas given off consists of a mixture of equal parts of methane and hydrogen. Moissan and Étard have also prepared the carbides of yttrium and thorium. The former, Y_2C_3 , has a density of 4.13, and forms a white hydrated oxide when treated with water, whilst giving off acetylene, methane, ethylene, and hydrogen. It is seen under the microscope to consist of yellow crystals. Thorium carbide, ThC_2 , also consists of small yellow crystals, has a density of 8.96, and gives off the same gases as yttrium carbide when acted upon by cold water, liquid and solid hydrocarbons being formed in small quantity at the same time (*Comp. rend.*, cxxii., 357, 362, 421, 573).

Borides of Nickel and Cobalt. H. Moissan also describes two new metallic borides, obtained at a temperature of 1200°C ., nickel boride, NiBo , and cobalt boride, CoBo . Both occur in brilliant prisms several millimetres in length, and are magnetic. Their densities at 18° are about the same—nickel boride, 7.39; cobalt boride, 7.25. The properties of the borides are analogous to those of iron boride (*Ph. J.* [3], xxv., 753), and the compounds serve for the introduction of boron into a metal such as iron when at a high temperature. It has been demonstrated that both boron and silicon can displace the carbon in molten iron when added in a suitable form (*Comp. rend.*, cxxii., 424).

Thiophosphites. M. Ferrand has obtained a new series of compounds, corresponding to the general formula PS_3M_3 , by heating mixtures of sulphur, red phosphorus, and different metals. Thiophosphites have thus been prepared of copper, $\text{Cu}_6(\text{PS}_3)_2$; iron, $\text{Fe}_3(\text{PS}_3)_2$; silver, Ag_3PS_3 ; nickel, $\text{Ni}_3(\text{PS}_3)_2$; chromium, $\text{Cr}_3(\text{PS}_3)_2$; zinc, $\text{Zn}_3(\text{PS}_3)_2$; cadmium, $\text{Cd}_3(\text{PS}_3)_2$; mercury, $\text{Hg}_3(\text{PS}_3)_2$; and aluminium, $\text{Al}_3(\text{PS}_3)_2$ (*Comp. rend.*, cxxii., 621).

Rhodinol. The chemical identity of the alcohol constituting the principal liquid constituent of rose-oil, with that in various other oils, was announced some time ago by Bertram and Gildemeister, and confirmed later by Erdmann and Huth (see *ante*, p. 173). Ph. Barbier and L. Bouveault now re-assert the identity of the alcohol constituting the chief portion of the essence of *Pelargonium odoratissimum* with the rhodinol extracted by Eckart from essence of roses, and claim that they have already shown the alcohol in essence of pelargonium to be different from the lemonol or geraniol in essence of *Andropogon schenanthus*. They also state that the product they extracted from essence of pelargonium was really a mixture of lemonol and another alcohol, the rhodinol of Eckart being declared to be a mixture of the same two alcohols. Hesse has proposed to name the second alcohol “réuniol” (*ante*, p. 173); but the authors prefer to retain for it the name rhodinol, formerly applied to its

mixture with lemonol. The composition of the new rhodinol is stated to be represented by the formula $C_{10}H_{20}O$, the same as proposed by Markownikoff and Reformatsky. The purified alcohol is described as a colourless oily liquid, boiling at $110^{\circ}C$. under a pressure of 10 Mm., possessing an agreeable odour of roses, and having a density at 0° of 0.8731. Its acetate boils at 115° . The proportion in which rhodinol exists in the two essences examined—rose and pelargonium—is estimated at 20 per cent. If these results are verified, they should remove much of the confusion that has been caused by the discordant results of other workers (*Comp. rend.*, cxxii., 529).

P. van Tieghem calls attention to the interesting fact that the normal polarity of the embryo-sac in plants is occasionally reversed. The normal position of the embryonic vesicles and of the antipodals is invariably maintained in those plants in which the embryo-sac is produced within the nucellus of a tegumented ovule, with its apex turned towards the micropyle, whether the mode of impregnation be porogamic or chalazogamic. But in certain of the Loranthaceæ, where the embryo-sac arises on the inner surface of the carpel, and when there is, therefore, strictly speaking, neither placenta nor ovule, the oosphere and the synergids are located at the lower, the antipodals at the upper end of the embryo-sac. A similar phenomenon is presented by the genus *Arceuthobium*, which van Tieghem proposes to remove from the Loranthaceæ, and to make the type of a new order Arceuthobiaceæ, intermediate between the Loranthaceæ and the Santalaceæ. For this mode of impregnation van Tieghem proposes the term "basigamous," as contrasted with the ordinary "acrogamous" mode. A similar mode of impregnation, accompanied by chalazogamy, occurs in certain Balanophoraceæ with naked ovules. It had already been noticed by Tretiakof in the case of *Allium odorum*, that the antipodal cells may sometimes be impregnated by the pollen-tube, that is, may assume physiologically the rôle of embryonic vesicles (*Morot's Journal de Botanique*, 1895, p. 465).

Professor O. Kirchner had observed that while the roots of *Soja hispida* produce tubercles abundantly in its native country, Japan, none are formed when it is grown in European botanic gardens. In order to ascertain the cause of this difference, he infected the European plants by growing them in soil obtained from Japan. The result was the production of abundance of root-tubercles, showing that they must be caused by a microbe present in the soil. In their anatomical structure, the root-tubercles of *Soja* agree most closely with those of *Phaseolus*. For the special microbe producing them the author proposes the name *Rhizobacterium japonicum*, substituting this generic name for Frank's *Rhizobium*, in consequence of the name *Rhizobius* being already appropriated in the animal kingdom (*Cohn's Beiträge zur Biologie der Pflanzen*, vol. vii., 1895).

In the *Minnesota Botanical Studies* for 1895 (the organ of the Geological and Natural History Survey of Minnesota), Mr. Roy W. Squires has an interesting note on the result of a series of experiments on the temperature of a trunk of *Acer Negundo* between January and June. He states that as a general result the temperature of the tree is lower than that of the air in the morning and at noon, while it is higher in the evening. The mean temperature of the tree, as compared with that of the air, was $1.31^{\circ}C$. higher in January, nearly the same in February, nearly 1° lower in March, 0.85° higher in April, and 1.13° lower in May.

Mr. A. J. Ewart contributes to the *Proceedings of the Liverpool Biological Society* the results of a series of observations on this subject, made in connection with Professor J. Reynolds Green.

In some plants, e.g., *Lilium*, *Narcissus*, *Tulipa*, and *Scilla*, minute round or oval pores were detected in the apex of the pollen-tube, through which solid particles had been extruded. These particles probably consisted of granules of a zymogen, by means of which the pollen-tube disintegrates the tissues of the style, through which it forces its way. These pores appear, however, to have only a temporary existence, closing up again after the granules have forced their way through the apex of the tube. In some cases a very large and wide terminal opening is formed, which may be from one-half to two-thirds the diameter of the pollen-tube. Both direct sunlight and total darkness were found to be unfavourable to the growth of pollen-tubes, a feeble light being the most advantageous. The optimum temperature for this growth is between 20° and $30^{\circ}C$. Branching and septation are both not uncommon phenomena in pollen-tubes, the septa being the result of ingrowths of the wall of the tube. The branching may be either dichotomous or apical. Pollen-grains of *Mercurialis* were seen to emit two, or even three separate tubes.

From observations made on about twenty species of Myrtaceæ, Dr. G. Lutz gives the following general account of the structure of these receptacles. They are never in the form of a canal, but are usually globular or ellipsoidal. They are generally formed at an early period from one or two epidermal cells, which are distinguished from the rest by their granular contents. The original cell or cells divide, and the receptacle is formed schizogenously by the separation of the daughter-cells. The so-called "resinogenous layer" is formed on the walls of the secreting cells, in the form either of caps or of a continuous coating. It consists of a mucilaginous ground-substance, in which granules and rods are imbedded. The secreting cells become obliterated at an early period; hence Tschirch has termed this kind of receptacle "oblito-schizogenous" secretion receptacles. At a later period the walls of the receptacle become suberised. The secretion is developed in the "resinogenous layer," which disappears as the secretion is formed. When the receptacle is fully formed, the intercellular spaces become filled with the secretion, and the resinogenous layer disappears entirely, or nearly so. The receptacles vary greatly in diameter, between 20 and 230μ (*Botanisches Centralblatt*, vol. lxiv., 1895).

Dr. G. Eisen contributes to the *Proceedings of the Californian Academy of Sciences* for 1895 an historical account of the means employed for producing fertile figs from the earliest times downwards. Caprification, or artificial pollination, has been practised from a very early period. The author distinguishes the following four varieties:—(1) The caprifig, or wild fig (*Ficus carica sylvestris*). It is in this variety that the *Blastophaga* or fig-wasp breeds, and goes through its various transformations. It bears three crops of fig, those produced from the male flowers only attaining maturity without assistance; the female flowers require artificial pollination. (2) The Smyrna fig (*Ficus carica smirniaca*). This produces neither male flowers, nor gall flowers, only female flowers, which require caprification in order that the figs may mature. (3) The common cultivated fig (*Ficus carica hortensis*). This contains no male flowers; but it requires no caprification to produce mature fruit, the female flowers being fertilised by the *Blastophaga*. (4) The San Pedro fig (*Ficus carica intermedia*). This kind produces no male flowers. The

first crop consists of mule flowers only, and is not susceptible of impregnation. The second crop consists of female flowers only, and requires caprification in order that the figs may mature.

A new tæniifuge from French Guinea has recently been described by Messrs. Heckel and Schlagdenhauffen. It consists of the seeds and root-bark of *Connarus africanus*, Lam., of which an illustration is given by the authors. The native name, séribéle (red medicine) indicates the colour of the seeds. These are about one inch long and one-third of an inch in diameter, and in shape resemble a kidney bean; for about one-third of their length they are enveloped in a red fleshy arillus. In Conakry and the greater part of French Guinea the seeds are employed, but in Bramaya the root-bark is used. The drug has been experimented with by Dr. Maclaud, chief of the *Service de Santé* at Conakry. He reports that in four cases its use was followed by success. The dose employed was sixty grammes of the ground seeds, given in the form of decoction in a glass of warm water. Dr. Drevon administered a smaller dose of twenty-five grammes, which was allowed to macerate for twelve hours, and was then given with the water in which it had been macerated. In three out of five cases the head of the tape-worm was passed. A dose of brandy was usually given after the drug, and preparation for taking it made by previous fasting. The authors made a chemical examination of the drug, but have not detected any special active principle. It contains about five per cent. tannin, giving a dark blue coloration with ferric chloride, a neutral fat, and an orange colouring matter, which adheres very persistently to the fat, also crystalline fatty acids, consisting of three parts of stearic to one of palmitic acid. The colouring matter seems to be a compound consisting of a rose and of a yellow substance. The constituents of the root-bark are similar, but the crystalline fatty acids are not present. The quarto coloured plate given with this paper illustrates the leaves, flowers, fruit, and details of the seed. Little is known of the plants of this family, except that a few are known to possess poisonous properties (*Annales de la Faculté des Sciences de Marseille*, tom vi., fasc. 2).

J. Jean gives the following method for quantitative determination of this constituent of kola and its preparations. By treatment with lime and chloroform the caffeine and theobromine are first separated: the residue is then extracted with 90 per cent. alcohol in a Soxhlet apparatus, and the alcohol distilled off from the solution containing kolanin, tannin, and colouring substances. The residue is treated with water, which leaves kolanin undissolved, and after washing with warm water it can be dried and weighed (*Rép. de Pharm.* [3], vii., 99).

Professor J. U. Lloyd publishes a report of a detailed examination of this drug, in which he shows that the average amount of ash left by an ordinary specimen of commercially fair asafoetida is quite considerable, ranging in the samples examined from 16 to about 20 per cent., whilst in some cases as high an average as 50 per cent. was observed. Selected tears, yielding to alcohol as much as 76 per cent. of their weight, left not more than 1.78 to 2.55 per cent. of ash. The opinion is expressed that purified asafoetida should be the only kind official for pharmaceutical use, and that the U.S.P. should give directions for ascertaining the absence of white turpentine and colophony resin. The acid number of asafoetida seems to be higher for dry tears than for asafoetida in mass. It varied, in these experiments, from 61.9 to 68.8 for dry tears, and from 37.7 to 40.4 for the mass. Asafoetida yielding at least 60 per cent. of its weight to alcohol, as stipulated by the U.S.P., is stated to be difficult to obtain in the American market (*Pharm. Review*, xiv., 54).

Oil of Russian Anise.

The chief constituent of this oil is anethol and little was known until quite recently respecting its other constituents. G. Boucharlat and M. Tardy have lately shown that the oil remains liquid at 5° C., and contains anisic aldehyde and a ketone, together with a small quantity of anisic acid (*ante*, p. 164). They now state that in addition to an enormous proportion of anethol, C₂₀H₁₂O₃, there are present very small quantities of estragol, anisic aldehyde, anisic ketone (C₂₀H₁₀O₄), anisic acid, anisic camphor or fenchone (C₂₀H₁₆O₂), several carbides of the formula C₃₀H₂₄, and some tarry matters. The total of the other substances, however, does not amount to more than one-twentieth the weight of the anethol present (*Comp. rend.*, cxxii., 624).

Silver Salts as Antiseptics.

It has recently been observed that various micro-organisms are killed when brought into contact with metallic silver. Other metals have a similar effect though in a lesser degree, and in some instances they exercise a prejudicial influence on living tissues. In a lecture delivered at the Medical Society of Dresden, Dr. Credé has drawn attention to the use of metallic silver as a dressing for wounds in the same manner that it has been applied in the Johns Hopkins Hospital at Baltimore. Silver foil being somewhat inconvenient, Dr. Credé has employed a loosely woven textile fabric coated with metallic silver. In the course of experiments with this material it has been found that the silver enters into combination with a secretion of the micro-organisms containing lactic acid, and that silver lactate is formed. This is the substance which is destructive to the micro-organisms; a solution containing one thousandth part of silver lactate kills them in five minutes; one part in 50,000 retards their development. These facts have been established by Behring, Miller, Schill, Bolton, etc., but no one had attempted to make a useful application of silver lactate until Dr. Credé induced the firm of von Heyden to prepare the salt for use under the name of "actol." Some practical objections to the use of this salt have led to further investigation, resulting in the introduction of silver citrate under the name of "itrol." This salt has not the irritating effect of the lactate, and, while perfectly harmless, it is described as having a very powerful antiseptic action when applied in the form of ointment or in powder, by dusting over the surface of wounds (*Pharm. Centrbl.*, xxxvij., 157).

The Mezereon.

At the present time, and indeed for some weeks past, one of the most attractive occupants of our shrubberies has been the purple and white varieties of *Daphne mezereum*. A bed near the ruined arch in the Royal Gardens, Kew, filled in the centre with *D. mezereum*, var. *album*, bordered with the variety *grandiflorum*, is now quite a mass of white blossom, the leafless branches of each plant being thickly covered with flowers. The purple variety appears to be more sparing in its flowering habit than the white, and, moreover, it is some three or four weeks earlier in flowering than the white. In clumps of a few plants together in shrubberies or in masses in a bed the Mezereon is equally attractive. The plant averages from one to four feet in height, and has an erect stem and few ascending branches. The flowers are sessile on the previous year's branches, and are produced from buds in the axils of the fallen leaves. In Britain the plant is not considered a true native, but is probably a garden escape, and is found mostly in the southern counties. It is also found in subalpine districts throughout Europe, frequent in the central and eastern parts, but more rare in the west. Mezereon bark was formerly collected in Kent and Hampshire. Most of that now seen in commerce comes from Germany. As a flowering plant it is quite worth growing.

THE OLD FIRM OF GODFREY.

BY JOSEPH INCE,

*Late Director of Godfrey's Laboratory.**(Concluded from page 207.)*

My father, the late William Ince, entered the firm of Godfrey when he was twenty-three years old.

He had been to school at Liverpool, had served an apprenticeship at Chester, where the home arrangements were poor, and other circumstances wretched.

The position held by the chemist's assistant of former days stands sharply in contrast with that which he now enjoys. The age itself has changed, and under the genial influence of the universal spread of education, mutual respect has been created between the employer and the employed.

Those were weary times during the apprenticeship at Chester, calculated rather to wean from a trust in earthly things than to inspire a taste for pharmacy and its associations. The premium was £100; the duration of "serving one's time" was seven years.

The house had this disadvantage that it was lower than the city walls, and in consequence during most part of the winter the apprentices had to stand on bricks to keep themselves above the water; the business was what is usually termed "mixed," to which might be added, mixing. My father in common with other men whose names we hold in honour, recognised that pharmacy was not to blame but ignorance, and this in his own person he determined to remove—rising at four o'clock to read.

The 'Chemical Catechism,' by Samuel Parkes, was his first introduction into serious study, a treatise he referred to with gratitude in after years.

Then came experiment and practical laboratory work conducted under circumstances which might have seemed to forbid continuance, for study was regarded with suspicion, and books as a sort of dynamite, to be hid away in corners by the assistant who might grow wiser than the master and imperil the situation.

Great was my father's satisfaction when he entered Godfrey's Old Firm at Southampton Street, which he viewed in the light of a reward for former hardships.

His son draws attention to the fact, that men who had passed through much the same ordeal as William Ince, resolved fifty-five years ago to break up this miserable condition of affairs, and they have handed down to a younger generation, not only an infinitely higher social position, but a means of gaining a livelihood worthy the acceptance of an educated individual.

Having duly performed his duties as assistant, he had the sole charge of the laboratory for some time during Mr. Cooke's life and at that gentleman's decease, became responsible manager and director.

In that capacity he remained until his death in 1853, aged 58, having been connected with the house for thirty-six years.

The present writer then succeeded, the financial management having been assumed by Mr Samuel Platt.

The old premises have been pulled down, and the very structure over which the phoenix watched for more than two centuries has made way for modern improvements.

Leaving the *personnel* of the firm, let me advert to some characteristic business details.

Certain trade items aided the financial position of the house: the first was the manufacture of carmine, entirely soluble in ammonia; sun-dried, and intended for the use of artists. It had a peculiar bloom distinct from foreign makes, which for many years secured for it a high price. Competition from abroad set in, and the sale was materially affected even before the west-end departure.

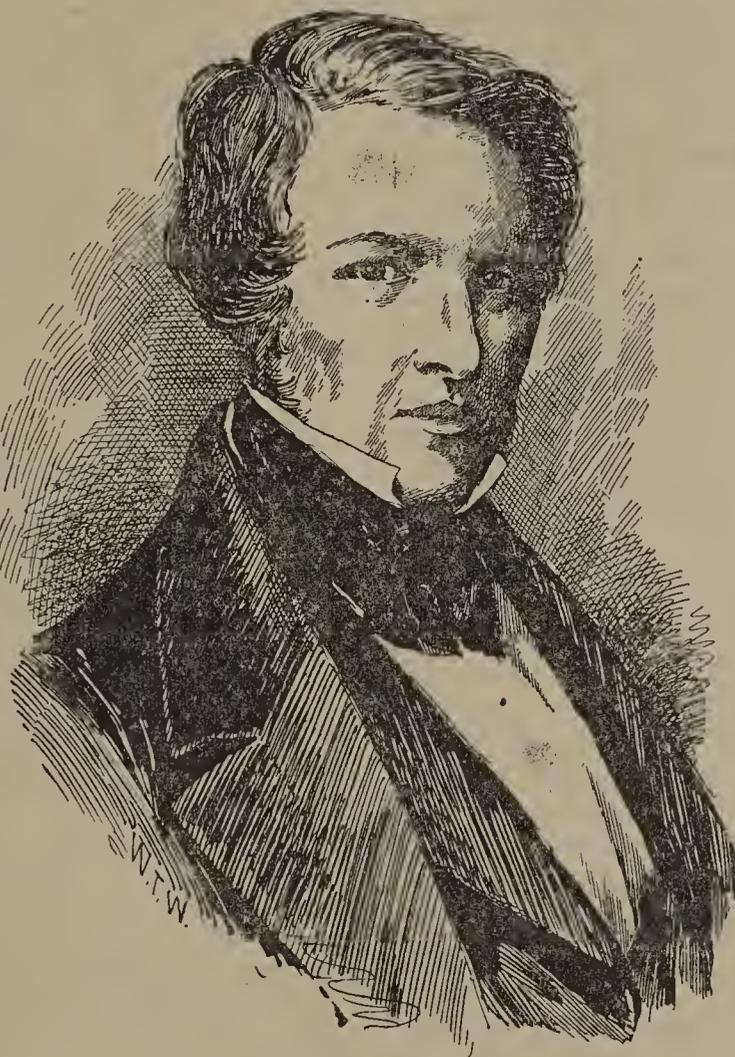
The next was Bismuth Trisnitrate; the precipitate underwent a fortnight's washing in distilled water; the whiteness was due to its being dried in the sun and never by artificial heat; diffusion in large excess of water resulted in an impalpable, non-crystalline powder. As it was unaffected when tested by a stream of sulphuretted hydrogen, and therefore was unchanged when exposed to gaseous fumes, it was patronised by operatic singers, actresses, and by premières danseuses at Her Majesty's in the Haymarket, and at the Opera House in Covent Garden. The third was ammonia and its preparations, the chief being smelling salts and spirit of sal volatile.

Modern formulæ containing ammonia are in some instances at a disadvantage, owing to the banishment of spirit of ammonia from the Pharmacopœia; the difficulty, which need not exist, is got over by adding strong liquor ammoniæ gradually, and shaking together with an alcoholic aromatic preparation until the formation of a clear solution. Linimentum camphoræ-compositum is in evidence, so, shaking apart, is Spiritus ammoniæ aromaticus.

Dr. Paris was no friend at this time to the business. He writes [edit., 1822, quoted], in the Pharmacologia, about one of Mr. Cooke's favourite preparations, the Essential salt of bark: "It

is highly necessary that the public should know that the preparation sold under this empirical title has no relation whatever to the late discoveries of Pelletier. It is merely an extract prepared by macerating the bruised substance of bark in cold water and submitting the infusion to a very slow evaporation." So far he was correct, but the author does not allude to the art of scaling, of which it was a good example, and which gained for it a reputation at a time when quinine sulphate (originally muriate), was not so beautifully prepared as it is now.

Dr. Paris was quite right when he came to describe "Godfrey's smelling salts." "This highly pungent preparation is obtained by re-subliming the common subcarbonate of ammonia with pearl-ash and a proportion of rectified spirit. The subcarbonate of potass.



WILLIAM INCE.

President of the Pharmaceutical Society, 1850-51.

in this case abstracts a fresh portion of carbonic acid from the ammoniacal salt. Its atomic composition has not yet been ascertained, but it will probably be found to consist of equal atoms of carbonic acid and ammonia." Pereira, as reporter to the Great Exhibition [1851], came to much the same conclusion.

The original formula was as follows:—

Ammonia Sesquicarbonatis	40 lbs.
Rectified Spirit of Wine (56 O.P.)	5 qts.
Pearl-ash.....	7 lbs.
Sublime.—C.W., C.M. (common weight, common measure).	

With this was connected the trade in smelling-bottles with gold and silver spring-caps. They were sold at a fancy price, the wonder being how so large a section of the public could afford to buy them. But they were beautifully made by a skilled workman in the employ of Mr. Diller, of Soho. No gilding or electroplating was allowed—the caps were solid gold or silver.

Diller in his day had a fortunate experience; he lent Louis Napoleon money, when the Prince was in sore strait for want of funds. Things turned out well in Paris, and Diller was not only commissioned to design the toilet requisites for the future Empress, but had to take them in person to the Tuileries. The money loan was discharged in full, and the silversmith received a most handsome remuneration for his work which, previous to its dispatch, was exhibited on Godfrey's counter.

Strange eagerness is displayed in the desire to obtain private formulæ, in the hope that their publication may disclose the secret of prosperity. The one secret, the publication of which is worth a straw, is that to buy the best and purest drugs, to make preparations of undoubted excellence and to have a genuine capacity for business, is the surest pathway to success. The fascination which surrounds secret remedies once led Mr. Cooke astray—he bought 'Ward's Preparations.' It is difficult to understand the inducement, as it was so entirely opposed to the general method of the firm. These included the red pill (sulphuret of antimony), Ward's white drops, an antiscorbutic remedy.

Original Formula.

Acid Nitrous	℥xxvj.
Volatile Salt Nost.	7 ozs.
[Ammonium carbonate re-sublimed.]	
Argentii Viv.	5 ozs.
Aquæ Destillatæ.....	5 lbs.

The acid and salt to be first carefully mixed by degrees; the quicksilver to be added in the same manner.

Ward's Essence (for headache).—Lin. Camphoræ Comp. P.L.

Ward's Red Drop.—Vinum Antimonii Tartarizati, made double strength (grs. iv. : ℥i.), sherry selected for colour, and the emetic tartar previously dissolved by heat in a little distilled water.

The Ward's drop bottles, holding 2 fluid drachms, have survived as a trade name, and Ward's Paste for fistula and piles has, in an altered and much simpler form, been enshrined in our Pharmacopœia under the title of Confectio Piperis. It was the only one of the series that yielded a profitable return.

Compare the official confection, and the formula given in the Pharmacologia, with the original:—

Ward's Paste.

Coriander	20 lbs.
Black Pepper.....	10 lbs.
Fennel	14 lbs.
Elecampane	12 lbs.
to form a species,	
Species ut Suprà	4 lbs.
Mellis	3 lbs.
Sugar	2 lbs.

12 ounces in a pot.

Ward was a footman in attendance on his master who was travelling on the Continent—there he picked up his nostrums. The

incident is not unique, for Mr. Jacob Bell used to relate how he called upon a celebrated dentist, whom he found in like manner to have been his footman, once engaged at Langham Place.

A mass of other recipes remain, altered and re-altered by the two Godfreys, Mr. Cooke, and others, so as in some cases to be almost illegible. As curiosities, a few are here selected:—

Balsam of Mecca.

Ol. Myristicæ.....	℥ss.
Otto Rosarum.....	gtt. v.
Ol. Cassiæ	gtt. xx.
Bals. Canadense	ad 16 ozs.

[Oils by measure.]

Eau à Brûler.

Spirit Rectif.	2 quarts. [C.M.]
Bals. Peruv.	1 oz.
Tinct. Benzoini (simpl.).....	℥iv.
Ess. Bergam	℥i.
Ol. Lavand. angl.	℥i.
Ol. Rosmarini.....	℥i.

Essentia Ambergris.

Ambergris	2 ozs.
Musk	℥iv.
Spirit. Rectif.....	℥xxxij.

Gregory's Powder.

[Original autograph.]

℞ Magnesiæ (ustæ).....	grs. vi.
Pulveris Rhei palmati.....	grs. ij.
— Amomi Zingiberis	gr. j.
Mi ce. Sig. Magnesia and Rhubarb.	J. G.

Hamilton's Hair Oil.

Strong Decoction of—

Colocynth Pulp	℥xxx
Rum,	
Ol. Olivæ	aa ℥x.

Huxham's Tincture of Bark, 1788.

Tinctura Corticis Peruviani Composita.

Cinchona Lancifolia bark, powdered.....	2 ozs.
Exterior Peel of Seville Orange, dried	1½ oz.
Virginian Snake Root, bruised.....	3 drachms.
Saffron	1 drachm.
Cochineal powdered.....	2 scruples.
Proof Spirit of Wine	2) ozs.

Digest 14 days and strain.

Huxham's actual formula was made with brandy and larger quantity of saffron (80 grains).

The official comment by the College of Physicians, date as above, deserves to be recorded.

"This medicine has been celebrated under the name of Huxham's Tincture. There is reason to fear that these spirituous remedies may sometimes have led the way to dram drinking, especially among the more delicate part of the human race—a consideration certainly of the utmost importance."

Laudanum.

[Laudatur ejus efficacia, quasi Laudatum medicamentum. Paracelsus.]

Opium	7 lbs. sliced.
Dissolve in water and press. Strain.	

Mum.....	2 gallons. [C.M.]
Spirit. Rectif.	1½ gallon. [C.M.]
Caryoph. Contus.....	8 ozs.
Aquæ Destillatæ	

Ad 7 gallons, Common Measure.

Note.—The Mum was not so much to increase the strength as to give a definite drop. A thick, treacly sort of beer, originally made by a German, called Mumme.

Artificial Musk.

Ol. Succini	℥vj.
Acid. Nitrous.....	℥xxiv.

The tincture was 4 ozs. of the resinous solid formed, dissolved in one gallon, common measure, rectified spirit.

Note.—The oil of amber, purified by a second distillation, was

found to give a poorer yield than the impure dark-coloured oil obtained in the first instance.

In consequence, rectified oil of amber was never sold.

Paraguay Roux.

Spilanthus Oleacea	4 ozs.
Rad. Pyrethri	2 ozs.
Spirit. Rectif.	3xxxij.

Spiritus Salis Dulcis.

Ether Chloric.	5i.
Spirit. Vini Rect.	5 j.

[Chloric ether by distillation, not mixture.]

Spiritus Etheris Nitrici.

[Original old formula.]

Acid Nitric	5xij.
Spirit. Vini. Rect.	1 gallon [C.M.]

Distil over into receiver containing spirit, let stand 3 days with 3lb. Potass. Sub-carb. and re-distil in balneo.

Note.—Potassii Bicarb. used at a later date in place of K_2CO_3 as above.

Williams' Tincture of Cayenne.

Essent. Cayenne	5ivss.
Spirit. Vini. Rect.	ad 3xvi.
[Ess. Cayenne, Pulv. Capsici 1. Sp. Vin. Rect. 3.]	

Tinctura Odontalgica.

Camphor	1 oz.
Sp. Vin. Rect.	3ij.
Ext. Opil	3ij.

Lower's Tincture.

Guaiacum Chips,	
Elecampane,	
Liquorice Root,	
Senna Leaves,	
Coriander, of each	12 ozs.
Sweet Fennel	6 ozs.
Raisins	6 lbs.
Spirit. Anisi	4½ gallons. [C. M.]
[Spirit. Anisi. Ol. Anisi, 5iiss.; Sp. Vin. Rect., 2 gallons; Aq. Destillat., 3 gallons; Powdered Sugar, 8 ozs.]	

Vinum Ferri

(by direction of Sir Benjamin Brodie).

Brown Sherry	5 gallons. [C. M.]
(From a well-known importer.)	
Ferri Potassio-Tart.	10 ozs.
Small iron tacks	q.s.

Macerate not less than three months in covered vessel with occasional agitation.

Vinum Hunt.

Sem. Santonic	1 oz.
Rad. Rhei Incis	1 oz.
herry (brown)	3xxx'j.

Note.—Had become obsolete: cannot trace the date.

Watchmaker's Oil deserves a passing notice as a distinctive trade article, if only on account of the memorandum in the price book—"not to be sold on Sundays." All else was physic, pure and simple; it was the golden age of medicine, for homœopathy was not as yet in the ascendant, and hygiene was not practically included in the healing art.

Daniel Hanbury states (1867) that "all druggists know that forty or fifty years ago liquid medicines for internal use were very commonly prescribed in the form of draughts or doses, each contained in a single bottle," and he proceeds to comment on the dangers of extreme concentration as exhibited in "drops." In my recollection, when medical practice was exemplified in the West-end by Dr. Chambers and Dr. Seymour, draughts and mixtures were alone prescribed. I cannot call to mind a single recipe ordered in a concentrated state by either of these physicians—nor one by Dr. Paris. Draughts usually involved repeats, and I have known three hours employed in this branch of dispensing; indeed, during the season it was no occasional task. The time came when there was scarcely a repeat to be dispensed; "drops" wrought the transformation. Before their advent, fashionable society, includ-

ing the whole family circle and the servants, pinned their faith upon continuous doses, three tablespoonfuls of which seemed to inspire confidence; quiet households followed their example, and in my own time I regularly made over-night four dozen "pill and draughts" for the market gardeners who came up to town on Saturday morning. Forty-eight shillings cash was no bad commencement of the day's work.

The continuous domestic use of aloetic pills and of rhubarb appears remarkable. A celebrated divine had radix rhei cut in cubes to be chewed, not swallowed, a practice persevered in till old age. The continuous use of Opium preparations, specially the Acetate of Morphia, may be considered as distinctive, but of this I am not sure. There were patients who took half-grain doses of Morphia daily throughout the year; others who continued the use of tincture of opium in heroic doses in the same manner.

The following recipe was dispensed for a considerable period:—

Anodyne Mixture.

R Morphine Acetat.	3ij.
Tinct. Cardam. Comp.	3-s.
Syrup. Simpl.	3ij.
Mist. Camphoræ ad.	3iv.

Misce.

Two dozen bottles were supplied at regular intervals.

I never feel sure, without reference, of the official posology of these remedies, nor yet of iodide of potassium.

Prices, as illustration of a period, may fairly be mentioned. Twice in my own experience they were reduced, and the alteration gave instant dissatisfaction; they had to be put back to the accustomed figure, which incidentally proves the date to have been anterior to the Stores. I have mentioned the London season. It meant from the middle of March to the Goodwood races; after that event came so dull an interregnum that for some weeks during the lull the old firm might nearly have closed its doors.

The staying power of an assistant may be included as characteristic of the times.

When I entered Southampton Street as a junior I was in the anomalous position of being a young man; the rest had seen years of service, while their predecessors had remained longer still, and had only left to commence business on their own account, namely, William Hooper, who was more than successful in Great Russell Street, Covent Garden, and Charles Linder, who went into partnership with Joseph Gifford in the Strand. Then the old order changed, and juniors began to come and go as is the fashion of these latter days. The gold fever broke out in Australia: incontinently one went to the diggings—there he endured hardships innumerable, till in despair he and some others tramped to Melbourne, where he became rich, so rich that on his return visit to London he offered to buy the firm. His fortune was made by the introduction of English flowers and seeds.

A second took his departure as hastily, but for a different cause; he came from a provincial town, and was set to make two dozen opium powders, one grain each. His powder-papers were spread out before him in due order, but his method had not that accuracy which dispensing feeling would desire, for he proceeded to dib out his pulvis opii with a palette knife, as the French say, *à la grâce de Dieu*. The elders looked on in silence. "Is that your usual method?" said my father; finding that it was, the junior was presented with a month's salary and a return railway fare, accompanied by the valediction, "Perhaps, on the whole, it would be better for you to go home and gain more experience." A third made strychnine pills, and ventured on his next batch in the same mortar, observing that it was nearly clean, reminding one of Sir Walter Scott's hedge doctor, who trusted to "two simples, calamy and laudamy." A fourth, on retiring, had an ingenious style of com-

position, stating that he had been for years with Messrs. Godfrey : he had been two.

These were but floating exceptions, for there were others who were admirable dispensers, and in all other respects to be commended. They could scarcely attain the dexterity acquired by what might justly be called the permanent staff, amongst whom I am bound to mention William Henry Baigent, from whom I learned more practical pharmacy than from any other source.

He spread plasters which would compete with the best machine work, the rapidity of the execution being only equalled by the beauty of the finish ; no dispenser I have yet seen could surpass him in the art of making an emulsion. His career was marked by strange contrasts ; curiously parsimonious during his long stay at Godfrey's, he subsequently became generous and open-handed, of which his gift of £100 to the Benevolent Fund is proof, and after years of an utterly secluded life, he took so keen an interest in the affairs of the city as to become Master of the Haberdashers' Company.

One great wave of business swept over the house and strained its resources to the utmost ; other establishments can refer to a similar experience. This was the dire invasion of cholera to which all England was exposed in 1848-49. In one year 53,293 persons are reported to have died in England and Wales of the epidemic. Never since the plague had there been so terrible a scourge. The laboratory was closed, except for the distillation of aromatic waters, chiefly aqua cinnamomi, and the preparation of remedies recommended by the Board of Health.

Essence of Mixed Spices.

[Used during the cholera epidemic.]

Ol. Myristicæ	ʒij.
Ol. Caryoph.,	
Ol. Cassiæ	aa ʒj.
Spirit. Rectif.	ad ʒxij.

The porters had to become assistants and help as best they could ; no one who went through that appalling visitation would wish for any purposes of gain to repeat that experience ; even the old laboratory porter was pressed into the service. His name was Leader, and as a specimen of bygone pharmacy he may be described. When I saw him first he was an antique in keeping with his surroundings, one on whom succeeding years seemed to make no impression. The date of his introduction to the firm was a mystery to the younger assistants, whom as young men he cordially despised. Sometimes he would enumerate former assistants, but he invariably left one out, as he had only stayed five years. Leader could write his name so that those skilled in autographs could read, he would talk of ingredients, and for some reason call unburnt furnace coal "green meat," but no one better knew how to light a laboratory fire or how to work a still, or how to guess a temperature by instinct. Alas ! the day when he went for a week to Greenwich and I tried single-handed to finish the carmine. It would not come, but Leader fortunately did, and all was peace. From that time it was only by compulsion that he would take his holiday, being thoroughly convinced that Godfrey and all his works would perish were he not at hand to avert the ruin.

When the firm went westward, Leader was no more a power ; new environment he could not understand, but nothing would persuade him to accept full salary for his past services and retire.

Constantly the old man dozed in the new laboratory, which he held in supreme contempt, till one morning he was found in his Covent Garden lodgings, quietly asleep, to rise in this world no more.

Two more extracts must end the record.

The Docteur Noir comes upon the scene. He was a West-Indian creole, tall and handsome, dressed in a faultless manner, a striking personality, so closely resembling Dumas the elder that when he made his appearance in Southampton Street I thought it was Alexandre in person. The Docteur was furnished with the highest testimonials and recommendations ; almost immediately he gained the confidence of some of our leading surgeons, and had an extensive and most lucrative practice among the best London circles. He professed to cure cancer, relying on a strong astringent ointment, the basis of which was krameria with chloride of zinc. The subsequent treatment, as far as we could judge, consisted in prescribing ounce packets of Radix Sarsæ, with directions for making the decoction ; also—he had a Vinum Ferri of his own, and once he compelled Leader to make it strictly to order, which was to plunge a red-hot iron into Malaga wine. (The method is sanctioned by mediæval authority.) The expected happened for the vessel was shattered, and its contents violently projected over the laboratory. The success of the Black Doctor was phenomenal, he lived in luxurious style, and kept his carriage ; he was honourable in all his financial relations, contracting no debts whatever.

In an evil hour he went to Paris and undertook to perform his cures under the watchful superintendence of the hospital authorities. Paris proved his downfall, for he was charged with empirical practice, and his career came to an ignominious conclusion.

After a long reign, King George III. was gathered to his fathers, and George IV. was crowned. The old firm had long enjoyed the privilege of sending twelve smelling bottles to the State Drawing Rooms for the use of the ladies of the Court ; they now applied to be permitted to supply the anointing oil, and they presented, on June 7, 1821, the following petition :—

"To the Lords Commissioners of the Court of Claims,

"May it please your Lordships,

"We, the undersigned, successors of the late Ambrose Godfrey, chemist, beg leave very respectfully to lay before your most honourable Court, the statement of his having had the honour of preparing the Oil used in anointing his late most gracious Majesty at his coronation ; and we have reason to believe that the same privilege had been enjoyed by his predecessors on similar occasions since their first establishment in the year 1680, but in consequence of those records having been accidentally destroyed, we presume not to urge any positive claim, though with due submission to your most honourable court, we offer ourselves to your consideration and favour, desiring to be appointed to perform the like service at the ensuing coronation of His present most gracious Majesty George the Fourth, whom may God preserve. Signed."

We learn from the *Times* (June 8, 1821) that the petition was returned to the applicants on the ground that the Court had no jurisdiction : so George the Fourth was not anointed with Godfrey's oil, which may account, and I think does, for the subsequent badness of his career.

OREXINE IN ANOREXIA.—Penzoldt finds that the base orexine is preferable to the hydrochloride in the treatment of anorexia, since it is less likely to produce vomiting than the salt. It should be given in 5-grain doses in a lozenge capsule, followed by a draught of about half a pint of fluid. Experiments on a wide range of cases, including many different diseases which were accompanied by loss of appetite have been treated with with marked success. The dose was generally given at about 10 in the morning. It frequently requires to be repeated for five days before the full and permanent effect is observed (*Therapist*, v., 100).

THE PRESERVATION OF CHLOROFORM.

BY D. B. DOTT.

The subject of the decomposition and preservation of chloroform has been ably investigated and discussed by D. Brown and D. Rainy Brown (*Ph. J.* [3], xxiii., 792, and xxv., 836), also by Schacht and Biltz (*Ph. J.* [3], xxiii., 1005). More recently, L. Allain (*Journ. de Pharm.* [6], xv., 252; *Ph. J.*, lv., 261) drew attention to the fact that sulphur, added in the proportion of one to a thousand of chloroform, acted as a preservative, preventing decomposition in chloroform exposed to diffuse daylight for an indefinite period. Allain does not explain the action of the sulphur. As it was shown in the papers above referred to, particularly by the Messrs. Brown, that oxygen is essential to the decomposition of chloroform by light, and that chlorine is always present at the earlier stages of alteration, it seemed probable that the sulphur acted as a reducing agent, and that any substance slightly soluble in chloroform and readily oxidisable would likewise act as a preservative. I therefore divided some pure absolute chloroform in four bottles. To the first was added a minute portion of morphine, to the second gallotannic acid, to the third hypophosphorous acid, and the fourth was left pure and simple. These were all exposed in a glass case to diffuse daylight, but where occasionally rays of direct sunlight reach. After a few weeks the pure chloroform showed signs of decomposition, distinctly evident to the nose and to silver nitrate. None of the others had decomposed, and even after a month's further exposure are still apparently unaltered. It therefore appears probable that any substance which is prone to oxidation and soluble, however slightly, in chloroform will prevent or greatly retard decomposition. If that is correct, one would infer that the preservative action of alcohol is partly due to its capacity for oxidation, whatever secondary part it may also play.

COCAINE IN OINTMENTS—A CAUTION.

BY WILLIAM JOHNSTON.

An illustration of the proneness of cocaine to decomposition recently came within my ken. A dispenser received the following prescription one evening when busy with other duties, and was told the ointment must be made up that night:—"Creolin, 80 minims; cocaine hydrochlorate, 132 grains; lanoline, 2 ounces." He had previously dispensed it for the same patient. Then he used boiling water to warm the mortar. This time boiling water was not available at the moment, but the hob was hot and handy, so the latter source of heat was resorted to. It was noticed that the mortar was pretty hot when used. The ointment was sent out in due course, and no more was thought of it till a day or two after, when it was returned with the complaint that there must be something wrong with it. The previous lots it was stated, had soothed the irritation of eczema like magic, but this had no effect at all. The dispenser scratched his head. He knew he had put the full quantum of cocaine in, and why shouldn't it minister comfort as before? Suddenly the thought of the warm mortar flashed across his mind, and the reason was clear. The alkaloid had decomposed in the hot fat and become useless. That such was the case was afterwards proved by a return to hot water as a warming medium. Another batch of ointment, made from the same lot of cocaine as before, yielded the original amount of satisfaction. Said satisfaction was somewhat one-sided, for the transaction left the chemist a poorer man by several shillings. However, the loss in cash was counterbalanced by the gain in experience, both to himself and perhaps to some readers of the Journal.

REVIEWS AND NOTICES OF BOOKS.

THE MEDICAL ANNUAL AND PRACTITIONERS' INDEX, 1896. By Various Authors. Pp. 732. Price 7s. 6d. net. (Bristol: John Wright and Co. London: Simpkin, Marshall and Co. 1896.)

The issue of this annual for the present year fully maintains the reputation established by the thirteen previous volumes. It is of the highest service to medical practitioners who wish to keep abreast with the rapid progress of their many-sided profession. The names of the contributors sufficiently attest the authoritative character of the work, and after a careful perusal of the present volume, it may be added that the alphabetical arrangement of the sections and the lucid style of the writers, together with the numerous and admirable illustrations, render the task of obtaining information a light one. In every department of medicine and pharmacy the past year's progress is clearly indicated and brought into relation with the previously established facts of medical science. As might have been anticipated in this Listerian age, the sections dealing with surgical subjects are particularly well done. The article on abdominal surgery by Mayo Robson, that on club-foot by Jones and Ridlon, and that on diseases of the ear by Dundas Grant may be especially mentioned. The article on the sensory distribution of spinal nerve-roots by Thorburn is of equal importance to both physicians and surgeons. Whilst, however, the surgical subjects are especially striking the medical and pharmaceutical sections are thoroughly well done, and full references are given to the original articles for those who require to consult them. A perusal of the section on the "Progress of Pharmacy" shows that the Germans are still in advance of other nations in scientific pharmacy. Among the useful preparations of German origin argentamine (ethylene-diamine silver phosphate), a non-coagulable silver phosphate, and formalin, a 40 per cent. solution of formic aldehyde, may be mentioned. Another German preparation, loretin (meta-iodo-ortho-oxyquinoline-ana-sulphonic acid) recommended by Schinzinger as a substitute for iodoform has yet to be tried by surgeons. It is to be hoped it may prove a successful substitute. In the chapter on new remedies it is noted that two cases of nephritis have been observed to follow the administration of β -naphthol. One of these cases proved fatal—a sufficient indication for caution in the employment of new drugs. It is hardly necessary to give further examples, and this notice may be concluded by stating that to pharmacists, as well as to doctors, the book is a reliable guide to the direction of progress in the medical world.

THE CHEMIST'S COMPENDIUM. Compiled by C. J. S. THOMPSON. Pp. 230. Price 2s. 6d. net. (London: Whittaker and Co., 2, White Hart Street, Paternoster Square. 1896.)

In the preface to this compilation it is suggested that, with the constant and increasing growth of pharmaceutical and kindred literature, pharmacists have doubtless felt the want of a book of convenient size, embodying the essential points of the many subjects of use to them in the daily exercise of their craft. Continuing, the compiler states that "this work is designed to supply this deficiency, and simply act as a handy-book of reference. It is also intended to serve as an introduction and guide to the standard text-books on the subjects included." Without entering upon a detailed criticism of the book, it is sufficient to remark that considerable revision will be required before it can fairly claim to serve the desired end. The pages on "Organic Materia Medica," in particular, require extensive emendation, and numerous discrepancies are apparent elsewhere on even a cursory examination. This is certainly not consistent with what is expected in "a handy-book of reference." The article on "Media for Mounting Sections," by the way, which is copied verbatim from the *Pharmaceutical Journal* (ser. 3, xxiii., 649), is wrongly attributed to Squire.

NOTES AND QUERIES.

FORMALDEHYDE FOR HARDENING SPECIMENS.

By the use of a four per cent. solution of formaldehyde, Mr. Thelwall Thomas has been able to harden in a few hours any piece of tissue placed in it. The specimens of tumour, etc., so hardened, readily froze on an ether microtome, and the sections could be stained with hæmatoxylin after immersion in methylated spirit.

PREPARATION OF RED MARROW.

In order to obtain red marrow in the most perfect state and liberal supply, the Liquor Carnis Company recommends in the *British Medical Journal* that the breast-bones of calves and other young animals should be broken, and the semi-fluid marrow poured out. What remains can be extracted by covering the bones with glycerin, and allowing them to remain for three days, turning each day. The marrow can afterwards be separated from the glycerin in a variety of ways.

SILVERING GLASS.

The following method has been recommended by B. J. Edwards, at a meeting of the Liverpool section of the Society of Chemical Industry:—Dissolve silver nitrate, 15 grains, in water, 6 fluid drachms, and add strong ammonia drop by drop until the precipitate first formed is re-dissolved. Next, dissolve caustic potash, 15 grains, in water, *q.s.*, and then add enough ammonia to not quite dissolve the precipitate formed. Filter this solution, and add the silver nitrate solution until the mixture is of the colour of weak tea. Then make up to 3 fluid ounces with distilled water, and add commercial grape sugar, $7\frac{1}{2}$ grains, dissolved in water, *q.s.* On pouring the finished liquid into a glass vessel, it is said to deposit a good film of silver in 15 or 20 minutes. If a thin, transparent film is required, so that the mirror can be looked through as well as into, the silver may be protected by a coating of celluloid varnish.

PALATABLE CASTOR OIL.

☞ Dissolve pure saccharin, 30 grains, in hot alcohol, $\frac{1}{2}$ fluid ounce, then add to castor oil (up to 1 pint) and mix thoroughly, after which add peppermint oil, 5 or 6 drops, to flavour. According to Edell (*Spatula*) this mixture has a more pleasant taste than any other combination of the oil.

LOTION FOR CHAPPED HANDS AND FACE.

According to *Meyers Bros'. Druggist*, a second application of the following lotion is rarely required:—Mix compound tincture of benzoin, 10 minims; alcohol, 2 fluid drachms; rose water, 30 minims; and glycerin, 1 fluid drachm. Apply to the chapped surfaces at night, after they have been washed with warm water and soap and thoroughly dried.

LABEL VARNISH.

A limpid, colourless varnish, which dries readily, and is not too brittle or easily affected by liquids, is prepared as follows (*National Druggist*):—Macerate together sandarac, 60 parts; mastic, 25; camphor, 1; lavender oil, 8; Venice turpentine, 4; ether, 6; alcohol, 44. Shake occasionally until the solids are dissolved.

APPLICATION FOR NEURALGIA.

Sabbatani paints the following solution on the painful parts:—Menthol and guaiacol of each 15 grains; absolute alcohol, 5 drachms. Rather less than a drachm is applied with a brush two or three times in twenty-four hours, the surface being afterwards covered with cotton wool (*Practitioner*).

ATROPINE SULPHATE AS AN ANTIDOTE IN OPIUM POISONING.

The value of the hypodermic injection of atropine sulphate in opium poisoning is illustrated by Dr. Paton's successful treatment of a case of attempted suicide, in which a female Chinese patient swallowed an infusion of 2 ounces of smoking opium. The solution of atropine sulphate was administered at intervals in 20-minim doses of 2 grains to the ounce solution, afterwards increased to 4 grains to the ounce. The total amount of sulphate injected amounted to $1\frac{1}{3}$ rd grain. Complete recovery resulted in a short time (*Lancet*).

SOLDER FOR ALUMINIUM FOR DENTAL WORK.

☞ Richards recommends the following:—Aluminium, 1 part; 10 per cent. phosphor-tin, 1 part; zinc, 11 parts; and tin, 29 parts (*Brit Journ. Dental Science*).

PARLIAMENTARY INTELLIGENCE.

METRIC SYSTEM OF WEIGHTS AND MEASURES.—A petition has been presented to the House by Mr. Boulnois (E. Marylebone) from the London Association for Protection of Trade—an Association said to comprise 4000 members, who are mostly retailers. The petitioners urge the adoption of the report of the Select Committee of 1895. This action of the London traders will probably be followed by pharmaceutical associations in various parts of the country.

THE STANDING COMMITTEE ON TRADE, under the vigorous chairmanship of Mr. J. E. Ellis, is making rapid progress through the forest of amendments which blocks the way of the Shops Bill. Clauses 1 to 4 have now been disposed of. Clause 1 was published in last week's issue of the Journal (p. 232). Clauses 2, 3, and 4 are now given as amended, and it may be possible in the next issue of the Journal to give the whole Bill in its altered form. New matter is indicated by the square brackets, and attention is called to deleted words. Unimportant verbal alterations are not noticed.

2. With respect to an order of a local authority under this Act the following provisions shall have effect; that is to say,—

- (1.) The order shall take effect at a date named therein, being not less than one month ("or two months" deleted) after the making thereof, and shall before that date be published in such manner as to the local authority making the order may appear best fitted to insure publicity for the same.
- (2.) The order may, if the local authority see fit, be expressed to have effect only during any specified part or parts of the year, and shall have effect accordingly, but, unless so limited, shall have effect throughout the year until amended or revoked.
- (3.) The central authority shall make regulations as to the form of such orders and of applications for the same, and [respecting the making of lists of persons whose consent is required for the purpose of putting the Act in force, and] as to the evidence to be produced respecting the proportion of persons signing such applications, and any such regulations shall be published in such manner as the authority making the same may direct, and shall have effect as if they were enacted in this Act.
- (4.) [For the purposes of this Act the local authority shall have power to frame such classification of shops according to trades as they may deem necessary having regard to the circumstances of the locality.]

3.—(1.) An order of a local authority under this Act may be amended by a subsequent order made upon the like application, and subject to the like provisions, and having the like effect as if it were an original order.

- (2.) If at any time it is made to appear to the satisfaction of the local authority that the occupiers of more than one-third in number of the shops to which an order for the time being in force under this Act relates, or of any class of such shops, are opposed to the continuance of the order, the local authority shall (formerly "may") revoke the said order, or revoke the same in so far as it affects such class of shops as aforesaid, and thereupon the order, in so far as it is so revoked, shall cease to have effect, but the revocation of an order shall be without prejudice to the making of another order under this Act.

4. If any question arises as to the class or classes of shops to which any particular shop belongs [or as to whether any particular place is a shop within the meaning of this Act, or as to whether a shop is or is not within the limits of the part of a district to which the order relates], such question may be referred to [any] court of summary jurisdiction [having jurisdiction within the district] which may hear and determine the question.

SHOPS (EARLY CLOSING) BILL.—It has been ordered that the Standing Committee on Trade shall have leave, until it has concluded the consideration of the Shops Bill, to continue to sit notwithstanding the sitting of the House. This would seem to point to a determination to accelerate the passage of the measure through the remaining stages of its parliamentary ordeal.

COMPANIES BILL.—This Bill was read a second time in the House of Lords, on Thursday, March 19, on the motion of the Earl of Dudley. No further progress with the Bill is possible till after April 21, to which date the House of Lords has adjourned for the Easter Vacation. It will, however, be taken in Committee on the first sitting day after the recess.

PHARMACEUTICAL JOURNAL.

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POOR LAW DISPENSERS.

IN the proceedings of the July meeting of the Council, reported on page 13 of the last volume of this Journal, reference is made to the then recently promulgated order of the Local Government Board permitting the appointment of army compounders as Poor Law Dispensers. The Council thought that so retrograde a movement on the part of a Public Department called for some action, and the PRESIDENT was, therefore, authorised to approach the Local Government Board on the subject in the interest of persons registered under the Pharmacy Acts. As a result of the oral representations made by the PRESIDENT to the proper officials, it is understood that the Department is willing to consider any arguments that may be advanced against the General Order above referred to. A *précis* of the statement which has just been officially transmitted to the Board by the Secretary of the Pharmaceutical Society has been placed at our disposal, and we are enabled to briefly epitomise the principal items in the document.

It is first pointed out that the training of an army compounder comprises a six months' course of instruction in a military hospital under the supervision of an officer, (presumably a medical officer) and a duly qualified compounder. The duly qualified compounder is thus constituted pharmacy instructor after his own six months' course, and is not likely to be in a position to convey a very high quality of technical knowledge to the mind of his pupil. Further it is shown that the course itself is meagre, and does not include translation from Latin to English of instructions as to the use and dose of medicines. Moreover, there is no guarantee that even the course prescribed is conscientiously enforced in every case, nor is it clear whether the qualification is obtained at the end of the course by examination or by adjutant's order. At any rate, evidence is given that the process of converting a private soldier into a compounder is not a difficult one. On behalf of persons who have passed through an adequate period of training in pharmacy and the allied sciences, and who possess a legally recognised certificate of competency under the Pharmacy Act, 1868, it is therefore urged that the General Order of June 7, 1895, be modified.

The Society's statement proceeds to press home the fact that the qualification of an army compounder is not an adequate guarantee that the holder has had the special

practical training, or acquired that special technical knowledge requisite to properly (*i.e.*, safely) perform the duties of a dispenser, as set forth in the instructions issued by the Local Government Board. These instructions are published at page 212 of the Society's Calendar for 1896, and need not be particularised here. But two examples may be given. Under Section 5 of the instructions it is the duty of the dispenser "to make such pharmaceutical preparations for use in dispensing prescriptions as he may be required to make from time to time." How could an Army compounder be expected to personally make such preparations on the experience obtained during six months in a military hospital, where it would be almost impossible to get the necessary practical knowledge, and where whatever teaching was imparted would be given by a person possibly as ignorant of practical pharmaceutical operations as the pupil? Again, the dispenser to a Poor Law Union has "to prepare and dispense skilfully and cautiously all prescriptions," etc., etc., and to "express in writing" the proper directions. As medical officers to Poor Law Guardians do use Latin in their directions to dispensers, and, in fact, rarely use anything else, an army compounder, who is officially allowed to be ignorant of Latin, cannot efficiently or safely fulfil that duty. In the words of the Society's statement, "apart from the danger likely to arise from a haphazard rule-of-thumb manner of translating medical prescriptions, it is difficult to imagine why a class of individuals unable to fulfil the duties appertaining to a public appointment should be declared, on authority, to be eligible to hold that appointment." It is finally argued that as an army compounder is not permitted by law to keep open shop for retailing, dispensing, or compounding, it is manifestly unjust that the inmates of public infirmaries should have a smaller measure of protection accorded them than that provided by the Legislature for the general public.

COLLEGE COURSES IN PHARMACY.

CONSIDERABLE interest is at present being taken in the United States in regard to the length of college courses for pharmaceutical students. The American Pharmaceutical Association unanimously adopted a resolution declaring that at least six months' regular attendance at a school of pharmacy, with not less than one hundred hours of school work monthly, ought to be required by law as a necessary condition of registration as a pharmacist. In Wisconsin, partial effect has been given to this resolution by an amendment of the pharmacy law, which provides that all candidates for registration as pharmacists shall be given substantial credit for the courses of education pursued at pharmaceutical schools or colleges. That is to say the time spent at a recognised school is to be reckoned as the equivalent of a certain amount of experience in a pharmacy, or recognised in some other way by the boards of pharmacy.

The *Bulletin of Pharmacy* thinks it would probably be found practicable at the present time and under existing conditions, to count a satisfactory completed college course of any number of months as at least equal to the same number of months' employment in a pharmacy, with the limitation that no one shall be registered as a pharmacist without having had two years' experience in a pharmacy, exclusive of any college courses. The same journal recommends the non-recognition by boards of pharmacy of any titles or degrees (?) conferred by colleges or schools, except in so far as may be

convenient for systematising and facilitating the work of registration. The distinction made in Great Britain between the Major and Minor examinations and certificates is commended, and just as several American States now also recognise two classes of pharmacists, it is suggested that two definite standards should be recognised for special pharmaceutical college courses, one designated as the Minor course and the other as the Major course. It does not appear to be understood, however, across the Atlantic that neither of the British certificates carries with it any proof of college training. They simply indicate that the holder has passed examinations—the first compulsory, the second voluntary—in certain subjects. It is our chief lack in this country that these certificates are not evidence of systematic training, and the proposal to allow a college course to count as equivalent to part of the period of pupilage in the pharmacy may be worth consideration here, as leading the way towards a better system.

The proposal to recognise two definite standards, if implying the existence of two classes of pharmacists, is not one that should be endorsed. The trend of opinion in this country is almost entirely in favour of the same conditions being imposed upon all candidates for registration, as is, indeed, the case now. The term "Minor," as applied to the qualifying examination, is a complete misnomer, and must sooner or later be replaced by some more accurately descriptive term. The chief needs of pharmacy in Great Britain, and probably in the United States also, are power to enforce—before apprenticeship or pupilage—the passing of a suitable scholastic examination, also to insist upon at least two years' experience in a retail pharmacy, and a special school course of not less than one year. The holder of the legal qualification ought to be eligible for all the privileges now reserved by law for those who pass the highest examination, and the opinion is very general that some other distinctive title should be reserved for those who choose to devote more time to study and to pass another examination of a higher standard. It may be found advisable to have a lower qualification for mere retailers of drugs, etc., but there ought not to be more than one class of pharmacists, and there should be a strict line of demarcation between titles acquired by registration and those conferred for special work.

THE COST OF TECHNICAL EDUCATION.

THE return made to the Department of Science and Art, and just published, shows that the total amount expended on technical education during the year 1893-94 in England, Wales, Scotland, and Ireland was £647,631 18s. 7d., and that the estimated total expenditure for 1894-95 was £737,420 15s. 1d. This is in addition to the sum of £42,861, which is to be devoted annually to intermediate and technical education, in accordance with the Welsh Intermediate Education Act. The total amount of the residue paid to the Councils of Counties and County Boroughs in England and Wales, in respect of the financial year 1893-94, was £786,768 12s. 3d., of which £634,837 5s. 8d. was appropriated to educational purposes. Scotland received £54,430 13s. 8d., of which £35,111 10s. 1d. was appropriated to technical education, whilst the total amount expended on technical education by nine local authorities in Ireland was £4339 9s. 11d. in 1893-94, and the estimated total expenditure during 1894-95 was £4748 16s. 6d.

PHARMACEUTICAL SOCIETY

SCHOOL OF PHARMACY PRIZE EXAMINATION QUESTIONS.

Session 1895-96.

MATERIA MEDICA.

PROFESSOR HENRY G. GREENISH.

Monday, March 23, 1896.—11 a.m. to 2 p.m.

1. Carefully describe the characters which would enable you to recognise the following drugs:—Sassy bark, Indian pink, sandarac, pellitory root, quilla bark, Peruvian coca, Curaçoa aloes, scammony, belladonna root.
2. State the botanical source, natural order, habitat, and principal constituent of the following drugs:—Jaborandi, elemi, frankincense, Indian pink, mezereon bark, logwood.
3. Write a short account of storax.
4. In what tissue or tissues are the following drugs formed:—Aloes, lactucarium, guaiacum resin, scammony, myrrh, goa powder?

THEORY AND PRACTICE OF PHARMACY.

MR. INCE.

Monday, March 23, 1896.—3 to 6 p.m.

1. Describe in full, Adeps Præparatus and Adeps Lanae; their mode of preparation and employment in pharmacy.
2. Suggest methods for the emulsification of Lard, Spermaceti, Castor oil, Balsam of Copaiba and Phosphorated oil.
3. Note Suppositoria, pharmacopœial or otherwise, in the dispensing of which special precautions are required.
4. Show that ten grains of Extractum Nucis Vomicae should yield one grain and a half of total alkaloid.
5. Write in technical Latin: Macerate in a covered vessel, with frequent agitation for four days, then decant and filter. Let it be kept in a well-stoppered glass bottle.

BOTANY.

PROFESSOR GREEN.

Wednesday, March 25, 1896.—11 a.m. to 2 p.m.

[Four Questions only to be answered.]

1. What is a sporangium? Describe its development in any plant you please. Compare the sporangia of a fern with those of a Phanerogam.
2. Describe the structure and mode of development of the seed. Explain how it is that this structure is only found in the Phanerogams.
3. What is chlorophyll? Give some account of its functions, and the conditions under which they are performed.
4. Draw a diagram of one of the steles of the fern, and point out the tissues of which it is composed.
5. Give a short sketch of the different kinds of branching found among flowering plants. Compare the branching of the leaf with that of the stem.

PRACTICAL BOTANY.

PROFESSOR GREEN.

Wednesday, March 25, 1896.—3 to 6 p.m.

1. Make a delicate transverse section of the tissue provided. Sketch the appearances it presents, and identify all the structures it contains, pointing them out in your sketch.
2. Identify and briefly describe the microscopic preparations A, B, and C.

PRACTICAL CHEMISTRY.

PROFESSOR ATTFIELD.

March 26, 1896.—11 a.m. to 1 p.m., and 2 to 5 p.m.

1. State, qualitatively, the character of "The Mineral Water."
2. How much bicarbonate of potassium is present in one fluid ounce of "The Medicine"?
3. Is there any lead in the sample of "Vinegar"?
4. Analyse "The Powder," and state what substances are present.

ANNOTATIONS.

THE DISCOVERY OF ARGON.—It is announced that Messrs. Macmillan and Co. will shortly publish a volume by Professor William Ramsay on the recent discovery by himself and Lord Rayleigh of argon in atmospheric air. The intention is to supply such an account as may meet the requirements of educated men with no special knowledge of the recent developments of physics and chemistry, and, where necessary, the reasoning employed in drawing conclusions relative to argon will be stated in popular language. The book will also contain a prefatory account of all the progress made in connection with the chemistry of the atmosphere by Cavendish, Boyle, Lavoisier, and other early discoverers, portraits of whom will be included in the volume.

SCHOOL OF PHARMACY.—We are requested to state that this school will close on Saturday, March 28, for the Easter vacation. The laboratory of practical chemistry will reopen on Monday, April 13, and the lectures will recommence on the following Monday.

LORD KELVIN'S PROFESSORIAL JUBILEE.—It is proposed to recognise the completion of Lord Kelvin's fiftieth year as professor of natural philosophy in the University of Glasgow during the present year. A joint committee, including representatives of both the University and municipality, is therefore taking measures to secure the participation of other universities and scientific and learned societies, at home and abroad, in celebrating the prospective jubilee. The different bodies are being invited to send representatives to a celebration to be held in Glasgow on June 15 and 16 next. On the first day a *conversazione* will be held in the University, and on the second there will be a banquet in the City Chambers. An exhibition of mechanical, electrical, and other scientific apparatus illustrating Lord Kelvin's inventive and constructive genius will form a special feature of the celebration.

LIEBIG'S CONDENSER.—According to Kahlbaum, the condenser, with which Liebig's name is invariably associated, was really invented by Christian Weigel, and described by him in his dissertation of March 25, 1771. Liebig was not born until 1803. Weigel's condenser was described in Goettling's 'Manual of Chemistry,' published 1794, and Liebig, when he first referred to the use of this condenser, mentioned that work as the source from which he had obtained the description of the apparatus.

THE PRODUCTION OF LIQUID OXYGEN COMMERCIALY.—According to the *Daily Telegraph*, Dr. Linde, who was recently announced as having discovered how to make liquid oxygen easily and cheaply as compared with the methods at the time in use, appears to have been anticipated by an Englishman, Dr. W. Hampson, an Oxford graduate. The latter is said to have explained the principle of his method to several scientific men in 1894, but he was only able to patent his invention in May, 1895, just five weeks before his German rival applied for an English patent. Dr. Hampson gave a demonstration of his process at Brin's Oxygen Works, on Saturday last. Beginning with oxygen at a pressure of 1800 lb. to the square inch, he allowed a portion of this to expand and thus cool the rest of the gas, the operation being repeated until a temperature of -180°C . was reached and the oxygen liquefied, as much as seven cubic centimetres being obtained in four minutes. In practice, freezing mixtures will be used to expedite the process and render it more economical.

PHARMACEUTICAL CONGRESS AT BRUSSELS.—The official report of the proceedings at the national congress of pharmacy held at Brussels last August, to celebrate the jubilee of the Société royale de Pharmacie de Bruxelles, has just been published, and constitutes a large volume of more than four hundred pages. All the papers read before the Congress are published in full, together with the discussions to which they gave rise, and reports of the banquet and other proceedings.

IDENTIFICATION OF NARCOTIC EXTRACTS.—In a circular issued by G. Hell and Co., they give simple instructions for identifying various extracts official in the Austrian Pharmacopœia. *Aconite extract* should produce a sharp and burning taste on the tip of the tongue, followed by long-continued local anæsthesia. *Belladonna extract* is distinguished from that of *hyoscyamus* by the intense green fluorescence produced by shaking out an aqueous solution with chloroform or ether, evaporating, adding a little warm water to the residue, and then a few drops of ammonia solution. *Cannabis indica extract* should yield to ether a soft resinous substance, soluble in alcohol, ether, chloroform, benzol, and carbon disulphide, and not capable of saponification by potash. *Conium extract* is easily detected by the mouse-like odour given off on adding to an aqueous solution a little soda or potash solution. It should also yield a residue of minute double refracting needle-shaped or columnar crystals, on dissolving in warm water, shaking out with ether, adding soda solution, again shaking out with ether, evaporating, dissolving residue in semi-normal hydrochloric acid, and evaporating a drop on a glass slide. *Opium extract*, when dissolved in water and acidified with hydrochloric acid, gives an intense blood-red coloration with ferric chloride solution. *Nux vomica extract*, if dissolved in 70 per cent. alcohol and the solution evaporated on a water bath after adding one or two drops of diluted sulphuric acid, is indicated by a residue, the edges of which are violet tending to red. An aqueous solution, acidulated with diluted sulphuric acid and filtered, should give a curdy white precipitate with ammonia, orange red with potassium chromate, and is also precipitated by yellow or red potassium prussiate.

"THE SCOTTISH ALPS."—Mr. W. Lamond Howie gave his illustrated lecture on "The Scottish Alps" before a crowded audience at the rooms of the Lantern Society, Hanover Square, London, on Monday evening last. The lantern slides exhibited well merit the description—"marvels of technical merit"—that has been applied to them. Beautiful snow scenes, picturesque cloud effects, and delightful views of mountain, river, glen, and loch scenery, were all calculated to inspire enthusiasm, both with regard to photography and mountain climbing. Mr. Howie is also to be congratulated on his manner of presentation, no less than on the matter presented.

THE RÖNTGEN RAYS.—Mr. A. Campbell Swinton is announced to deliver a lecture in the Governors' Hall of St. Thomas's Hospital on Tuesday next, March 31, on the discovery by Professor Röntgen of the x -rays and their application to practical surgical use. Tickets can be obtained at the hospital, and the proceeds of their sale will be devoted to the Special Appeal Fund. Professor Oliver Lodge, of University College, Liverpool, is reported to have been able to observe the effect of rays which penetrated a 12-inch balk of timber and the palm of his own hand. In addition, he has been able to "see," in the same sense, through the head of a boy at the laboratory connected with the college, and also through every part of his body.

PROCEEDINGS OF SOCIETIES.

Chemical Society.—An ordinary meeting of the Society was held on March 19, Mr. A. G. Vernon Harcourt, President, in the chair. After the usual formal business had been transacted, Mr. H. J. H. Fenton, M.A., read a paper on "The Constitution of a New Acid Resulting from the Oxidation of Tartaric Acid." By oxidation a ketone acid had been obtained from tartaric acid having a composition expressed by one of the two following formulæ:—

Crystalline compounds were obtained with phenyl-hydrazine and hydroxylamine, one definite compound with each, and these were the only ones to be obtained. With acetyl chloride and acetic anhydride, compounds	COOH CHOH CO COOH	COOH COH COH COOH
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stable in cold water had been produced. A solution of the second form and alkaline permanganate was decolorised at once. Racemic acid was isolated from this with hydrogen iodide. Dioxy-tartaric is first produced. With hydrogen bromide and acetic acid as solvent there is no change whatever, even after several weeks. With hydrogen bromide and ether as solvent the result is a body having the composition $C_4H_8(C_2H_5)_2$. It has no acid properties, and is a diethyl ester. It is quite unusual for such a body to be obtained from ether. When this body is placed in a dessicator over sulphuric acid it becomes liquid, and this question of liquefaction offers some difficulty in explaining. It first gains weight and then loses. When sealed up with hydrogen, however, it is perfectly stable. The second form easily gives anhydrides, and it is possible that this acid may belong to the maleic series. Intermediate products are formed (the acetic acid solvent) on heating— $C_4H_4O_6 + 2CH_3COOH - H_2O$.

Very little discussion followed the reading of this paper, Professor Armstrong merely saying that the subject was a difficult one to deal with. Professor Dunstan asked Mr. Fenton if he had tried solvents other than water in the dioxy-tartaric acid experiments, to which Mr. Fenton replied that other solvents had no action whatever. Too much or too little water would not do.

Specimens of the various substances Mr. Fenton had prepared were exhibited on the table.

Although three gentlemen contributed papers at this meeting, Mr. A. E. Tutton, of the Royal College of Science, practically monopolised the evening. His first paper was on "The Volume and Optical Relationships of the Potassium, Rubidium, and Caesium Salts of the Monoclinic Series of Double Sulphates, $R_2M(SO_4)_2 \cdot 6H_2O$," and this was immediately followed by two others intimately connected with the same subject, viz., "A Comparison of the Results of the Investigation of the Simple and Double Sulphates Containing Potassium, Rubidium, and Caesium," and "The Bearing of the Results of the Investigation of the Simple and Double Sulphates upon the Nature of the Crystal Element." This last paper was of a speculative nature. Mr. Tutton, it could easily be seen, is a thorough master of his subject. His clear delivery and lucidity of expression kept his audience at close attention to a subject which less ably handled must have bored unmercifully. He first of all explained the difficulty that had to be encountered in cutting section-plates, and took occasion to refer to the two instruments he had devised, which he had described to the Royal Society, one for grinding section-plates and prisms of crystals in any desired direction, and the other for producing monochromatic light of any desired wave length for investigating the optical properties of crystals. With the former of these two instruments he had cut hundreds of sections and not broken more than three or four. The author has for a number of years been working on the relationship of these crystalline salts from various points of view, and in the present instance, as in former investigations, he finds that the rubidium salts always, without exception, occupy a position between potassium and caesium, and invariably nearer the former than the latter; and one of his final conclusions is that the alkali metal R has a dominating influence in these results.

Mr. Barlow, whom Mr. Tutton mentioned as having contributed a paper to the British Association on the relationship of structure with optical properties, regretted his inability to join in the discussion, but expressed himself as highly pleased that the present papers went far to obliterate the supposed boundary line between chemistry and physics.

The President mentioned that some time ago he had been examining the double crystalline compounds of ferrous and ammonium chloride, and that his results had continually varied, although the crystals obtained were, so far as he could discover, perfect. He asked if Mr. Tutton could explain this.

Mr. W. J. Pope, on being asked to speak, said that no one who had not some practical acquaintance with the subject could realise the amount of work entailed in these investigations, and remarked that the selenates, $R_2M(SeO_4)_2 \cdot 6H_2O$, were not nearly so constant in their relationship as the salts under consideration.

Mr. Tutton briefly replied, and said his great endeavour had been to obtain irreproachable compounds for this work, and that it had even taken twelve months to get some of the crystals. Rubidium and caesium had a different molecular refraction from what had generally been supposed. The selenates and double selenates, he said, would be investigated next.

The last paper was on "The Hydriodides of Hydroxylamine," by Professor Dunstan, F.R.S., and Mr. Ernest Goulding. It was read by Professor Dunstan—a little too hurriedly, perhaps. By the action of methyl iodide on hydroxylamine a substance $(NH_2)OCH_3I$, was formed, a trimethyl compound of the base having the composition $N(CH_3)_3O \cdot HI$. There was also formed a hydriodide of hydroxylamine itself, represented by $NH_3O \cdot HI$. $(NH_3O)_2HI$ had also been obtained by the indirect method, and the authors had endeavoured to obtain them by the direct method (hydrogen iodide in water), but had not succeeded in getting the normal substance.

Among the following papers which were taken as read are one or two which would have been listened to with interest by pharmacists:—"An Analysis of the Water from the Dripping Well at Knaresborough, in Yorkshire," by B. A. Burrell. "Contributions to the Knowledge of Ethylic Aceto-Acetate, Part 1—Acetonilmalic Acid," by S. Ruhemann, M.A., Ph.D., and E. A. Tyler. "The Action of Lead Thiocyanate on the Chlorocarbonic Esters, Part 1—Carboxyethyl-thiocarbimide and its Derivatives," by R. E. Doran. "An Auxiliary Assay Balance," by R. Law. "Charas: the Resin of Indian Hemp," by J. B. Wood, M.A.; W. J. N. Spirey, M.A.; T. H. Easterfield, M.A.

Midland Chemists' Assistants' Association.—This Association met on Wednesday, March 18, Mr. H. Jessop in the chair, to hear a paper on—

"COD-LIVER OIL AND ITS EMULSIFICATION," BY P. C. ARBLASTER.

The cod-fish appears at Bergen, Norway, and farther north in the months of January and February, and is then caught in quantities of six to eight millions or more. Later, about March, the fish appears at Lofoden, where sometimes over eight millions are caught, yet later the fish go farther north to Finmark, where the catch is quite as large. About sixteen thousand fishermen congregate annually at Lofoden. The fecundity of the cod-fish is such that it has been estimated that if only one female fish escaped annually, and her eggs safely hatched, the species would be effectually preserved. This fact is less surprising when we recollect that the ovary of each female fish contains no less than nine million eggs.

As soon as possible after capture the fish are brought alive in a specially constructed tank to the shore, where they are sold to the tradesmen and manufacturers; or, what happens very seldom, the oil is extracted by the fishermen themselves on board.

There are five varieties of cod-liver oil, namely—

1. That extracted by means of steam or steam oil.
2. The ordinary medicinal oil, of a light yellow colour.
3. The oil of a dark yellow colour.
4. The brown medicinal oil.
5. The dark brown oil used by tanners and curriers to soften and preserve leather and skins.

1. *Steam Oil.*—In the preparation of this the livers are subjected to the action of steam in pans, pressed and transferred to closed lead cisterns, where the oil is left to deposit stearin and other impurities. After one or two months the clarified oil is bottled. Merchants draw off the oil at as low a temperature as possible to avoid stearin being afterwards deposited. This oil is almost water-white, and has very little taste or smell.

2. *The Light Yellow Oil* is prepared by allowing the livers to remain in heaps, and the oil runs out by itself. It is evident that through this exposure to the air, lasting some weeks, the oil gets somewhat rancid, and of course stronger to the taste and smell than the steam oil. Here as elsewhere the difference in the light yellow oils is due to the cleanliness observed and the casks used. Being prepared without heat, this oil contains very little stearin, and will stand a cold temperature better than the steam oil. Makers of high class oils always keep the oil for some time in ice houses to allow the olein, stearin, and palmitin to deposit.

3 and 4. These are the darker yellow and brown medicinal oils, and

are prepared by pressing the livers and subjecting them to a low heat. Dr. De Jongh's oil is of the fourth class.

5. *Curriers' Oil* is obtained by letting the livers ferment, heating and then subjecting to strong pressure.

Cod-liver oil contains, besides several glycerides, oleic, palmitic, and stearic acids, and free acetic and butyric acids. It also contains a number of inorganic substances, such as bromine, iodine, and sulphur, also combinations of phosphorus, besides sulphates and phosphates of lime, magnesia, and soda, with traces of ammonia. The attention of chemists has been called to the extremely small amount of iodine present. It forms at the utmost .01 per cent.

With regard to the emulsification of cod-liver oil, there are two methods in general use—the Continental and the English. The Continental method has the great merit of never failing to produce a good result if the proper proportions are used for forming the nucleus or base. The most satisfactory proportions are half as much water as of oil, and half as much gum as water. One part of finely powdered gum is placed in a dry mortar and 4 parts of oil are added and well stirred; when uniform, 2 parts of water are added, all at once, and upon stirring an emulsion is quickly made. Additional water may be added without risk of separation occurring.

When an emulsion begins to "crack" or separate it should not be thrown away. It may be restored by placing an additional quantity of gum in a mortar and gradually adding the cracked emulsion to it, triturating well after each addition, when the dispenser will generally have the satisfaction of seeing the uncombined oil disappear.

The principal qualities that a cod-liver oil emulsion should possess are: 1st, fine division of the oil globules; 2nd, non-separability, and, 3rd, palatability. The author said he should like to point out the many virtues of Irish moss, which contains about 70 per cent. of pectin or vegetable jelly and has extraordinary powers of emulsification. The only disadvantage in its use is the liability of its solution to ferment under certain conditions. This may be got over by the addition of 5 per cent. of alcohol to the bulk, or a small quantity of elixir saccharini, which acts as a powerful anti-ferment as well as a sweetening agent.

The formula he has found most satisfactory is:—

Irish Moss (picked)	1 drachm.
Cold Distilled Water.....	5 ounces.

Allow the water to stand on the moss for one hour, then boil for ten minutes, and strain through muslin, and make up to 5 ounces. To this in a bottle when nearly cold add:—

Cod-liver Oil	8 ounces.
Alcohol.....	1 ounce.
Water to make	16 ounces.
Flavouring	℥ss.

Use a quart bottle, shake the mucilage well round the sides, and then add the whole of the oil and agitate to form a nucleus; then add half the water and lastly the alcohol, flavouring, and as much water as required to make up the quantity.

Three samples were placed before the meeting, one made as above, one an acacia emulsion, and the third a so-called emulsion (in reality a soap) made by shaking together equal parts of cod-liver oil, freshly prepared, and lime water.

The author could not see why such a preparation as the third, properly flavoured, should not come into general use. The two drugs are separately prescribed largely for rickets and spinal diseases in children, also the presence of lime water would certainly help a delicate stomach to bear the oil.

To completely mask the odour and taste of cod-liver oil would be worth much gold to any man. The author had found oil of wintergreen very useful, though it is not much used in this country. He gave three formulæ, each of which is sufficient for one pint of the finished product:—

1.	Oil of wintergreen	} Of each 15 minims.
	Oil of sassafras	
2.	Oil of wintergreen	} Of each 20 minims.
	Oil of bitter almonds.....	
3.	Oil of neroli	} Of each 12 minims.
	Oil of bitter almonds.....	
	Oil of clove .....		2 minims.

Oil of lemon appears to be of little use. Elixir of saccharin has been found very useful in bringing out the taste of the flavourings used.

After a good discussion on the paper, a note was read by the Chairman (Mr. H. Jessop), in which he stated that liniments of aconite and belladonna of one-twelfth the strength had as powerful an action as the official preparations, if the affected part was first well bathed with hot water.

Chemists' Assistants' Association.—At the meeting held on the 19th inst., when Mr. E. W. Hill, the President, occupied the chair, a paper was read by Mr. C. Morley on "The Rational Pharmacist." At the outset the author remarked that the various suggestions that had at various times been advanced for the betterment of the pharmacist's lot had been, as a rule, wide of the mark, inasmuch as the position and claims of the rank and file of the craft had been ignored. He then went on to mention the attributes which, in his opinion, the rational pharmacist ought to possess, and the faults which retarded the possession of these. Obviously the foremost was manipulative skill as a dispenser, accompanied by a good scientific training, so that an absolute guarantee could be given to the public of the excellence of every article offered for sale, over the quality of which direct control can be levied. It is only by this means that the extreme competition of outside traders can be combatted, since those who buoyed themselves up with the hope that "anti-company" legislation would prove a panacea for all their ills would probably find that they had been clutching at a straw, and that the readjustment of the Companies Act would not be of very material benefit. The personal element was undoubtedly of paramount importance in the direction of an abstract acknowledgment by the public of the pharmacist's right to a higher scale of remuneration in his own particular branch, towards which there seems fortunately to be some leaning in spite of keen competition, and everyone should, in his own interest, submit to tests every drug and chemical which passes through his hands, of which he can be the guarantor. If everyone did this, an improved prospect would be opened out to apprentices who are often imperfectly trained, with a resulting changed complexion of the examination returns. At the present time it is altogether lamentable to notice the deficiency which is frequently apparent in the term-completed apprentice, who frequently has never packed a percolator or drawn sweet nitre or sal volatile. This state of things is of course frequently entirely the fault of the pupil himself, who neglects to avail himself of the opportunities presented to him, but should it happen that he is left to his own devices instead of being familiarised with the processes which he will be called upon to understand at the qualifying examination, he has at any rate the consolation of knowing that there is probably no calling where the perceptive faculties are more calculated to be developed and self-reliance thus engendered than in that of the pharmacist.

Mr. Morley proceeded to remark that the predominance of the professional over the commercial instinct has given rise to what may be called a racial fault, since chemists have not hitherto been enterprising enough to appreciate the need which exists for emancipating themselves from old ideas and views of conducting business, and meeting the demand which exists for general attractiveness of their shops and wares, accompanied by a reduction in the charges for ordinary business transactions in which little or no skill is involved. The pharmacist's present position seems to be that he cannot relinquish the professional feature of the calling, since that would constitute a retrograde act which must not be entertained. On the other hand, the commercial side must be cultivated if he wishes to exist. To this end the two instincts which are naturally inimical should be made to serve one another by securing the greatest amount of respect from clients by proving the possession of an all-round knowledge, which is the essence of personality and on which alone can be fixed any hope of remuneration higher than that of the ordinary trader.

In regard to the sale of poisons, Mr. Morley said his experience was that the regulations were not followed with the faithfulness they should be, and this state of things was obviously unfair to the man who implicitly obeys the law, since the public are somewhat impatient of restrictions. Another unsatisfactory feature was for the pharmacist to be charged ninepence for a proprietary medicine containing a poison in the first schedule, and having a retail price of one shilling as fixed by the maker on the label, thus assessing threepence as the sum of recompense for the trouble and formality of registering, to say nothing of the consideration of qualification. In spite of these annoyances there must be no infraction of the law in any detail if the pharmacist is to compare favourably with the unqualified man. In conclusion, reference was made to the lack of

cohesion existing amongst the craft, the opinion being expressed that no individual sacrifice was too great which could conduce to the perfect union which was desirable on every social, political, and ethical ground.

Liverpool Pharmaceutical Students' Society.—At the usual meeting of this Society, held under the presidency of Mr. T. S. Wokes in the University College, on Thursday evening, the 19th inst., the following gentlemen were elected members:—Messrs. H. G. Saunders and W. H. Saunders.

A dispensing difficulty was brought forward under "Miscellaneous Communications" by Mr. Pickering, who had come across it in making the following mixture:—

R Quininae Sulph.	gr. 40.
Acid. Nit. Mur. Dil.	ʒiiss.
Sp. Chlorof.	ʒii.
Sp. Ætheris Nit.	ʒvi.
Mist. Creosoti ad	ʒviii.

The addition of the spirit of nitrous ether caused the creosote to separate and to become a deep brown colour, though, as Mr. Pickering said, he had taken the trouble to neutralise the spirit with sodium bicarbonate previously.

Mr. H. Wyatt, jun., said the coloration was caused by the action of nitrous acid on the creosote, which, in common with most bodies of a phenolic origin, gave coloured nitro derivatives. It was a needless precaution using sodium bicarbonate to neutralise the spirit of nitrous ether before adding it to the other ingredients, as the diluted nitro-hydrochloric acid and the glacial acetic acid present would still cause evolution of nitrous acid.

The Secretary exhibited some balances and a sound containing a small electric light used for illuminating the bladder during surgical operations or examinations, sent by Messrs. Maw, of London, as an exhibit at the recently postponed conversazione of the Society.

Mr. H. Peirson then read a paper on—

"SOME WEAK POINTS IN OUR TRADE MORALITY."

Mr. Peirson said the weak points he wished to touch upon were those in chemists' dealings with customers, apprentices, and other chemists and manufacturers. It was perfectly honest to charge more for booking goods, and to charge less in proportion for larger quantities, but not to charge Mrs. A a lower price than Mrs. B simply because the first lady asks for the reduction and the other does not. Still, it is too true unfortunately that people who grumble most get best served. Business can only be conducted on thoroughly straight-forward lines when fixed prices are maintained, and in order to keep the business together those fixed lines must be reasonable ones. The charges for prescriptions should be arranged to scale, and this scale, when fixed upon, ought to be adhered to. Poverty of the customer or the purchase of large quantities of medicine at a time should alone justify a reduced rate. Advertisements and labels are a fruitful source of immorality. If the seller abstained from recommending his preparations in extravagant terms his customers would be more likely to believe what he said, and would hold him in considerably more respect.

One of the weakest points of the trade is the treatment of apprentices. In the "good old days" apprentices, from all accounts, seem to have had a harder time of it than their modern prototypes, but there is little doubt that they were really taught their business, and thus properly equipped for the battle of life. Nowadays the greater part of an apprentice's knowledge is picked up in his first situation as an assistant, at the expense of the chemist who engages him, and that individual, instead of getting a premium for teaching him, has to pay him a salary. No one has a right to take an apprentice unless he is in a position to impart to him practically the details of the business, and yet apprentices are taken by numbers of chemists who never even make a tincture, buy all their ointments from a wholesale house, their ready-made pills from a "pill builder," and in the same manner with liniments and compound powders. In Wales there are many businesses of this stamp where the chemist's business is associated with that of a grocer, a tobacconist and a confectioner, the day's takings averaging about one chemist's article in three, and about one prescription to every three hundred transactions. Such chemists have no right to take apprentices and pretend to teach them the business, and yet how often is that done! The reason is that an apprentice is a cheap assistant, enabling the chemist to do without a paid one, and possibly with one errand boy less. Even in the larger and better businesses how often do we

find that the major part of an apprentice's time instead of being spent in the laboratory assisting in the various operations is taken up in packing and putting up for stock proprietaries, so that he only learns one side of his business, and cannot become a good all-round man. If a chemist takes an apprentice he should do so with the firm intention of teaching him his business, and not simply leave the boy to pick up his knowledge in a haphazard fashion. A sharp boy will pick up a good deal of information, useful and otherwise, but everyone is not sharp, so that an apprentice should not be left to himself, but an effort be made on the part of the chemist to turn him into a good assistant. This can only be done in a chemist's business of the kind likely to give a youth a proper insight into varied pharmacy, therefore it lies with the chemist to say whether he can honestly and with justice to the boy and himself teach the business in his establishment or not. If he takes a youth when not in a position to provide him with the experience required, he does that youth a grave injustice.

The last point touched on by Mr. Peirson was chemists' conduct to one another and to manufacturers. There was, in his opinion, a lack of fellow feeling, professional honour, *esprit de corps*, or whatever one may like to term it, amongst chemists. In this respect they have much to learn from their medical friends, who are very careful to maintain each other's reputation and that of their profession, seldom being heard to say anything depreciatory of their brother practitioners, at any rate to their clients. It would be good if the same could be said of chemists. With reference to the conduct of chemists towards manufacturers, the question of imitation was touched upon. If a man has a new idea, brings it out, works it up by spending much time and trouble on it, and creates a demand by advertising it, is it right for anyone to imitate that article? The Patent Law recognises the principle that an inventor is entitled to the sole benefit of his invention for a certain space of time; but when this period has elapsed the idea becomes common property. The majority of special preparations sold are not patented, but, in a broad sense, the same principle applies. A new preparation is brought out, nothing but the genuine article is sold for some time until the demand is created, becomes general and permanent. Then, to use the simile, the patent expires and the article becomes public property. Mr. Peirson said he thought in such a case others were quite justified in making a similar preparation, provided they did not slavishly copy the original, so as to mislead customers into thinking they were buying the original article. They should try to improve upon such articles, not to imitate them, and, above all, they should not run down and decry another man's preparation so as to sell their own, for it is easy to point out the good points of one's own articles without making unfair reflections on those of other makers.

This was followed by a paper on—

"SOLUTION," BY R. C. COWLEY, PH. CH.

The author began by discussing the effect upon the development of chemistry exerted by Avogadro's enunciation of his famous law that equal volumes of different gases under similar conditions of temperature and pressure contain the same number of molecules. Thus in the case of water as steam we find that the formula is H_2O , two volumes of hydrogen and one of oxygen having united to form two volumes of gaseous water or steam, and that it is not simply equal parts of H and O. In the state of vapour water exists as simple molecules of H_2O , but in its liquid form at lower temperatures we are unable to say of how many atoms these molecules consist, the general view among chemists and physicists being that the formula is at least $8H_2O$, possibly greater. The number of atoms in the molecule of a solid may be more numerous than those in a liquid, and that probably accounts for the allotropic forms of many elements, such as carbon, sulphur, phosphorus, etc., which exhibit no difference in their densities when in a state of vapour. Sulphur, when heated to its boiling point, shows its molecule to consist of six atoms, when heated still higher this six-atom molecule dissociates, and a vapour density is obtained corresponding to a two-atom molecule. At low temperatures acetic acid has the formula for its vapour density $2(CH_3COOH)$; when the temperature is raised, dissociation results, and a formula, CH_3COOH , is obtained. From this we may conclude that simple molecules can only exist in a state of vapour at a high temperature or in dilute solutions.

In determining vapour densities we sometimes get substances only yielding a fractional part of the figure expected, $NH_4Cl, POCl_5, I_2$ for example. This is accounted for by the molecules splitting up or becoming dissociated into simpler ones. The V.D. of NH_4Cl should be compared with air 1.85, but really it is only 1.01, this being due to

the molecule on heating dissociating into molecules of $\text{NH}_3 + \text{HCl}$. This can be proved by the atmolysis of NH_4Cl vapour through a porous clay tube, the NH_3 being lighter than the HCl passes to the outer surface of the tube first, and will change the colour of red litmus paper to blue. The solution of solids in liquids and their crystallisation therefrom show a striking similarity to vaporisation. A solid introduced into a liquid in which it is soluble will diffuse itself evenly throughout the whole of the liquid, and the quantity so dissolved will depend on the nature of the salt or solid, the solvent and the temperature.

Just as vapours or gases exert an equal pressure on all sides of the containing vessel, so salts exert an equal pressure upon all parts of the liquid in which they are dissolved, the pressure being termed the osmotic pressure of the salt. This agrees entirely with the kinetic theory of gases and the teachings of Boyle and Charles' laws, so that we may really say that if the solvent were removed from a dilute solution of a salt, this salt would be left filling the same space in the state of gas at the same temperature and pressure as when the liquid solvent was there, and that the osmotic pressure will conform to the laws of Boyle and Charles. Applying Avogadro's law to dilute solutions Van t'Hoff lays down that "Isosmotic solutions at the same temperature and pressure will contain the same number of molecules." Liquids vary in their power of dissociation; those so far studied are water, benzene and acetic acid—the latter being especially active, whilst hydrocarbon liquids are only slightly so.

The measurement of the osmotic pressure of salts in solution presented serious difficulties which were finally overcome by Traube and Pfeffer, who employed precipitated membranes to separate the solution from the solvent. These "membranes" were made of porous clay saturated with cupric ferrocyanide, silicic acid, tannate of gelatin, and other bodies which have the power of preventing the solids diffusing from the solution into the solvent. To the end of a long glass tube is attached by the stem a thistle funnel with its mouth tied over with bladder or other membrane, and filled with a dilute solution, this funnel being kept immersed in the solvent. A current of the solvent passes into the funnel and rises in the tube until the osmotic pressure is equal to the hydrostatic pressure, which may be ascertained by means of a manometer.

A simple experiment may be performed showing the effect of osmotic pressure very well. Allow one drop of solution of $\text{K}_4\text{FeC}_6\text{N}_6$ to fall into a solution of CuSO_4 , a membrane of $\text{Cu}_2\text{FeC}_6\text{N}_6$ is formed round the drop, and as the water passes into the globule from the surrounding solution this globule becomes larger and finally bursts. This phenomenon plays an important part in the physiology of the plant, the cell-walls with their protoplasmic lining prevent the solids in solution in the cell-sap from passing outwards, but readily permit the passage of water. When plant-cells are treated with dilute solution of NaCl , water is absorbed from the cells by the salt solution, and plasmolysis or separation of the protoplasmic cell-lining is the result.

Pfeffer, by observing the osmotic pressure of solutions of cane sugar of various strengths, obtained figures proving that Boyle's law relating to gases applied equally to solids in dilute solutions, and that as the temperature increased the osmotic pressure became greater.

The law of Avogadro, as modified by Van t'Hoff from these experiments with solutions, now runs as follows: "Isosmotic solutions at the same temperature and pressure contain the same number of molecules, and this is the same as would be contained in the same volume of a true gas at the same temperature and pressure." From this one may deduce that isosmotic solutions will have the same freezing-point. As long as a hundred years ago Blagden observed that the strength of a solution bears a simple ratio to the freezing-point, a fact re-discovered by Rudolf in 1861, who showed that if various salts were made into solutions with the same solvent, in strengths equal to their molecular weights, they depressed the freezing-point to the same extent. This work was further confirmed by Raoult, who determined molecular weights by noticing the depression of the freezing-point caused by solution of a known weight of a solid in a liquid, of which the molecular depression was known. This in the case of water is 19; acetic acid, 39; and benzene, 49.

Aqueous solutions were thought to disagree with Avogadro's law, for substances in such solution exert a greater osmotic pressure than that calculated from their molecular weight, and the depression of the freezing-point is about twice as great. However, Arrhenius by his theory of electrolytic dissociation cleared up the matter, stating that the water dissociates a salt, a base, or an acid into its

electrolytic ions, which roam about the solution in a free state, keeping up the equilibrium, the aqueous solvent acting on solids so that their condition is analogous to that of bodies such as NH_4Cl , which in a state of vapour are dissociated and have abnormal vapour densities in consequence.

The electrical conductivity of solutions agrees with the above and is in direct ratio to the dissociation. An electrolyte, or body conducting electricity, in an aqueous solution is the body exhibiting irregularities both in osmotic pressure and in depression of the freezing-point, and if in any other solution it will not conduct it loses its abnormal behaviour.

Cane sugar in aqueous solution will not conduct electricity, and is therefore perfectly normal. As soon as an electrical current passes through a solution of an electrolyte, polarisation results, but the electrolyte is not decomposed, the respective ions merely rearrange themselves, the anions going towards the anode, the cations towards the cathode. The weakest electrical current can polarise an aqueous solution of an electrolyte, effectually showing that the ions are already dissociated. It certainly seems strange that in a solution of NaCl , the Na and Cl are roaming about in a free state, and yet there is no evidence of either free Na or free Cl . Clausius considered them not permanently at liberty, but continually combining and decomposing, but Ostwald proved that the ions in a solution are charged with a high degree of electricity, altering the chemical behaviour of the elements.

The ordinary analytical reactions of salts are directly affected by this electrolytic dissociation in aqueous solutions. AgNO_3 will precipitate chlorine from KCl , but not from chlorates, for the ions in the first case are K and Cl , but in the second K and ClO_3 . FeSO_4 gives a black precipitate with AmHS , but K_4Fcy does not, for the ions in the last case are K_4 and Fcy . These and other examples go a long way towards proving that dissociation is a necessary condition to chemical change.

Recapitulating these remarks the author summed up as follows:

- 1st. In the state of vapour, simple molecules may exist, and in many cases these simple molecules may, with further heat, dissociate into simpler particles.
- 2nd. In the solid and liquid states the molecules are complex, and these may be simplified by solution in various solvents.
- 3rd. Water as a solvent assumes an anomalous position, splitting up salts into still simpler particles analogous to molecules dissociated at high temperatures.
- 4th. It is only these dissociated molecules which are capable of conducting electricity, or are, in other words, electrolytes.
- 5th. All ordinary reactions in chemistry depend on this peculiar condition of the molecules concerned.

A discussion upon the two papers followed, in which the President, Mr. J. Smith, and others took part.

Western Chemists' Association (of London).—At a meeting of this Association, held on March 18, a discussion took place on the subject of prescribing proprietary medicines. The discussion was opened by Mr. Parker, and taken part in by Messrs. Martindale, Taplin, McEwan, Andrews, and the President. The following resolution was subsequently put and agreed to unanimously:—

That this meeting is of opinion that the practice of prescribing proprietary medicines is becoming so extensive as to be seriously injurious to the progress of pharmacy, and detrimental to the best interests of the medical profession, and considers it to be most desirable that all prescribers should adopt the practice of writing prescriptions without the name of any particular maker attached, so that they may be dispensed by any pharmacist from recognised and published formulæ.

It was also agreed to send copies of the resolution to the General Medical Council, the Council of the Pharmaceutical Society, and the medical and pharmaceutical press.

SNUFFS FOR HAY FEVER, COLD IN THE HEAD, ETC.—The following formulæ are taken from the *Amer. Med. Chir. Bulletin*:—

1. Cocaine hydrochlorate.....	1.8 gramme.
Morphine sulphate	83 "
Bismuth subnitrate	30.0 "
2. Cocaine hydrochlorate.....	1.8 "
Camphor	4.0 "
Bismuth subnitrate	30.0 "
3. Boric acid	20.0 "
Salol	6.0 "
Menthol	0.25 "
Cocaine hydrochlorate.....	0.06 "

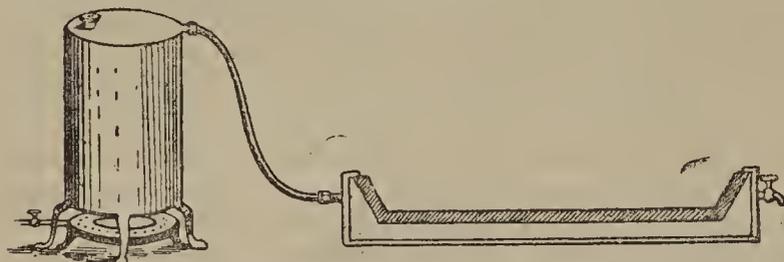
SCOTTISH NEWS.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION.—At a meeting held on Friday, March 20, Mr. J. Mackintosh Cameron, President, in the chair, an interesting lecture was given on—

“GRANULAR EFFERVESCING PREPARATIONS,” BY GEORGE LUNAN.

There are now four official granular effervescent preparations in the British Pharmacopœia, namely, citro-tartrate, phosphate and sulphate of sodium, and the sulphate of magnesium. Three of these are in the Addendum, 1890, and the growing popularity of these preparations assures further additions in the new B.P. It is not too much to say that caffeine and lithium preparations are most likely. We find the demand for granular effervescent preparations by prescription largely on the increase, and pharmacists must be prepared at short notice to dispense, if possible, variously medicated effervescent granules.

The apparatus which I use in my business consists of an ordinary photographic developing bath, jacketed with tin so as to form a hot plate. The cavity of the tin jacket is filled with steam generated in a small copper boiler heated by an ordinary bunsen gas stove. A metal pipe conveys the steam from the boiler to the cavity and there is an escape pipe at the other end of the steam jacket. By this means a suitable temperature is easily maintained, and the arrangement of a separate boiler works better than a water bath, or than directly applying the heat to the jacketed developing bath.



This is not offered as the acme of apparatus, nor is it put before you as an original idea, as, I believe, similar instruments for the same purpose are used all over the country. [A quantity of the mixed powders for granular effervescent citro-tartrate of sodium was then placed on the heated developing bath, and when the powders had become coherent into a mass, one half was rubbed through a sieve of one diameter of mesh, and the other half through a sieve of another diameter of mesh so as to have two quantities of granules of different sizes. The still moist granules were then returned to the hot bath and allowed to dry, the drying process being facilitated by turning the granules over occasionally.]

The demonstration induces various remarks. A necessary constituent is, of course, the citric acid, the water of crystallisation being liberated when heat is applied, and if the formula is properly adjusted this binds the powders into a suitably coherent mass, that can be granulated by pressing through a sieve of the desired size. As the medication varies so must the relative amount of citric and tartaric acid, so as to suit the medicament; thus a hydrous or deliquescent substance requires less of the former and more of the latter, and *vice versa* with an anhydrous hygroscopic ingredient. Yet the citric acid is not a *sine quid non*, for the U.S. Pharmacopœia has a semi-granular preparation made by damping the ingredients with alcohol, and so making a coherent mass suitable for granulating, actually dried and powdered. This, their caffeine preparation, has no citric acid for granulating purposes, yet it proves that where you have a medicament soluble in alcohol you can granulate without citric acid.

Heat.—The heat applied to a granule at any time should not exceed 100° C., otherwise you discolour the granule and drive off much of the carbonic acid gas. At the same time, for purposes of economy, a strong heat obviates the use of the official proportion of citric acid. Samples of cheap so-called citrate of magnesia contain a large percentage of sugar and tartaric acid, with a small percentage of citric acid. This was my experience when the prices of the two acids were not so nearly identical as to-day. It is a mistake to bake to the detriment of the medicament and the briskness of the effervescent draught.

Neutrality.—The theoretical usually slight acidity of the B.P. types of granules generally agrees with the practical. With substances such as citric and tartaric acids and bicarbonate of sodium

the variability is small, and a slight deficiency in the former is counterbalanced by the same in the latter. Theoretically the effervescent citro-tartrate of sodium contains about a half per cent. excess acidity, while the sulphate and phosphate of sodium preparations contain 1½ per cent., doubtless to give a pleasant sharpness to the draught, and in the latter instance to cover the mawkish saline taste. The effervescent magnesium sulphate contains one-tenth per cent. excess of acid. In granule-making the question of neutrality is important. In some cases it is necessary to make an exactly neutral granule if the therapeutic action is to be maintained. Take, for example, piperazine, which only acts in alkaline solution. It must be retained in its initial condition in the finished granule, not only by adjusting the basis of the formula so as to give, if anything, an alkaline reaction when decomposed, but the order of mixing must be strictly maintained to prevent it becoming neutralised by the acids. In this instance the piperazine must be first thoroughly mixed with the bicarbonate, and any predecomposition in the granule will take place between the acids and the latter, for which they have greater affinity. Pharmaceutically, too, the order of mixing has a great deal to do with the product. We invariably granulate piperazine without heat at all, having our formula so adjusted as to yield a coherent mass when simply mixed in the proper order. In this and in other instances of a similar type, with a little adjustment it is quite easy to avoid detrimental decomposition by heat.

Types of Granules.—The effervescent citro-tartrate of sodium affords a basis—not invariably as I have shown, however—suitable for medication where the quantity of medicament is small, such as citrate of caffeine, 2 grains to the drachm; antipyrin, 5 grains; iron carbonate, 5 grains; iron and arsenic, iron and quinine, and so on. Another type is the sulphate and phosphate of sodium and the sulphate of magnesium granules where the medicament forms 50 per cent., although ultimately, when dried, about 25 per cent. of the two former and 40 per cent. of the latter. These are naturally much less effervescent than the former type, although the sugar is entirely left out of the sodium salt preparations for this and physiological reasons. In the magnesium preparation the granule is overburdened with medicament and sugar, leaving only about 50 per cent. of available effervescent materials. I have something to remark regarding the size of granules of this type. There is, unfortunately, a demand for granules medicated with insoluble substances, such as euonymin, phenacetin, sulphonal, salicin, quinine salicylate and bismuth salts. Of course, these are neither elegant nor palatable, and in all cases should be pointed out to the prescriber as unsuitable modes of exhibition, excepting, perhaps, the bismuth salts, where the nascent carbonic acid would increase the effect. Even if permissible, in that case you have still to reckon on loss of medicament adhering to the glass or settling to the bottom. Non-volatile evaporable liquids can be mixed with the sugar, or, if not present, the bi-carbonate, and dried before being incorporated with the acids. I have in view such substances as lysidine. Powerful poisons, such as strychnine and arsenic can only be evenly diffused by adding to the sugar or bi-carbonate in solution and drying at a low temperature before mixing with acids. Two of the pharmacopœial granules—the sodium preparations—are without sugar for reasons already noted, and in many others not official in frequent demand, its presence is contra-indicated. True, a granule without sugar will always be less uniform unless sifted and made with a fine sieve, because the binding power of the sugar is absent, but against that I place the greater briskness which is always noticeable, the whole granule consisting of effervescent material. Saccharin has been used as a substitute for sugar in some cases.

There are cases where the use of sugar is prohibitive, and, from my own experience, I should say that far too much is used in granule making. In ordinary medicated granules it is not required either for palatability or to aid the granulating. It is impossible, however, to suggest a standard formula, as almost every substance requires a variation in the quantities of acids and bicarbonate to give the best result. The sugar in the official magnesium granule keeps it from readily disintegrating in water.

It is often more economical and gives a more effervescent draught to prepare the medicament with the decomposition of the granule, or if the carbonate from which the salt is produced is only slowly decomposed the reaction can be got over on the slab, and the product dried before incorporating with the granule mass. I have in view in the latter case such examples as the production of true citro-tartrate of magnesium, and in the former citro-tartrate of potassium and of lithium.

Size of Granules.—I use two sieves, a No. 12 and a No. 6, and find that, as far as I can understand, the former is most suitable

for granules with a large percentage of medicament or sugar, either or both, and a consequent small proportion of effervescing material and solubility. The small granule is more quickly decomposed in water, but it is also prone to caking and loss of carbonic acid in the stock bottle, unless dried until it is pulverulent. I do not think a No. 12 sieve suitable for many kinds, but no doubt it is the most suitable size for the types I have mentioned. It is, I think, a mistake, to sacrifice to uniformity or size of granule either the effervescence or colour of granules. Consequently, for all practical purposes, so that they may keep under varied weather and other conditions, a No. 6 or No. 9 sieve is the most suitable. These give an appreciable sized granule, which will keep for a longer period without change, protect oxidisable substances such as iron carbonate, retain the solubility of scale iron preparations, and mix and decompose easily in water without stirring. These are considerations which weigh with makers of granules, but they are not so important but that if desired by the prescriber the size can be made as he may wish without seriously interfering with the effect.

I have recommended principles which I believe are sound. It has not seemed to me necessary to give the minutiae of working details. That will come with little difficulty where there is a desire to make granules in an intelligent manner. The apparatus is simple, the means to your hands, the construction of formulæ contained in very simple equations; and to those who have not yet in their shops undertaken this manufacture I commend it as essentially a thing which ought to be done in the dispensing department, and not left in the hands of wholesale or special manufacturers.

The lecture gave rise to a discussion, taken part in by Messrs. Boa, Cameron, Cowie, Hill, McBain, and Sinclair, and on the motion of the Chairman a hearty vote of thanks was awarded to Mr. Lunan.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION.—The usual fortnightly meeting of this Association, the last ordinary meeting of the session, was held on the evening of Thursday, March 19. Mr. W. L. Currie presided, and there was a large attendance of members. "Coal and Coal Gas" was the subject of an exceedingly interesting paper read by Mr. Robert Tocher, M.P.S., Maybole. The author sketched in a lucid manner the natural history of coal, and gave information regarding the principal gold fields of the world. He calculates that our coal supply will last for two or three hundred years at the most, and that then the inhabitants of this country will have to import their coal from China or North America, where the coal area, almost untouched, is seventy times greater than ours. On the motion of Mr. Laing, a hearty vote of thanks was given to Mr. Tocher for his lecture, which was rendered all the more interesting from the experiments he made, and the coal specimens and beautiful fossils which he exhibited.

ABERDEEN AND NORTH OF SCOTLAND SOCIETY OF CHEMISTS AND DRUGGISTS.—A special meeting of this Society was held in the Adelphi Hotel on Monday evening, the 23rd inst. The President, Mr. Johnston, occupied the chair. In the course of the evening the Chairman presented Mr. A. Strachan, in the name of the Society, with a gold Albert and appendage, on the occasion of his retiring from the Secretaryship, and also a silver toast fork for Mrs. Strachan. He referred to the many years Mr. Strachan had been Secretary of this, the oldest Society of Chemists and Druggists in the country, to the great services he had rendered during that time to the Society and to pharmacy in the North, and more especially to the great amount of efficient work done during the Pharmaceutical Conference visit in 1885.—Mr. Strachan feelingly replied, and thanked the members for the gifts to himself and Mrs. Strachan. He noted the changes that had occurred in the Society since he became Secretary, dwelling more particularly on the facilities the young men enjoyed of preparing themselves for examinations since the opening of the rooms in Bridge Street. He complained of the conduct of those chemists outside the Society who were always ready to run it down. In some instances those men, when preparing for their examinations, were the most exacting as to their rights to the rooms, but so soon as they passed they turned their backs on the Society.—Toasts followed, and the company spent a very pleasant evening. The following is the inscription on the appendage:

"Presented to Alexander Strachan in appreciation of his services as Secretary to the Chemists and Druggists for nineteen years. Aberdeen, March, 1896."

Mr. John Cruickshank has been elected Honorary Secretary in succession to Mr. Strachan.

IRISH NEWS.

ACETYLENE GAS.—Mr. John R. Wigham, M.R.I.A., of Dublin, has devised and patented a very simple apparatus for the production of this gas, and also a burner for its combustion. The gas was at first supposed to be of a poisonous nature, but Dr. Walter Smith and others have shown that it is not so. Two important points in its favour are:—First. The simplicity of production from the calcium carbide—namely, the mere application of cold water. Second. Its great illuminating power, which is thirty times that of sixteen candle gas. These are points which will render it of great importance as a lighthouse illuminant, although the present price of the calcium carbide may retard its use in other directions.

A NEW PHARMACY has been opened at Callan, Co. Kilkenny, by Mr. Hugh Montgomery, L.P.S.I., lately with Mr. D'Arcy, M.P.S.I., The Medical Hall, Tipperary.

NOT MEDICINES.—The Local Government Board has objected to a large number of items in the tender form of the South Dublin Union, some being for medicines which might be compounded by the resident medical officer, while others were for stimulants under disguise.—Sir George Owens, M.D., M.P.S.I., one of the guardians, said he approved of the action of the Local Government Board.

PHARMACEUTICAL SOCIETY OF IRELAND.—A pharmaceutical assistants' examination will be held at Dublin on Monday, the 13th prox., and a registered druggist examination on Tuesday, the 14th idem. The 30th and 31st inst. will be the last days for lodging applications. If sufficient numbers apply, examinations will be held for above qualifications at Belfast on the same dates as in Dublin.

THE ANALYST to the Richmond Lunatic Asylum, Dublin, Dr. McWeeney, has resigned, finding the small salary of £30 per annum insufficient.

LEGAL REPORTS.

"PINK PILLS FOR PALE PEOPLE."

On Friday, March 13, Mr. Justice Chitty in the Chancery Division, made an order by consent in the action of Fulford *v.* Gratte and Son, restraining the defendants from selling pills as and for Dr. Williams's pink pills for pale people, which were manufactured and sold by the plaintiff. Mr. John Cutler, who appeared for the plaintiff, said the origin of the action was that an order for Dr. Williams's pills had been sent to the defendants in mistake. Mr. Stewart Smith, who appeared for the defendants, said his clients did manufacture pink pills for pale people, but did not represent them to be of the plaintiff's manufacture. Under the circumstances of the case he could not resist the granting of an injunction.

THE CHEMISTS' ASSOCIATION, LIMITED.

On Friday, March 13, application was made to Mr. Justice North, in the action of Fry *v.* The Chemists' Association, Limited, for the appointment of a receiver and manager. The plaintiff and his wife are holders of 80 debentures of £50 each out of a total issue of 120 of a certain series, which were a charge upon the whole of the Company's property, including uncalled capital, and interest being in arrear, it was asked that Mr. Walter Howard, an accountant, might be appointed receiver and manager. His Lordship made the order as asked, and directed that if the parties consented, the usual decree in a debenture-holder's action should be drawn up. The Company did not oppose the application, Mr. C. E. E. Jenkins appeared for the plaintiff, Mr. Pattulls for the Company.

PUBLICATIONS RECEIVED.

HANDWÖRTERBUCH DER PHARMACIE. Edited by A. BRESTOWSKI. Part 24. Price 2M. 40 Pf. (Vienna and Leipsic: Wilhelm Braumüller. 1895.)

THE MEDICAL ANNUAL AND PRACTITIONERS' INDEX. Pp. 732. Price 7s. 6d. net. (Bristol: John Wright and Co., Stone Bridge. 1896.) From the Publishers.

OBITUARY.

MORRIS.—On March 5, Caleb G. Morris, Chemist and Druggist, Llanfyrnach. (Aged 45.)

CORRESPONDENCE.

Several communications are unavoidably held over on account of want of space. Correspondents are requested to write as briefly as possible.

CASH CHEMISTS, EARLY CLOSING, ETC.

Sir,—There is no doubt that the dangerous rock ahead in the matter of the business of a chemist and druggist is the spread of these limited companies trading as cash chemists, stores, etc., and ruthlessly cutting down prices and profits. It is quite time the individual retail chemists of the country stood up as one man and tried by every means in their power to get the law altered. I have been contending for some years now with cutting grocers and stores, and every week have had to lower prices, and therefore profits, of something or other. I see that one drug company is opening a cutting retail branch in a manufacturing town a few miles from Liverpool, and advertising single articles at wholesale prices, etc., etc. Really, sir, wholesale prices won't keep the retail chemist; one can manage to get a living if patents only are cut, but when it comes to drugs and dispensing, the game is not worth the candle.

In the matter of early closing, I consider those chemists who are opposing it are very foolish. It is quite certain that if the public knew that the shops close at a certain time they would get what they want before that time. In the case of many chemists it may be necessary to have some arrangement whereby urgent cases occurring after closing may be dealt with, but this is a detail which could easily be arranged. I am often vexed and disgusted somewhat to find that after giving some thirteen or fourteen hours' attendance to business I have at the end of that time some £2 or £3 only, and often largely made up of cut patents. This business could just as easily have been done in two-thirds of the time, and would have been if the public knew that shops would close at such an hour. Why oppose early closing? I say support it by all the means in our power, we shall be all the better for the relief, and may have a chance of giving a little attention to some other pursuit, which shall be a change and perhaps a means of making a little more of the needful. I hope the Shops (Early Closing) Bill will soon become law, and that it will be promptly adopted throughout the country.

March 14, 1896.

HARASSED.

THE DECAY OF PRESCRIBING.

Sir,—Dr. Murrell's fear that prescribing is becoming a lost art is well founded. We have just dispensed the following prescriptions, written by consulting M.D.'s, which serve to show what may be expected in the future:—

- | | |
|---|----------|
| (1) ℞ Sanmetto (Od. Chem. Co.) | ʒij. |
| Aletus cordial (Rio Chem. Co.)..... | ʒij. |
| ℞ Hyoscyami | ʒss. |
| Aque ad. | ʒviij. |
| M. ʒss. three times a day in an equal quantity of water. | |
| (2) ℞ Liq. ext. coca (Squire) | ʒss. |
| Syr. cinch., alcoholic (Schacht) | ʒj. |
| Ft. guttæ. | |
| Take 40 drops twice a day in a wineglassful of water at 11 and 4. | |
| (3) ℞ Liq. Pepsin c. Eucalyptin (Schacht) | ʒi. |
| ℞ Nuc. Vom. | ʒviij. |
| Bismuth Salicylat. | gr. iij. |
| Menthol | gr. ʒ. |
| Ess. de Calisaya | ʒss. |
| Aque ad. | ʒviij. |
| M. ʒj. ter die ant. cibos. Mitte dos., viij. | |
| (4) ℞ Peptenzyme | gr. x. |
- One powder to be taken in a wineglassful of warm water directly after lunch and dinner.

Doubtless these are the production of much thought and profound judgment, but it is a pity these gentlemen should ignore the British Pharmacopœia. It will be observed that the writer of the last two prescriptions has an open mind, and selects his specialties from Great Britain, France, and America.

March 14, 1896.

PHARMACIST.

EARLY FLOWERS.

Sir,—It may be of interest to your readers to add a few notes on early flowers. *Petasites fragrans* and *Ruscus aculeatus* may be seen on any Christmas Day, but they were in flower as early as November 17. *Daphne laureola*, *Viola hirta* and *Vinca major* were noticed on December 22, while *Salix cinerea* (male) was out on January 2. Amongst a host of others, *Stellaria holostea* may be mentioned, on January 19; *Caltha palustris*, February 23; and *Adoxa moschatellina*, on March 9. *Lamium purpureum* and *Geranium robertianum* have been with us throughout the winter.

Ryde, March 20, 1896.

E. W. POLLARD.

UNDUE CUTTING IN THE RETAIL TRADE.

Sir,—The growing evil of under-cutting is a question which must deeply concern chemists of to-day, and any scheme formulated for its amelioration should have the deepest consideration. Your correspondent of the 29th inst. would do much to bias the public mind by the exposure of the constituents of patents, but the question of merit and demerit would be a delicate point for chemists to decide, for the efficacy of a medicine does not lie in its pecuniary value, but rather in its therapeutic effect. But there remains another point of action which is not often suggested, and I think could deal a death-blow to the invading army of quackery (so aptly termed the decoy duck of the cutter) into this country. Such a power can do infinitely more for us than legislation. I refer to the "profession." Could not a deputation from the Pharmaceutical Society appeal to the British Medical Association to consider the distressing effect quackery has on medicine and pharmacy? and if, as a result, the profession were to issue a manifesto to the country, declaring that such wholesale consumption of patent nostrums was undermining the constitutions of its subjects, people would be sacred and rely more on the legitimate sources for the alleviation of their ailments? Conversely, will our relationship there justify such an action? We have been taught that Pharmacy is Medicine's handmaid, but it seems as though we have the sack, since doctors supply their own drugs, surgical appliances, etc., etc., and even permit secret patent remedies to poach among the ingredients of their prescriptions.

Winchester, March 10, 1896.

S. G. BARTLETT.

SHOPS (EARLY CLOSING) BILL.

Sir,—The onslaught upon this Bill by "M.P.S." was certainly amusing, if not instructive. His principles seem to be entirely opposed to all legislation, since legislation, when really required, must prove detrimental to some, or it could not better others. His theory seems to be that two-thirds have no moral right to interfere with what concerns the proprietor, and the proprietor only. Then what right has a government to interfere with suicides, lotteries, etc.? Is it not equally for the individual welfare that legislation should be employed in this case? Would not the Act be a just and proper thing for the proprietors themselves?

What "M.P.S." calls the stale argument, "because others keep open," is no bogey, as thousands can testify. Two cases flash to my mind at once, where competing chemists are almost next door to each other. In such cases how can one close before the other closes? Individuality, however manly and moral, is a luxury that innumerable chemists cannot afford to carry out to the full. In such cases as I have cited, the correct thing to do, of course, is for the two to make friends and arrange a time of closing between them. But the Shops (Early Closing) Bill is the same principle fitted into shape for universal adoption, the one difference being that when the bulk of the inhabitants have found it advisable to arrange a certain hour for closing, their object shall not be frustrated by the dog-in-the-manger-like action of a few.

Let us look at the matter broadly and work for the general good—not for our own selfish ends. "M.P.S." acknowledges that the assistant ought to be protected, therefore I need not enter into that phase of the question. I have dealt with practically the only reasonable objection, and can but believe that the harm the Bill would do would be but a drop in the bucket as compared with the vast and unlimited blessing it would be to thousands upon thousands of our pale-faced and consumptive shop-keeping classes.

Rochester, March 17, 1896.

H. S. YOUNG.

ANSWERS.

"K."—See short note in Journal for August 17 last, page 149. We have a special article on the subject in hand, and hope to publish it shortly.

"SUBSCRIBER."—Your "coal gas" is peculiar in containing a constituent having the formula C_4H_2 . Please say what you mean by this, and we will endeavour to supply the information you require.

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs. Beeny, Bennett, Boyd, Christy, Clarke, Cocks, Cope, Cracknell, Dott, Ellinor, Fennell, Forrett, Gerrard, Grace, Grimble, Hardy, Hill, Ince, Jackson, James, Jones, Junor, Kent, Knight, Maiden, Netting, Pollard, Porter, Pretty, Rideal, Ross, Russell, Sawyer, Tame, Tanner, Thompson, Whitehead, Wretts.

ALCHEMY AND PHARMACY. THEIR MYSTERY AND ROMANCE.

BY C. J. S. THOMPSON.

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(Continued from page 43.)

CHAPTER VII.

The Art of Foretelling.

The theory of the art of foretelling by means of the stars, and casting horoscopes, was as follows:—The seven planets then known, including the sun, with the twelve figures of the Zodiac, comprised the astrological system. Each unit, or body, or nation was supposed to be governed or influenced by a certain star or constellation, and this power extended to all things connected with the person or nation. Thus, Saturn was supposed to influence life, sciences, and buildings; Jupiter—honour, wishes, and wealth; Mars—wars, persons, marriages, and quarrels; the Sun—hope, gain, and happiness; Venus—love and friendship; Mercury—fear, disease, debts, and commerce; the Moon—robberies, wounds, and dreams. The intrinsic quality was denoted by the planet. The Sun was regarded as favourable; Saturn, cold; Jupiter, temperate; Mars, ardent; Venus, fruitful; Mercury, inconstant; the Moon, melancholy. The days, colours, and metals also came under the same influences.

In casting a horoscope the astrologer had first to observe if the time was propitious, and what planet was dominant in the heavens. Then by means of calculations and diagrams, he would deduce the consequences from the position and bearing of the stars. The day was divided into four equal parts; the ascendant of the Sun, the middle of the sky, the descending of the Sun, and the lower part of the sky. These four parts of the day were sub-divided into twelve distinct parts, which were called the twelve houses of the Sun. It was of the greatest importance in drawing a horoscope to tell exactly in which "house" the star appeared. One can easily trace the connection of the influence attributed to the planets with the old Greek mythology, and it can hardly be wondered at, that the same system should have been brought to bear on medicine.

A favourite method of divination, especially with the sorcerers, was that of gazing into a beryl or crystal. For the proper performance of this ceremony a pure virgin or equally pure youth should be the gazer. The sorcerer having

repeated the necessary charms and adjurations with the invocation suitable to the spirits he wished to consult, the seer then looked into a large beryl or crystal, wherein he saw the answer represented either by types or by figures, and sometimes it is said he might hear the spirit speak to him.

Vallancey states, that in the Highlands of Scotland large crystals of somewhat oval shape were kept by the priests to work charms with, and that water poured on them was given to cattle as a preventive of disease. Dr. Dee was a famous conjuror with the crystal in the time of Queen Elizabeth.

Lilly describes these crystals as being the size of an orange, set in silver, surmounted with a cross, and engraved all round with the names of the angels Raphael, Gabriel, and Uriel.

Among other charms practised was Dactylomancy, which was performed by means of a ring suspended by a thread in the centre of an earthenware or metal pitcher. The ring which was supposed to have been made under the influence of a certain constellation, was swung from side to side of the vessel, and the sounds it made on touching, were taken as predictions and oracles.

The art of divination by fire was called Pyromancy, and was performed by allowing a certain body to burn, the smoke from which, by its density and colour, forecast the future. A favourite medium for consulting this oracle was by roasting a donkey's head on hot coals.

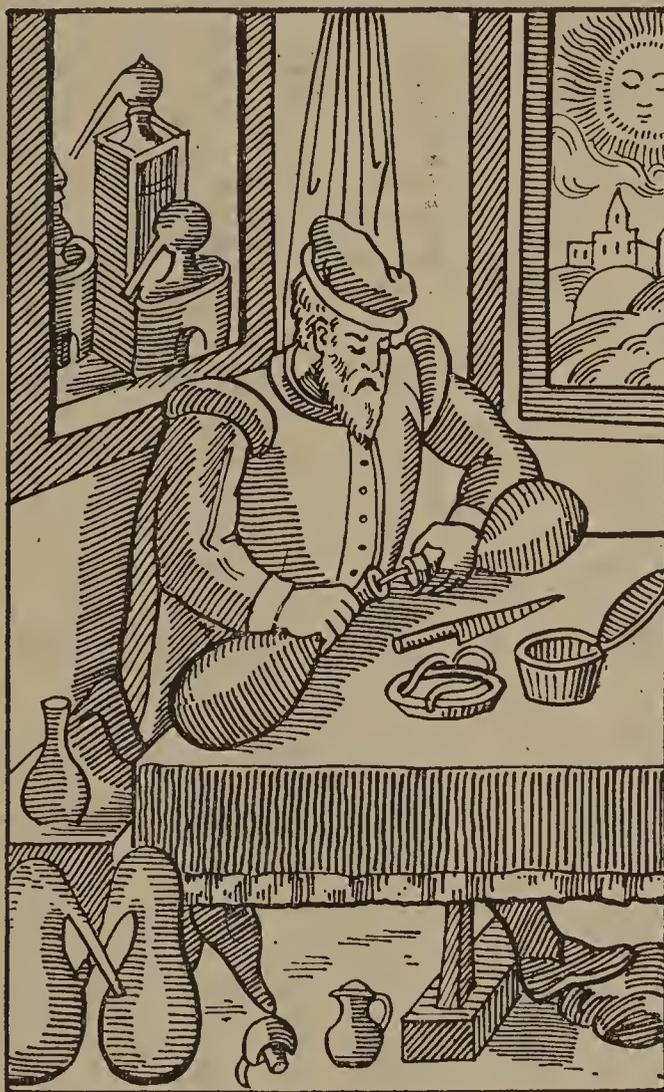
Popular belief in mediæval times attributed anything unusual, or beyond its understanding, to magic, so most of the early alchemists were believed to be magicians. Both Albertus Magnus and Roger Bacon were accused of dealing in the black arts, one having to resign his bishopric of Cologne and retire to a monastery, and the other to the Franciscan cells in Paris, to free

themselves from charges of their accusers.

The illustration represents an alchemist of the sixteenth century in an ante-room of his laboratory engaged in fixing a portion of his apparatus. On the table is his luting box and knife. Through one window a view of the laboratory with stills of varied size is obtained, while through the other the sun looks with becoming gravity on the operation.

The Symbols of the Alchemists.

In modern science chemists write their formulæ and work out their processes by means of symbols, so the alchemists used signs and hieroglyphics to represent the then known elements, metals, and other articles in common use. The



AN ALCHEMIST.

From an old engraving, dated 1576.

so-called elements—fire, air, water, earth—were represented by special symbols, here represented. The metals were supposed to be influenced by the planets to a certain degree, and were represented by the corresponding signs of the zodiac. Various other articles also had their symbols which served as a means of shorthand at a period when caligraphy was little known or employed.

Black Magic.

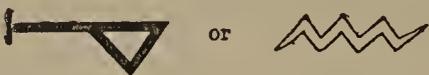
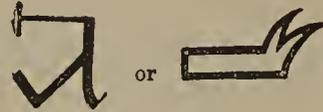
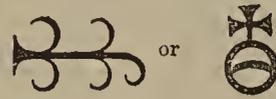
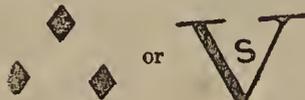
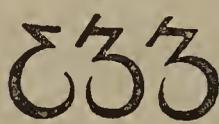
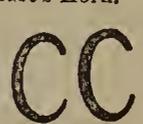
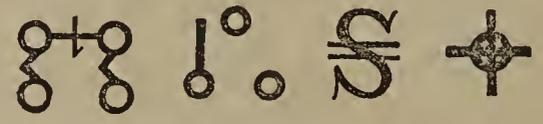
Geber, an alchemist of great repute in Arabia, was believed to possess the power of creating gold by magic. He was a man of undoubted learning and a skilful practitioner of his time, yet he was dubbed a sorcerer. He was said to possess all kinds of extraordinary implements, and, among others, a book of black magic which gave him full power over demons, and a brass idol which spoke oracles. On the day of his death, in 1003, the Evil One is supposed to have carried him off. James Iodoc, an Englishman, achieved considerable notoriety by claiming that he had succeeded in setting the demon in a magic ring. These men should not be confounded with the host of impostors and charlatans who simply preyed on the credulity of the people, but in those days all were judged alike. Most of the great mediæval alchemists dabbled in magic, and all agreed that to

obtain the intervention of Satan in human affairs, it was necessary to enter into a pact with him. Those who went to this length and became exponents of demonology or the black art, were initiated with much solemnity.

Taking the Oath.

The oath to the demon had to be pronounced in the centre of a circle traced upon the ground, accompanied by the offer of some pledge such as a garment of the novice. The edge of the circle was supposed to establish a mark which the demon could not cross. Heavy perfumes such as vervain, with burning incense and lighted tapers, always formed part of the ceremonial. The smoking brazier, which entered largely into the ritual, was believed to act upon the demons, and was constantly fed with all kinds of mysterious vegetable and animal substances, such as would produce most smoke being preferred. It is said that belladonna and opium were always used as ingredients of the incense, in order to produce a state of semi-stupor and influence the imagination.

The perfumes employed by the professors of the art had each a special significance, and were offered to some planet to form a link with the earth. A mixture of saffron, amber, musk, cloves, and

Fire. 	Air. 	Water. 	Earth. 				
Lead. 	Tin. 	Iron. 	Gold. 	Copper. 	Mercury. 	Silver. 	
Antimony. 	Arsenic. 	Aqua Vitæ. 	Borax. 	To Purify. 			
Cinnabar. 	Caput Mortuum. 	An Oil. 	Saltpetre. 	A Magnet. 			
Sal Ammoniac. 	Sulphur. 	Tartar. 	A Covered Pot. 	To Sublime. 	To Precipitate. 		
Spirit of Wine. 	Roman Symbol for denarius. 	To Digest. 	To Distil. 	Aqua Fortis. 			
Aqua Regalis. 	A Brick. 	To Calcine. 	Camphire. 	Ashes. 	Celusse. 		
Lime. 	Quicklime. 	Cinnabar. 	Wax. 	Hart's Horn. 			
A Crucible. 		Crystal. 	A Gum. 				
Steel Filings. 	Litharge. 	To Lute. 	Sublimated Mercury. 	Precipitated Mercury. 	N tre. 		
Realgal. 		Sand. 	Soap. 	Sal Alkali. 	Sal. Ammoniac. 		
Salt. 	Talc. 	Vinegar. 	Verdigris. 	Vitriol. 	Urine. 	Day. 	Night. 

incense, together with the brain of an eagle and the blood of a cock was offered to the Sun.

The white poppy and camphor burnt in the head of a frog, with the eyes of a bull, and the blood of a goose, were dedicated to the Moon; while to Mars, sulphur was mixed with hellebore and euphorbium, together with the blood of a black cat and the brain of a crow, and then burnt.

One can imagine the terrible odour that would be caused by burning such articles as these, and as the column of smoke ascended, the half-stupefied and scared spectator fancied he saw the forms of writhing demons in the air.

Very curious properties were attributed to certain articles when thrown on live coals. Thus, if thunder and rain were required, the liver of a chameleon was said to produce it; while the gall of a cuttlefish burnt with roses and aloe wood, was all that was necessary to induce an earthquake.

By burning coriander, parsley, hemlock, liquor of black poppy, giant fennel, red santal wood, and henbane, almost any number of demons could be raised. Sorcerers of this class were called tempest raisers.

With the witchcraft practised largely by women in mediæval times we have not much to do, although belief in its influence was widespread during the middle ages. To bewitch an individual was to cause him gradually to die a mysterious death.

The process commenced at first with great secrecy, by modelling a figure of the intended victim in wax or clay. This having been done a swallow was killed, and the heart placed under the right arm of the figure, and the liver under the left. The effigy was next pricked all over with new needles, each prick being accompanied by the most terrible imprecations against the victim.

Another method was to make the figure of earth taken from a graveyard and mixed with dead bones. Certain mystic signs were then inscribed on it, which were said eventually to cause the death of the victim. So general did the practice of witchcraft become, that no class of society was safe from accusation and suspicion, thousands perishing by the faggot and torture.

From the fourteenth to the sixteenth century supernatural beliefs exerted a great influence on the people. One of the most celebrated trials of the time was that of the Duchess of Gloucester, who was accused of bewitching Henry VI. It transpired at the trial that she had instructed a priest named

Bolingbroke, who practised necromancy, to bewitch the King, a sorceress named Marie Gardimain being also implicated. An effigy of the King in wax was discovered half melted in front of a fire of dry plants, which had been gathered by moonlight in a graveyard.

Bolingbroke, the necromancer, was hung, Gardimain burnt, and the Duchess of Gloucester condemned to imprisonment for life. The "evil eye" was another form of witchcraft, mostly practised by women. Visions or apparitions in the sky, foretelling some war or disaster, were firmly believed in by the Church, and caused great consternation. Fiery dragons appearing in the heavens were said to predict civil

war, and we also read of pigs bearing royal crowns, and gory stars, all of which were doubtless caused by ordinary phenomena not understood at that time.

In the accompanying illustration, the alchemist with uplifted torch, is repeating the specified incantation over the still, under which he has just kindled a fire, having commenced the preparation of the "Elixir of Life."

The appearance of the devil presiding at a sabbath or meeting of sorcerers is thus described by De Lancre: "He is seated in a black chair with a crown of black horns, two horns in his neck, and one on the forehead, which sheds light on the assembly, the hair bristling, the face pale and exhibiting signs of uneasiness, the eyes round, large and fully opened, inflamed and hideous, with a goat's beard. The neck and the rest of the body deformed, and in the shape of a man and a goat, the hands and the feet of a human being." The word witch is thought by some authorities to be derived from *chausaph*,

which means a user of pharmaceutic enchantments, or an applier of drugs to magical purposes.

Witches sent storms and barrenness, drowned children, brought on ague, could kill with evil eye, slay with lightning, pass through key-holes, ride through the air on broom-sticks, and perform many other weird and wondrous things.

"They were generally old blear-eyed wrinkled dames," says Scott, "ugly and crippled, frequently papists and sometimes atheists; of cross-grained tempers and cynical dispositions." They were often poisoners, and generally monomaniacs. Epilepsy and all diseases not understood by the physicians were set down to the influence of witches. They were said to make two covenants with the devil, one public and one private. Then the novices were



AN ALCHEMIST.

From an old engraving, dated 1576.

presented to the devil in person, and instructed to renounce the Christian faith, tread on the Cross, break the fasts, joining hands with Satan, paying him homage, and yielding him body and soul. Some witches sold themselves for a term of years, and some for ever; then they kissed the devil, and signed their bond with blood, and a banquet ended the meeting; their dances being accompanied with shouts of "Ha, ha! devil, devil! Dance here, dance here! Play here, play here! Sabbath, sabbath!" Before they departed the devil was said to give them philters and amulets. These women were usually hypochondriacs, often driven by despair and fortune to confess any charge made against them.

PHARMACEUTICAL SOCIETY

MEETING OF THE COUNCIL.

WEDNESDAY, APRIL 1, 1896.

Present:

MR. MICHAEL CARTEIGHE, PRESIDENT.

MR. JOHN HARRISON, VICE-PRESIDENT.

Messrs. Allen, Atkins, Bottle, Corder, Cross, Gostling, Grose, Hampson, Hills, Johnston, Martin, Martindale, Newsholme, Savory, Southall, and Warren.

The minutes of the last meeting were read and confirmed.

LETTER FROM MR. SCHACHT.

The SECRETARY then read the following letter:—

" March 26, 1896.

" 1, Windsor Terrace, Clifton.

" The President and Council of the Pharmaceutical Society of Great Britain.

" Gentlemen,—I beg to acknowledge the receipt of the resolution so kindly proposed by the President and supported by the Vice-President and the other members of the Council at its meeting in March.

" I esteem it the greatest compliment I have ever received, and though conscious that the terms therein employed are far too laudatory, I accept them gratefully as a measure of the feeling of personal attachment entertained for me by my late colleagues.

" Though no longer aspiring to the honour of membership of your Council, I beg to say I shall continue to feel a very deep interest in its proceedings and in all that concerns the interests of pharmacy.

" I have the honour to be,

" Gentlemen,

" Your very obedient servant,

" (Signed) G. F. SCHACHT."

NOMINATIONS FOR COUNCIL.

The Secretary reported that he had received twenty-four nominations to fill the fourteen vacant seats on the Council, and that the following eighteen nominees had declared their willingness to accept office if elected:—

Armitage, Nathaniel Newborn, 114, Tong Road, Armley, Leeds.

Bateson, Thomas, Stricklandgate, Kendal.

Campkin, Algernon Sidney, 11, Rose Crescent, Cambridge.

Carteighe, Michael, 180, New Bond Street, W.

Corder, Octavius, 31, London Street, Norwich.

Cross, William Gowen, Mardol, Shrewsbury.

Gostling, Thomas Preston, Linden House, Diss.

Harrison, John, 33, Bridge Street, Sunderland.

Hills, Walter, 225, Oxford Street, W.

Johnston, John, 45, Union Street, Aberdeen.

Martindale, William, 10, New Cavendish Street, W.

Newsholme, G. T. Wilkinson, 27, High Street, Sheffield.

Park, Charles James, 1, Mutley Plain, Plymouth.

Savory, Arthur Ledsam, 143, New Bond Street, W.

Storrar, David, 228, High Street, Kirkcaldy.

Symes, Charles, 14, Hardman Street, Liverpool.

Warren, William, 24, Russell Street, Covent Garden, W.C.

Wills, George Sampson V., 92, Croham Road, South Croydon.

The following six nominees had not expressed their willingness to accept office:—

Gravill, Edward Day, Jesmond House, Park Grove, Hull.

King, Horatio Alfred, Exchange Street, Norwich.

Martin, Nicholas Henry, Northumberland Road, Newcastle-on-Tyne.

Nichol, Anthony, 29, Bank Street, Carlisle.

Potter, Henry Arthur, 7, Raven Row, E.C.

Wilson, Harry, 146, High Street, Southampton.

NOMINATIONS FOR AUDITORS.

The Secretary also reported that he had received the following five nominations to fill the office of auditor, and that all the nominees had expressed their willingness to accept office if elected:—

Butt, Edward Northway, 77, Hamilton Terrace, N.W.

Lescher, Frank Harwood, 60, Bartholomew Close, E.C.

Stacey, Samuel Lloyd, 22, Great St. Helen's, E.C.

Umney, Charles, 50, Southwark Street, S.E.

Yates, Francis, 64, Park Street, Southwark, S.E.

FINANCE COMMITTEE.

The SECRETARY read the report of the Finance Committee, which recommended sundry accounts for payment, and stated that certain suggestions made by the auditors would receive attention.

The PRESIDENT (as Chairman of the Committee) moved the adoption of the report and recommendations. He said there was nothing special to refer to in the receipts, which mainly consisted of subscriptions and examination fees. The payments also were of the usual character. With regard to the Benevolent Fund, the receipts had been satisfactory, many members sending subscriptions with their subscription to the Society, and the local secretaries also having sent in a good many.

The report and recommendations were unanimously adopted.

ELECTION OF MEMBERS.

Pharmaceutical Chemists.

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

Lucas, Harry, Llandough. | Stoddart, James Geo. Young, Edinburgh.

Chemists and Druggists.

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

Allen, Henry, London.

Cuthbert, Ralph, Huddersfield.

Ferrier, David Hynd, Dundee.

Glass, William Stephen, Edinburgh.

Lawson, Andrew, Dundee.

McKinnon, Daniel John, Dundee.

Marley, William, Newcastle-on-Tyne.

Troake, Robert James, Bristol.

ELECTION OF ASSOCIATES IN BUSINESS.

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

Abbott, James, Glasgow.

Barnett, Charles, Cleethorpes.

Bartlett, Samuel George, Winchester.

Cran, Newell Burnett, Aberdeen.

Cruickshank, John, Aberdeen.

Cummings, Charles, Dundee.

Davidson, Robert, Hawick.

Doig, John Lyall, Dundee.

Duncan, Adam, Leith.

Duncan, Charles Tocher, Dundee.

Forsyth, John, Dundee.

Fraser, Charles, Edinburgh.

Good, John Thomas, Bristol.

Green, Alfred, Wakefield.

Griffiths, Henry Thomas, Bristol.

Hearnshaw, John William, Spalding.

Houston, Fred. J., New Whittington.

Irving, James, Newton Stewart.

Joseph, Leopold, Cardiff.

Lindsay, Robert McIntosh, Dundee.

Peebles, Thomas Smith, Lochee.

Robertson, John Wright, Dundee.

Spencer, Frederick, Stratford-on-Avon.

Taylor, Walter, Child's Hill.

Waddington, Alfred Henry, Bradford.

Young, James, Torquay.

The PRESIDENT drew attention to the fact that this list included no less than twelve members or associates in Dundee, who had been introduced to the Society by the exertions of Mr. Harvey, the Local Secretary.

ELECTION OF ASSOCIATES.

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

Minor Examination.

Bagnall, Percy, Ashton-under-Lyne.	Patrick, Christopher, Bradford.
Bowden, Harold, Patricroft.	Rollett, Harry, Lincoln.
Mitchell, David, Broxburn.	Smith, Walter, Fyvie.
Veitch, George Hutcheson, Glasgow.	

Modified Examination.

Llewellyn, Richard, Merthyr Tydfil.

ELECTION OF STUDENTS.

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

Flood, William Hall, Lec.	Pilcher, Daniel Garnett, Margate.
Gittins, Samuel Ernest, Oswestry.	Roberts, William Henry, Chester.
Jeffery, John A. Paynter, Gateshead.	Rogers, F. E., Bury St. Edmunds.
Lloyd, Hugh William, Bala.	Stephenson, James, Newark.
McHattie, James Reith, Edinburgh.	Underwood, Albert Henry, Ipswich.
Mason, Hugh, Bexley Heath.	Walton, Thomas Robert, Cardiff.
Neal, David Thomas, Waddon.	Williams, David, Carmarthen.
Nicholls, Theophilus Henry, London.	Wrather, Thomas Edward, Bewdley.

RESTORATION TO THE REGISTER.

The name of the following person, who had made the required declarations, and paid the restoration fee, was restored to the Register of Chemists and Druggists:—

Abington, Leonard Yates, High Street, Staplo Hill, near Bristol.

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

BENEVOLENT FUND COMMITTEE.

The report of this Committee included the recommendation of grants amounting to £57 in the following cases:—

The widow of a chemist and druggist, and former subscriber to the Fund. Is unable to support herself, and has no friends able to assist her. (Morecambe.)

The widow of a member. Has had previous grants amounting to £100. Is a hopeless invalid, and has no means. (Harrogate.)

The widow of an associate who died last year in an insolvent condition. She suffers from the effects of operation for cancer. (Wales.)

The widow of a chemist and druggist. Has had previous grants amounting to £60. Has been supporting herself in a situation, but has had to leave on account of ill-health. (London.)

The widow of chemist and druggist who had assistance from the Fund previous to his death. Applicant has also had a former grant. She is in feeble health, and her friends can only help her slightly. (Birmingham.)

The VICE-PRESIDENT, in moving the adoption of this report and its recommendations, said the Committee had before them eight cases for investigation yesterday. Of these they granted assistance to five, two were declined, and one deferred for further information. At first sight it might appear that the Committee had a partiality towards widows, but he could assure the Council that all the cases were dealt with on their merits, and the Committee were fully satisfied before arriving at their conclusions. In several cases where previous grants had been made the position of the applicants remained as acute as when they were formerly assisted, and he thought in one or two instances the aid they had been able to recommend was likely to prove exceptionally beneficial. In one of these, the applicant had got into a small business and was doing fairly well; but the premises she occupied being required for a bank, she had to leave. She had, however, thrown herself into the battle of life with much vigour, and she was now seeking to obtain a livelihood in another direction, and it was hoped good would result from the action of the Committee in helping her. Another case was a singularly unfortunate one. The husband, when called away, had left no direct provision for his family, for though he had insured his life, the office failed, and some investments he had made unfortunately proved worthless. In these circumstances he felt the help they were able to recommend would probably prove of a welcome character, besides proving the value of the Fund.

The report was then adopted.

LIBRARY, MUSEUM, SCHOOL, AND HOUSE COMMITTEE.

The SECRETARY read the report of this Committee. The preparation of the draft Annual Report had been referred to the President. A petition was presented from a number of students, asking for the use of a room for social intercourse. The consideration of this was deferred. The Committee recommended the addition of £25 per annum to the salary of the Librarian.

Library.

The report of the Librarian had been received, including the following particulars:—

	Attendance.	Total.	Highest.	Lowest.	Average.
February.....	{ Day	489	27	11	16
	{ Evening.....	214	18	7	11
Circulation of Books.	Total.	Town.	Country.	Carriage paid.	
February	199	111	88	£1 1s. 5 ¹ / ₂ d.	

Donations to the Library had been announced (*Phar. Journ.*, March 14, p. 207), and the Committee had directed that the usual letters of thanks be sent to the respective donors.

The Committee had recommended that the under-mentioned books be purchased:—

For the Library in London:—

- Cole, Methods of Microscopical Research, 1895.
- Glazebrook, Heat and Light, 1895.
- Newth, Inorganic Chemistry, 1895.
- Roscoe and Harden, Dalton's Atomic Theory.
- Scott, Structural Botany, 1894.
- Zeitschrift für physikalische Chemie.

Museum.

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

	Attendance.	Total.	Highest.	Lowest.	Average.
February ...	{ Day.....	606	39	12	24
	{ Evening.....	54	7	1	2

Donations to the Library had been received (*Pharm. Journ.* March 14, p. 207), and the Committee had directed that the usual letters of thanks be sent to the respective donors.

The PRESIDENT moved the adoption of the report and recommendations, which was carried unanimously.

REPORT OF THE GOVERNMENT VISITOR.

The SECRETARY read a letter from the Privy Council Office, enclosing the following report on the examinations by Dr. Stevenson:—

"Report on the Examinations held by the London Board of Examiners of the Pharmaceutical Society of Great Britain during the year ending March 31st, 1896.

"To the Lords of the Council.

"My Lords,—I have the honour to report for your information that during the year ending 31st March, 1896, I have attended twelve examinations of the London Board of Examiners of the Pharmaceutical Society of Great Britain.

First or Preliminary Examination.

	Numbers.	Percentages.
Candidates examined	1468	—
" who passed.....	708	48.2
" " failed	760	51.8
Failed in Latin.....	502	34.2
" English.....	451	30.7
" Arithmetic	670	45.6

"These statistics show no large variation from those of the preceding year. The examination is an easy one, but as it is not necessary to pass it before commencing pharmaceutical study, it is too commonly put off till the last moment, with lamentable results. The weakness in Latin and arithmetic of some of the candidates who even pass this examination manifests itself at the later and more important qualifying examination.

Minor Examination.

	Numbers.	Percentages.
Candidates examined	772	—
" who passed.....	220	28.5
" " failed	552	71.5

Failed in Chemistry	305	39.5
„ „ Materia Medica	42	5.4
„ „ Botany	79	10.2
„ „ Prescriptions	34	4.4
„ „ Pharmacy and Dispensing	212	27.5
„ „ obtaining aggregate number of marks for a pass	60	7.8

“The number of candidates who presented themselves for this, the qualifying examination, shows a marked decrease when compared with those who presented themselves during the preceding year (1002), and the proportion of failures is considerably increased. Of the failures in Chemistry, 265 out of the 305 were in Practical Chemistry, *i.e.*, in laboratory work—assuredly one of the most important portions of the work of the chemist and druggist.

“The examination in this work affords the best test of practical knowledge, and cannot be adequately prepared for except by actual work in the laboratory; and in this preparatory study large numbers of candidates show a lack of experience. So long as a course of laboratory instruction is not obligatory, so long will, I fear, these deficiencies be revealed by a large proportion of failures.

“Although but few candidates were rejected for inability to read prescriptions, defects in Latin, especially in Latin grammar, are very manifest in the majority of candidates.

“The standard demanded at this examination was, in my opinion, a fair one and the stringency of the practical examination in chemistry is commendable.

Major Examination.

Candidates examined	Numbers.	Percentages.
„ who passed	120	—
„ „ failed	54	45.0
„ „ failed	66	55.0
Failed in Chemistry and Physios	31	25.8
„ „ Materia Medica	20	16.7
„ „ Botany	14	11.7
„ „ Practical Work	4	3.3
„ „ obtaining aggregate number of marks for a pass	17	14.2

“There was an appreciable diminution in the numbers presenting themselves for this examination. Only about one-third of those who qualify by passing the Minor examination proceed to the higher diploma of pharmaceutical chemistry. The failures in the scientific subjects of this examination, chemistry, physics, and botany, were greater than in the preceding year.

“I am, my Lords,

“Your obedient servant,

“March 14th, 1896.”

“(Signed) THOS. STEVENSON.”

The PRESIDENT said the most striking point about this report was the observation with regard to the Preliminary examination. They had known of this weak spot for a long time, and many of their younger members, both in the north and south, had called attention to it at their meetings. It seemed to him that it would shortly become a matter of duty on the part of the Council to consider whether in the interests of those entering the trade the standard of the Preliminary might not be raised. It appeared that after twenty-eight years of compulsory powers, apprentices were still taken by chemists and druggists without having passed the examination, and those young men spent a large part of their time while in the shop in getting up one after another the three subjects of Latin, Arithmetic, and English. Anyone trained in that way must be at a great disadvantage in after life, and it would be really more merciful if the examination appeared on paper more stringent, so as to deter young people who really had no school knowledge worth speaking of from attempting to pass it. It might also be a question whether the fee for the examination should not be raised after at least a second failure. Certain facilities were now given for repeated attempts, and there seemed to be an idea that when once the fee had been paid there was a financial advantage in coming up time after time; but he had grave doubts whether the present system was a good one, and whether it would not be better to increase the fee after a second failure. The Preliminary examination was the finger-post at the entrance to the calling, and it was only right to say that the possession of a certain amount of money by the candidates, or their parents and guardians, was essential for the payment of fees and securing a sufficient amount of instruction. In his view the exaction of moderate but fair fees, not for the purpose of making money, but to check the perpetual attempts of young people of seventeen years or older to pass an examination for which they were not adequately prepared,

would be beneficial. At last night's meeting of the Committee he reported the case of a candidate about twenty-five years of age who had been up for the Preliminary examination sixteen times, and still failed. The Preliminary was a test of knowledge at a particular period of life, and it was quite a mistake for a young man of nineteen or twenty to take up the study of Latin if he had had no preliminary school preparation. It was not right for parents or guardians to apprentice their sons or wards to chemists and druggists until they had passed the examination, and it was not morally right for chemists to take apprentices under such circumstances.

Mr. ATKINS having expressed his obligations to the President for the remarks he had made on this subject, said he much feared they would not have the practical result they well deserved to have. This was a very old story. He supposed it was some five and twenty years ago that he ventured to express strong views on this very question, and he should like to hear whether there were any legal difficulties in the way of the Preliminary examination or its equivalent being made compulsory. Until such compulsion was brought to bear, he feared very little would be accomplished, and the exigencies of trade and the fierceness of modern competition seemed to him only to accentuate that feeling. Emphatically endorsing, as he did, the President's remarks as to the cruelty of launching unfortunate fellows into business without a realisation of the severity of the tests which would afterwards follow, he did hope that at no distant day some steps would be taken in the direction he had indicated. He was also, he might add, painfully struck with the reference by Dr. Stevenson to the failures reported upon by him.

Mr. CROSS said, as having for some time supervised Preliminary examinations, that he had often felt it his duty to look over the papers, and he could not fail to be struck with the want of intelligence displayed by not a few of the candidates. He did hope, therefore, if only in the interests of the youths themselves, some restraint would be put on the number of times candidates might sit for the Preliminary examination, it being perfectly hopeless that some of them could ever become qualified.

The PRESIDENT said he feared a considerable number of failures were due to the apparent simplicity of the examination and the prevalence of an idea that it was possible to pass tests for which no sufficient preparation had been made.

The report was then adopted.

THE COMPANIES BILL IN PARLIAMENT.

The SECRETARY read a letter, addressed to the President of the Pharmaceutical Society, from Mr. John Junor, Hon. Secretary of the Inverness Chemists' Association, stating that the Association intended to send a signed petition to the Member of Parliament for the Inverness Burghs (Sir R. B. Finlay, Solicitor-General for England) inviting him to use his influence, when the Companies Bill was presented to the House of Commons, to get a clause inserted which would benefit pharmacy. The Association noted with pleasure that the President and several other representatives had actively interested themselves in the attempt to remedy some of the grievances respecting company trading. Sir R. B. Finlay being an influential member of the Government, the Inverness Association thought the present opportunity should be grasped, be the results what they might, and the grievances presented in the form of a petition to the Solicitor-General, on similar lines to those set forth by the Pharmaceutical Society's Committee to the Board of Trade. What the Inverness Association desired was that the Society should forward a memorial embodying the statements applicable in petition form, so that they could get the signatures of the masters to the same. They anticipated about twenty signatures within Sir Robert's representation, and if they went a little outside it they might number about thirty. The Association was indebted to the Editor of the *Pharmaceutical Journal* for his courtesy and advice in the matter.

The PRESIDENT said of course there would be no difficulty in meeting the request of Mr. Junor when the proper time came for moving in the matter. It might be convenient both to some members of the Council and to others who took an interest in this subject to hear that the Companies Bill introduced into the House of Lords was in the same form as that drafted by a special committee, appointed when Mr. Bryce was at the Board of Trade. The result of the interview between the President of the Board of Trade and their “Watch Committee,” as it had been designated, was that representatives of medical and other bodies equally interested in the matter had held a long meeting in connection with another Department of the

Government, with a view of getting an amendment introduced into the Bill. He was not in a position, nor did he think it would be wise, to say what they were doing, but the Council should know that they were not relaxing their efforts in the way of moving as quickly as possible in the matter. The initial difficulty they had in dealing with the matter was that of finding language which would give them what they wanted without fettering the Board of Trade in what that authority called industries and businesses. This was essentially a business nation, and so enormous an amount of money was invested in companies trading legitimately as contrasted with what some thought illegitimately, that the Board of Trade hesitated to introduce the amendments this Society had suggested, thinking they were too wide and sweeping. They were now, however, in a position to get assistance from another Department of the Government, and he was happy to tell them that they might possibly also get some assistance in their future deliberations from the distinguished member of the medical profession who had just been selected as President of the Royal College of Physicians. He would only add that the Watch Committee would not relax its efforts in the matter.

In answer to questions from the Treasurer and Mr. Atkins, the PRESIDENT said he understood the Bill was introduced into the House of Lords by the Government, because it was thought that the technical and legal difficulties with which it bristled might be better met and dealt with in the Upper House than in the more purely business atmosphere of the House of Commons, and consequently that it might be more speedily pushed forward.

PRESCRIBING PROPRIETARY MEDICINES.

The SECRETARY read a letter received from the secretary of the Western Chemists' Association of London, enclosing the following resolution which was passed *nem. con.* at a meeting held on March 18:—"That this meeting of the Western Chemists' Association of London is of opinion that the practice of prescribing proprietary medicines is becoming so extensive as to be seriously injurious to the progress of pharmacy and detrimental to the best interests of the medical profession, and considers it to be most desirable that all prescribers should adopt the practice of writing prescriptions without the name of any particular maker attached so that they may be dispensed by any chemist from recognised formulæ."

It was resolved that the resolution be referred to the General Purposes Committee for consideration.

EARLY CLOSING.

The SECRETARY said he had received from Mr. J. Anderson Russell, Secretary of the Glasgow and West of Scotland Pharmaceutical Association, a copy of a letter which had been sent to Sir John Lubbock, as follows:—

"Sir,—The Council of this Association desires to congratulate you upon progress made with Bill for Early Closing of Shops, and desires at the same time to draw your attention to circumstances connected with shops for the sale of drugs in Glasgow and the West of Scotland. In this city the majority of drug shops are the property of doctors who are the occupiers of the premises, and in many towns throughout the West the same statement applies, though it is believed the district is peculiar in this respect. There are also drug shops kept open by persons who are neither chemists nor doctors. Though many speak of these as 'chemists' shops,' and of persons engaged in them, though unregistered, as 'chemists,' these terms in any legal enactment would not apply to them, unless that were specifically stated, because the definition of the term 'chemist' extends only to persons registered under the Pharmacy Acts. It appears to be only fair that whatever conditions by legal enactment are made to apply to the keeping open of chemists' shops should be made to apply equally to all shops kept open for the sale of drugs and medicinal preparations.

"I am yours faithfully,
" (Signed) J. ANDERSON RUSSELL."

LEGAL PROCEEDINGS IN SCOTLAND.

The following letter had been received from the Glasgow and West of Scotland Pharmaceutical Association:—

"26th March, 1896.

"Sir,—Will you kindly submit the following communication to your Council:—
"We the members of the Glasgow and West of Scotland Pharmaceutical Association urge upon the Council of the Pharmaceutical Society of Great Britain the advisability of directing the attention of the Home Office to the

manner in which the Pharmacy Acts are represented in the Scottish Law Courts. In our opinion the Pharmaceutical Society, to which the enforcement of these Acts has been entrusted, is unduly hampered in its administration, and its purpose in prosecuting offenders is misrepresented by the Judges, so that the public sympathies are abused; and convictions against offenders are not represented by the Bench in a manner calculated to prevent further offences, or to give due significance to the fact that the law has been infringed. These circumstances are subversive of a due regard for the observance of the law and wanting in the spirit of equity.

"We particularly cite the following trials:—

"1st.—On October 23rd, at Dundee, before Sheriff-Substitute Campbell Smith in the case of the Pharmaceutical Society *v.* Stewart, and also on the 25th, *v.* Finlayson.

"2nd.—On October 26th, at Edinburgh, before the Lord Justice Clerk, Lord Young, and Lord Trayner in the appeal cases, the Pharmaceutical Society *v.* Turnbull, and *v.* Hume.

"3rd.—On December 16th, at Glasgow, before Sheriff Fyfe in the case of the Pharmaceutical Society *v.* Kerr.

"From these cases it will be seen that the comments made and the modified penalties inflicted are calculated to negative the good effects sought to be produced by securing convictions.

"We regard amendment of the Pharmacy Acts as being urgently needed, but while they remain on the Statute Book we look to seeing them enforced in legal equity, with a view to the attainment of that at which they are aimed.

"I am,
"Yours faithfully,
"J. ANDERSON RUSSELL,
"Secretary."

The communication was referred to the General Purposes Committee.

THE CONSTITUTION OF THE SOCIETY.

The SECRETARY read the following letter, which had been received from the Local Secretary in a large city, who did not desire his name to be published:—

"I wish your Council would take early steps to remove the inequalities of relations of members and associates of the Society. I have before expressed to you the belief, and I hold the opinion more strongly now than ever, that we shall never have pharmacists a united body till they are equal in qualification and in every other respect.

"To the ambitious and able pharmacist, as to everyone else, all honours in life are open, and if he desires to be marked beyond his fellows he should find his honours outside his profession. If he does not, and if he tries to distinguish himself from them by saying 'I am a better chemist and druggist than my neighbours, because I have passed an examination which he has not passed,' then he must not be surprised, and has no right to complain if his despised neighbour leaves him alone in his glory.

"Given a united body, the members equal in every respect, divide it into grades with different honours, rights, and privileges, and the body will at once disintegrate.

"The Council ought to realise by now that in the future it is likely they will have associates only as the backbone of the body. I speak thus strongly on this matter because of my experiences in collecting subscriptions, which I find a very hard and thankless task.

"I can assure you it is not through any respect or love for the Pharmaceutical Society that thirteen out of the eighteen qualified chemists in this town subscribe to the Society, and sixteen of them to the Benevolent Fund, but this is a standard which I can see will be quite impossible to maintain unless the associate is treated more liberally. Raising the status of associate to that of member is not in my way of thinking the goal, but it is a decided step in the right way, and is perhaps as much as could be looked for as a start, and would on its initiation bring in a number of members."

Mr. WARREN said he expressed some doubts at the annual meeting two years ago as to the wisdom of passing any measure which did not ensure a majority of pharmaceutical chemists, and though he had not spoken on the subject since, time and consideration had convinced him that nothing but the cordial co-operation of all qualified to practise pharmacy would be adequate to the work they wanted to do. He did not think the time when they had so many enemies was the time to give a half-hearted reception to their friends. In their social excursions they often met gentlemen who would do great service to the Society and be an honour to the Council, whom they regretted to find were not eligible to a seat there; but

he could conceive nothing more likely to give life and energy to the Council than to have a number of capable men eager and qualified to serve the Society upon it. He had felt the deepening of interest in the corporate welfare, which even a brief experience brought with it, and such as he hoped would be retained long afterwards. He trusted that whatever they went to Parliament for, they would achieve this object.

Mr. CORDER agreed with Mr. Warren, and with the views expressed in the letter from the local secretary.

The VICE-PRESIDENT moved that the letter be referred to the Law and Parliamentary Committee for consideration. It opened a very wide question on which his opinions were pretty well known, but the letter came from a gentleman who, he understood, had been very zealous and successful in enrolling members, and was certainly worth careful consideration.

Mr. WARREN seconded the motion, which was carried unanimously.

RESIGNATION OF PROFESSOR DUNSTAN.

The following letter, dated from the Research Laboratory of the Society, March 30, 1896, was read by the Secretary:—

"Dear Mr. President,—Having accepted the appointment of Director of the Department of Scientific and Technical Research of the Imperial Institute, I must ask the Council of the Pharmaceutical Society to accept my resignation of the professorship of chemistry and directorship of the Research Laboratory.

"I make this request with many feelings of regret at the termination of my official relationship to the Pharmaceutical Society, with which I have been intimately connected, as student and teacher, during a period of nearly twenty years.

"In looking back I have the satisfaction of realising that during this time a number of important improvements in the educational arrangements of the Society have been made by the Council, in the initiation of which I have been glad to take a prominent part.

"I beg that you will convey to the Council my sense of indebtedness for the kindness and consideration they have so often shown me and my desire in the future to render any assistance that may be in my power in furthering the educational and scientific work of the Society.

"I am, dear Mr. President,

"Yours very faithfully,

"WYNDHAM R. DUNSTAN.

"MICHAEL CARTEIGHE, Esq.,

"President of the Pharmaceutical Society of Great Britain."

The PRESIDENT said this was the first time in his experience that he had had to announce the resignation of a professor or lecturer. He proposed to ask the Council to accept the resignation, and to suggest to Professor Dunstan that it should date from the 1st of October, which he hoped might be arranged without difficulty. He would move the following resolution, which he suggested should be forwarded to Professor Dunstan:—

"That this Council, in accepting the resignation of Professor Dunstan, desires to record its appreciation of the services which, as Professor of Chemistry in the Society's School and Director of the Society's Research Laboratory, he has rendered to the Council in assisting to increase the efficiency of the educational and scientific work of the Society."

When the Research Laboratory was founded he pointed out that it was part of the educational advantages which ought to belong to such an institution, and he had been surprised since then to find in how many other places research laboratories had been founded on similar lines. Whatever differences of opinion there might be as to the character of the work done there—whether it was too purely scientific, and not so much in touch with what some called practical pharmacy as it might have been, he could not help saying that the mere fact that Professor Dunstan had been asked to take this position at the Imperial Institute, which had received annual grants of a considerable amount from the Commissioners of the Exhibition of 1851 for this purpose, and to undertake the organisation of a research laboratory, which would deal not only with the chemistry and pharmacology of drugs, but of the whole of the vegetable products of the colonies and of India, indicated that those in authority felt that the experience he had gained in their institution and the ability he possessed pointed him out as the right man for the position. He believed that if Professor Dunstan were properly supported in the new sphere to which he was removing he would be able to render important services to science. The work he would have to do would be on a much larger scale than he has had the

opportunity of undertaking hitherto, and he would really have to build up a scientific department dealing with all the vegetable products of the colonies and of India—dyes and so forth. If he succeeded as he had done in their institution in encouraging his co-workers and pupils, and creating in them an enthusiasm for original work, he thought they would have reason to congratulate themselves on the fact that one of their professors had been appointed the first director of this important scientific institution. He understood the contemplated work would include the examination of drugs, and it might be that later on they would find it convenient to be in touch with Professor Dunstan and his colleagues, and that they on their side should be in touch with the work of this Society, which possibly later on might be asked to assist with advice in certain branches of research work in which the Pharmaceutical Society had special advantages. Whether this should be so or not, he wished Professor Dunstan, who was still a young man, every success in this new enterprise, both on public and on personal grounds. He believed it was intended eventually to make this scientific department a very big concern, and he had no doubt Professor Dunstan would find there abundant scope for his activity and his unwearied ability and industry.

Mr. HAMPSON seconded the motion with much pleasure, and hoped Professor Dunstan's future career would be both brilliant and successful.

Mr. HILLS desired to bear testimony after twenty years' experience to the marked ability and exceptional industry displayed by Professor Dunstan. He congratulated him on this new appointment and on the honours he had already attained, and had no doubt that further marks of distinction awaited him.

Mr. MARTIN also desired to join in congratulating both Professor Dunstan and the Imperial Institute on the appointment. He had felt it his duty to criticise some of the work in connection with the Research Laboratory, as not being sufficiently connected with pharmacognosy and pharmacy, but in this new sphere the work he had already done would be of service, and he would find a wide field for his energies. He wished him personally every possible success, and a great and brilliant future for the laboratory over which he was to preside.

The resolution was carried unanimously.

The PRESIDENT then moved:—

"That it be referred to the General Purposes Committee to consider and report (a) as to what steps should be taken to fill the vacancy caused by the retirement of Professor Dunstan, and (b) to consider generally the relations of the Society to its educational work and to the School of the Society."

The resolution was seconded by the Vice-President, and carried unanimously.

GENERAL PURPOSES COMMITTEE.

The portion of the report of this Committee dealing with the School of Pharmacy prize examinations having been read, the President moved that upon it the following awards be made:—

Practical Chemistry.

Bronze Medal..... George Senter.
Certificates of Honour { John Arthur Dewhirst.
Francis Underwood Stamp.

Chemistry and Physics.

Bronze Medal..... George Senter.
Certificates of Honour { Harold Wilson.
James Hamerton.

Botany.

Bronze Medal..... John Arthur Dewhirst.
Certificates of Honour { Francis Underwood Stamp.
William Neale Ellis.

Materia Medica.

Bronze Medal..... George Senter.
Certificate of Honour John Arthur Dewhirst.

Pharmacy and Practical Pharmacy.

Bronze Medal..... Harold Wilson.

The proposition was unanimously agreed to.

The Council then went into Committee to hear and consider the report of the General Purposes Committee so far as it referred to legal proceedings.

On resuming, the report and recommendations of the Committee were adopted, and special resolutions were passed authorising the Registrar to institute proceedings against certain persons for breaches of the Pharmacy Acts.

SCHOOL OF PHARMACY

PRIZE EXAMINATION QUESTIONS.

Session 1895-96.

(Continued from page 252.)

CHEMISTRY.

PROFESSOR DUNSTAN.

Friday, March 27.—11 a.m. to 2 p.m.

- Describe the preparation and chief properties of the chlorides of phosphorus. Explain the action of water on each.
- Describe and explain the action of concentrated sulphuric acid on each of the following substances:—Sodium chloride, bromide and iodide, hydrogen sulphide, sulphur, carbon, and alcohol.
- What is the chief ore of mercury? How is the metal obtained from it and purified?
- Briefly describe the chief properties of arsenic, antimony, and bismuth. How are these elements classified?
- Calculate the latent heat of steam from the following data:—
Weight of copper calorimeter, 80 grammes.
" " calorimeter and water, 180 grammes.
" " calorimeter, water, and condensed steam, 198.42 grammes.
Initial temperature of water, 10° C.
Final temperature of water, 80° C.
Specific heat of copper, 0.092.
- Write a short account of the phenomena of diffusion of gases and liquids.

MAJOR EXAMINATION QUESTIONS.

CHEMISTRY.

March 31, 1896.—10 a.m. to 1 p.m.

[Six questions only are to be attempted.]

- Mention any instances you are acquainted with of the synthesis of hydrocarbons from bodies containing a smaller number of carbon atoms.
- How would you propose to separate the elements copper, arsenic, antimony, and tin? Indicate by equations the reactions upon which the method of separation is founded.
- Give a clear and full account of how you would prove that the molecular formula of ethylene is C_2H_4 .
- How can the following substances be obtained:—Potassium hypophosphite, sodium metaphosphate, silicon chloride, perchloric acid, metastannic acid, hypochlorous anhydride?
- What is the acetylene theory of the luminosity of flame, and upon what experimental evidence does it rest?
- Indicate several different methods by which ethylamine could be obtained from ethyl alcohol.
- Show how the specific heat of an element in the solid state can be approximately calculated from a knowledge of the specific heat of one of its compounds.
- Compare the principal reactions into which acetone and acetaldehyde respectively enter.
- Describe carefully how you would prepare ortho- and para-nitrophenol from phenol, and how you would separate these two nitro-compounds from each other.

PHYSICS.

March 31, 1896.—2 to 5 p.m.

[Six Questions only to be attempted.]

- Describe the methods employed for the liquefaction of gases. What is the explanation of the fact that the gases formerly known as "permanent" have only recently been liquefied?
- What is the law of diffusion of gases? Describe the method by which this law was determined. How may it be shown by means of gaseous diffusion that ammonium chloride is dissociated by heat?
- Explain the following statement:—"The atomic weight of a solid element is that quantity which at any given temperature contains the same amount of heat as seven parts of solid lithium at the same temperature."
- What is meant by the dew-point, and how is it determined?
- Describe the phenomenon of double refraction. Explain the principles that account for it.

6. Describe the construction of a reflecting telescope, and show how its action depends on the laws of reflection.

7. How is the electrical resistance of a metallic wire determined? What relations exist between the resistance, length, and diameter of the wire?

8. Describe how magnetic declination and magnetic inclination are determined. What are isogonic and isoclinic lines?

9. Describe the construction and action of lightning conductors. On what principles do their action depend?

A Paper.*

BOTANY AND MATERIA MEDICA.

Wednesday, April 1.—10 a.m. to 1 p.m.

- What do you understand by a natural system of classification of plants? Point out its advantages over the artificial system of Linnæus. Illustrate your answer, as far as you can, by references to British Plants.
- Describe in detail two aberrant genera of the natural order *Scrophulariaceæ* and point out how they differ from the type of this family.
- Give some account of the manner in which plants reach to the external stimulus of light.
- What is *Jalap*? What substances are frequently found as substitutes for it, and how would you recognise the genuine drug? Briefly describe a method of estimating the different resins it contains.
- Enumerate the chief mydriatic alkaloids. From what plants and from what parts of such plants are they severally obtained?

B Paper.*

BOTANY AND MATERIA MEDICA.

Wednesday, April 1, 1896.—2 to 5 p.m.

- Give a general outline of the system of classification of plants proposed by De Candolle, and point out the chief characters in which its subdivisions are based.
- Write a general account of the natural order *Ranunculaceæ*, and illustrate by reference to British genera the various forms of flowers which are met with in this family. Give the floral formula of each genus mentioned.
- Give a clear account of the formation, function, and manner of occurrence of starch in plants.
- What active constituents are yielded by *Podophyllum peltatum*? Describe their preparation and mode of separation. From what part of the plant are they obtained?
- Enumerate the fixed oils which are the most important pharmaceutically. From what sources are they severally obtained? Give an account of the preparation of one of them, and state to what constituents its medicinal properties are due.

B Paper.*

PRACTICAL BOTANY AND MATERIA MEDICA.

Wednesday, April 1.—10 a.m. to 1 p.m.

- Write a concise description of A, and illustrate your account of its structure by means of microscopic preparations. Leave diagrammatic sketches of it, and not more than two sections, mounted in glycerine.
- Describe in technical language the flower provided, and refer it to its natural order, giving your reasons. Draw its floral diagram.
- Identify the leaf B, and demonstrate its histological peculiarities.

A Paper.*

PRACTICAL BOTANY AND MATERIA MEDICA.

Wednesday, April 1.—2 to 5 p.m.

- Write a concise description of C, and illustrate your account of its structure by means of microscopic preparations. Leave diagrammatic sketches of it, and not more than two sections, mounted in glycerine.
- Describe in technical language the flower provided, and refer it to its natural order, giving your reasons. Draw its floral diagram.
- Cut such sections of the leaf D as will exhibit any histological peculiarities which are of assistance in the recognition of the drug. Explain your preparation from this point of view.

* Part of the candidates received the papers A, A, and the remainder had the papers B, B.

RECENT WORK ON THE LIQUEFACTION OF GASES.

Professor Dewar's lecture at the Royal Institution, on March 27, was about "Further Researches on Liquid Air," and attracted an audience which filled the theatre to its utmost capacity. The Professor remarked at the outset that on previous occasions he had devoted attention mainly to the optical and electrical properties of liquid air, and it was now his intention to treat more fully of the production of low temperatures and the difficulties encountered in approaching the temperature of absolute zero. The question of low temperature results was, he said, a question of technique pure and simple, and all the advances which he had made in the required direction had been obtained by modifying the apparatus used in such a manner that the heat of the surrounding atmosphere was excluded as far as possible. A diagram of the apparatus in use at the Royal Institution ten years ago was shown, and contrasted with that now used, and it was pointed out that the disastrous results obtained with the former were mainly attributable to the fact that it was constructed on too theoretical lines. On the other hand, the fact was strongly emphasised that the principles of the production of extremely low temperatures by means of regeneration was involved in both forms of apparatus, the principle of which owed its conception in the first instance to Sir William Siemens. The vessels now used by Professor Dewar exclude 95 per cent. of the heat of the surrounding atmosphere, which would otherwise affect the cooling liquid by convection and radiation. This is accomplished by using highly exhausted vacuum vessels immersed in others containing liquid air.

Professor Dewar devoted a considerable proportion of time to carrying out experiments, the majority of which were quite novel. The first was familiar enough, and consisted in breaking the vacuum of one of the glass test tubes in which a quantity of liquid air had been placed. When this was done the liquid, formerly quiescent, began to boil very rapidly. Afterwards, the direct liquefaction of air was shown. The liquefaction of the oxides of nitrogen, NO_2 , N_2O_5 , N_2O_4 , was then demonstrated, the gases being contained in glass globes, which were rubbed with a sponge pad that had been soaked in liquid oxygen, and so cooled. A similar experiment to this was one in which bromine were introduced into a vessel which had been previously rendered vacuum, and in which a cavity was blown in the top to allow of liquid oxygen being placed therein. When this was done, the whole of the bromine was deposited in the form of red crystals around the cooled portion of the globe, the red fumes entirely disappearing. After removing the cooling agent the crystals reassumed the vaporous condition. The boiling point of oxygen, -184°C ., was shown by immersing a thermo-couplet and noting the deflection on a galvanometer scale. An apparatus was also shown by means of which two samples of air can be liquefied by means of contact with air that has previously been liquefied.

Professor Dewar passed on to the consideration of regenerators in the liquefaction of hydrogen. In the first of these a silver tube was arranged in the form of a coil, and it was shown that so long as this part was not exposed to the action of the cooling gases issuing from the minute, needle-like orifice of the tube, there was no appearance of liquefaction, but when the silver coil was inserted into the vessel, and the expanded air passed over the coils, a liquid jet very soon appeared. Passing on to more elaborate experiments, one was shown in which a jet of liquefied oxygen so reduced the temperature below that of the critical point of oxygen in a tube that the latter was seen to fill up with liquid oxygen supplied from a bottle in which it was under a pressure of about forty atmospheres.

Next followed a description of the method found to give the most satisfactory results in the liquefaction of hydrogen. The basis of this is the reduction of the temperature of a gas by means of forced expansion through a needle point aperture under high pressure. This process usually reduces the jet to the condition of a fine spray of liquid, but in the case of hydrogen various precautions connected with the regenerative principle have to be observed in order to obtain successful results. The advantages of copper coils for the purpose of easily obtaining liquefied gases were dwelt on, and in this connection a striking experiment was shown. A quantity of liquid oxygen was placed in a vacuum vessel, into which was inserted a copper coil fitted with a minute hole at the bottom. Then hydrogen, which had been previously cooled by liquid carbonic acid and liquid air, was blown through the oxygen in the tube, and the oxygen, after a few moments, became converted into a dense opaque solid mass.

NOTES AND QUERIES.

CANTHARIDES HAIR LOTION.

There are many formulæ for a cantharides hair lotion made on a similar plan to the prescription you quote—

R Tr. cantharidis	5iiss.
Ol. olivæ	3iiss.
Ess. stephanotis	ʒxx.
Aqua calcis	ad ʒx.

M. ft. lotio pro capitis.

The oil and lime water are shaken together to form an extemporaneous linimentum calcis. It is not stable, but is kept in suspension by adding a solution of white Castile soap, in the proportion of 1 drachm to a fluid ounce of the whole lotion—

Soap Solution.

Saponis duri	grs. 40.
Aquæ destillat.	ʒi.

M. leni calore; filter and use cold.

The spirit should be added last. [*Reply to "Calcis."*]

DEODORISED PARAFFIN OIL.

You will hardly succeed in deodorising ordinary paraffin oil without much trouble. There is a so-called odourless oil in the market, and you can prepare a very good article by thinning down vaseline oil with light petroleum spirit. A few drops of citronella or cassia oil will cover the slight odour of this. [*Reply to W. T. P.*]

PEARL-COATING PILLS.

The insolubility of these is generally due to a coat of impermeable varnish being applied first before the pearl coating is used. With a little practice you will get good results with the following method:—Moisten the pills, which must be perfectly dry and hard, with just sufficient of a mixture of mucilage of acacia, 1 drachm; syrup, 1 drachm; water, 5 drachms; rectified spirit, 1 drachm. Use for coating the following powder:—Finest French chalk, 6 drachms; rice starch, 2 drachms. Coat in the ordinary way in a round vessel, and finally burnish in another tin without any powder. Take great care not to add too much of the moistening liquid at first, yet enough to evenly damp the pills. [*Reply to W. T. P.*]

COPAIBA IN PILLS.

To dispense the following prescription:—

R Copaibæ Balsam	grs. 250.
Magnes. Calc. Levis	grs. 18.

M. ft. Massa in pil. 60.

Carefully evaporate the balsam on a slab to about 100 grains, to which, while still hot, add the light calcined magnesia. An excellent pill mass is the result. Rapid manipulation is required. [*Reply to C. T. Duncan.*]

COOLING POWDERS.

We cannot give any information as to the composition of proprietary articles. As a non-aperient cooling powder you may give 4 grains of potassium nitrate with 1 grain of powdered sugar. [*Reply to Pharmacist.*]

COMPOSITION POWDER AND ESSENCE.

The original formula for the powder is: Powdered bayberry bark, 4 ozs.; powdered *Pinus canadensis* bark, 2 ozs.; powdered ginger, 2 ozs.; powdered capsicum, $\frac{1}{4}$ oz.; powdered cloves, $\frac{1}{4}$ oz. The essence is made by percolating the above with a menstruum of 1 part of proof spirit to 2 parts of water, so that every ounce of powder may give 4 fluid ounces of percolate. [*Reply to Pharmacist.*]

HOUSEHOLD AMMONIA.

Strong solution of ammonia, 5 ozs.; yellow soap, 2 ozs.; pearl-ashes, 1 oz.; distilled water, 3 pints. Dissolve the soap in the water, made warm; add the pearlash, and when nearly cold, the ammonia. Keep well corked. [*Reply to P.E.L.*]

TO RELIEVE PAIN IN EXPOSED TOOTH PULP.

Solution of cocaine hydrochlorate (4 per cent.), 20 parts; oil of sassafras, 30 parts; carbolic acid, 50 parts. Shake the bottle before using [*Journ. Brit. Dent. Assoc., xvii., 127.*]

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THE COUNCIL MEETING.

At the Council meeting on Wednesday, a letter from Mr. SCHACHT was read, acknowledging the compliment paid to him by the resolution passed at the last meeting.

The Secretary reported that he had received twenty-four nominations for the Council election, and that out of the number eighteen had declared their willingness to become candidates for the fourteen vacant seats. One retiring member of Council does not offer himself for re-election, and the additional candidates are MESSRS. ARMITAGE, of Leeds; BATESON, of Kendal; CAMPKIN, of Cambridge; PARK, of Plymouth; and SYMES, of Liverpool.

The nominations for the office of auditors did not introduce any alteration, and all the nominees have expressed their willingness to accept office.

In moving the adoption of the report of the Finance Committee, the PRESIDENT stated that the receipts consisted chiefly of subscriptions and examination fees, while the payments were of the usual nature. The receipts on account of the Benevolent Fund have been satisfactory, both from members and local secretaries.

The additions to the Society comprise ten members, thirty-four associates, and sixteen students.

On the recommendation of the Benevolent Fund Committee, grants amounting to fifty-seven pounds were authorised. The Vice-President in moving the adoption of the report instanced the benefit conferred by the Fund.

The report of the Library, Museum, School and House Committee, in addition to the usual details, mentioned a request made by students for the use of a room for social intercourse, the consideration of which is deferred.

The report of the Government Visitor of examinations received from the Privy Council Office was read, and will be found at page 265. In reference to it, the PRESIDENT called attention to the remarks on the Preliminary examination, and suggested that in response to the representations received it would be the duty of the Council to consider whether the standard of this examination should not be raised. Owing to the fact that apprentices are still taken by chemists and druggists without having first passed the Preliminary examination, many of them are placed at a great disadvantage in after-life when they discover that they have not been properly prepared for obtaining qualification in the calling they have entered upon.

Mr. ATKINS, in expressing his obligation to the PRESIDENT for his remarks, said that he feared they would not have much practical effect unless the passing of the Preliminary examination were made a compulsory condition of apprenticeship, and he hoped steps would be taken in that direction before long. Mr. CROSS referred to his experience in the supervision of the Preliminary examination as having afforded evidence that it is hopeless for some of the candidates to become qualified.

A letter relating to the Companies Bill now before Parliament, and addressed to the PRESIDENT, by Mr. JOHN JUNOR, the Honorary Secretary of the Inverness Chemists' Association was read. It stated that the Association intends to invite SIR R. B. FINLAY, as member for the Inverness Burghs, to use his influence in getting a clause inserted which would benefit pharmacy, and requested that a suitably prepared memorial should be forwarded for the purpose in view. The PRESIDENT mentioned that the Watch Committee has had an interview with another department of the Government, and that there is now a possibility of getting assistance in that quarter as well as from the new President of the College of Physicians.

The subject of prescribing proprietary medicines was raised by the reading of a letter from the Western Chemists' Association of London, enclosing a resolution passed at a meeting of that body last month. The matter was referred to the General Purposes Committee for consideration.

A copy of a letter addressed to SIR JOHN LUBBOCK by the Secretary of the Glasgow and West of Scotland Pharmaceutical Association, on the subject of early closing, was read. Another letter from that Association related to the recent decisions by Scottish Courts in prosecutions under the Pharmacy Act. The Association considers that the administration of the Act by the Pharmaceutical Society is unduly hampered in a manner subversive of due regard for the observance of the law.

A letter was read from the local secretary of a large city, pointing out the desirability of removing the inequalities in the position of members and associates of the Society, and urging that legal qualification under the Pharmacy Act, 1868, should constitute eligibility for membership of the Society. In reference to this letter, Mr. WARREN said that since the time when he expressed doubts as to the wisdom of the course suggested, further consideration had led him to a conviction that it is necessary to offer every inducement for increasing interest in the Society, and for bringing into it all capable and qualified men willing to serve it. On the motion of the Vice-President, seconded by Mr. WARREN, the letter was referred to the General Purposes Committee.

In a letter addressed to the PRESIDENT, Professor DUNSTAN requested the Council to accept his resignation in consequence of his appointment as Director of the Department of Scientific and Technical Research of the Imperial Institute. On the motion of the PRESIDENT, seconded by the Treasurer, a resolution was passed accepting the resignation of Professor DUNSTAN, and expressing appreciation of his services as Professor of Chemistry in the Society's School and Director of the Research Laboratory. Mr. HILLS and Mr. MARTIN joined in congratulating Professor DUNSTAN and the Imperial Institute on the appointment, and in the expression of wishes for his future success. It was then resolved that the General Purposes Committee should consider what steps should be taken to fill the vacancy caused by the retirement of Professor DUNSTAN and, generally,

the relations of the Society to its educational work, and to the School of Pharmacy.

The report of the General Purposes Committee gave the results of the examinations for school prizes (see p. 268), and the several awards were confirmed. After the portion of the report relating to legal proceedings had been considered in committee, it was resolved that the Registrar should institute proceedings in the cases to which the recommendation of the Committee related.

DR. STEVENSON'S REPORT.

THE Government Visitor's reports to the Privy Council on the examinations of the Pharmaceutical Society are always interesting documents, inasmuch as they furnish an absolutely independent and impartial view of the value of the pharmaceutical qualification, and the educational standard of those who obtain that qualification. The report presented to the Council on Wednesday on the examinations during the year ending March 31 (*vide* p. 265) is specially worthy of attention, though it is somewhat humiliating reading. In it the Government Visitor once more revives the impeachment of the First examination. Speaking of that examination Dr. STEVENSON says it is an easy one. "But," he continues, "as it is not necessary to pass it before commencing pharmaceutical study, it is too commonly put off till the last moment with lamentable results. The weakness in Latin and arithmetic of some of the candidates who even pass the examination manifests itself at the later and more important qualifying examination."

Comments of similar purport have been contained in former reports, and the present reiteration seems to imply an absence of any effort to remedy the evil so often adverted to. With the expression of opinion as to the practical worthlessness of the preliminary test adhered to by the Pharmaceutical executive, the duty of the Government Visitor terminates; and the Department to which he reports has little or no concern with the number of unprepared candidates presenting themselves for the Minor examination, beyond seeing in the public interest that the process of elimination in the examination room is sufficiently effective to reject incompetence. It is to the Pharmaceutical Society, therefore, that the warning would seem to be principally addressed.

It is not a matter of indifference to those who claim to have the highest interests of the pharmaceutical calling at heart that the Society should officially continue to recognise persons of little knowledge and no mental training as eligible for entry to the Minor examination, and little doubt can be entertained of the opinion held by thoughtful members of the calling. Indeed, there appears to be ample reason for supposing that the strictures of Dr. STEVENSON are not only well founded, but that a good many interested persons are fully alive to the fact. The First examination, however, still preserves its modest triumvirate of subjects, whilst the mildness of that "rule of three" has passed into the category of proverbial truisms. The Medical Council has erased it from the list of examinations received *pro tanto* in lieu of the medical preliminary, and it is regarded as a veritable pariah among professional entrance examinations—of no caste, despised and rejected. Yet the Pharmaceutical Society's First examination, slighted though it be, proves too difficult for 51.8 per cent. of potential pharmacists to pass at the first attempt, and it must further be borne in mind that the absence of any means of compelling youths to satisfy so modest a test of scholastic acquirement

before entering upon apprenticeship or pupilage makes the examination still less potent to effect the object for which it was called into being.

THE CULTIVATION OF SAFFRON IN KASHMIR.

ACCORDING to Mr. W. R. LAWRENCE, the latest authority on Kashmir (*vide* pp. 131, 227, and 275), the saffron of that country is famous for its bouquet, and is in great request both as a condiment and as a pigment for the "forehead marks" of the Hindoos. The cultivation of the saffron plant in the district is peculiar, and the industry is an ancient one, the saffron crop formerly constituting a large source of revenue to the State, but during a famine the people in their distress ate the bulbs, and although seed has been imported and land is set apart every year for the production of more seed, the process of reproduction is so slow that the deficiency is yet far from being made up. At the present time cultivation is extending as fast as the local method of seed-production will allow, but, as may be expected, this method is very slow, and out of a total measured area of 4527 acres of saffron land, only 132 acres were found to be actually under cultivation with the saffron crocus. For seed purposes a particular aspect and sloping ground are required, and it is three years before the bulbs can be planted out in the small square plots where the plants are grown. These plots are allowed to remain fallow for eight years, without the application of manure or water. In July or August the surface of the ground is gently broken up a few times, and a neat trench dug on all four sides to ensure the proper drainage of the plot. The bulbs, being then planted, will live for fourteen years without any interference by the cultivator, new bulbs being produced and the old ones rotting away. About the middle of October the flowers appear, and at harvest time the whole flowers are picked, put into bags, and then taken to the farmer, who keeps one bag for himself and gives the other to the cultivator.

The flowers having been dried in the sun, the next step is to remove the three long stigmata from each, this operation being performed by hand. The stigma has a reddish orange tip, and the first quality saffron (*shahi zafran*) consists of such tips only. The rest of the stigma is white, and is collected separately, and sold under the name of *mongla*. The flowers are next beaten lightly with sticks and winnowed, after which the whole mass is thrown into water, when the petals swim and the other parts of the flowers sink. The sunken matter (*nival*) is collected, and the parts which rise to the surface are dried, again beaten with sticks, and once more plunged into water, this process being repeated three times, and the *nival* each time becoming poorer. By mixing *nival* of the third stage with that of the first a kind of saffron is obtained, which is lighter in colour and of fainter odour than *mongla*. This mixture is known to the trade as *lacha*. It is said to have been found by experience that the cultivator never attempts to foist a bad bag of saffron flowers on the farmer, but this may be due less to native honesty than to the strict watch kept during harvest time, the cultivators being "as carefully watched and supervised as diamond-diggers at Kimberley." Apparently there is little chance of the industry extending to any considerable extent so long as the present primitive method of reproduction from seed is exclusively resorted to, and Mr. LAWRENCE is doubtless right in his surmise that the production of saffron in Kashmir might increase if the European methods of producing seed bulbs were adopted.

ANNOTATIONS.

THE RAPID ACQUIREMENT OF LANGUAGES.—We are yet far off the time when the English language will be familiar the world over, and English people are, every year, becoming more alive to the fact that a knowledge of other languages than their own, and especially of modern languages, is a matter of vital importance to them. Unfortunately, in most cases they are compelled to acquire French, German, etc., at home, rather than abroad where those languages are spoken, and the systems that prevail tend, for the most part, to disgust and deter would-be linguists. A notable exception in this respect is the method devised by M. Gouin some fifteen or sixteen years ago, and recently introduced into this country by Mr. Howard Swan. By means of the Gouin Series Method the study of any language is from the beginning rendered interesting, attractive, and practical, by dramatic scenes out of real life acted in front of the class. Indeed, it is difficult to speak too well of this system, under which it is claimed that a student can learn to speak any language well in about six months, devoting four hours a week to the work. Classes are now being conducted in London and in several provincial towns. Specimen lessons are given free to intending students, and it is announced that a special demonstration lesson in German will be given at Howard House, Arundel Street, Strand, on Thursday next, April 9, tickets for which may be obtained free on application. A special two months' course for persons proposing to spend a holiday on the Continent will commence on June 1, at the same address.

INTERNATIONAL MEMORIAL TO PASTEUR.—In connection with the proposed international memorial to Pasteur, a provisional committee has been formed to constitute a British section. At a meeting held under the presidency of Sir Joseph Lister, on Friday, March 20, it was decided to address an appeal for subscriptions towards the erection in Paris of a monument to Pasteur to persons in the British Empire interested in science, as well as to those engaged in industries benefited by Pasteur's labours. The Executive Committee consists of Sir Joseph Lister, Sir John Evans, Sir Henry Roscoe, Dr. Thorne Thorne, and Professor Percy Frankland who will act as honorary secretary. Pharmacists interested in the Memorial should send their subscriptions to the honorary treasurer, Sir John Evans, addressed Royal Society, Burlington House, W.

THE ACTIVE SUBSTANCE IN THE THYROID.—Dr. Robert Hutchinson, referring in the *British Medical Journal* to the recent claims by Baumann, Fraenkel, and Drechsel, that they have discovered the active ingredient of the thyroid gland, states that he has found the activity to reside in the proteids of the gland. These proteids are practically only two in number, a nucleo-albumin and the colloid matter, and the latter is the only one that is active. It has been isolated in a state of purity, and is described as containing a considerable quantity of iodine in organic combination (see *ante*, p. 161), Dr. Hutchinson has succeeded in splitting off from it a body apparently identical with that obtained by Baumann from the entire gland.

THE SERUM TREATMENT OF DIPHTHERIA.—According to the Berlin correspondent of the *Standard*, at a meeting held in Berlin on Saturday last, Professor Virchow stated that the serum treatment had been a brilliant success at the Emperor and Empress Frederick Hospital for Children. The percentage of deaths from diphtheria is stated to have fallen from 37.63 in 1891-93 to 27.8 in 1894, and 11.2 in 1895, the total number of cases treated during the last year being 538. Prophylactic injections were administered to 460 children, of whom 18 afterwards caught the disease, but only in a modified form.

THE RÖNTGEN RAYS.—Visitors at the conversazione held in the Goldsmith's Institute on Saturday last displayed somewhat remarkable anxiety to obtain ocular demonstration of the fact that they possess skeletons. Mr. Herbert Jackson demonstrated the osseous charms of all and sundry by means of a small glass globe emitting the mysterious *x*-rays, and a screen coated with fluorescent material. Any part of the body placed between the globe and the screen was instantly projected on the latter, the bones being distinctly revealed, whilst the fleshy integuments showed as faint shadows only. The bones of a man's foot were thus displayed, the rays easily penetrating both boot and stocking; nails driven several inches into wood could be seen throughout their entire length; whilst coins, keys, etc., contained in purses and bags were very clearly shown. Professor Stroud writes to *Nature* to say that in obtaining pictures by means of the Röntgen rays, the time of exposure can be reduced (from 12 or 15 to 2 minutes) by placing a card coated with barium platinocyanide immediately in front of, and in contact with, the sensitive plate. The suggestion is also made that the introduction of some suitable fluorescent substance into the emulsion used on dry plates would greatly shorten the time of exposure.

EARLY CLOSING BILL.—With no amendment of practical importance to our readers, other than those already reported in the *Journal*, the Shops (Early Closing) Bill passed the Grand Committee on Trade on Thursday last. Sir John Lubbock successfully opposed an attempt to postpone the coming into effect of the proposed law until next year. Further opposition to the Bill is threatened by Mr. H. Samuel, Major Dalbiac, and Mr. Duncombe, who have given notice of their intention to move, when the Bill is reported, that it be re-committed to a Committee of the Whole House of Commons. It is reported that an influential minority of the Grand Committee protests against "numberless blemishes" that disfigure the Bill, and a large majority of London Unionist members is understood to be opposed to the measure in its present shape. It may be anticipated, therefore, that there will be an interesting struggle on the Report stage. To correspondents who are anxious to do something, either to facilitate or impede the further progress of the Bill, it may be suggested that the most satisfactory course of procedure is for them to address the Members of Parliament for their respective districts individually and at once. One of the worst things about the Bill, according to a Glasgow draper, who writes to the *Daily Telegraph*, is that it will transfer trades and spoil one street to improve another. He suggests that it would be well named "The Transfer of Business Bill," and contends that if a trader is in the vicinity of better-class thoroughfares, where it suits the majority to close on Saturdays, this Bill will compel him, although he may have taken many years to build up a business amongst middle-class people, to close his premises at the only time large numbers of his customers can reach him.

PHARMACEUTICAL EXHIBITION AT PRAGUE.—The Executive Committee in connection with this exhibition appeals to English authors and publishers of books and papers connected with pharmacy to send copies for use in the library and reading-room which will be open for the use of visitors. The Exhibition will be held in the great Exhibition Palace of the Baumgarten, Prague, from August 15 to September 15, and applications with lists of works to be exhibited should be sent at once, addressed to O. Schreiber. The books, etc., should not be forwarded until July.

PROCEEDINGS OF SOCIETIES.

Chemical Society, March 26.—Mr. A. G. Vernon Harcourt, F.R.S., President, in the chair.—This was the anniversary meeting of the Society, and Fellows turned up in fairly large numbers to hear the President's address and vote for the new officers and Council. The President, with characteristic punctuality, commenced to read his address at 8 o'clock. This was to all intents and purposes a retrospect of affairs which had happened in the course of the Society's meetings during the past year—an eventful year in scientific respects. Thirty years ago, when holding the position of secretary, Mr. Vernon Harcourt said that a museum had been inaugurated in connection with the Society. This was not a success; and no doubt for want of proper curatorship a valuable museum has been lost to latter-day chemists. Decomposed specimens were a constant source of annoyance, and the President appeared to think that those specimens would at the present time have been of considerable value by virtue of their decomposition. "Chromic acid, now trioxide," was how he referred to one of his specimens. The most important of scientific achievements was, perhaps, the discovery by Professor Röntgen of the new "light" rays, and the Society was indebted to Mr. Jackson for his recent demonstration of the new photography. Professor Dewar's illustrated paper on liquid air was referred to in warm terms by the President, who said that contributions of the same kind would always be welcome. The acetylene theory of luminosity was also a subject that had aroused the liveliest interest among the members. In this controversy Professor Lewes had shown that cyanogen, when surrounded by nitric oxide, burned with a luminous flame. The President here mentioned that the disputants had requested him to give a decision *ex cathedra* on the controversy, but this he firmly declined to do, saying that differences between good workers like Professors Lewes and Smithells were best left to themselves. Reference was made to the classical researches by Lord Rayleigh and Professor Ramsay on the new atmospheric constituents. Helium, said the President, was most appropriately named. It was strange that hydrogen should be so easily locked up in chemical combinations whilst helium could not be induced to combine with anything; the sun seemed to be its natural resting-place. Professor Ramsay was to be congratulated on his great good fortune.

The President next made a timely reference to the difficulty the Society had to deal with in the matter of the large number of papers submitted for reading. A full meal in this respect was always provided, but it was to be regretted that so many really good and attractive papers should be left unread. They could not be put forward to future meetings, as each meeting more than provided its own supply, and the question naturally arose as to the order in which contributions should be read. The President suggested three methods of dealing with the difficulty—

1. With respect to the order in which they were received by the Secretary.

2. That when authors were present they should have preference.

3. That some papers were more likely to give rise to interesting discussions than others, and precedence might be given accordingly.

The life and work of Pasteur, a foreign member of the Society, was briefly noticed, and allusion was made to the hundredth anniversary of the Institute of France. Then the case of Dr. A. B. Griffiths came under notice. At a recent ballot a sensation was caused by Mr. Otto Hehner reading a letter written in answer to an advertisement of Dr. Griffiths, which had appeared in the *Chemical News*, professing to procure for the applicants the Fellowship of the Chemical Society. There was an animated discussion on the matter, and general indignation was felt and expressed at Dr. Griffiths' unprofessional conduct. It transpired that at this particular ballot the certificates of three candidates were signed by Dr. Griffiths, and a request was made that the certificates in question should be read aloud by the secretary. This was done, and the result of the ballot was that the three candidates proposed were blackballed, and the question of Dr. Griffiths' conduct was remitted to the consideration of the Council.

The jubilee of the Society was to be commemorated by Dr. Armstrong's account of the scientific work of the first fifty years, a record which would consist of two volumes, and would most probably be published in the course of the present year. Another jubilee would be celebrated, viz., Lord Kelvin's fifty years' tenure of office as Professor of Natural Philosophy in the

University of Glasgow. There was a round of enthusiastic applause when the President announced that the senior secretary, Professor J. Millar Thomson, would represent the Chemical Society at this function. The inquiry into the nature of the flaw in the steel rails, which resulted in the recent railway accident at St. Neots, would be conducted by Professors Thorpe and Dunstan. Finally, the President commented on the downward course of a number of Fellows, whose names had been removed on account of non-payment of subscriptions. The number of Fellows on the list at present was 2018, and there were 28 foreign members, to which number the President hoped more would be added.

Dr. J. H. Gladstone, in a short speech, proposed a vote of thanks to the President for his address, and alluded to the desirability of having experimental papers put prominently forward at the meetings.

Professor H. B. Dixon seconded the motion, complimenting the President on his lucid review of the annual work of the Society. Papers which required the performance of experiments, or even the mere exhibition of apparatus, would prove most acceptable at the meetings, as quicker ideas could be got in that way than from drawings.

The President having briefly replied,

The Treasurer, Professor Thorpe, next came forward with his financial statement. One item in his balance-sheet was the advertisements which had recently been appearing in the Journal of the Society. This, he said, was a pet little scheme of his own, and it had succeeded very well indeed. The financial report was exceedingly satisfactory. The President moved a vote of thanks, and Mr. David Howard in seconding, while giving the highest credit to Professor Thorpe for his admirable and business-like statement, was not complimentary to the professional chemist as a man of business. As a general rule, said Mr. Howard, he was a man who could not add up his washing-bill correctly.

After votes of thanks had been proposed to the other officers and to the abstractors, the ballot for the new officers and Council was taken. The applause which greeted the announcement by Mr. Vernon Harcourt that he had been re-elected President left no doubt in anyone's mind that the election was a popular one.

The Vice-Presidents elected are:—Brown, Horace T., F.R.S., Dewar, James, F.R.S., Japp, Francis Robert, M.A., Ph.D., F.R.S., Mond, Ludwig, F.R.S., Roberts-Austen, W. Chandler, C.B., F.R.S., Tilden, William A., F.R.S.

The other officers remain as formerly, viz.:—Secretaries: Thomson, J. Millar, Dunstan, Wyndham, R., M.A., F.R.S.; Foreign Secretary: Meidola, Raphael, F.R.S.; Treasurer: Thorpe, T. E., LL.D., F.R.S.

Royal Institution, March 21.—Lord Rayleigh began his fifth lecture on "Light" at the Royal Institution by referring to the colours of thick plates. The plates in question, however, were thick only in comparison with those of extreme thinness that had been spoken of in previous lectures, and the colours were due, or had their origin in a kind of diffuse reflection. The theory might properly be called the diffusion of colours, and several of the laws governing it were established by Newton. Lord Rayleigh illustrated it by taking a glass slightly dulled in front and coated with quicksilver behind. On the electric light being thrown upon the dull surface the light was reflected from the glass to the screen, and coloured rings were seen with greater or less brilliance. The colour was attributed to the way in which the particles of dust on the glass reflected the light; but the thickness of the glass and the angle of light were points also to be kept in view. The greater part of the lecture was devoted to a consideration of the resolving power of optical instruments on two things extremely close to one another, the lines of a fine grating, for instance. Giving an illustration in photography, Lord Rayleigh took a plate, which he coated on one side with a bichromated gelatin, and placed it over a plate bearing lines to the fineness of six thousand to the inch. This was exposed to the electric light for half an hour while the lecture was continued. When later the result was shown on the screen it was found to be exceedingly good. In dealing with the resolving power of instruments, Lord Rayleigh showed how much the power of the eye to resolve angular magnitude depends on the size of the aperture of the instrument used, whether the telescope, microscope, or spectroscope, though in the case of the telescope they were usually dealing with bodies that were self-luminous, and in the case of the microscope with those that were not so. Lord Rayleigh spoke of important principles in relation to gratings, concluding

that the resolving power of a grating depended on the number of lines that were there, provided they were accurately placed, the practical limitation being that they must get the lines into a space corresponding with the several instruments they wished to associate with the grating.—*Daily News*.

School of Pharmacy Students' Association, March 26.—Mr. H. A. D. Jowett, Vice-President, in the chair.—After the minutes of the previous meeting had been confirmed, a "Report on Analytical Chemistry," by Mr. J. R. Walker, was read by the Secretary, Mr. Tickle. At the conclusion of this report a paper was read by Miss R. S. S. Harrison, entitled the "Life and Work of Darwin." A discussion followed, in which Messrs. Henry, Brown, Payne, Sheldrake, and the Chairman took part. The Chairman having then asked for any miscellaneous business, Mr. Goulding, after a short speech, presented Mr. Tickle with a microscope on behalf of past and present students of the School of Pharmacy. Mr. Tickle, in reply, said that he required no such solid memento to remind him of the pleasant time he had spent at the Square, but he thanked the subscribers for the kindly feeling which had prompted them to make him this most useful present. A demonstration of some effects of the Röntgen rays with a phosphorescent screen was then given by Mr. F. H. Carr, after which the meeting adjourned.

Manchester Pharmaceutical Association, March 17.—Mr. Geo. S. Woolley, President, in the chair.—At the ordinary monthly meeting, held at the Victoria Hotel, the prizes gained by competitors in the recent competitive examinations were presented to the candidates by the President, Mr. Geo. S. Woolley. In the course of his remarks, the President said that youths who had the energy and perseverance which were requisite for them to attain these rewards were those who might afterwards be found in the higher walks of pharmacy. He congratulated those who had been successful on the excellence of their papers. The two candidates who headed the list in the senior division were so close together that it was with great pleasure he had himself given another special prize.

Mr. Rymer Young said it was most pleasing to him to find when so many complaints were floating about concerning hard examinations so many young men coming forward voluntarily. Such an illustration of love of hard work was gratifying; he was glad to see the prizes were appreciated, and especially to note the high standard of the candidates' papers.

The prize winners in the senior division were:—N. H. Schollar, special prize, presented by Mr. Rymer Young, and herbarium. T. O. Barlow, special prize, presented by Mr. G. S. Woolley, and herbarium. H. Gray, herbarium. Junior division: H. M. Halls-worth, special prize and herbarium. E. Tristram, herbarium.

Society of Arts (Indian Section), March 26.—At this meeting Mr. Walter A. Lawrence, I.C.S., C.I.E., read a paper on—

"KASHMIR: ITS PEOPLE AND ITS PRODUCE."

He said the beautiful valley of Kashmir was cradled in the Himalayas at an average height above the sea of 6000 ft. On the north, east, and west it was shut in from the outer world by ranges of mighty mountains, while on the south it was separated from the Punjab by rocky barriers fifty to seventy-five miles in width. The cultivated part of the valley was eighty-four miles in length, and twenty to twenty-five miles broad, traversed by the river Jhelum. One of the many legends relating to the Haramak mountain was that any traveller who scaled its peak would meet with instant death. In the crest of this mountain there was said to be a vein of emerald, which rendered all snakes that lay within its ken innocuous, and it was a curious fact that the poisonous snakes were only met with in the valley. The trees, such as the plane trees, walnuts, willows, poplars, elms, mulberries, and the countless orchards of apples, pears, and apricots, reminded one of a well-wooded English park. The crops of rice and the cotton belonged to the East, while the rounded forms of the trees, the rivers, and streams with their banks of green turf and willows, recalled the West. The very villages were English; instead of the ineffably dreary and unvillage-like look of the Indian hamlet, there were dotted about here and there picturesque homesteads, all having their little gardens and court-yards. One of the prettiest objects in the village was the graveyard, shaded by the *Celtis australis*, and bright with purple, white, and yellow iris. Kashmir could be reached in three weeks from London; it had a most delightful and varied climate. For a

holiday or change there could be no more restful and healthy life than a year or six months' sojourn in the valley of Kashmir, and any European with a medicine chest was always welcome. There was sport for the sportsman, wonderful scenery, mountains for the mountaineer, glaciers for the botanist, a vast field for the geologist, and magnificent scenes for the archæologist. Up to the end of the fourteenth century, Kashmir was the seat of a Hindu kingdom, when the people left their glorious temples and their picturesque religion for the sullen compromise of Islam. The beauty or rumoured wealth of the valley attracted the Moghals at the end of the sixteenth century, and Kashmir came under a foreign yoke.

The lot of Kashmir was not unhappy under the Moghals, but they were succeeded by the brutal and oppressive Pathans, who ruined the country and the people, and were ultimately driven out by the Sikhs. The Sikhs were a change for the better, but left much to be desired. Moorcroft narrated that the punishment for the murder of a Kashmiri by a Sikh was a fine of two rupees. In 1846, Kashmir was made over to the Maharaja Gulab Singh, who was a strong ruler, and his efforts were very effectual in stamping out crime. Kashmir had undergone many changes in its governors, who with their deputies had felt no sympathy for the people. It had been the deliberate policy of the Panjits, the Brahman officials of Kashmir, to exaggerate the difficulties of administration in the valley. They excused their own corruption, cruelty, and ignorance by assuring their masters that the Kashmiris were lying, lazy, and dishonest. Another cause of the hopeless state of the people was the fact that earthquakes, floods, fires, cholera, and famine were familiar to every generation. For example, in the village of Pattan, where there were about 165 families, in 1885 seventy persons perished in an earthquake, and in 1892 fifty-five persons were carried off by cholera. The tyranny of man on the one hand, and the terrible vagaries of nature had rendered the Kashmiris incredulous of the existence of good in man and nature. All their memories were sad, and hardly a day passed without mention of the great famine of 1877-79, when men turned cannibals, and three-fifths of the population perished. The dress of the men was like their character, effeminate. They wore a kind of heavy woollen nightgown falling to the feet, and under this, if the weather were cold or wet, they inserted a small earthen brazier of hot embers, known as a kanger. Though this kept them warm, it had its drawbacks, as they went to bed with their kanger and often set the bed on fire, and it was said that the brazier was a fruitful source of cancer. In Kashmir there was cultivation that would astonish Europeans, and the art wares in Srinigar had astonished the world.

The domestic life of the Kashmiris was admirable. One never heard of scandals, and, like the Irish, they were kind to their children and their old folk. They were also a very gentle people, and their quarrels never went beyond invective and abuse. The sight of blood was dreadful to them, and if a fowl had to be slaughtered for food the execution devolved on the village priest. At one time no doubt it was necessary to attract the attention of their rulers by some striking demonstration. Men who had a grievance would fling off their clothes and smear themselves with mud. The nakedness was to imply destitution, and the mud signified that they were reduced to the condition of a clod. Many a time the lecturer had seen a procession, one man wearing a shirt of matting, another having a straw rope round his neck with a brick pendant, another carrying a pan of hot embers on his head, while the rear was brought up by a woman bearing a number of broken earthen pots. If this was bad, still more inconvenient was the practice of casting a plough under his horse's feet in order to emphasise the fact that agriculture no longer possessed charms for the proprietor of the plough. Once while hearing petitions the lecturer noticed an old man standing for some time on his head; fearing that he might injure himself, he was asked why he did it. His reply was that, thanks to Mr. Lawrence's arrangements his affairs were so confused that he did not know whether he was standing on his head or his heels. A man once wanted to strengthen his case in some litigation which he had by arousing the lecturer's sympathy, and the course he adopted was to bring before him the dead body of his child, for which he said his neighbours would not allow him burying-ground. One bitterly cold night a man appeared at Nág marg stark naked, saying that his uncle had turned him empty into the world. Some English clothes were given him, and he was told by way of jest that as he was now dressed as an Englishman he could assert his rights. The next day the uncle appeared in the camp in a very shattered condition, charging his nephew with assault. This incident showed how dangerous it was to jest with the natives. The ruler of Kashmir was a Hindu, and

93 per cent. of his subjects were Mussalmans. The officials of the country for the most part belonged to the rigid Brahmin caste, but the much-talked-of oppression in Kashmir was entirely official, and did not arise from religious intolerance. In India of late great rivalry had arisen between the two great religions of Brahminism and Islam, but in Kashmir the Mussalmans and Hindus lived together in delightful amity. The chief reason of this was that the people of the Valley, though Mussalman in name, were really Hindus at heart. Kashmir was rich in superstitions, and lovers of the supernatural would find a grand field in the villages of the remoter valleys.

Turning from the people to the products of the valleys, it would be interesting to note that almost all the vegetable products that existed in a temperate climate could be grown in the vale of Kashmir. It was the lecturer's hope that Kashmir might become the California of India. The fruit was magnificent and was easily grown. There was everywhere an endless supply of wild stock, and from the nurseries many thousands of trees grafted or budded with the best English and French varieties of apples and pears were given out. The turning industry, introduced two years ago, was thriving. There were large vineyards from which excellent wine—Medoc and Barsac—was made. These vineyards had recently been replanted with American stock in order to combat the phylloxera which had penetrated even to remote Kashmir. Excellent cider was made, and the brandy which was distilled from the wild apples and pears was pure and potent. They had succeeded admirably with hop-growing, the financial results of which would surprise Kentish growers. Silk was an ancient industry in Kashmir, and it was probable that the valley produced the old Bactrian silk which found its way to Damascus; but evil days came in 1878, and disease obliterated the industry. In 1889 it was decided, on the advice of Sir Edward Black, to rehabilitate sericulture, and to stamp out disease by following the Pasteur system of microscopical examination. For the first two years the results were disappointing, a native with a microscope being a most uncertain combination. Success was, however, eventually obtained, and a few weeks ago the first Kashmir silk found a sale in London. He had advised the Government not to incur expense on improved reeling appliances, his idea being to demonstrate that good silk could be raised in Kashmir, and to make sericulture pay its expenses.

All that was wanted in the country was European capital, skill, and energy. Already Europeans were carrying on a successful manufacture of carpets, giving employment to the unfortunate weavers of the old shawls, for which Kashmir was once world-famed, this latter industry having been destroyed by the Franco-German war. There was splendid water-power everywhere, and if capital were forthcoming, cotton mills could be erected which would supply Central Asia with cloth. The valley abounded in fibres, one being especially worthy of European notice, called out there Yechkán. The *Abutilon avicennae* and its fibre had been pronounced superior to Indian jute, and finer than Manilla hemp. The iron of Kashmir was preferred to the imported metal, and the valleys and mountains were thought to be rich in minerals. The chance discovery of a rich sapphire mine in 1882 suggested that organised exploration might lead to further discoveries. It was no exaggeration to say that the Kashmiris detested mining, as it led to forced labour and the presence of numerous officials, who required to be fed. He had not time to refer to the floating gardens similar to the Chinampas of old Mexico, nor to the saffron for which the valley was renowned.

An interesting discussion followed the reading of the paper.

Liverpool Chemists' Association, March 19.—Mr. M. Conroy, President, in the chair.—One new member, Mr. Mortimer Parry, was elected. The Secretary read a letter from Mr. Ellams drawing attention to a letter he had received from the Inland Revenue authorities, concerning certain labels for "Brown's Harmless Headache and Neuralgia Powders," which were said to make the preparations liable to stamp duty, although as Mr. Ellams said, they were a simple drug vended entire. It was decided that the Secretary should write to Somerset House to get a final decision on the point whether a simple drug was liable or not. A new variety of stethoscope—the phonendoscope—was then shown by Mr. A. S. Buck. It is the joint invention of two Italian professors—a physicist, Eugenio Bazzi, and a pathologist, Aurelio Bianchi—and has the appearance of a large watch with two ear tubes of indiarubber attached to the back. The front consisted of a thin metallic plate with a socket in the centre to receive a flat-headed rod of ebony or vulcanite. In the interior is a thinner dia-

phragm, similar to the plate of a telephone receiver, which vibrates readily, and acts as a microphone, increasing the internal sounds of that part of the body upon which it is placed. An improved syringe for injection of organic liquids was also exhibited by Mr. Buck. This was similar to the usual Pravaz pattern, but had asbestos packing, easily sterilised by heat.

An excellent paper on "The Chemical Analysis of Water" was then read by Mr. H. A. Davies, M.A., B.Sc., F.I.C., who, in his reply, after a brief discussion, said that chlorides were peculiarly constant in proportion in the water from various districts, not varying for years. Lead certainly was dissolved in small quantities by the Vyrnwy water after standing in the pipes all night, but he had not made any direct determination of the power of Vyrnwy water in this respect as yet. A point he wished to emphasise with reference to the bacteriological analysis of water was that though it was to a certain extent a good thing, chemistry gave a better, quicker, and more reliable answer. An ordinary bacteriological examination of the number of colonies alone would require at least a week, whilst the isolation and identification of the bacteria would mean a work of weeks, and would be consequently very expensive. Chemical analysis was daily routine work, quickly done by competent analysts, certain in its results, and much the cheapest of any known method of water examination.

Cambridge Pharmaceutical Association, March 27.—Mr. A. S. Campkin, J.P., in the chair.—The Association received a deputation from the Proprietary Articles' Trade Association, which was represented by Messrs. W. S. Glyn-Jones (Hon. Secretary), J. Barclay (Messrs. Barclay and Sons, Ltd.), W. A. Gilligan (Liebig's Extract of Meat Company, Ltd.), and H. S. Norris (Condal Water Company, Ltd.). The members of the local Association present were Messrs. E. Saville Peck, M.P.S. (Hon. Secretary of the Cambridge Pharmaceutical Association), H. J. Parsons, D. Greenwood, E. Field, S. F. Barker, C. S. Addison, A. Ivatt, M.A., and L. Hutchin. Letters expressing sympathy with the movement and regretting absence were read from Messrs. Beall and Son, J. Yeomans, and J. Colston (Cambridge), J. S. Norman (Bedford), F. A. Barrow (Newmarket), E. Matthews (Royston), Wm. Sutton and Co. (London), and J. Sanger and Sons (Oxford Street).

After an address by Mr. Glyn-Jones, a discussion took place, and the following resolution was then agreed to:—

"That this meeting of registered chemists, residing in Cambridge and its neighbourhood, desires to express its pleasure at seeing that a number of influential manufacturers have already joined the Proprietary Articles' Trades Association, and to assure them, and all other manufacturers, that any steps they may take in connection with the Association to ensure fair profits will meet with the approval and cordial support of every legitimate retail trader."

Chemists' Assistants' Association, March 12.—Mr. E. W. Hill, President, in the chair.—The following report of Mr. Gerrard's paper has been unavoidably deferred:—

"ON NUTRIENT BEEF FOODS," BY A. W. GERRARD.

It was stated that the following process had been found to give the most satisfactory results in the preparation of meat peptone. One pound of good lean beef is finely minced and pulped through a No. 40 sieve, after which it is placed in a porcelain digester, and one pint of water, at 60° C. slowly poured in with constant stirring. Two ounces of the fresh and active inner lining of a pig's stomach are cut up into fine shreds and mixed with the meat, the whole being constantly stirred for at least five minutes, so as to bring the pepsine and meat as completely into contact as possible. Three more pints of water at 60° C., are now added slowly with continuous stirring, and then one fluid ounce of dilute hydrochloric acid. The digester and its contents are now heated in a water bath for two hours, constantly stirring, the temperature being kept at about 50° C. (not exceeding 52° C.). At the end of the time the mixture is boiled, neutralised with sodium carbonate, filtered, and evaporated to the consistence of a soft extract. It is important to notice that if the beef is merely minced and not pulped a digestion of four to six hours is required, but in that case the product is not of such good quality and the bitterness is much more marked. The average percentage of dry peptone yielded by eight experiments with lean steak was 18.1, whilst the anti-peptone amounted to 4.3.

Passing on to the discussion of peptonisation by means of the pancreas, the author stated that his observations had taught him that tryptic digestion can be carried on three or four degrees higher than with pepsin, without risk to the stability of the ferment and

with advantage to the product. When pancreatising meat it is usual to employ the mixed ferments, but on a large scale it is advantageous to use the fresh pancreas so long as care is taken that the sweet-breads are clean, fresh, and active. The most satisfactory process was found to be as follows:—Take 20 ounces of lean beef which has been pulped through a No. 40 sieve and mix it with 150 grains of pancreatin or 1 oz. of prepared fresh pancreas. Now add 5 pints of water at 60° C., and having stirred in 100 grains of sodium carbonate, place the mixture in a digester, keeping it at a temperature of 55° C. for two hours, constantly stirring. At the end of this time the mixture is neutralised with hydrochloric acid, boiled, allowed to cool, and filtered, after which it is rapidly evaporated to a soft extract, when it is ready for use. In regard to yield, 100 parts of good quality meat will give, by the process just described, 19 per cent. of dry peptone. Both varieties of peptone always contain a fair amount of common salt formed from the acid and soda used. This salt acts as a preservative and is enough to keep the concentrated product good for almost any length of time.

In pancreatic, as in peptic digestion, the whole of the meat does not pass into solution, for there always remains the same insoluble remnant called anti-peptone, the proportion being about the same as in peptic digestion. In this process the reduction of time from the usual four to two hours yields a product which is more palatable and serviceable to the invalid, but if digestion were prolonged to the longer period a peptone would result full of leucin and tyrosin. Pancreatised meat has a pleasant flavour and is freer from bitterness than the peptonised variety, and hence seems to be preferable to the latter.

Although a peptone of meat is, from a scientific point of view, an ideal food, since it contains all that is soluble of muscle, yet its use is not always possible on account of bitterness and want of savoury character, which often causes patients to turn against it after a few days. The most successful experiment tried with a view to obviating this distaste was to administer the peptone in combination with detannated wine, which combination may be called vinous peptone. This may be prepared by taking a pint of light-coloured invalid port, somewhat sweet, and adding to it a solution of isinglass until it ceases to give a precipitate. After standing a few hours it is filtered, and in each 15 ozs. of the product 3 ozs. of peptone is dissolved, after which it is again allowed to stand, and filtered. Another useful form of administration is to dissolve a portion of peptone in beef-tea, 1 oz. being added to each pint. This product is well tolerated by patients, and can be utilised in cases where wine is objectionable. It is important to mention that the addition of peptone to beef-tea makes it a perfect meat food, strongly nutrient; whereas in its simple form it is a mild stimulant and weak nutrient. The 1 oz. of peptone really adds 4 ozs. of good solid meat to the pint of beef-tea. In cases where administration *per rectum* is indicated, the peptonised beef-tea, either alone or together with the albumin of two eggs, can be used advantageously. Another method of rectal administration is in the form of suppositories, which are best made with the cacao-butter basis, containing 50 per cent. of peptone, the use of gelatin as a base being decidedly objectionable.

The following was recommended as a satisfactory working formula for beef essence:—Take 1 lb. of lean beef from the blade-bone, cut it into thin slices, and place it in an enamelled pan with 1 pint of soft water. Cover the pan and bring it to the boil, afterwards allowing the contents to simmer gently for four hours, a little water being added from time to time. When the cooking is sufficient, the meat will be technically "boiled to rags." The entire product should at once whilst hot be transferred to a perfectly clean flannel filter, to drain. To the filtrate, 60 grains of salt are added, and the volume brought, either by evaporation or addition of water, to 8 fluid oz. On allowing to cool a well-formed, transparent jelly will be the result. Beef essence or beef jelly, which is a great favourite with the public, approximately contains 9.06 of dry solids, the remainder being water, and it is noticeable that the richest jelly, from point of flavour, is obtained from the lean muscle of the blade-bone, but on the other hand, the muscle of the leg yields one of firmer consistence, owing to the fact that there is more gelatin-yielding tissue in the leg than in the shoulder. For the preparation of concentrated beef-tea, as sold in skins, the lean parts of the leg, shoulder, or neck of beef are cut and broken into small pieces, and some salt having been added the whole is boiled for eight or ten hours in about eight times its weight of water, the volume being constantly maintained by addition of water. When the boiling is com-

pleted the fats, extracts and gelatin will have been removed. The whole mass is next strained and allowed to cool and settle. Next day the layer of fat is removed, the gelatinous portion again heated, carefully filtered, and concentrated to a semi-fluid extract which is poured whilst hot into skins tied off into sections and allowed to cool. This preparation needs the addition of peptone to enhance its nutrient power to a suitable degree. Albuminous meat juice is made by placing slices of lean beef in horse-hair press bags and submitting to strong pressure. The juice which exudes is a nearly clear red fluid containing traces of fat and some blood corpuscles. Analysis showed it to contain 7.3 per cent. of solids, 3.9 of which was albumin. The mineral matter, mostly phosphates, constituted 1.1 per cent. The following process was also recommended for the preparation of a meat juice. One pound of finely pulped meat, 16 fluid ozs. of distilled water at 60° C., and 1 fluid drachm of strong hydrochloric acid are well stirred for ten minutes. Forty-four grains of sodium bicarbonate are then added, and after the effervescence has ceased the whole is poured on to a stout muslin strainer, when the juice is pressed out with the hands, the residue being finally mechanically pressed. Either of these juices is quite equal in nutrient power to any on the market, whilst they are not unpleasant in flavour. Unfortunately they will not keep for more than twenty-four hours without the addition of preservatives.

Mr. Gerrard referred to the extravagant and impossible claims which are put forward by many makers at the present time on behalf of their preparations, and drew attention to the fact that the most concentrated meat food cannot represent more than five times its weight of lean muscle. One of the most popular and expensive foods yielded on examination .12 per cent. of albumin, 57 per cent. of solids, boric acid being used as a preservative. This preparation appeared to be compounded of a good meat extract and a little added albumin, since the latter constituent is present in much too small a quantity to be natural to a concentrated meat juice. As a nutrient this article would be of no value, for an entire bottle only contains one grain of albumin. Another food of the same class was found to be a "doctored" blood, the corpuscles being evident under the microscope, whilst on heating a thick coagulum was formed. One hundred parts gave 35 of solids, of which 12.7 were found to be coagulable matter composed of a mixture of albumin and hæmatin. This preparation was evidently made by whipping ox-blood to remove fibrin, and then adding salt and boric acid as preservatives. Such a preparation being rich in serum albumin is a good nutrient.

In conclusion, Mr. Gerrard said that what is wanted is a genuine liquid beef of pleasant flavour, which could be guaranteed to contain the whole of the proteids. Peptone is at present the nearest approach to this ideal, but the bitter taste constitutes a serious drawback to its use, the author is at the present time carrying out a series of experiments with a view to check or prevent the formation of this objectionable constituent.

Brighton Junior Association of Pharmacy, March 25.

—Mr. T. F. Grindley in the chair.—Mr. Geo. Long, who had been announced for a previous meeting, read a paper on "Ancient Eastern Medicine Practice." The subject was dealt with in an exhaustive manner, the Egyptian Pharmacopœia and methods from the Papyrus Ebers proving especially interesting. A discussion followed, when Mr. Long adduced many interesting facts of Egyptian history, proving the high state of Egyptian civilisation. A hearty vote of thanks was accorded to the contributor for his very intellectual discourse.

Midland Pharmaceutical Association.—Mr. R. D. Gibbs in the chair.—The following resolutions have been passed at a meeting of the Council of this Association:—

"That this Council hears with pleasure of the candidature of Mr. Park, of Plymouth, for the Pharmaceutical Council, and promises to support him in every way it can."

"That the support of the Council be given to the Shop Hours Bill for the regulation of the compulsorily closing of chemists' shops at reasonable time."

Plymouth, Devonport, Stonehouse and District Chemists' Association (Junior Section), March 27.—Mr. H. O. Westcott in the chair.—Mr. Ernest A. Hodge gave a very interesting and instructive lecture on "Opium," and was able by the use of specimens lent from the Pharmaceutical Society's Museum to explain the manner of collecting the drug in Persia, Turkey, India, and Egypt.

Sheffield Pharmaceutical and Chemical Society.
April 1.—A paper was read by Mr. J. Austen, entitled "The Plants of the Bible." It was illustrated by a large number of specimens, several of which had been lent by Mr. E. M. Holmes, Curator of the Pharmaceutical Society's Museum, whose kindness in so doing was duly acknowledged. A very good specimen of hyssop was also shown, which had been collected by the Rev. A. Hall on Mount Sinai. A very cordial vote of thanks was passed to Mr. Austen at the close.

Edinburgh District Chemists' Trade Association
March 26.—Mr. Peter Boa in the chair.—Mr. C. F. Henry read a communication from the Edinburgh Decimal Association asking an expression of the Association's opinion on the introduction of the decimal system of weights and measures into this country, and inviting the members to memorialise the Government in favour of their recommendations (1) that Parliament should at once legalise the metric system for all purposes in trade, (2) that after a lapse of two years it should be made compulsory to use these weights and measures for all trade purposes, and (3) that it was desirable that in schools decimals should be taught at an earlier stage in the school curriculum.

The matter having been discussed, a resolution in favour of the first and third recommendations was unanimously adopted.

Mr. David McLaren then introduced a discussion on Sir John Lubbock's Shops (Early Closing) Bill, with special reference to its effect on pharmaceutical chemists and chemists and druggists. He moved a general recommendation that the Association should support the principle of the Bill, and after a long discussion, on a vote being taken, the motion was carried.

The meeting agreed to remit to a committee to consider as to the most suitable place for the annual picnic of the Association and to report to the next meeting. In view of the annual meeting in May, Messrs. Mackenzie and Wylie were appointed auditors. This being all the business, the meeting terminated.

Pharmaceutical Chemists' and Apothecaries' Assistants' Association of Ireland, March 27.—Mr. J. B. Alister, M.P.S.I., President, in the chair.—A short business meeting preceded a debate on the question whether infusions should be retained in the British Pharmacopœia.

Mr. Alister held that infusions should be retained in the B.P., and they should be made fresh and not in a concentrated form. To keep infusions caused them to darken in colour and lose their aroma and flavour. Mr. Hunt urged, on the other hand, that infusions could not be indispensable, since out of twenty-eight that were official only ten were in actual use, and the remainder were hardly ever prescribed. One half of the B.P. infusions might be expunged with advantage. From a therapeutic point of view infusions possessed no advantages over the tinctures of the same drugs, except the absence of spirit. The two cold water infusions were condemned entirely by a very high authority on pharmacy. The most serious objections to fresh infusions was their liability to decompose. Many of them would not keep twenty-four hours. The speaker referred to the United States Pharmacopœia, in which only three or four infusions were found. Concentrated infusions lacked colour, aroma, and flavour of fresh infusions, but in most cases the deficiency was marked by the other ingredients in the prescription. If infusions were regarded as convenient vehicles and flavouring agents merely, liquid extracts, capable of dilution at will, would be more elegant and permanent substitutes for them.

Mr. Ashe, for the affirmative, argued that the use of infusions pleased doctor and patient. They were old friends and should not be cast off. Mr. Payne agreed with Mr. Hunt, and humorously compared infusions to Chelsea old pensioners, good in their day, but now unfit for further service. Medical men nowadays merely added an infusion to their prescriptions to avoid using the word *aqua*, or, perhaps, to render the mixture more disagreeable to, and consequently more appreciated by, the patient. The speakers on both sides were supported by Messrs. Walsh, Ardill, Hardy, Harris, etc.

Mr. McCarthy (Vice-President) then summed up, and favoured the introduction into the B.P. of a number of standardised concentrated infusions. Many small chemists were at the mercy of the wholesale houses, but every pharmacist ought to be able to make his own concentrated infusions. On a vote being taken, it was agreed by a majority of six that infusions should not be retained in the B.P.

LEGAL INTELLIGENCE.

COURT OF CHANCERY.

In Re INGRAM, JONES, AND ELVEN'S PATENT, No. 1639 OF 1894.

This petition for revocation came before Mr. Justice Romer on Thursday, March 26, having been placed in the list of witness actions on account of the respondents declining to consent to the revocation when it was first in the list before Mr. Justice North. When it was called on, Mr. Sebastian, who appeared with Mr. Roger Wallace for the petitioners, the Pharmaceutical Society of Great Britain, said in these cases the respondents were entitled to begin, but he did not know whether they appeared.

On inquiry it was found that no one appeared on behalf of the respondents, and as this fact prevented any consent being given to affidavit evidence being taken, the case had to stand over for a short time until the witnesses were in attendance.

Mr. Wallace, Q.C., then opened the petition, saying it was for the revocation of Letters Patent No. 1639 of 1894. The patentees were Georgina Elizabeth Sarah Ingram, Edmund Ingram, and Rev. Richard Jones, Rebecca Jones, wife, and Margaret Elven, spinster. These people took out a patent, the original inventor being George Elven, who was a Baptist minister. It was a patent for liver pills consisting of podophyllum resin, compound extract of colocynth, extract of hyoscyamus, and powdered caraway seeds. The petition for revocation was by the Pharmaceutical Society of Great Britain, who under their Charter had certain duties to perform for the protection both of chemists and druggists and of the public with regard to the sale of poisons. This particular patent did not deal in any question regarding poisons, such as had been the subject of decision in Courts of Justice; but in those cases it had been held that when a medicine was a patent medicine it did not come under the Pharmacy Act, and consequently a large number of patents had been taken out for various compounds of drugs, and people who bought them believed there was some special protection from the fact that they were sold under Letters Patent. There appeared to be a widespread feeling that there was some special benefit in the medicine guaranteed by the patent if Letters Patent were granted. It was said in some of the text-books that no patent ought to be granted for medicine, as it was against public policy, but there had never been any actual case decided on that point. Probably that statement was introduced on the ground that statutory monopolies should not be granted for anything to the detriment of the public, but there was no decided case of that kind. The particulars of objection pointed out that all the individual drugs in this patent were well known, and that they were continually compounded in different proportions by chemists and druggists, and prescribed by medical men without let or hindrance.

Mr. Justice Romer suggested that Mr. Wallace should put in formal evidence, and that would conclude the matter.

Mr. Michael Carteighe was then sworn. He stated that he was a pharmaceutical chemist, carrying on business at 180, New Bond Street. He was President of the Pharmaceutical Society of Great Britain, and a Fellow of the Institute of Chemistry. He was one of the petitioners jointly with the Society. He had read the specification in question. The drugs named in it were podophyllin, colocynth, hyoscyamus, and caraway powder. Three recipes were given in the specification, each containing the same drugs, but in different proportions, except that the third left out the caraway powder. All those drugs were well known at the date of the patent, and long before, and were to his knowledge constantly prescribed and dispensed in various proportions.

Upon this evidence, his lordship revoked the patent and gave the petitioners the costs of the proceedings.

OBITUARY.

FLETCHER.—On March 16, Thomas Fletcher, Chemist and Druggist, Smallthorne, Staff. (Aged 60.)

SMITH.—On March 22, Morgan Smith, Chemist and Druggist, Aberdare. (Aged 41.)

SUTTON.—On March 27, Samuel Sutton, Chemist and Druggist, Gosport. (Aged 80.)

CORRESPONDENCE.

"THE OLD FIRM OF GODFREY."

Sir,—In your last week's issue there is an article entitled "The Old Firm of Godfrey," by Mr. Joseph Ince, late Director of Godfrey's laboratory.

With Mr. Ince's views concerning the Godfreys I have nothing to do, but the private formulæ of the firm which Mr. Ince, a former director of the laboratory, publishes as the original ones, I have as a member of the firm to protect.

These formulæ were confidentially entrusted to Mr. Ince to guide him in the conduct of the laboratory, and for the director of a laboratory to publish formulæ thus entrusted to him without the permission of the proprietor is to my mind a distinct breach of confidence.

I am surprised that the editor of a journal should not as a matter of principle have declined to publish, without permission, the private formulæ of an existing firm communicated by one of its late employés.

30, Conduit Street, W., March 31, 1896. THOMAS GREENISH.

* * * The foregoing letter is inserted according to the desire of Mr. Greenish that it should "without fail" appear in this week's Journal. The Editor regrets the mistaken impression under which it appears to have been written, the more so as he has been informed by Mr. Ince that the formulæ referred to had become obsolete even in his time, and obviously they are only of antiquarian interest.

UNDUE CUTTING IN THE RETAIL TRADE.

Sir,—Mr. Ferguson calls for a simple scheme, here it is:—Experiment—"Chemists' Proprietary Association"; 100 members start at 5s. per share, £25. They take half a dozen each "C.P.A. Liver Pilules."

50 doz. at about 5s. per doz.	£12 10 0
50,000 handbills, about	2 10 0
Carriage and other expenses.....	2 10 0

17 10 0

50 doz. bottles sold at 10d. each bottle	25 0 0
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Equal to 30 per cent. profit	£7 10 0
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Points in favour:—No cutting, no signing agreements, fair profit, no secret medicine dealing (composition of articles stated on label), business confined to chemists and druggists, etc. Try above, Mr. Ferguson, and get 100 chemists to combine! Combine!!

London, March 19, 1896.

ASSISTANT.

CASH CHEMIST.

Sir,—I have read the letters bearing upon the above subject, and am quite of opinion that the use of the title chemist by any person or persons not registered under the Act of 1868 is illegal. I consider that the inaction of the Council in the matter implies blind indifference to the letter and spirit of the Act. We are told that it has been decided that a limited company is outside the Act, a thing inanimate, existing in name only, therefore cannot pass an examination, which, the Act says, shall be the test of efficient skill and knowledge. The Commission on the Limited Liability Act, the Lords Justices of Appeal, and the Common Law, which is understood to be common sense, say that the 1868 Act is sufficient. Then why is it not put in force?

What is required to carry out the Act? Let every member of the Council remaining by rote, unwilling to put the means into operation, retire or resign. Let the members seek out a pharmaceutical Cromwell and thirteen other good men and true as colleagues, and elect them on the Council in May next. For the present we have had enough of education and benevolence. The Government of the day placed the administration of the 1868 Act in the hands of the Council of the Society, which has registered all eligible persons who applied without fee, supplied all the machinery for carrying out the Act, and is charged with keeping correct Registers and granting certificates to competent individuals.

In the preamble to the Act the word persons (plural) occurs three times, namely, (1) "'persons' keeping open shop, etc., for retailing of poisons"; (2) "'persons' known as chemists and druggists"; and (3) "from and after the day named all 'persons' . . . be duly examined, etc." I contend, on the strength of all these data, that it is illegal for the Board of Trade to grant a certificate to any persons to carry on the business of chemists and druggists, and that it is the duty of the Pharmaceutical Council to set aside these illegal companies on the same grounds as patents have been set aside.

Can this be done? Yes! Is the Act sufficient? Yes! Does the present Council know how to do it? Yes! Then why is it not done? I will leave those who care to reply to speak for themselves. What are the members to do? Send men with definite instructions that it must be done. Justice and equity should predominate at the Square and Somerset House alike. I hope all our thinking men will take up this matter of the suppression of illegal companies and the illegal use of the title chemist in earnest, speak out boldly, and give definite instructions to the new Council in May.

Spital Hill, Sheffield, March 29, 1896.

G. ELLINOR.

THE BENEVOLENT FUND—A SUGGESTION.

Sir,—In the interests of the splendid Benevolent Fund of the Pharmaceutical Society, in which for many years I have taken a deep interest, I should like with your kind permission to make a suggestion, which, if put into practice, I am inclined to think would prove a strong incentive towards a largely-increased subscription list. I would recommend that at the end of the list of subscriptions which you publish in the Benevolent Fund Supplement of the Journal in February each year, a general summary of the different places contributing should be made, to be arranged in order of merit, namely, according to the value of the amounts sent up by each town for the previous year, and also giving details of population, name of the local secretary, and the number of the subscribers, thus:—

Name of Town (or Division in London).	Population.	Name of Local or Div. Sec.	Number of Subscribers.	Amount Subscribed.
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A little rivalry is a capital thing, and an annual list of this kind would doubtless create a considerable amount of interest amongst members of the craft throughout the country, as the chemists in each town will assuredly be anxious to see their own town or city standing well up in the list, and it would also serve the useful purpose of bringing into a strong light the varying amounts of energy and work put into their duties by the local and divisional secretaries, upon whom the responsibility of a good or bad annual collection chiefly depends. Nearly every chemist upon the Register can afford to subscribe something, say 2s. 6d. per annum, and the great majority of them would do so, provided it is put fairly before them year by year, and a small subscription like this, if given by all, would be amply sufficient to keep the Benevolent Fund in a flourishing state.

Cardiff, March 17, 1896.

ALFRED COLEMAN.

COCAINE IN OINTMENTS.

Sir,—*Re* the "caution" concerning cocaine in ointments, which appears in the *Ph. J.*, March 28 (p. 249), the experience of the chemist which occasioned its publication might be of some value to me as one of the "some readers of the Journal," had the narrator supplemented his tale with the "wherefore" of the dispenser's procedure. For instance, amongst other things, it might be of interest to know why the unfortunate dispenser found it necessary to use heat in making the ointment stated? What was his object, and had he scratched his head in formulating his method? Also, after his consultation with the Crown Counsel mentioned in the note, and the subsequent brightening of his mental sky by mental fireworks, was he quite sure that the reason was clear, viz., that the alkaloid was decomposed in the hot fat? Perhaps the gentleman who so vigorously recounts the incident, and so eloquently points the moral, will be further able to enhance the value of his note by some explanation on the lines indicated.

London, March 30, 1896.

P. GREEN.

SHOPS (EARLY CLOSING) BILL.

Sir,—It has been said by some that this Bill will interfere with individual liberty; but when individual liberty is carried so far as to make an assistant work fourteen or fifteen hours a day, it is time it should be curtailed. Generally, employers are so selfish that their employés require some protection from their tyranny, and what they will not do for humanity's sake, they should be compelled to do by law. The Bill aims a blow at one of the greatest evils of the present day, and there are employers who would be only too glad to close their pharmacies at an earlier hour if their neighbours would do likewise. Most assistants are strongly in favour of the Bill, and it is with great dissatisfaction they learn that the Council of the Pharmaceutical Society does not intend supporting this measure. It is earnestly to be hoped that at the next election men will be returned who will be more considerate of the interests of those they represent than the present Council.

London, March 23, 1896.

"LIBERTAS."

SHOPS (EARLY CLOSING) BILL.

Sir,—I have to thank you for the insertion of my letter in the Journal on March 10, as well as for the prominence given to the question of early closing since that date. In regard to your remarks on that letter, assistants cannot be always on the move when hours are not exactly as they would like. The correspondence has been very gratifying and instructive, and in one case amusing. Out of eight letters only two are opposed to early closing, so that this correspondence has not been amiss, but shows that a majority are favourable to the measure. If chemists are to be classed as professional men, why should not they, like medical men, be able to say that their hours are so-and-so? If there were the same professional etiquette amongst us there would be no difficulty as to early closing. It is rather late in the day now to suggest that a plebiscite of the trade be taken in regard to Sir John Lubbock's Bill, seeing the progress it has made; but if you, sir, were to take the trouble, I am sure everyone would be pleased to abide by the result. Would it be too much to expect the Council at its next meeting to take more decided action regarding it; as yet they have committed themselves to nothing but watching. What is watching without action? We are all watching the progress of the Bill. I am especially indebted to Mr. Sanders, of Cardiff, for his able letter on my behalf, as well as the other gentlemen who have written in favour of early closing. I hope all those who have votes will vote for those candidates for seats on the Council who are favourable to the Bill, and not for those who are opposed to what some called "grandmotherly legislation." With kind regards and best wishes for yourself, sir, and for the Journal, which I do not intend to be without.

Dundee, March 30, 1896.

EARLY CLOSING.

* * * With regard to our correspondent's suggestion, we are not so sure as he seems to be that "everyone" would be willing to abide by the result of an informal vote such as he suggests, and as he surmises, it is rather late for any such general expression of opinion to be ascertained. At the same time we shall be very glad to hear from anyone who either approves or disapproves of the principle of the Bill, and there could be no objection to recording the number on each side who take the trouble to express an opinion. [Ed. Pharm. Journ.]

Sir,—In my opinion, the Bill mentioned is sadly needed, and more especially by chemists and their assistants than any other branch of shopkeepers. At present the understood hour for closing shops in the district where I am engaged is 9 p.m., but it is not recognised, as certain shops are to be seen full blaze at 10, and even 10.30 p.m. Is that fair? I do not understand why shopkeepers, who would otherwise close at a proper time, should be debarred from doing so, all because a few grabbing employers keep open to all hours, praying for a chance copper, besides encouraging the public to come late. Is it reasonable to expect a higher grade of education from students under such unfavourable circumstances? How are we to qualify except by cramming? I am certain that earlier closing would prove beneficial in every way, and a boon to chemists' assistants; and by Act of Parliament is the only way to gain a satisfactory result.

Glasgow, March 23, 1896.

THOMAS BOYD.

Sir,—The different conditions which affect the chemist's business according to the locality in which it is placed will probably account for the different views taken of Sir John Lubbock's Bill. Otherwise everyone would welcome the prospect of shorter hours. Any law which imposed the same hour for closing on the wealthy and on the poor districts of a town would not only press heavily on the shopkeeper but would inflict such inconvenience on the public that it would be evaded or set at open defiance. The discussion on the subject should, however, be carried on without misrepresentation. Your correspondent, Mr. H. E. Durbin, of Putney, said in last week's Journal:—"Already in the Council Meeting Messrs. Hampson, Martin, Allen, Hills, and Gostling have objected to the State protecting assistants from the greed of employers. These gentlemen have not the welfare of the assistants at heart . . ."

Evidently Mr. Durbin is unacquainted with the gentlemen he criticises. Two of them have retired from business and no longer employ assistants, but I am quite sure that in the whole ranks of pharmacy there could not be found five gentlemen who have the

welfare of assistants and of the trade generally more at heart, and few establishments, indeed, where the business hours are shorter or the assistants better cared for than the respective houses of the gentlemen enumerated. The report of the proceedings at the last Council Meeting does not bear the interpretation Mr. Durbin puts on it. Surely it is permissible to object to Government interference without wishing to oppress employes or keep open the shop until 10 or 11 o'clock at night. If the principle is once established it may be carried to greater lengths than many of us will like.

225, Oxford Street, W., March 25, 1896.

J. R. WRETTS.

Sir,—I think this Bill ought to be supported, and that it will be a great mistake if chemists do not seize this opportunity of ending, once for all, the perennial difficulty of early closing. The entirely permissive character of the measure is a sufficient reply to those members of the Council who opposed it at the March meeting, and, if a two-thirds majority is not considered enough, by all means let it be three-fourths. The Act would simply confirm a resolution of the chemists themselves, and provide for the effectual and equitable carrying out of the same. In my opinion, however, the saving clause for chemists is too loose as it stands, and would operate unfairly on the large number who do not maintain a night service. The rule ought to be "all lights out" at the hour agreed on for closing. But undoubtedly the best plan would be to prohibit the sale of all articles whatsoever after closing time, except on the written order of a duly qualified medical practitioner, veterinary surgeon, dentist, or certificated nurse. I am convinced that nothing short of this would be satisfactory to the owners of "lock-up" shops, and as these form the great majority (at least in my part of the country), the adoption of the Act would rest with them. Although there might be a little friction just at first, I am sure the public would soon fall in with the new order of things, and get into the habit of keeping a stock of such domestic remedies as are likely to be required on an emergency. In conclusion, let us remember that whatever form the measure may ultimately assume, the adoption or otherwise of its provisions will rest entirely in our own hands.

Aberdeen, March 16, 1896.

SPES.

Sir,—Speaking after an experience of over thirty years behind the drug counter—most of which time I have worked fourteen hours daily, and sixteen hours on Saturdays—I may say I cordially approve of the measure, now in committee of the House of Commons. Of course, the single-handed chemist will reap most benefit from it, for he is practically tied to the shop so long as it is open. On the other hand, a man who can afford several assistants will not be so much affected by it, as he can go out and come in whenever he chooses, and, if he lives away from business, can go home as early as he wishes. The subject has been discussed over and over again, until I am heart-sick at the slow progress made. It is time we had deeds, not words. The chief objection urged against this Bill is that we shall lose business by it. Well, perhaps we may, but, after all, what is the loss of a few shillings to the gain in health and comfort which will be secured by shorter hours? I have looked forward for many years to the time when we shall close at 7 p.m., and should even like to see all shops closed at 5 or 6 on Saturdays—many shops already close about that time. This would make "life behind the counter" more what it ought to be, instead of the white slavery it is now.

Liverpool, March 24, 1896.

WALTER A. GRACE.

Sir,—Having served on the local committee for early closing, I am convinced that nothing but legislation will effectually curtail the present abnormal hours of labour. I have sounded many of my *confrères*, and all express the hope that Sir John Lubbock's Bill will speedily become law.

Richmond, S.W., March 25, 1896.

R. A. BLANCHFORD.

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs. Blanchford, Blackburn, Cupit, Dott, Forrett, Greenish, Haigh, Hill, Ince, Jarvis, Jeeves, Lownsbrough, Midgery, Muir, Reynolds, Schneider, Taplin, Tame, Walker.

STERILISATION OF MILK.

BY J. A. FORRET.

Sterilised milk is now frequently used for infant feeding, especially for infants of tender age. Though it is a commercial article it is not always available as such; and in many instances there will be the desire to prepare the milk at home, as often and in such quantities as may be required.

It is generally accepted that milk subjected to a temperature of 100° C. for twenty or thirty minutes, undergoes practically the same chemical changes as result from sterilisation under pressure, *i.e.*, at a temperature above 100°. Dr. C. W. Earle* states that both clinical and chemical evidence lead to the belief that milk is injured as a food for infants by being heated to any temperature above 80°; and that pasteurisation at a temperature ranging between 70° and 80° destroys most of the ordinary germs of milk, including the bacilli of tubercle, typhoid, cholera, etc., whilst the milk itself is not injured.

How then can the "cooking" be carried out by means of ordinary domestic utensils, and without employing a thermometer? Dr. Earle says that milk may be pasteurised by simply immersing the vessel containing it in boiling water that has been removed from the source of heat, and leaving it so immersed for half an hour. There is no mention of the volume of water relative to that of milk necessary to raise the latter to the required temperature. Mr. Malcolm Morris† directs the bottle containing the milk to be placed in a suitable vessel containing cold water, and the temperature of the water slowly raised to the boiling point. The vessel is then to be covered with a woollen cloth and set aside for half an hour. Here, again, the proportion of water to milk is omitted. Obviously, if the same proportions of water and milk be taken in both cases, the maximum temperature of the milk will be much higher by the latter method than by the former.

A pint of milk contained in an ordinary jar requires a bath of from eight to ten pints of boiling water to raise its temperature sufficiently high. The amount of heat required by this method is enormously greater than by that of Mr. Morris. The directions given by Mr. Morris, however, are insufficient: if we "heat slowly on a stove," overheating of the milk may result, whatever be the proportion of water to milk.

Experiments were made with the view of determining suitable proportions and formulating simple directions for sterilising. "Heat slowly," "heat over a brisk fire," etc., are at best vague. Perhaps the best way to indicate the amount of heat is to state the time required to boil a given quantity of water in which the vessel containing the milk is immersed. If the heat employed take longer than the time stated, the temperature of the milk will be too high, and *vice versa*. "Place a jar containing a pint of milk in three pints of water contained in a cylindrical tin vessel, of such size that the level of the water and milk are about equal when the jar is supported about half an inch from the bottom of the water bath; raise the temperature of the water to the boiling point, after which allow the milk to remain in the water for about fifteen minutes. The heat employed should boil the water in not less than twenty-five minutes, and not more than thirty-five minutes." When the water boils the temperature of the milk is about 75°, and rises till it meets the falling temperature of the water, attaining a maximum of 78°-80°.

There is a further important point in connection with the sterilisation of milk which I think has not received sufficient attention. When the milk is heated the separation of cream is much

more complete, and the cream forms a more compact layer than is the case when the milk is merely allowed to stand at ordinary temperature. If the milk be treated in an open jar and not stirred, a tough skin forms on the surface, and such milk is impoverished by loss of fat in the removal of the skin, together with more or less of the cream adhering to its under surface. When a closed vessel is used for the milk this loss is avoided, but the cream is diffused with difficulty by stirring or shaking, and appears in small clots or flakes.

"As it is easier to prevent precipitation than to re-dissolve a precipitate once formed," so is it easier to prevent separation than to diffuse the cream once separated. The milk, therefore, should be frequently stirred while in the water bath and till its temperature is practically normal.

ON THE ASSAY OF CREAM OF TARTAR.

BY C. A. HILL, A.I.C.

Having been in the habit of determining the potassium hydrogen tartrate in "cream of tartar" by means of direct titration with alkali, and having found that this process gives accurate and trustworthy results, I have thought it desirable to bring these facts before the notice of pharmacists, not only because the method is far more convenient and expeditious than the ignition process recommended in the British Pharmacopœia, but also in order to notify the fact that the latter process is quite inaccurate, owing to the loss of potassium carbonate from reaction with the calcium sulphate which occurs in commercial "cream of tartar." The presence of calcium tartrate does not affect the result.

For the assay, about 1 gramme of the substance is weighed out into a flask, and warmed with a slight excess of $\frac{N}{5}$ soda. The excess of alkali is then titrated with $\frac{N}{5}$ sulphuric acid, phenol-phthalein being used as an indicator.

The following analyses show the composition of three commercial samples. The total calcium was determined, and the amount over and above that sufficient to account for the sulphuric acid was calculated as tartrate. In sample No. 1 the amounts of lime and sulphuric acid exactly tallied.

No. 1.	
Potassium Hydrogen Tartrate	96.00 per cent.
Calcium Sulphate.....	4.20 "

	100.20 "
The value found by the ignition process was	84.50 per cent.
Correction for 4.2 per cent. of Calcium Sulphate	11.61 "

	96.11 "

It will be seen that this corrected value agrees well with that found at once by the direct titration.

No. 2.	
Potassium Hydrogen Tartrate.....	89.41 per cent.
Calcium Tartrate	10.55 "

	99.96 "

The value found by ignition process was 89.35 per cent., showing that in the absence of calcium sulphate identical results are obtained by the two processes.

No. 3.	
Potassium Hydrogen Tartrate	90.73 per cent.
Calcium Sulphate	2.46 " "
Calcium Tartrate	6.69 " "

	99.88 " "

* *Pharm. Journ.* [3], xxiii., 263.† *Pharm. Journ.* [4], i., 149.

lower reducing flame until it has become brightly red hot. Break up the fused mass and charcoal in a small agate mortar, and carefully wash away with water everything but the reduced metallic beads or powder.

The following scheme shows how the metals may be distinguished, but of course it is advisable to apply confirmatory wet-way tests :—

Easily fusible to white metallic beads.	{ Ductile { Marks paper—Lead. Does not mark paper—Silver, Tin. Brittle { Antimony. Bismuth.
Difficultly fusible forming scales	
Infusible, forming gray or black powder	{ Red—Copper. Yellow—Gold.
	{ Magnetic { Very—Iron. Slightly—Cobalt, Nickel. Non-magnetic—Platinum.

Borax on platinum wire.—The oxides of certain metals have the property of forming variously coloured beads when heated with borax in the reducing and oxidising regions of a Bunsen flame. Many of the colours are quite characteristic. It must be remembered that these tests apply only to salts capable of conversion into oxides in the flame. Sulphides should first be roasted before being used.

Borax Beads.

Element.	Oxidising Flame.	Reducing Flame.
Manganese.....	Amethyst	Colourless
Copper	{ Hot, green Cold, blue	Brown-red, opaque
Iron.....	{ Hot, yellow; Cold, colourless or pale yellow	Pale green
Nickel..	Reddish-brown	Grey, opaque
Cobalt.....	Blue	Blue
Chromium	Green	Green

In conclusion, I should like to recommend a closer acquaintance with these tests to my younger friends. They are all extremely delicate, and often yield very decisive results with little loss of time, besides giving more exercise in the use of one's powers of observation than the more systematic methods of wet-way analysis.

THE CINCHONA PLANTATIONS OF MADRAS.

The Revenue Department of the Government of Madras has issued a report by Mr. M. A. Lawson, Government Botanist and Director of Government Cinchona Plantations, on the receipts, expenditure, and general condition of the plantations. From the report, which is dated June 10, 1895, and which deals with the Dodabetta, Nedivattam, and Pykara estates, it appears that the season during the past year was unusually dry, the rainfall on the Dodabetta estate being 26.85 inches, and on the Nedivattam estate 13.79 inches less than that gauged in the previous year; but the exceptionally dry season does not seem to have affected the crops to any appreciable degree, the output of bark on the three estates having been 125,557 lbs., which added to the amount in stock at the beginning of the year, made a total stock of 393,701 lbs.; of this quantity 198,572 lbs. were disposed of during the year, leaving in stock in the store-houses at the commencement of 1895, 195,129 lbs.

The Dodabetta estate has greatly improved, and the estimated annual output of bark, viz., 100,000 lbs., is double the quantity harvested in former years. This satisfactory result is to be attributed to deep trenching, deep digging, and heavy manuring. Where the soil is poor, weeds have been sown and manured, and these weeds being dug in every year have greatly decreased the poverty of the

soil. Fifty-one thousand pounds of dried crown bark were taken from this estate during the year, an amount which could easily have been doubled had the extra quantity been required. The several plots known as the "Picnic ground," and consisting of about forty acres, have not now been barked for many years; the trees upon it are very fine, very healthy, and are of a uniform variety. All other varieties or species have been uprooted, and it is from the best trees in the centre of this ground that the seed is taken which is required for the several estates; this means that a pure strain of the very best sort of the crown barks is ensured. The plants raised from this seed are undoubtedly more vigorous in their growth than those raised from hybrids, the latter having greatly deteriorated during the last twelve years. Nevertheless, it cannot be affirmed that the plants raised even from these carefully-nursed trees are nearly so vigorous or long lasting as those raised from seed taken from the same trees twelve or fifteen years ago, and it would therefore be very desirable if Government could procure a fresh supply of seed from South America.

The Nedivattam estate, the most difficult of all to deal with, owing to the great mixture of varieties which were originally planted out upon it, is not doing so well as had been hoped for, though for no fault or want of care on the part of the superintendent. All the new plantations have been deeply trenched, and dug, and heavily manured, and yet in many plots the trees do not show the same satisfactory growth as is visible on the Dodabetta estate. This appears attributable to two causes: First, most of the new plantings consisted of crown hybrids raised from Dodabetta seed (and these, as has been said above, have much deteriorated). Secondly, the land on which the trees have been planted was second-hand land, so to speak; that is to say, it was land upon which cinchona had been grown before. The plan now adopted on this estate is as follows:—When a plot is cleared, the trees are cut down, but not uprooted, and the ground is not meddled with for two or three years; by this time the stools of the trees have thrown up shoots three or four feet in height, and the ground is also covered with a dense growth of weeds. The land is then pitted, but the weeds surrounding the pits are not disturbed. The shoots afford shade and shelter to the young plants, and the weeds conserve and add to the nutritious properties of the soil. If the weeds are entirely removed, and the whole land kept perfectly clean, what little organic matter is left on the surface of the soil is burnt up during the hot weather, and the nitrogenous matter and all soluble salts are washed out of the soil during the rains, the result being that the land is left miserably poor. The Pykara plantation has greatly improved during the last ten years. The trees on it are for the most part of a good sort, crown and crown hybrids, and all the young plantations have been deeply cultivated and manured. There are still patches of red bark here and there, upon the plantation, and there is a considerable area which was planted up twelve years ago with Nedivattam hybrids. The trees on these plots will in due course be replaced with pure *Cinchona officinalis*; a small portion on a barren ridge has been abandoned for the present, as it is hoped that it may recuperate if left fallow for some years.

The manufacture of quinine and febrifuge in the factory at Nedivattam was carried on almost continuously during the past year; 4770 lbs. of sulphate of quinine, and 1756 lbs. of febrifuge were turned out during the twelve months, of which 3631 lbs. of quinine and 3956 lbs. of febrifuge were sold during the same time, leaving, together with previous amounts in stock, 4984 lbs. of quinine and 1946 lbs. of febrifuge on hand at the beginning of 1895. It is estimated that the value of the quinine, febrifuge, and other drugs manufactured at the factory during the past year would amount to 84,740 rupees.—*Board of Trade Journal.*

NOTES ON THE PREPARATIONS AND FORMULÆ OF THE BRITISH PHARMACOPŒIA.

SYRUPS.

(Concluded from page 225.)

Syrupus Rhei.—This is certainly a most objectionable preparation. It is very liable to become fermented or crystalline, it is nauseous in flavour and unsightly in appearance. It is, nevertheless, an important preparation, and the formula requires a considerable amount of revision. Primarily it is an alcoholic preparation, a dilute spirit being used to exhaust the two ingredients, which are ordered to be in No. 20 powder. This is too fine a state of comminution; a coarse powder percolates far better. These drugs are supposed to be exhausted by percolation only, no maceration or subsequent pressure being deemed necessary. It is a tincture; why not proceed as with a tincture—macerate, percolate, and press? This tincture is then ordered to be evaporated, which process involves the loss of both spirit and essential oil. The evaporated liquor is then directed to be filtered. If this is done whilst hot the filtering medium retains little or nothing, and if cold it takes hours to filter a pint, and seems a superfluous operation. A better plan to adopt, if the tincture has to be evaporated, is to dissolve the sugar in the hot liquor. By so doing the fine precipitate peculiar to rhubarb does not occur. It is difficult to imagine any sufficient reason why spirit which has done duty in connection with *syrupus papaveris* should be recovered by distillation, whilst under quite similar circumstances such spirit is directed, in the formula for *syrupus rhei*, to be evaporated into the atmosphere and lost.

A better-flavoured syrup would be obtained by omitting the coriander fruit and adding at the end of the process its equivalent of essential oil dissolved in a little rectified spirit. As now ordered to be made, practically the whole of the aroma of the coriander is driven off during the evaporation of the percolate. It is obvious to all who have made this syrup what a distinctly crude preparation it is, and how antagonistic to the first principles of practical pharmacy. The Continental and American practitioners seem to prefer an alkaline preparation in this syrup, for no fewer than nine pharmacopœias order it to be made in combination with alkalis, such as sodium or potassium carbonate and bicarbonate. This method does produce a nice syrup, but its introduction into English medicine is not likely to be appreciated as it is seldom called for, nor is it advisable to introduce a chemical preparation of a drug like rhubarb when so little is known about its constitution. Squire proposes using a liquid extract, dissolving the sugar in it and adding essence of coriander if necessary. This is an excellent proposal, but of no avail unless a liquid extract is to be introduced. Instead of this form, a modified one might be used with advantage by first preparing a liquid extract of the root and using glycerin and water as the menstruum, somewhat following the process given in the unofficial formula for making *syr. pruni virg.*—

Rad rhei, coarse powder	15 parts.
Sugar	70 "
Glycerin	15 "
Water to	100 "

Mix the glycerin with three times its volume of water, and in this mixture macerate and percolate the drug, and continue to percolate with water until 45 fluid parts have been collected. In the percolate dissolve the sugar, without heat and preferably by repercolation, and make the product measure 100 fluid parts. If desirable, an essence of coriander can be added. This produces a syrup which keeps well and is of pleasant flavour.

Syrupus Rhæados.—This formula is a good one but requires careful attention to detail, otherwise the syrup is liable to undergo fermentation on keeping. The poppy petals should be quite fresh and free from any signs of blackening due to heating or incipient fermentation. During the whole time of adding the petals the full heat of the water bath should be maintained, and the petals should be added very gradually, in order to ensure thorough contact with the hot water, and also to prevent the temperature from falling too low. When the liquor is pressed and strained it should be heated to the boiling point and filtered bright as quickly as possible. The sugar should then be dissolved in the filtered liquid, and taking care that the gravity does not at any time exceed the normal, the whole should be gently boiled for one or two minutes, any matter which separates being removed by skimming. When cold the spirit should be added and the syrup completed as officially directed. The flavour is not injured by ebullition, provided that it be not unduly prolonged. Attention to the foregoing points ensures a product, which, when properly stored, does not ferment or spoil. The use of enamelled iron or porcelain vessels might with advantage be specified, as contact with iron or copper injures the colouring matter.

Syrupus Rosæ Gallicæ is rarely used. Its omission has been recommended, but, if retained, the present unsatisfactory formula will doubtless give place to one constructed on the lines of the U.S.P. Coull (*Ph. J.*, liii., 786) has proposed a suitable modification of the latter, in which powdered rose leaves are percolated with a mixture of rectified spirit, glycerin, and water, and the percolate mixed with four times its volume of simple syrup. It is an easy matter to prepare a bright, clear syrup of the petals by this form:—

Rose petals	10 parts.
Glycerin	1 "
Spirit, rectified	10 " fluid.
Sugar	66 "
Water to	100 " fluid.

Mix the spirit and the glycerin, and macerate the rose petals, then percolate until 33½ fluid parts are collected. In this percolate dissolve the sugar without heat, and make the product measure 100 fluid parts. This formulæ produces a better syrup than by the infusion process now employed, which is open to many objections, as the infusion is only filtered with great difficulty, and often becomes mouldy before completion unless great care is taken.

Syrupus Scillæ.—The high specific gravity constitutes the chief defect of this formula, anything above 1.330 being incompatible with good keeping qualities. Reduction of the quantity of sugar ordered to 2¼ lbs. would set matters right in this respect. It is important that diluted acetic acid of full pharmacopœial strength, and squill neither damp nor mouldy through absorption of moisture, be used for the acetum scillæ, which, further, should be allowed to stand for a few days, and carefully filtered before being made into syrup. The weight of the finished product might also be stated, and directions added to adjust the weight when cold by the addition of diluted acetic acid. Syrup of squill prepared as above is unexceptionable. The use of an acetum scillæ containing a larger proportion of acetic acid has been suggested, but does not appear necessary.

Syrupus Sennæ is a palatable and efficient preparation of senna. The weak point about the formula is the evaporation by heat of the mixed expressed liquors. A high temperature, according to our present knowledge of the pharmacy of senna, is detrimental to the activity and general properties of the drug: improvement might doubtless be effected in this direction. Two methods are available. Either the senna might be treated twice by expression with a menstruum containing 25 per cent. of rectified spirit and the

pressings mixed and filtered, or the leaves might be exhausted, within the required volume, by repercolation with cold water, the remainder of the official process being carried out as it stands. In either case the application of heat would be avoided and an improved product result. A good process is to exhaust the leaves with cold water by repercolation, so as to obtain a liquid extract of a given volume. To this add the spirit and the coriander oil, and filter. It is best to add strong spirit of about 90 per cent., as the extractive present in the liquor is considerable, and requires often a large quantity of spirit to coagulate it. The spirit, unless it is strong, adds unnecessarily to the volume, besides which, strong spirit more readily separates the extractive and the filtration is more rapid. In the filtrate, dissolve the sugar without heat, and make up to a given volume. A process like this would avoid the application of heat, and is less trouble to manipulate than the present one.

Syrupus Tolutanus.—This formula requires modification. Boiling the balsam for half an hour in a lightly covered vessel with occasional stirring causes the loss of a large proportion of the odorous principle, and the liquid, when allowed to cool before filtering, deposits crystals of cinnamic acid, etc., much of which would otherwise be retained in the syrup and increase its taste and flavour. The directions might be altered as follows:—Heat the balsam and the water in a closely covered vessel to near the boiling point for half an hour, stirring frequently. Filter the solution whilst hot, and wash the contents of the filter with boiling distilled water to 16 fl. ozs. Dissolve the sugar in the filtered liquid. Slight decomposition of the cinnamic acid may take place under the prolonged application of heat, with formation of other bodies of the aromatic series which communicate a benzene-like odour to the syrup on keeping. Excess of heat should therefore be avoided. A similar odour also develops in syrup of tolu which has undergone slight fermentation through being improperly stored in too warm a situation. The use of porcelain or enamelled iron vessels might be specified. Contact with iron darkens the colour of syrup of tolu, and copper is taken up when preparations of tolu are made in vessels of that material.

With a view of producing a better flavoured syrup than that yielded by the official process, two other methods have been proposed. One, devised by F. Stephenson, consists in powdering the balsam with a portion of the sugar and extracting the soluble constituents with cold water, either by percolation or maceration. The liquid is filtered and the sugar dissolved in it by agitation without heat. Another process depends on the use of alcohol. Several formulæ have been published, but that given in Squire's 'Companion' is perhaps the simplest. "Dissolve bals. tolu, $1\frac{1}{4}$, in S.V.R., $1\frac{1}{4}$, add the solution to simple syrup, 34, shake thoroughly, and filter." Both these methods produce syrups of excellent flavour and are worthy of consideration by the compilers of the new pharmacopœia. These two formulæ well illustrate the increasing tendency of modern pharmaceutical practice towards the conservation, in unchanged condition, of the active principles and odorous constituents of drugs by the substitution of such processes as repercolation, cold maceration with expression, etc., for the time-honoured methods of decoction and boiling down generally, which even now characterise many of our official formulæ.

A very fragrant preparation is that prescribed by the U.S.P.—

R Balsam tolu.....	146 grs.
Alcohol.....	$12\frac{1}{2}$ fl. drs.
Calc. phosphate.....	$1\frac{3}{4}$ ozs.
Sugar.....	$33\frac{1}{4}$ ozs.
Water to produce.....	32 fl. ozs.

Dissolve the balsam in the alcohol, incorporate with it the calcium phosphate and 5 ozs. of sugar. Allow the alcohol to evaporate,

and then add 16 ozs. of water; mix well and filter. In the filtrate dissolve the remainder of the sugar, and bring up the final volume to 32 fl. ozs. by the addition of water.

Syrupus Zingiberis.—The unattractive appearance of the product of this formula renders it anything but illustrative of elegant pharmacy, and although lacking nothing in either pungency or flavour, a formula yielding a bright article seems to be a desideratum. It is doubtful if anyone can produce a better flavoured syrup of bright appearance miscible with water. None of the so-called soluble essences have any medicinal value. If an alcoholic solution of the ginger is saccharated, it will be clear, but directly it is diluted the resinoid matter will certainly be precipitated. On the other hand, if an alcoholic preparation is added to simple syrup, the syrup will become turbid, as at present.

The following modification is suggested:—

Strong tincture of ginger.....	1 fl. oz.
Distilled water.....	A sufficiency.
Pumice in fine powder.....	90 grs.
Refined sugar.....	$17\frac{1}{2}$ ozs.

Mix the pumice with one fluid ounce of the water. Add the tincture, shake well, and allow to stand for one hour. Filter bright, and wash the contents of the filter with water to 9 fluid ounces. In this dissolve the sugar by agitation in a closed vessel at a gentle heat.

Proposed New Official Syrups.—The following syrups have been recommended for insertion in the next edition of the Pharmacopœia:—Syr. codeinæ, ferri phosph. co., ferri quininae et strych. phosph., ferri quininae et strych. hydrobrom., hypophosph. co., picis liquidæ, and pruni virginianæ. Formulæ for these have been published and tested by experience, and the syrups themselves are extensively prescribed. By their inclusion the Pharmacopœia would be enabled to fulfil, as far as this class of preparations is concerned, not the least important of its functions, viz., that of truly reflecting the medical practice of its day.

PHOTOGRAPHY FOR CHEMISTS.

LANTERN SLIDES BY REDUCTION.

When a negative happens to be of larger size than a quarter-plate, it rarely happens that we can print a small portion by contact on a lantern plate without spoiling the composition of the picture. This is assuming, of course, that the operator has composed a picture, and not put his camera down anywhere. There is no great difficulty in making lantern slides by reduction; the exposure is the only bugbear, as usual.

There are two distinct methods of reduction: (1) daylight; (2) artificial light. There is nothing to choose between them, and the question of time and opportunity must decide which is to be adopted. The apparatus required is not expensive. It can be made in odd moments for a few pence, and is applicable to day and artificial light. It consists of a printing frame the size of the large negative, four pieces of bamboo a quarter of an inch in diameter, some black twill, the ordinary camera and lens, and a carrier to take lantern plates $3\frac{1}{4} \times 3\frac{1}{4}$ inches.

The negative is placed in the printing frame upside down and kept in position by four little slips of wood, or better still, a frame such as the gold slip used in picture frames, which will fit tightly into the frame and hold the negative securely. Of course brads may be driven into two sides of the frame, and the negative slipped behind them, but in this case it is necessary to safe edge the negative. This is done by cutting strips of tin foil just wide enough to cover the rebate of the negative so that no clear glass can be seen, these should be pasted and stuck on the glass of negative round the

four sides. The strips of bamboo are either nailed to the printing frame or merely fastened together by stout copper wire, the shape being exactly that of the printing frame. The other end of the bamboos are tied with stout string to a piece of cardboard tube, postal tube, which slips over the lens. The length of the bamboos depends upon the focus of the lens and the amount of reduction. It will sometimes be found convenient to have the bamboo in two lengths; thus, supposing we want as a general rule 36 inches, two pieces, 24 inches each, should be obtained, and by fastening these together in the middle by two loose rings of copper wire we can extend them to 48 inches or reduce them to 24 inches.

The black twill or the focussing cloth (or even a dark table-cloth may be used) must also depend for its size on the length of bamboo, but sufficient should be obtained to completely cover over the space between lens and negative, and hang down on each side.

Of course, two laths of wood can be used, merely resting them on the top of printing frame and camera, but the other plan is preferable, the arrangement being more complete and adaptable to both day and artificial light, and also more rigid, especially when the camera is sloped towards the sky.

The ordinary camera may be used, but a carrier to take lantern plates must be used in the dark slide. The ordinary lens may be used unless of inordinately long focus, when it becomes inconvenient on account of the great distance between negative and lens. To find the required distance there is a simple rule which is as follows:—

(a) Divide the longer base of the plate by the longer base of the image required, to the quotient add 1, and multiply by the focus of lens used; the result will be the distance between negative and lens.

(b) Divide the distance found as above by the quotient obtained in the first rule, and the result will be the distance between lens and plate.

Example.—What are the relative distances in reducing a whole plate negative, $8\frac{1}{2} \times 6\frac{1}{2}$ inches, to lantern size with an 8-inch focus lens?

Now that the whole of the lantern plate is not used, we reckon that 3 inches is all that can be used, because of the mask, hence:—

$$(a) 8\frac{1}{2} \div 3 = 2\frac{7}{6} = \text{the amount of reduction.}$$

$$2\frac{7}{6} + 1 \times 8 = 2\frac{2}{3} \times 8 = 30\frac{2}{3} \text{ inches.}$$

$$(b) 30\frac{2}{3} \div 2\frac{7}{6} = 11 \text{ inches (practically).}$$

Therefore, if we place our lens about 30 inches from the negative and rack the camera out to about 11 inches, we shall have an image on the ground glass which merely requires a little adjustment of the camera screw to be sharp and of the right size. In focussing it is always advisable to temporarily affix to the outside of the focussing screen a square mask, this being, of course, accurately placed as regards the centre of the screen, and to use a focussing magnifier to obtain critical sharpness.

Having satisfactorily arranged our image as regards composition by shifting the camera nearer to, or farther from, the negative—because it will be obvious that the nearer the lens to the negative, the less of the negative we shall include, and *vice versa*—we fill our dark slide and are ready for exposure.

For daylight work the arrangement of frame and camera should be placed near a window, and if anything but sky is seen opposite the negative, place outside the window a large sheet of white cardboard at an angle of 45° . This will reflect equal skylight through all parts of the negative. Now cover over the space between negative and lens, insert your dark slide, in front of the negative place an opaque card, draw the shutter of the dark slide, and remove the opaque card from negative and expose.

Very little assistance can really be given as to exposure, but with a negative of average density, which will give a good silver print,

and using a lens working at F/11 and a Mawson lantern plate at midday in May, ten seconds will give a good black slide.

There is one little point that has been missed—the diaphragm; always use the largest diaphragm which will give satisfactory definition, this will usually be F/11 or F/16.

Be very careful whilst exposing not to shake the camera—it is quite sufficient for anyone weighing about eleven or twelve stone to walk across the room to give double outlines.

Daylight is not a constant quantity, and although visually the same on two different days, the actinic power of the light varies enormously, therefore we prefer artificial light.

Precisely the same apparatus can be used for artificial light with one or two additions. In one such arrangement in use the printing frame containing the negative is fastened to the side of a cube sugar box in which a hole is cut.

Opposite to the negative on the other side of the box is placed a sheet of white cardboard bent slightly to the arc of a circle. The lights, etc.—two incandescent gas burners do well with tin reflectors behind them—are placed one on each side of the negative inside the box, so that the light is reflected on to the card and thence on to the negative, and no direct light reaches the negative. Absolutely even illumination, even of a large negative, is thus obtained, and the exposure, using the same conditions as stated for daylight, is only twenty seconds.

Of course, the light may be placed directly behind the negative, but in this case a diffuser, such as a sheet of opal glass, must be placed between light and negative, and even then, unless great care is exercised, uneven illumination of the negative and consequent unequal density of the slide must ensue.

We may use magnesium ribbon, and a diffuser of opal is then necessary, and the ribbon must be kept in motion the whole of the time. Magnesium is objectionable because the particles of magnesia form a voluminous cloud, which tastes and smells unpleasantly and settles down on everything. Still, for those who wish to work with this substance, about 18 inches burnt close to the opal and moved about all over it will be about sufficient to obtain good results under above-mentioned conditions. An ordinary oil lamp or gas may also be used, provided the light is diffused.

Only the bromide lantern plates are suitable for reduction, the exposure, especially with the chloride emulsion, being so long as to place them out of court. The chloro-bromide may be used for daylight and magnesium ribbon.

After development and fixing, which may be performed in the developers recommended by the makers of the plates used, the lantern slide must be well washed and cleared in an alum and acid bath, then again well washed and finally given a gentle rub with a piece of cotton-wool under the tap, and set up to dry.

The finishing off of a slide is not a difficult matter, but one which wants doing properly. Place the slide film downwards upon a piece of white paper, and with a box of assorted masks try various shapes till the one most suitable to the picture is found, and frequently a mask with a comparatively small opening will give the best results pictorially. Having found the most suitable mask, lay it on the slide, on the top of this a cover glass well cleaned, and it is ready for binding. Binding strips can be purchased commercially in long strips, but personally we prefer to use $3\frac{1}{4}$ strips, as somewhat easier to apply. Wet $3\frac{1}{4}$ ins. of the strip, lay it flat on the table, pick up the slide and cover glass and adjust on the wetted slip so that there is an equal width on either side; now press the glasses firmly on to the strip and lift from the table and with a handkerchief or soft duster wipe the strip on to the glass of the slide and cover, taking care that these do not slip; when it adheres firmly, that is,

does not immediately rise up, lay the whole on one side and go on with the next slide; by the time half a dozen have been thus treated a second side may be stuck down, and thus with the third and fourth. By working in this way a far neater and safer job is made of it than if all four sides are bound at once.

The final operation is titling and spotting. There are several makes of masks on the market on which a blank white space is left for the title, and it is just as well to write the title on the mask, as it is then protected by the cover glass. If the ordinary masks are used, Chinese white may be used for the titles.

"Spotting" the slides is affixing to them two marks, by means of which the lantern operator can tell which side is to be placed next the lantern, and these marks usually take the form of two white circles. Such "spots" can be bought commercially already gummed, or postage stamp edging may be used.

A few minutes' thought will show that the projecting lens of the lantern will reverse an image just as the lens of the camera does, so that we must insert the slide into the lantern carrier upside down and wrong way round, and as the spots are used to indicate this, they must be placed at the top of the slide, when the view appears to us as we saw it in nature. If it be a subject with lettering in it, the spots must be placed at the top of the slide, when we can read the lettering the right way as the slide is looked at against a piece of white paper.

OBLIGATIONS OF THE PHARMACIST.

Apothecaries in Germany, France, Holland, Belgium, Scandinavia, Russia, and some other countries, enjoy a relatively high position in the community. In England and the United States the average druggist has not yet attained the confidence and respect due to his calling, because of his comparatively inferior education, the laxity of the laws regulating the practice of pharmacy, and the excessively mercantile nature of his business.

While we explicitly aver that there may be found in our country (the United States) very many highly educated pharmacists who honour their profession and fully realise its dignity and obligations, we are obliged to admit that the great majority of our druggists are unable to sustain the high standard of professional skill and accountability which is necessary to establish their title to recognition as fit men to perform the exceptionally important duties of makers, examiners, and dispensers of medicines.

The obligations of apothecaries and their assistants are set forth in laws and regulations established in most of the older civilised countries, and are sufficiently understood to insure a general sense of security from danger and a sincere respect for the pharmaceutical profession. In our country, on the other hand, there is no definite understanding of the many serious obligations of the pharmacist to the community, nor any adequate legal requirements such as would compel respect if intelligently and rigidly enforced. Not only the whole community, but the pharmaceutical profession itself, must have an approximately definite and rational idea of the professional obligations of the pharmacist, before the latter can attain to his rightful position by a faithful performance of these obligations.

His first and most obvious duty is, of course, the possession of sufficient scientific and technical training to enable him to perform his special duties well. In the absence of that training it is useless to expect him to become a worthy member of the profession, even if he should meet with great success as a merchant. But there are many other obligations which the professional pharmacist is expected to perform, and which he must perform with fidelity, in order to deserve and receive the respect, confidence,

and gratitude of his fellow-men. Thus, he must resolutely set his face against every species of fraud and quackery, which, of course, includes his absolute refusal to sell any nostrum or other article which he knows to be in any degree fraudulent, whether "in the original package put up by the manufacturer" or not. He must never, either directly or indirectly, or by implied assent, recommend any ready made cure in order to effect a sale, even if he has no reason to believe that cure to be a harmful humbug. He must use reasonable diligence in examining all his drugs, chemicals, and preparations, as to their quality, purity, and strength, and must reject any and every article not in proper condition; the objection so often raised, that "no druggist can have time to test all his chemicals," is not well taken, and is generally advanced by those who have no knowledge on the subject. The pharmacist must further take care to properly preserve his medicines. He must see to it that his balances, weights, measures, and other instruments are accurate and reliable. He must demonstrate by his life and work and speech that he is, indeed, the honest and faithful protector of his fellow-man against the dangers of ignorance, fraud, and abuse in the employment of medicine. He must so conduct himself and his pharmacy that intelligent men may perceive that a pharmacist's *officina* is not a mere depôt for the sale of miscellaneous merchandise, including drugs and medicines of all kinds, atrocious quack nostrums not excepted, but that it is, instead, a place where specially trained scientific experts render important professional services intimately related to the health and happiness of mankind.

The apothecary should gladly assume his obligations, and the community should be educated up to a full realisation of the services he performs, for in no other way can he hope to occupy the position which is rightfully his. There can be no compromising.—*Bulletin of Pharmacy.*

THE SCIENCE OF EXAMINING.

BY PETER T. AUSTEN, PH.D., F.C.S.

Much severe criticism is being directed against examinations, and much of it is timely and fully deserved. And yet when the criticisms are carefully considered they appear to be directed not so much against examinations as a method in education as against certain forms of examinations which are very prevalent and which certainly do not show anything more than evanescent memorisation, adroitness, or trickiness on the part of the student. No one will deny, however, that much of actual life is a kind of examination, and that we are being continually pressed to solve problems of all kinds, apply knowledge, and in general to act, and that on the success of our efforts will depend the positions we will attain, or at least maintain. There seems to be no reason why examinations should not be made an extremely important part of education, instead of being, as I fear they often are, an unmitigated nuisance to both student and teacher, a bone for the pedagogical critics continually to snarl over, and, when all is done, to be of no real use to either teacher or student, and to show nothing as to the real nature of the teaching done, and the mental development of the student.

For the teacher who teaches from love of teaching, and who knows that successful teaching calls for the application of psychological principles far more than is generally supposed, there is a peculiar fascination in an examination paper. An examination may be made a test of the contents, capacity, quality, and action of a mind under defined conditions; but the paper must be a good one; I do not refer to the work of an inexperienced hand. The idea seems to be prevalent that anyone can write an examination paper. This is a great mistake. The elaboration of a paper that will really test not only the contents of the mind, but also its different func-

tions as developed by a particular study under the guidance of a particular teacher, requires experience and ability. It is true that a man may be a good teacher and a poor examiner, but this usually arises from a lack of attention to the science and art of examining. My experience in this branch of pedagogical science leads me to believe that there are not very many really good examiners, and that the average examinations do not test the minds of the students as they ought to be tested. The average examination calls mainly for an exercise of memory, and for some proof that the student understands the matter he has studied. No man values the faculty of memory more highly than I do, or requires a better understanding of a given subject. But memory and mere understanding are only the foundations of education. More than this is called for. Some examinations require skill in observation, others accurate definition; while others bristle with problems. Some call for knowledge in which the teacher is weak. Almost every pedagogic earmark may be found in examination papers, but rarely is the paper constructed on such a plan that it tests not only the quality and quantity of knowledge in the mind, but also the various workings of the mind, and ascertains what the mind can do when set in action by the particular subject.

In my own specialty of chemistry there is an excellent opportunity for examination papers which may test the mind qualitatively and quantitatively, and probe both absorptive and productive powers. I have always taken a great interest in working out examination papers and in studying the minds as they appear in the answers. I am accustomed to work out questions under various heads. The following example will serve to indicate my meaning, and may also encourage others to experiment in examinational science; and I think that the method will be found so interesting that the investigation will not be hastily dropped. I should add that in the examination paper as given to the students the questions are mixed up, so that the classifications given as follows do not appear:—

Questions for Testing:—

Memory.—(1) Give a brief history of oxygen. (2) Outline the theory of phlogiston. (3) What are "copperas," "bluestone," "tincal"?

Accuracy of Definition.—(4) State concisely the laws of Dalton, Charles, Mariotte, and Avogadro. (5) Define a mechanical mixture. (6) Define an element.

*Observation of Experimentally Demonstrated Facts.**—(7) Describe and sketch an apparatus for producing acetylene from calcium carbide, and explain the working of it. (8) Describe and sketch the combustion of nitric acid in iodohydric acid.

Accuracy of Detail.—(9) Explain with the aid of sketches the reduction of hot cupric oxide by hydrogen, heating the oxide in a combustion-furnace and preparing the hydrogen in a Kipp generator.† (10) Make a sketch of a section of Pepys' gasometer, and explain how the apparatus works.

Acquaintance with the Properties of Matter.—(11) Describe the properties and chemical behaviour of nitrogen, sulphur, zinc, silica, and iodine.

Retention of Oral Instruction.—(12) Explain the contamination of water by sewage. (13) Describe the process for making open hearth steel.

The Faculty of Comparison.—(14) State similarities and differences between the properties of oxygen and hydrogen. (15) What substances resemble lead sulphide in colour and solubility in nitric acid?

Lucidity of Statement.—(16) Describe minutely and without

* Given in lectures, and not in text-book.

† Given in text-book and demonstrated in lecture.

sketches the apparatus and method of preparing phosphine. (17) Prove by analysis of stibine by volume that the molecule of antimony is tetratomic.

Recognition of Substances.—(18) A yellowish green gas with a suffocating odour. What may it be? (19) A colourless gas, very soluble in water, gives white fumes with hydrochloric acid. What may it be? (20) A white powder, insoluble in water; heated with concentrated nitric acid it evolves red fumes and yields a solution, which, when excess of acid is evaporated off, and it is diluted with water, yields a precipitate which is insoluble in concentrated nitric acid. What may this white substance be? (21) A chemist wishes to fill a jar with red liquid. What substance may he use?

The Ability to Observe.—(22) Give four examples of chemical change which you observe in this room. (23) Describe an ordinary red building-brick, stating dimensions and properties of surface, weight, fracture, etc. (24) Water expands on freezing. Give five examples of results caused by this expansion which you have personally observed.

The Application of Facts to Proofs.—(25) Prove that water is formed by the combustion of a kerosene lamp. (26) Prove that hydrogen sulphide contains sulphur.

The Interpretation of Phenomena.—(27) A piece of white paper on being held for an instant in the flame of a candle and at right angles to it, a black ring is formed on the paper. Explain what the ring indicates, and how the particles of carbon are formed, and why they are deposited on the paper. (28) A Roman candle on being ignited and then thrust under water continues to burn. How can this be accounted for? (29) Why cannot fish live in lakes on the tops of very high mountains?*

The Application of Knowledge.—(30) The iodine falls into the sand box. How can the iodine and sand be separated? (31) A mixture consists of barium carbonate, sodium sulphate, and sulphur. How can they be separated? (32) A manufacturer has a waste product consisting of a liquid containing 40 per cent. of sulphuric acid, 10 per cent. sodium sulphate, and 5 per cent. ferric sulphate. How can he treat it so as to convert it into other products that have commercial value?

Deceptive or Misleading Questions.—(33) Dilute sulphuric acid is poured upon zinc. A gas with a slight bluish colour is evolved, which burns with a red flame. What is it? (34) Chlorine gas is collected in a jar over mercury‡ in the usual manner. It is then brought into a eudiometer, mixed with twice§ its volume of hydrogen, and exploded. How many volumes of hydrochloric acid gas will be produced?

The Imagination.—(35) Filthy water of the gutter, warmed by the sun's rays, escapes from a foul environment, and, condensing, sparkles like diamonds on the petal of the violet. Use this as basis for an allegory in life.

These questions do not by any means represent all the possible divisions of mental action, and I have purposely avoided those of a very technical nature, most of which, however, would fall under the heads given; but they will serve to indicate what opportunities there are to construct examination papers that shall test a student's knowledge and the working of his mind. It may be urged against the questions I have given that several of them might fall as well under one head as another, or that a few more elaborate questions could be made out, and each question marked under the several heads. My experience, however, has not been that the real ends are best attained in this way. The question that is distinguished by its

* Compare London University Matriculation Examinations, Stoker and Hooper, p. 31. Q. 6.

† Colourless.

‡ Chlorine cannot be collected over mercury.

§ Once.

definite nature and object gets a clearer answer and gives a more satisfactory insight into the student's mental equipment and action than a long or complicated one. If, after teaching a student a subject for a certain time, an examination shows that he can bring forth nothing more than that which has been put into him, it may be inferred either that the teacher is incompetent, or that the student is intellectually deficient, assuming, of course, that the system in the particular institution permits the teacher to do his best, does not assign him more pupils than one man can teach, and requires the student to do the work assigned to him. In such case I think that the fault usually lies with the teacher. Still I admit that there are institutions in which educational work of a high pedagogical order is impossible, and mind development, as distinguished from mind cramming, is out of the question. In such a case students are produced who are saturated with knowledge, but who are incapable of utilising it. Like water-logged vessels they roll about aimlessly, and are unable even to keep out of the way of craft which are taking the fullest advantage of wind and tide. In such an institution the earnest teacher, when he fails, deserves sympathy more than blame.

The results of examinations, conducted on some plan like the one I have attempted to describe, are very interesting. Such examination papers are far more difficult to write than the calls for mere memorisation that are so frequently made on the student, and which a hasty cram will enable a fairly bright candidate to pass. The answers are more difficult to rate; and often an attempt to mark them according to the usual rules is unsatisfactory. It is quite easy to assign a mark to the amount that a student knows, or even to discriminate as to the quality of his knowledge. To assign a figure to his ability to apply this knowledge, to originate, to create, to act under its instigation, is more difficult; yet it can be done with a fair degree of success.

It must always be borne in mind that a man's value in this life does not depend merely on what he knows, but upon what he can do. *Cæteris paribus*, the more he knows, the more he should be able to do; for so much the greater should be the incentive, if the knowledge imparted to him acts on him as it should. Until technical education was introduced, this fact was not well understood, and it is still far from appreciated in many schools.

For instance: A shows in his paper an encyclopædic knowledge. In his answer to Q. 11 he recites with great precision the properties of silica and iodine. But he fails to answer Q. 30, which calls for a conclusion dependent upon this knowledge. He is like a recruit who has been given a gun, but has not been taught how to fire it off. Such a student demands the teacher's attention at once. His mental inaction is usually the result of poor teaching.

It may not be amiss for me to say parenthetically here that teaching is the most difficult of all professions. It is not usually regarded so, but I believe that it is. Much of what is called teaching is nothing more than a kind of pumping. Knowledge is forced in through the most convenient intellectual orifice, a great deal being lost *in transitu*, and not a little leaking out afterwards. The engorged recipient is like a boiler whose feed-pump is too big for it and will not cease pumping, but fills the boiler entirely full of water and leaves no space for steam; whereon the engine slows down and stops, or throbs soggly with its cylinder filled with lukewarm water instead of hot expansive steam.

Again, a student may fail in his attempts to state anything correctly or exactly; but he fills pages with attempts to apply his knowledge, suggesting all sorts of ideas and applications. Most of them may be impossible, some even ridiculous. But no matter, let the teacher take hold of this boy at once, for the mind of an Edison, a Siemens, or an Ericsson may be seeking nourishment an

development. Happy is the teacher who can discern what mean the instinctive strugglings of the embryonic master mind, and who can liberate it from the thralldom of routine—who can guide its first weak attempts to walk and climb, until it becomes hardy and venturesome, and fearlessly scales cliffs heretofore inaccessible; and so clambering by hitherto unknown ways to the peak discovers new fields for human activity, and cuts a wide path by which thousands may enter and take possession.

Examination papers constructed on the basis I have suggested, viz., to test not only the knowledge possessed by the student, but also the working of his mind upon the particular subject, will show more clearly the nature and condition of a mind than the daily recitation, because the case is more capable of systematic study and can be made to cover larger fields of mental activity. While I do not intend to suggest that such examinations should replace the regular recitation, I believe that they should be held frequently, and should serve a far wider purpose than that of merely noting the quantity of knowledge absorbed by the mind. Such an examination is not a mere matter of testing and registering; it is a creative exercise of the mind.—*Science*.

MYDRIATIC BASES.

Dr. O. Hesse has ascertained that the substance known in commerce by the name of scopolamine hydrochloride consists of salts of two bases—hyoscine and atropine—which can be separated by crystallisation from alcohol, in which they are unequally soluble.

Hyoscine, in combination with hydrobromic acid, turns the plane of polarised light to the left, while atropine is inactive, and by means of this difference the relative amounts of the two bases may be ascertained. It seemed possible that atropine might be formed from hyoscine, in the same way that atropine is formed from hyoscyamine, by the action of caustic soda, but further investigation has shown that hyoscine is first converted into oscine and lævotropic acid, which soon becomes inactive, and breaks up into water and atropic acid. Atropine, on the contrary, appears to break up at once into oscine and atropic acid, without formation of inactive tropic acid.

Atropine hydrobromide crystallises from water, like the hyoscine salt, in large rhombic plates, but it does not contain water of crystallisation, while the hyoscine salt has three molecules of water. When the two salts are dissolved together in water they crystallise out together, and with three molecules of water.

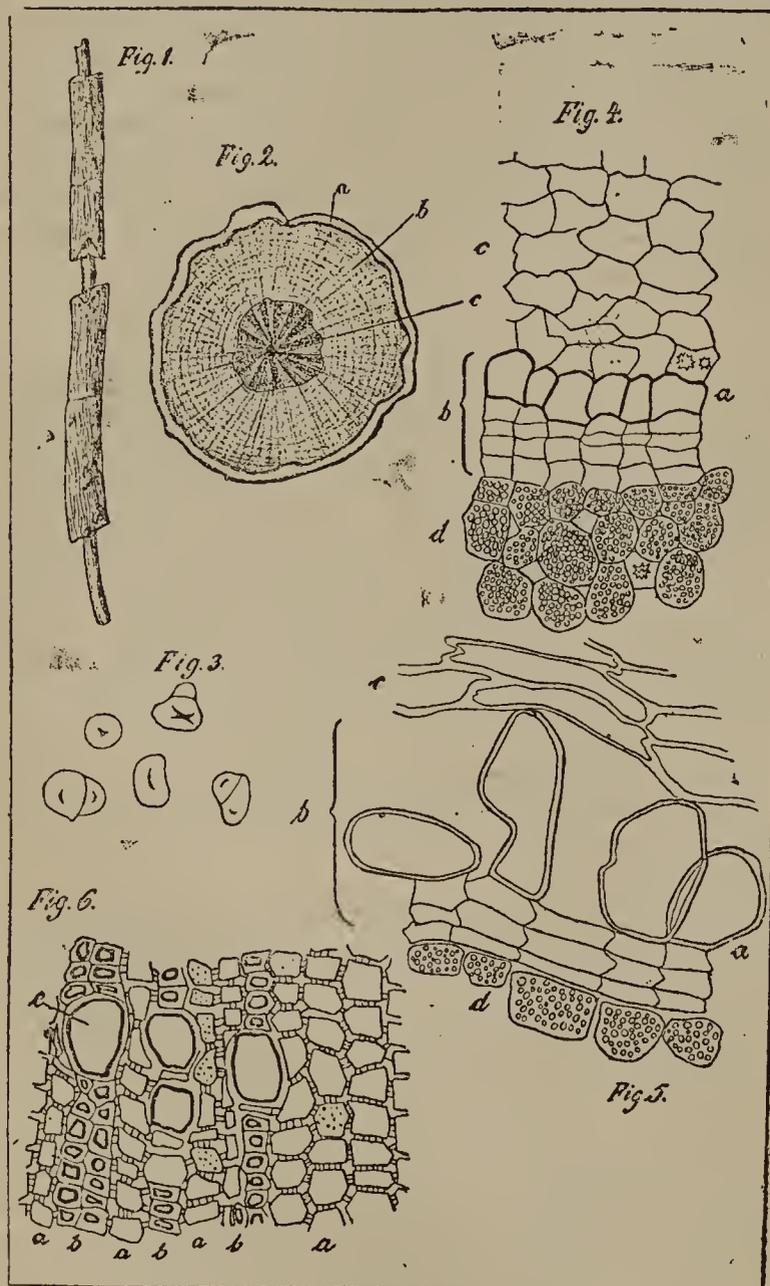
Atropine itself crystallises in concentric groups of needles, which melt at 36° C. and have the composition $C_{17}H_{21}NO_4 + 2H_2O$.

MENTHO-PHENOL AS AN ANTISEPTIC.—By mixing 1 part of phenol with 3 parts of menthol and melting the mixture, a transparent fluid with an aromatic odour and taste is obtained; the sp. gr. is 0.973, the fluid is nearly insoluble in water and in glycerin, but dissolves readily in alcohol, chloroform, and in oils. It dissolves iodine, iodoform, and aristol. Schaefer finds that this body has strong antiseptic and analgesic properties. It may be used preparatory to cauterising chancroidal sores and curetting necrotic surfaces. As a mouth wash 2 drops mixed with an ounce of aqueous menstruum may be advantageously employed. A case of abscess under the finger nail was painlessly lanced under a warm 5 per cent. aqueous solution of mentho-phenol, and rapidly healed when dressed with gauze containing 2 per cent. of the antiseptic. Equally good results were obtained in painful suppurating otitis media et interna. Wounds washed with warm 2 per cent. solution of mentho-phenol rapidly heal. In dental practice it is also useful, acting as a disinfectant and anodyne anæsthetic (*Bost. Med. Surg. Journ.*, cxxxiv., 111).

A NEW ADULTERATION OF SENEGA ROOT.*

BY C. HARTWICH.

In the early part of 1894, Ad. André, in Hanover, drew attention to an interesting adulteration found in senega root imported from New York, the drug containing nearly 25 per cent. of a foreign root which he referred to *Richardsonia scabra*. The structure of the drug, however, showed this identification to be incorrect; the starch in the two roots differed in character, and in the *Richardsonia* the oxalate of calcium assumed the form of raphides, whilst in the adulteration referred to it was present as cluster crystals. Hartwich believes the root to be that of



Triosteum perfoliatum, L., Caprifoliaceæ, which has recently appeared as ipecacuanha. Externally the roots showed the greatest similarity, and the histological and chemical examination proved their identity.

Triosteum perfoliatum is indigenous to the eastern and south-eastern United States, and might therefore easily be collected with senega, although the two plants are very different in appearance. *Triosteum* is a shrub with a thick knotty rhizome, from which arise several stems reaching nearly three feet in height; it is known in America as tinker's weed, bastard ipecac., etc., and is used somewhat extensively as an antipyretic, purgative and emetic.

* Abstract of a paper in the *Archiv. d. Pharm.*

The drug consists of a yellowish-brown or dark brown bent, knotty rhizome to the sides, and under surface of which are attached numerous roots, generally not over $\frac{1}{2}$ Cm. thick, and often much thinner; these are lighter in colour than the root-stock, show here and there transverse fissures (Fig. 1), and resemble many varieties of false ipecacuanha, especially *Richardsonia*. In general appearance it is so like senega that its presence seems to have been overlooked; it differs, however, in the absence of a keel.

The structure of the root is very characteristic. A transverse section (Fig. 2) exhibits a radiate wood without pith and a cortex, in which a narrow pale outer portion can be easily distinguished from a darker inner part. Next to the cork is a layer of large compressed cells (primary bark), containing here and there a cluster crystal of calcium oxalate. Between this and the secondary bark is a layer of four or five rows of cork cells, the outer of which have undergone an unusual radial elongation (Figs. 4a and 5), in consequence of which the primary bark has become compressed, and is eventually thrown off. The cortex contains numerous cluster crystals of calcium oxalate and starch in compound or simple grains reaching .015 Mm. in length (Fig 3). The wood is remarkable for the fact that the medullary rays are lignified, whilst in the xylem rays only the middle lamella yields the lignin reaction.

The *Triosteum* root contains an alkaloid which André considered identical with emetine. Hartwich, however, was unable to obtain the characteristic reaction with hydrochloric acid and chlorinated lime, and concludes, therefore, that the alkaloid is not emetine.

PHARMACEUTICAL SOCIETY.

DONATIONS TO THE LIBRARY AND MUSEUM.

At a meeting of the Library, Museum, School, and House Committee, held on Wednesday, the 8th inst., the Librarian presented the following report of donations:—

To the Library (London).

University of Durham:

Calendar, 1896.

College of Preceptors, London:

Calendar, 1896.

Royal College of Veterinary Surgeons, London:

Register, 1896:

Philosophical Society of Glasgow:

Proceedings, 1894-5, vol. 26.

Royal Dublin Society:

Scientific Proceedings, new series, vol. 8, parts 3-4.

Scientific Transactions, 2nd series, vol. 5, parts 5-12; vol. 6, part 1.

Faculty of Physicians and Surgeons of Glasgow:

Memorials of the Faculty, by Alex. Duncan, 1896.

The following report of donations was presented by the Curator:

To the Museum.

Baron F. von Mueller, M. and Ph.D., K.C.M.G., etc., Melbourne:

Fruit of *Dammara robusta*.

Mr. J. Medley Wood, F.L.S., Natal:

Bulbs of a *Eucomis*, used as a remedy for the "Red Water" disease in cattle.

Mr. J. Newson, Pietermaritzburg, Natal:

Root of *Tephrosia macropoda*.

Mr. E. L. N. St. Cyr, Hayti:

Specimens of *Polyporus sanguineus*.

Messrs. Hodgkinson, Treacher, and Clarke, London:

Fine specimen of Peruvian coca leaves.

Mr. C. J. Lowes, London:

Entire leaves of Virginian tobacco.

Messrs. Parke, Davis, and Co.:

Specimens of Hoang-nan bark, as prepared for use in medicine in Cochin China.

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THE METRIC SYSTEM.

THE advocates of the metric system must not trust too confidently in the removal of opposition which might be inferred from the apparent progress recently made towards popular acquiescence in their views. A significant indication of this may be seen in the fact that the *Times* has opened its columns to a series of communications in which the objections to the metric system are very forcibly stated. Those objections have moreover been, to some extent, endorsed in a leading article upon the subject, where it is argued that there can be no need for making the metric system compulsory if it possesses the merits claimed for it, and is so superior as its advocates declare it to be. Hence it is held that the only practical and final test of convenience is to be reached by setting the community free to use whatever system it prefers. With that object the removal of any legal difficulties in the way of using the metric system is recommended as being the only immediate necessity. The keen competition everywhere prevailing will, it is believed, then determine the question as to the practical adoption of the metric system. When it is found to be advantageous people will adopt it and, until that has been done upon a very large scale, it is urged that no case can be made out for compulsory change of our standards.

In the communications here referred to, objection to the metric system is commenced by a protest against the allegation that "ignorant prejudice" is the origin of all opposition to the metric system. That may be regarded as mainly a sentimental grievance, though it has served to induce the *Times* correspondent to show the existence of more respectable reasons than mere unenlightened dislike of innovation. First among these are the opinions held by the late SIR JOHN HERSCHEL—stated in a work published by him in 1863—that the 10,000,000th part of the quadrant of a meridian is not a good unit of measure, and that a better one could be devised on the basis of the inch or yard, correlated with the polar axis of the earth, without the change being felt in ordinary commercial or other transactions of any kind. In like manner it was shown that weights and measures of capacity might be rescued from the present state of utter confusion. In a second article the fact is pointed out that, in France, although more than a century

has elapsed since the metric system was established, and notwithstanding compulsory measures, old customs have survived and the people still buy and sell by sous and fourths. Then in America the system has been departed from, and the quotations on the New York Stock Exchange are in halves, quarters, and eighths, the decimal division of the dollar being ignored, and division into parts is effected there as well as in England, by halving, re-halving, and again halving. There is a still more striking departure from the system in California, where prices are given in "bits" or eighths of a dollar, 15 cents being a long bit and 10 cents a short bit, these coins being given and received in payment indiscriminately without charge or supplement, so that lack of appropriate divisibility in accordance with the metric system has led to inexact payments.

In addition to the reasons deducible from persistence of habits, some natural facts are mentioned by the writer in the *Times* as offering strong evidence against the desirability of decimalisation. Though the French have decimalised the quadrant, astronomical observations, and nautical works based upon them, have so long been conducted by the older mode of measurement that alteration of this arrangement seems almost impracticable. That arrangement was, moreover, dictated by Nature, the division of the circle being the outcome of the Chaldeans' division of the heavens to fit their calendar. The attempt to decimalise the calendar in France was a failure, and various deeply-rooted customs would stand in the way of such a proceeding if it were practicable. Thus houses are let, and servants and assistants hired by the quarter year, while in other trading transactions the same system is in such constant use that much difficulty would be experienced in making a change. There is also a deeper reason than mere habit: a quarter of a year is the period in which the Earth describes a fourth of its annual journey round the sun, the intervals between the shortest day and the vernal equinox, and between this and the longest day, as well as the other divisions determining the seasons. The behaviour of the moon is equally inconsistent with a decimal system, and the fact that there are twelve full moons in the year gave rise to the calendar generally adopted by civilised peoples. The adoption of a decimal division of the compass is prevented by the natural relation of the cardinal points, as the intervals between them are necessarily four right angles. Hence it is argued that as there is no escape from the divisions forced upon us by the order of Nature, in any case the mixed system would in large part remain in use. Without assenting to the sufficiency of these reasons for objecting to the metric system it may be admitted that they fully dispose of the allegation that those who oppose the adoption of the metric system are actuated by merely "ignorant prejudice." It will be interesting also to see in what manner the suggested applicability of these reasons will be dealt with by the advocates of a metric system of weights and measures.

SHOPS (EARLY CLOSING) BILL.

THIS Bill is down for the report stage in the House of Commons on Wednesday next, April 15, and there is increasing evidence of strong opposition being offered to prevent it becoming law. Amongst the arguments being circulated by opponents of the measure it is stated that the proposed law will interfere with the liberty of the subject and adult male labour, and that whilst it would legalise the

principle of local option as to the hours of trading in shops it would not be operative in bad districts. Many of the definitions in the Bill are also objected to as vague and unsatisfactory. In addition, it is contended that putting the proposed law in force would add greatly to the rates, possibly affect the rateable value of many shops, add to the police duties, and press with undue severity on small shopkeepers. Finally, it is pointed out that the object aimed at—the limitation of the hours of work of shop assistants—could easily be attained by the promotion of a Bill limiting the number of hours worked per week, leaving the owners of shops to close when they please. It may be noted that the Bill has been before the Parliamentary Committee of the London County Council, but, in the absence of any expression of public opinion upon the subject in the metropolis, the Committee has felt itself unable to advise the Council to take any action in the matter.

Attention has been specially directed by one London paper to two clauses in the Bill, which seem well adapted to furnish an easy passage for the proverbial coach-and-four through the prospective law. The first is Clause 10, which provides that

Nothing in this Act, or in any Order made thereunder, shall render the occupier of any premises liable to a fine for supplying any article to any person lodging in such premises.

There is nothing here to prevent a lodger constituting himself a sort of middleman, and buying goods of the shopkeeper on behalf of individuals who would otherwise be debarred for a time from having their wants supplied. Then Clause 12 provides that

Where an order in force under this Act requires shops to be closed at an hour earlier than seven o'clock on any day of the week, the occupier of any shop to which the order applies and which is closed at such hour *on any other day of the week*, may apply to the local authority for an order substituting such day as regards such shop, and the local authority *shall make an order accordingly*.

The words here indicated by italics seem specially designed for the benefit of the shopkeeper who makes a point of keeping his place of business open when others are closed, and may be quite sufficient to render nugatory the main object of the Bill, which is to secure uniformity of action. Apart from these special points, however, the contemplated Act, regarded as a whole, will surely prove an extremely difficult piece of legislation to put in force satisfactorily, and the authorities upon whom the responsibility is cast will have no enviable task.

THE ANTITOXIN TREATMENT OF DIPHTHERIA.

THE report of the Metropolitan Asylums Board, embodying the results of a year's experience of the use of diphtheria antitoxin in six separate hospitals, shows that the percentage of deaths has been much less since the introduction of the new remedy. In 1894, 3042 diphtheria patients were treated exclusively by the ordinary methods, and 902 died. During the past year, however, when the antitoxin treatment has prevailed, there were 3529 patients, of whom only 796 died. The percentage therefore fell from 29·6 to 22·5. The average severity of the disease is said to have been about the same in both years, and 1894 was the best year previously recorded. For the four years anterior to the introduction of the antitoxin treatment the death rate varied about 1 per cent. only from year to year, and the *Times* in a leading

article observes that the figures in the report establish the success of the new treatment beyond doubt.

In a letter to the *Times*, Mr. LENNOX BROWNE has since disputed the conclusion put forward by the leading article in that paper, that the report of the Metropolitan Asylums Board establishes "beyond doubt the beneficial influence of the drug." He shows that the statistical evidence of the report is vitiated by the assumption that the decrease in mortality in 1895 is due to the use of antitoxin, and that this assumption is not justified by facts. The subject is not one which can be usefully discussed in the columns of a newspaper, but it is at least deserving of note that a protest has been made against the mode in which a most interesting and important matter has been officially represented to the public. The following table is published by Mr. LENNOX BROWNE to illustrate the actual position:—

Year.	Treatment.	Cases.	Deaths.	Per cent.
1895	With and without antitoxin	3529	796	22·5
1895	With antitoxin	2182	615	28·1
1895	Without antitoxin	1347	181	13·4
1894	Without antitoxin	3042	902	29·6

It is thus shown that though the reduction on the whole mortality for 1895 is 7·1 per cent., it is only 1·5 per cent. on those cases treated with antitoxin. The variation in these cases is therefore approximately identical with that observed during the four years prior to 1895, and the great improvement has really been in cases under ordinary treatment. But it must be borne in mind that the importance of comparative figures in such matters is at best extremely problematical, and the actual value of the new method of treatment can only be definitely determined by noting its effects in individual cases.

THE USE OF OPIUM IN INDIA.

COPIES of the report of the Royal Commission on Opium (see *Pharm. Journ.*, April 27, 1895, p. 957) were sent, on publication, to the Government of India for consideration, and a Blue-Book issued this week contains a review of the report sent in response. It is pointed out that the result of the inquiry is a vindication of the past action of the Government of India in regard to the production, consumption, and sale of opium, the evil effects of which had been grossly exaggerated. Moreover, it is urged that, whilst the prohibition of the drug in India would be impolitic, its use cannot in any circumstances be prevented in native states, and prohibitive or restrictive legislation would lead to far worse consequences than any arising from the system under which the State is responsible for the production and distribution of the drug. At the same time, an effort will be made to check opium smoking, as distinct from other methods of consumption in India, by raising the price of the preparations—*chandu* and *madak*—most in vogue and limiting the number of places where they can be purchased. The arrangements with cultivators will also be modified with a view to getting rid of middle men, but the ordinary use of opium as a febrifuge, stimulant, and restorative is considered to have been proved comparatively harmless at the worst, whilst often distinctly beneficial, and the Government of India considers, therefore, that further interference is uncalled for.

ANNOTATIONS.

NEW JOURNAL OF PHARMACY.—France rivals the United States in the number of publications devoted to pharmacy, and another has recently been added to the list. This is the *Bulletin de Pharmacie*, the official organ of the Fédération des Sociétés de Pharmacie du Sud-Est et des Syndicats Fédérés. It is published quarterly, and each number contains eighty pages of matter, the proceedings of the Federation naturally occupying most of the space available.

NOVELTY IN COLOUR PRINTING.—A new process in colour printing has just been introduced into this country, by means of which it is said to be possible to print in any number of different tints by a single impression, as in ordinary black and white work. The object is effected by the addition of certain chemicals to the inks, which prevent them mixing and blending upon the ink disc of the printing machine, and it is stated that the cost of producing circulars or show cards in half-a-dozen tints is very little more by this process than work in black and white only.

A PHARMACIST IN VENEZUELA.—Professor Rusby, of the New York College of Pharmacy, is visiting the Orinoco River district and the country now in dispute between Great Britain and Venezuela, as botanical expert to a company of American capitalists, incorporated to develop gold fields in that part of the world. The company also desires to ascertain what commercial products can be grown in the district, and Professor Rusby is instructed to ascertain what drugs can be profitably produced there. He also proposes to collect herbarium specimens for the New York College of Pharmacy and other institutions.

TITLES FOR PHARMACISTS.—If there must be a new title for pharmacists, observes the lively *Spatula*, it should be as simple and distinctive as possible. P.M., standing for Master of Pharmacy, or P.D, Doctor of Pharmacy, seems to our contemporary about what is wanted. Of the two, however, it prefers the former, "as there are enough 'doctors' of varying breeds and descriptions already." Nevertheless, pharmaceutical colleges and schools in the United States appear to be more than ever bent upon conferring what they are pleased to term the "degree" of doctor upon their graduates, and doubtless "Doctors of Pharmacy" will soon be as thick as blackberries across the Atlantic. But why should they be as cheap?

DEATH OF COUNT MATTEI.—Cæsar Mattei, the maker of the so-called "electro-homœopathic" remedies—anti-canceroso, anti-sicrofoloso, anti-febbroso, etc.—has died at the age of eighty-six. He was a native of Bologna, and was made a Count by Pope Pius IX. in 1847. Subsequently, he served as Lieut.-Colonel of the Civic Guard, and as Deputy of the Electoral Chamber in Rome. Politics, however, soon ceased to interest him, and after devoting some time to the study of medicine, he announced the discovery of a means of preparing herbal remedies which imparted to them a peculiar efficacy. It is generally understood that repeated analyses of these preparations have failed to disclose the presence of anything except water. Notwithstanding this, a large number of people, including several possessing some little prominence in the civilised world, have publicly declared their complete belief in the accuracy of Count Mattei's statements with regard to his secret remedies. The formulæ for these remedies are left to the deceased's adopted son, Count Mario Venturoli Mattei,

THE USE OF TIN CANISTERS FOR PRESERVED FOOD.—The suspicion that dietetic preparations and articles of food put up in tin vessels may become contaminated with lead, derived from solder used in making the tins, has frequently led to objections that tin canisters are unsuitable for that purpose. Some experiments made by Dr. Marrell and Dr. Wilson Hake, and reported in the *British Medical Journal*, appear to show that the fear of contamination is not altogether justified. Several tins of meat essences were carefully examined, and though lead was found to be present in the solder, none could be detected in the contents of the tins.

THE ILL-REGULATED SALE OF POISONS.—Under this heading the *Lancet* expresses the opinion that the existing restrictions on the sale of poisonous medicinal preparations, such as laudanum, are not sufficiently rigid, and that such potent articles, as well as strong acids, etc., are too easily obtainable. The view is put forward that in this respect, and in order to provide against the unfortunate occurrences commonly described as accidental poisoning, "much more strenuous efforts are called for than have yet been made, to adapt the machinery of the law to its professed purpose of regulating the sale of poisons."

SOCIETY OF ARTS.—The arrangements of this Society for the meetings after Easter include lectures on several subjects of special importance at the present time. On April 22, "The Perfected Photochromoscope and its Colour Photographs" will constitute the text of a discourse by Mr. F. E. Ives; on April 29, Mr. E. W. Badger will treat of "Fruit Drying or Evaporation"; and at subsequent meetings papers will be read by Captain Abney on "Orthochromatic Photography"; by Mr. Hudson Maxim on "High Explosives and Smokeless Powders"; and by Mr. E. W. Moir on "Tunnelling by Compressed Air."

NATURE'S UNIVERSITY.—The London Geological Field Class announces the beginning of a summer course of lecture excursions at the end of the present month, the subject of the series being the physical geography and geology of the Thames and its tributaries. The object of the excursions is to visit suitable spots for geological expositions by Professor Seeley, F.R.S., on Saturday afternoons, the districts to be explored during the coming season including Purley, Caterham, Guildford, Farnham, Maidstone, Herne Bay, Addington, Hindhead, the Chiltern Hills, Bushey, and Watford. Special arrangements with the railway companies enable the conductors to keep the expenses of the excursions within moderate limits, and no more delightful way of spending a half day can well be conceived for those who can spare the time. Full particulars of the Field Class will be furnished by the honorary secretary, Mr. R. H. Bentley, 31, Adolphus Road, South Hackney, N., on application.

THE LIBERATION OF PLANT PERFUMES.—According to E. Mesnard (*Comp. rend.*), light is the principal cause of the transformation and destruction of odorous substances, and not oxygen, though the two agents act in concert in many cases. These effects of light are manifested both by chemical changes and mechanical action, the first being indicated in odorous plant products from their elaboration to their resinification, whilst the second regulates the periodical liberation of perfumes. The intensity of the perfume of a flower would seem then to depend upon the equilibrium maintained between the pressure of water in plant cells, which tends to drive out the elaborated perfumes, and the action of light which opposes the turgescence. These novel suggestions appear to be in accordance with the fact that flowers are less odoriferous in hot than in temperate climates, and also that trees and fruits in the East so frequently contain more or less resinified odorous substances.

PROCEEDINGS OF SOCIETIES.

Linnean Society of London, March 19.—Mr. C. B. Clarke, F.R.S., President, in the chair.—Messrs. James Backhouse and Spencer H. Bickham were admitted, and Messrs. J. H. Leigh and Edward Step were elected, Fellows of the Society.

Mr. Clement Reid exhibited fruits of *Naias marina* from a peaty deposit below mean-tide level in the new docks at Barry, S. Wales. In Britain it had only been found living at a single locality in Norfolk, but in a fossil condition it had been obtained in the pre-glacial forest-bed at Cromer. A discussion followed, in which Messrs. A. B. Rendle, H. Groves, and A. W. Bennett took part, and it was suggested that the living plant might be looked for in South Wales, where, being inconspicuous, it might have been hitherto overlooked. Mr. Reid also exhibited some wood forwarded by Mr. H. N. Ridley from the jungle near Singapore. It appeared to have been eaten into a honeycombed mass of peculiar character, and was found only in wet places, but always above ground, the entire tree rotting. Neither Mr. Ridley nor Mr. Reid had seen anything like it in England; and the latter, while suggesting that the small lenticular unconnected cavities in the wood were probably caused by insects or their larvæ, thought they were unlike the work of either beetles or white ants. Some critical remarks were offered by Dr. Haviland.

A paper was read by Dr. Otto Stapf on the Structure of the Female Flowers and Fruit of *Sararanga*, Hemsley. The materials utilised consisted of female flowers and fruits of *Sararanga sinuosa*, Hemsley ('Journ. Linn. Soc.,' vol. xxx., p. 216, t. 11) which had been collected by the officers of H.M.S. "Penang" in New Georgia, Solomon Islands, and were in excellent preservation. There were also photographs and a description, taken upon the spot, of the tree, about 60ft. high, shortly branched at the top, with terminal, nodding, white-flowered, very compound, and gigantic panicles. The leaves are like those of an ordinary screw-pine. The flowers consist of a rudimentary, sinuously bent, saucer-shaped perianth, and a subglobose, sinuously lobed gynæcium, with very numerous (70-80), dark, discoid or reniform stigmas which are arranged in double rows over the dorsal ridges of the main body and the lobes, having between them minute pores which end behind some way below the surface. There are as many ovary-cells as stigmas, each containing one anatropous ovule from the base of the inner angle. The vascular bundles of the gynæcium end below the stigma in a cluster of tracheids, and supply it probably with a viscid or sugary liquid. The base of the pore is surrounded by a compact, thin-walled parenchyma, very rich in plasma. It is suggested that the pollen-tubes grow from the stigma down into the pore, and descend from here through the conductive tissue to the ovule. The ripe fruit is a succulent drupe with numerous pyrenes, in shape like the flower, but much larger. The endocarp is bony, the albumin copious and oily; the embryo is as in *Pandanus*. The complex structure of the flower is explained as a modification of the type represented, e.g., in *Pandanus utilis*, and in accordance with Count Solms-Laubach's theory of the flower of the Pandanaceæ. On this paper some critical remarks were offered by Mr. Rendle.

On behalf of Mr. G. S. West, a paper was read by Professor Howes on two little-known Opisthoglyphus snakes. The author had examined and compared in respect of the structure of the buccal glands and teeth, specimens of the grooved and non-grooved varieties of *Erythrolamprus asculapii*, as recorded by Dr. Günther ('Biologia Centr.-Amer.' part cxxi., p. 166), and he proved that the latter were rightly referred to the species.

Royal Institution, April 4.—In his concluding lecture on light, Lord Rayleigh referred to the researches of Young and Fresnel, both of whom were unwilling to admit other than longitudinal vibrations of the ether. But the phenomena of polarisation compelled recourse to the theory of transverse vibrations, or vibrations at right angles to the direction of the ray. Nicol's prism was shown to stop all vibrations except those in a particular plane, while a crystal of Iceland spar showed the ray split up into two, consisting of vibrations at right angles to one another. The difference was proved by analysis by means of a Nicol prism. These phenomena could not be intelligently explained so long as light was assumed to consist of longitudinal vibrations like those of sound, while on the transverse hypothesis Fresnel fully worked out formulæ which experiment proved to be accurate. Light could also be polarised by reflection from glass at a particular angle, or conversely it could be shown that light already polarised could not be fully reflected except in the direction corresponding to the plane of its

vibration. By means of a mechanical model the relations between the plane of transverse vibration and the angle of reflection were graphically shown. When light was very bright there was no angle at which polarisation was absolute. For example, the image of the sun was always visible on water even at the angle of minimum reflection. This apparent disagreement with Fresnel's formula was probably due to the presence of a dust or grease film upon the water. A chemically-clean surface was almost impossible of attainment, but, if it could be secured, agreement with theory would probably be found to be complete. The dispersion of light by small particles was shown in a solution containing very finely-divided sulphur. When a polarised beam was employed the blue colour resulting from dispersion was seen in one direction only, there being no vibrations to be reflected at right angles to that direction. The blue colour of the sky is due to dispersion of light by small particles, not, as some have supposed, to the oxygen or ozone in the atmosphere. Were the blueness due to actual colour the sun would look blue and the rest of the sky black. It is obvious that media reflecting differently must have different qualities. The difference must be one either of rigidity or of density, but the behaviour of small particles showed the effect must be due to one or other of these qualities, not to the joint action of both. Referring to the Röntgen rays, Lord Rayleigh said that the difficulty in connection with them lay in the impossibility of applying the ordinary methods of analysis. Little or nothing could be done with rays which could neither be reflected nor refracted, nor passed through doubly refracting crystals.

Pharmaceutical Chemists' and Apothecaries' Assistants' Association of Ireland, March 13.—Mr. Wells, President of the Pharmaceutical Society of Ireland, in the chair.—At the first meeting of this Association held in the rooms of the Pharmaceutical Society of Ireland, the following paper was read—

THE HISTORY OF PHARMACY.

BY DR. NINIAN FALKINER.

The history of pharmacy is the history of the living world, and we must not, in the happy possession of the fruits of science, forget that all we have comes to us from those who have gone before. The great Burke says, "Those will not look forward to their posterity who never look backwards to their ancestors"; if this be true that in the ordinary mind there is an intense pride and anxiety to know, in generations back, that our ancestors were honourable men, how much the more shall we, who are the scientific descendants of those who have laboured in the past for the advancement of knowledge and for the good of their fellow creatures, endeavour to honour and cherish the memories of those who have left their footprints in the narrow pathway of mediæval knowledge.

From the earliest days of the history of mankind, two great necessities for the community have always existed, firstly, that of the minister of religion, and secondly, that of the healer of the sick.

Primitive man, gifted with powers of observation, saw that animals when sick were attracted by some instinct which we cannot understand towards some herbs, which relieved their indisposition. The dog doses himself with *triticum caninum*, the cat revels in the odour of *valeriana officinalis*, the Indian mongoose is said to procure an antidote for snake-bite in *mimosa octandra*.

Probably from the earliest time man would be led to observe the behaviour of animals when suffering from disease or injury. In savage man we must seek the beginnings of our civilisation, and it is in the lowest tribes and those which have not yet felt the influences of superior races, that we must search for the most primitive forms of pharmaceutical and medical ideas and the earliest theories and treatment of disease. The lowest form of belief that exists is called Animism, which may be defined as a belief which attributes death and all forms of disease to magic, which is influenced by the spirits of dead men. Amongst these people we cannot expect to find much of the early development of the science of pharmacy; they were, however, probably acquainted with the properties of some herbs and poisons, as in the case of the obi poison.

So far as we can judge by records of the past, the oldest place in the civilisation of the world must be assigned to Egypt. It is most probable that the first kingdom of Egypt existed 8000 years ago; its history is more reliable than that of China, and more recent than that of Assyria and Chaldæa. We require no further proof than the mummies in our museums to convince us that the Egyptians from the period from which those interesting objects date, must have possessed a very accurate knowledge of anatomy, of pharmacy, and a skill in surgical bandaging very far

surpassing that possessed now-a-days by even the most skilled professors of the art. Mr. Granville says there is not a single form of bandage known to modern surgery of which far better examples are not seen in the swathings of the Egyptian mummies; the straps of linen are found without one single joint extending to 100 yards in length.

Professor George Stokes, librarian to the interesting Dublin institution, Marshes' Library, after his appointment, when getting the place into order, found a box containing a mummy; he sent for me and asked me to examine it, and on doing so, found that there was a malformation of the bones of the right arm and fore-arm. I handed the specimen to Professor E. Bennett, who exhibited it at the Academy of Medicine. The famous "Ebers Papyrus" was purchased in 1874 by Dr. Ebers, at Thebes. This papyrus contains 110 pages, each page consisting of about twenty-two lines of bold Hieratic writing. It may be described as an encyclopædia of medicine as known and practised by the Egyptians of the eighteenth dynasty, and it contains prescriptions of all kinds of diseases—some borrowed from Syrian medical lore, and some of such great antiquity that they are ascribed to the mythological ages, when the gods yet reigned personally on earth. Among others is given the recipe for an application whereby Osiris cured Ra of a headache. In this papyrus is an example of an old Egyptian diagnosis and therapeutics as follows: "When thou findest anyone with a hardness in his re-hit (pit of the stomach), and when, after eating, he feels a pressure on his intestines, his 'hit' is swollen and he feels bad in walking like one who suffers from heat in his back, then observe him when he lies stretched out, and if thou findest his intestines hot and a hardness in his re-hit, say unto thyself, This is a disease of the liver. Then prepare for thyself according to the secrets of the science from the plant pa-che-test and dates, mix them, and give in water."

The Jews were indebted to Egypt for their primary ideas of medicine, but they cast away the ideas of demonology and magic which clouded what was good in the practice of Egypt. The Talmud recommends onions for worms, and wine, pepper, and asafoetida for flatulency. The Talmudists are responsible for calling the earth, air, fire, and water, elementary bodies. In the middle ages the Jews rendered service to the healing art, and had a large share in the scientific work connected with the Arab domination of Spain.

When a Chinese physician is unable to procure the medicine that he requires he writes the names of the drugs he desires to employ on a piece of paper, and makes the patient swallow it—Grecian medicine anti-Hippocrates. Turning now towards the history of the great empires that replaced the power of Egypt and Persia in the south of Europe, Greece and Rome, we find in Grecian mythology that a prominent place is given to the deity that presides over the branches of the healing art. Apollo was the father of Æsculapius the god, and instructed by the kind centaur Cheiron, and brought up with Jason and many other demi-gods. Melampus is believed by the Greeks to have been the first mortal who practised medicine: he was the first physician who prescribed iron in the form of rust and wine identical with the vinum ferri of the Dublin Pharmacopœia; he also practised with hellebore, whence its name melampodium. In Homer there are numerous instances of medicine, surgery, and pharmacy, perhaps the most interesting is the account of disinfection by sulphur—'Odyssey,' Book xxi., 481:—

"Bring sulphur straight, and fire, the monarch cries;

She hears, and at the word obedient flies,

With fire and sulphur, cures of noxious fumes,

He purged the walls and blood-polluted rooms."

Hippocrates (B.C. 460), the father of medicine, was the first teacher who endeavoured to eliminate the superstitious element from its practice: he first recognised nature in the treatment of disease, and that physicians and pharmacists are her servants. He prescribed vegetable mercury, elaterium, scammony, poppy juice; he used blue stone, white vitriol in the treatment of ulcers, and tar water in the treatment of wounds. With regret I must for want of time pass on from Hippocrates to the dawn of modern medicine in the sixteenth century.

The Royal College of Physicians was founded in 1518. The history of medicine, as recognised by Law, dates from the year 1511, when an Act was passed for appointing physicians and surgeons. The examination of these gentlemen was placed in the hands of the Bishop of London and the Dean of St. Paul's Cathedral. By this Act the faculty of medicine was vested in one body, the members of which practised medicine, surgery, and pharmacy; the assistants to the physicians were called apothecaries. This happy

and peaceful family party was broken up by the establishment of a Royal College of Physicians by Thomas Linacre, physician to Henry VIII., in the year 1518 A.D. This Act, we must observe, gave the College of Physicians full and penal powers against the apothecaries. In the same year the College of Surgeons was united to the College of Barbers, the surgeons abandoning the dignified and lucrative operation of shaving, while the barbers promised to confine their practice of surgery to the drawing of teeth. The surgeons appear to have behaved so badly that another Act was passed in 1542, which was directed at the quack system of practice without remuneration. In 1552 an Act was passed which declared that it was illegal for a surgeon to administer medicine. In the year 1553 the College of Physicians obtained a new Act, in which their former powers were confirmed and enlarged, and in which it is stated that their four censors, or any three of them, shall have power to examine, survey, govern, correct, and punish all and singular physicians and practitioners in the faculty of physic, apothecaries, druggists, distillers, and sellers of waters and oils and preparers of chemical medicines, according as the nature of his or their offences may seem to require. It is uncertain at what time the physicians gave up the practice of preparing their own medicines. The apothecaries, who had been incorporated with the grocers, obtained their charter in 1617; it was enacted at the same time that no grocer should keep an apothecaries' shop, and that no surgeon should sell medicines. The first pharmacopœia was published in 1618 by the College of Physicians of London. Twelve subsequent editions were published, the last in 1836. This Society prospered, and in 1671 built a laboratory. Mr. Bell gives an instance of the enormous charges of these people:—

Apothecaries' bill for attending Mr. Daly, of Ludgate Hill, five days. Total: £17 2s. 10d. The following are some of the items:—

	s.	d.		s.	d.
An emulsion.....	4	6	Another bolus	2	6
A mucilage	3	6	Another draught.....	2	4
Gilly of hartshorn	4	6	A glass of cordial	3	6
Blister	1	0	Blistering to the arms ...	5	0
An emollient glyster	2	6	The same to the wrist ...	5	0
An ivory pipe, armed.....	1	0	Two boluses again	5	0
A cordial bolus	2	6	Two draughts again	4	8
The same again	2	6	Another emulsion	4	6
A cordial draught	2	4	Another pearl julep	4	6
The same again	2	4			

This was the amount of medicine taken in one day by the unhappy victim. Misconduct of this kind on the part of the apothecaries gave their natural opponents, the physicians, a powerful weapon of offence against them, but their great public usefulness as a class prevented the annihilation of the Society then as in the present time. In 1748 the apothecaries appear to have obtained the same jurisdiction over the chemists that the physicians previously had over them, and led to the friction which has happily terminated in the foundation of the Pharmaceutical Society of Great Britain in 1841 and the foundation in 1875 of the sister Society in Ireland, whose guests we have the honour of being to-night. For those among you who wish to become more intimately acquainted with the history of medicine and pharmacy, I must refer you to the excellent work of Edward Berdoe, 'The Origin and Growth of the Healing Art,' and the 'Progress of Pharmacy in Great Britain,' by Jacob Bell and Theophilus Redwood.

I now come to the second section of my lecture, which is the Pharmacopœia. The earliest pharmacopœia was prepared by the Arabs in the ninth century. The first recognised by authority was published at Nuremberg in the year 1542. In England the first pharmacopœia under authority appeared in 1618, of which there were twelve subsequent editions, the last in 1841. The Dublin Pharmacopœia first appeared in 1807, the last edition being published in 1850. Until the Medical Act passed in 1858, the right of publishing the Pharmacopœia for England, Scotland, and Ireland was vested in the College of Physicians of London, Edinburgh, and Ireland respectively, and as these books contained several preparations similar in name and different in strength, such obvious danger arose for travellers that the British Pharmacopœia published in 1864, became, by Act of Parliament, the standard for Great Britain and Ireland. An amended edition was brought out in 1867. A second reprint with additions appeared in 1874, another edition was published in 1885, and a supplement to it in 1890.

With all its faults it is our pharmacopœia, and being ours we will all take our own method of abusing it. I, for my own part, am

going to speak of it in simple language, saying how I think it might be improved, and my first cry is for Utopia. Why should not the Pharmacopœia be an international volume, edited by an international pharmaceutical conference, and revised every ten years as is the case with the American Pharmacopœia, and printed in all languages? That solution, the best for mankind, will come, but I fear that at a time when the bones of the most junior apprentice are resting with his fathers. But if you will allow me I will descend from my Utopian flight and soberly assert that the Pharmacopœia may be viewed from three professional standpoints:—(1st) Student and teacher, (2nd) Pharmaceutical chemist, and (3rd) Medical practitioner.

From the educational standpoint the Pharmacopœia may be truly looked upon as a jewel casket that requires at least three keys to unlock it, one of gold, a knowledge of chemistry; the second of silver, a knowledge of botany and zoology; and the third of iron, the knowledge of experimental physics. No student can hope to understand this complex work unless he holds the three keys. With reference to education and the programme which I drew up for the course of materia medica and botany that was instituted last year, it might be said that my course was too comprehensive, but my answer to this will be given in the analogy of the three keys. For educational purposes I would therefore recommend (1) that all the chemical formula for reactions should be given; (2) that the natural orders of vegetable and animal products should be given; (3) that there should be a comprehensive glossary of the terms used in the Pharmacopœia with definitions; (4) that explanations of complex tests and processes should be given. As a pharmaceutical chemist, I should like to see all the processes definite, and when a difficulty in manipulation occurs it should be mentioned and the character of the product described. For instance, the *lin. crotonis*, *lin. potass. iodidi* and *sapon*, and *lin. terebinthinæ*. With reference to the second, I do not think the Committee could do better than adopt the formula of the elegant preparation devised by my distinguished colleague, Professor Charles Tichborne. Another preparation which is not always satisfactory when made by the official process is *liq. gutta-percha*. Indeed, I know that some practitioners are of the opinion that the lead carbonate is contained in solution in this preparation. Those present who have prepared it know that the lead carbonate takes a long time to subside, and that even when the bulk is deposited the solution does not clear. I adopted the following plan, using dried, clean sand as a filter. I diluted with about half as much more chloroform, then dissolved and filtered, with the result—a bright solution which was easily concentrated.

Lastly, as a medical practitioner, I ask for standardised preparations whenever it is possible to obtain them. I look with distrust on most of the aqueous and green extracts; they must be of uncertain strength, and the prolonged processes by which they are obtained must seriously alter the nature of their constituents. I consider that Fowler's solution is at present an unsatisfactory preparation, as the leading authorities are not agreed as to its chemical condition, whether the arsenious oxide is dissolved in potassium carbonate, or a true arsenite of potassium is formed. I consider that the doses of Donovan's solution are too high. The dose of arsenious iodidi is given at 1/30th part of a grain, and the solution containing 1/100th part of a grain in each minim is given in doses of 10-30 minims. I have too much respect for the idiosyncrasies of doctors, and perhaps also a kindly feeling to all the substances that are official as old friends to become a strong advocate for the removal of any of them. What harm do poor mastic and pyrethrum, and *hoc ille genus* do to anyone by being allowed to retain official distinction? I do, however, recommend that some preparations known to be used in enormous quantities be made official, such as chemical food, Easton's syrup, syrup of hypophosphites, syrup of lactophosphate of lime, and boroglyceride, and I think that fresh juices and abstracts are the types of medicines that when used will be likely to procure good results.

In conclusion, I take the opportunity of thanking the Council of the Pharmaceutical Society for the repeated acts of favour which they have done me, having successively appointed me as their examiner in chemistry and pharmaceutical chemistry, as their special examiner under the Pharmacy Amendment Act, and finally as their Professor of Botany and Materia Medica. I have also to express my feelings of satisfaction that they have allowed me to supplement the botany instruction by the appointment of Mr. Henry Dixon, Assistant Professor of Botany in Trinity College, Dublin, who is acting as my colleague in this School, and to whom I wish to express before you a strong sense of his great efficiency and

attention to the well-being of the students. The School will, I trust, under the enlightened directorship of your Council, soon be found fully equipped, firstly, by the institution of a course of lectures in theoretical chemistry and chemical physics, and, secondly, by a course in practical pharmacy. Also I hope that as time advances, and the Society, although yet young, develops its resources, that prizes and scholarships may be established, and a research laboratory attached to the School. From what I have seen in the past of the labours of the Society since its formation, I feel confident that the time is at hand when you will yield in nothing to the advantages which are enjoyed by your elder sister in the great metropolis of the world; and I thank you again, and congratulate you on the step which you have taken with respect to the Association that meets to-night for the first time beneath the paternal roof. By encouraging the association of the students of pharmacy you are advancing a movement important from an educational and social point of view. Thackeray more than once refers in his peculiar way to the special temptations of a chemist's establishment. We all here know that these temptations exist: how are they to be met? Only by the student's own determination and manliness. You members of this Association remember that he who cannot obey and serve his lawful master faithfully will never be fitted to command.

"Self-knowledge, self-reverence, self-control;
These three alone lead men to sovereign power."

I would not be treating you as men if I did not place this responsibility of your conduct in your own hands, but at the same time I observe with joy that the Council of the Pharmaceutical Society have extended an arm of friendship and protection to you. The special advantages of this Association are that it provides for the time of leisure, giving an opportunity of social intercourse to the students of pharmacy. It encourages the students to extra work, and to take more interest in the work that they are doing, and it provides the great want of teaching young men to think when they are on their legs and speaking. I venture to predict that this Association, founded under the auspices and nourished by the support of the Council of the Pharmaceutical Society, has a long course of useful and honourable work before it.

SCOTTISH NEWS.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION, April 2.—Mr. W. L. Currie, President, in the chair. The Hon. Secretary and Treasurer, Mr. J. Anderson Russell, in submitting his

FINANCIAL REPORT FOR THE YEAR, said the Association commenced the year with a balance in hand of £35 9s. 7d., which had now increased to £50 5s. 7d. The accounts of the Social Committee, which had been kept separate, showed a balance of £4 15s., which had been carried to the general account.

The Chairman said that it spoke well for Mr. Russell's powers of finance that he was able to show such a handsome increase in the Association's funds at the end of the year. They must also congratulate the Social Committee, and particularly its convener, Mr. McKellar, on the very admirable way in which he had managed its affairs. He hoped that next year they would have not one "at home," but several. He might add that the accounts had been audited and found correct, and he moved that a very cordial vote of thanks be passed to Mr. Russell for his labours.

Mr. Russell then submitted his secretarial report. While there was nothing of transcendent importance to record in connection with the meetings during the fourth session of the Association, the Council were pleased to be able to announce a gratifying increase in membership and in the interest taken in the Association by the country members, who had sent numerous letters of well wishing. Reference was made to the friendly intercourse which had taken place among the members, and to the various papers of practical value which had been read during the session. There were at present 155 members on the roll, a net increase of eleven on the year.

The Chairman, in moving the adoption of the reports, said it would benefit the Association generally, and the members of the trade in particular, if they would turn out to the meetings in very much greater numbers than they had hitherto done. Personally, he had only missed one meeting, and none of them had more claims upon their time than he had. If Sir John Lubbock's Early Closing Bill became law it might have some influence on the attendance.—Mr. Alexander Boyd seconded the motion for the adoption of the report, which was then agreed to.

Mr. Thomas Blair, the librarian of the Association, reported that the number of books issued from the library was five times greater than in the preceding year.—Mr. James Moir said he thought that the time had now come when they should consider the advisability of having a room exclusively for themselves, which would be open one or two nights a week, so that students might come and examine the specimens, and have the library always accessible.

Mr. Thomas McKenzie said that the students attending the Glasgow and West of Scotland School of Pharmacy had formed themselves into an Association, which had a membership of over fifty. He would be very pleased to put the cabinet of *materia medica* into a locked room to which the members could have access. He also asked if the members of the junior association, which might be looked upon as a feeder for the senior association, could have the use of the books in the library.—On the motion of Mr. Moir, seconded by Mr. Boyd, it was remitted to the Council to consider Mr. McKenzie's proposal.

Mr. Alexander Laing suggested that the Council should be empowered to lend the cabinet of *materia medica* to any member who desired it, on condition that it was returned in the same condition as received.

The Chairman said he thought that the whole question as to the lending of the cabinet should be remitted to the Council for consideration. As regarded the renting of rooms for the exclusive use of the Association, the Aberdeen chemists paid a rent of about £35 a year, and had not only rooms, but teachers for the younger students. He would be very willing to contribute annually towards the keeping up of rooms in Glasgow, and he thought that the time had come when that should be done. This question, as well as Mr. McKenzie's proposal, would be considered by the Council. He moved that a very hearty vote of thanks be awarded to Mr. Blair for the trouble he had taken in connection with the library.

SHOPS (EARLY CLOSING) BILL.

The Secretary said that as the outcome of a matter which came under the consideration of the Council at its last meeting, he had written a letter to Sir John Lubbock with reference to the Bill for the early closing of shops (see *ante*, p. 287). He had received a reply from Sir John Lubbock in which he said that he would consider the suggestion of the Council.—The Chairman said that he regarded the Bill as a step in the right direction, and he was sure that most of the members would be of the same opinion. Their hours of labour were far too long at present, and were not good for them either physically or mentally. He did not approve of grand-motherly legislation, but they should welcome this opportunity of making it compulsory to close places of business earlier. Generally speaking the provisions of the Bill were entirely favourable to their supporting it, but they should get a better definition as to what medical appliances were.—Mr. Laing said he would like the Association to give support to the Bill as far as possible. Legislation could not err when it protected a majority from a selfish minority. He was only sorry that the Bill was so much safeguarded as to leave its adoption absolutely to the discretion of the localities concerned. He very much feared that it would be a difficult matter for them to be able to utilise it to any practical purpose in Glasgow.—Mr. Thomas Adams said he was afraid that so far as they were concerned this Bill would be a dead letter. Druggists were so scattered, and there were so few of them in a ward that it would be very difficult for them to take the initiative. He would prefer that an early closing district should be formed composed of all the shops in that district.

The Secretary, who remarked that he was strongly in favour of the Bill, said that, so far as Glasgow was concerned, the whole of the chemists in the city might move in the matter, because it would be in the hands of the Town Council. As to the point referred to in the letter to Sir John Lubbock, if the Bill simply referred to the class of shops mentioned as chemists' shops, it would leave the other drug shops out, and they would be a trouble to them, and, again, if an exemption were made in favour of pharmaceutical chemists and druggists that did not make an exemption in favour of the doctor or his man if he was not qualified. Though they could not prevent a medical man or a limited liability company speaking of themselves as chemists, at the same time any enactment applying to chemists would not apply to them unless they were specified in it, and that was a proof that they were not chemists.—Mr. Laing said that local authorities had the power of assigning to every shop what class it belonged to.

Mr. D. Watson, speaking in support of the Bill, said that Sir John Lubbock would never have introduced it if it had not been

that shopkeepers could not agree among themselves to close at a certain hour.—Mr. Boyd said he was decidedly against the Bill. He did not think that the Legislature was justified in interfering with a man's liberty to work. The result of a strict compliance with the Act would be that the conscientious man would suffer. Chemists should be on the same footing as doctors.

Mr. Moir said that he must take the same view as Mr. Boyd. Every district of a city had its own time for business. In the centre of Glasgow, chemists could close at six o'clock, while in the suburbs their business was only beginning then. They were to be allowed to supply medical appliances, but where were they to draw the line? A bottle of castor oil or an ounce of ipecacuanha wine might be vital in many cases. He could not see how the Act could work in their trade. He had no objections to the law interfering with employés. In the interests of the small shopkeepers, who contrived to eke out a livelihood after the larger places of business were closed, he would oppose the Bill. The House of Commons was playing more and more into the hands of the large capitalists.

The Chairman said that the point they were most interested in was getting included in the Bill all shops where drugs were sold. The members of Council who were present at the meeting referred to were unanimously in favour of the Bill. They saw the difficulty of working out the details, but they were going to leave the future to itself. It would be a very difficult matter to include chemists and druggists in the Bill.—Mr. Boyd moved that the Association petition Parliament that all pharmaceutical chemists and shops where drugs were sold should be entirely exempted from the provisions of the Bill.—Mr. Moir seconded.—Mr. Laing moved that the Association should heartily approve of the principle of early closing, and give its support to the Bill now before Parliament.—Mr. Watson seconded.—On a show of hands being taken, twelve voted for Mr. Laing's amendment, and two for Mr. Boyd's motion, several members declining to vote.

The Chairman, in his retiring address, said that he had been connected with the drug trade for twenty-six years and certainly the position now was very much better than what it was in his young days, and he did not despair of seeing it in a very much improved position from what it was at present. If a chemist and druggist paid attention to his business and he gained the confidence of the public, all the limited liability companies in the world would not affect him.

On the motion of Mr. Boyd, seconded by Mr. Laing, a hearty vote of thanks was passed to Mr. Currie for his services as President.

ELECTION OF OFFICERS.

Mr. James Robb proposed and Mr. Moir seconded the re-election of Mr. Currie as President, which was unanimously agreed to. The following office-bearers were also elected:—Hon. President, Mr. Daniel Frazer; Hon. Vice-Presidents, Messrs. John McMillan, Alexander Kinninmont, and J. W. Sutherland, Dumfries; Vice-Presidents, Messrs. John Foster, Thomas Robinson, Alexander Laing, and James Robb; Secretary and Treasurer, Mr. J. Anderson Russell; District Secretaries, Messrs. James Bruce, A. Miller, George Robertson, and Mungo Wallace; Librarian, Mr. Colvin Gates; Committee, Messrs. Hugh Lambie, James Moir, J. W. Miller, Alexander Boyd, A. McKellar, Robert Brodie, D. S. Robertson, James McNiven, James McMurray, R. M. McCowan, J. Stewart, Robert Tocher, Thomas Adams, Alexander Bruce, and John Neil.

IRISH NEWS.

PHARMACEUTICAL SOCIETY OF IRELAND, April 1.—Mr. W. F. Wells, junr., President, in the chair.—Mr. Conyngham, pursuant to notice, brought forward two motions, the first of which was that a resolution passed at a previous meeting, refusing to admit Mr. Cleland and others for examination should be rescinded; and the second was in the following terms:—

"That our legal adviser be instructed to draw up a bye-law admitting these young men and any others in a similar position who have applied for the privilege (It being ascertained the number is not as large as was anticipated.) The Council does this, having vindicated the right to refuse certificates from limited companies, but as a matter of grace the request of these young men be granted. Let it be clearly understood that on and after this date (Mr. Cleland's case) no certificates will be received from any apprentice or assistant claiming time in the employment of a limited company."

In moving his first resolution Mr. Conyngham said not more than eleven or twelve persons would have to be admitted, but the President thought there would be a good many more.—Mr. Hayes seconded the motion of Mr. Conyngham.

Mr. Grindley said what Mr. Conyngham asked could not legally be done. This was really a grievance of the limited companies and not of their apprentices and assistants.—Mr. Beggs said there was no way out of the difficulty except by rescinding the regulation of 1884. Their law adviser had told them that.—Mr. Baxter concurred with Mr. Beggs.—Mr. Whitla said if they opened their portals so widely as by rescinding the regulation the number of applicants of this class would be trebled. Within the last two days he had heard that it was a common thing in a prominent house in the city to give certificates to young men who began as cash boys, and who afterwards learned to compound, then after a certain number of years received certificates of apprenticeship.—The Vice-President opposed the motions of Mr. Conyngham, remarking that if passed the resolutions would only be operative until the next case of hardship should be brought forward, to which the Council should be soft-headed as well as soft-hearted enough to yield.—After further discussion Mr. Conyngham was allowed to withdraw his motion, but he intimated that he would take further action in the matter.—The President said he would not receive further resolutions on the subject unless they were legal or proposed to rescind the regulation altogether.—Other business having been disposed of, the Council adjourned.

PHARMACEUTICAL CHEMISTS' AND APOTHECARIES' ASSISTANTS' ASSOCIATION OF IRELAND.—A committee meeting of this Association was held on Friday, Mr. James B. Alister, M.P.S.I. (President), in the chair. The following were present:—Messrs. McCarthy, M.P.S.I. (Vice President), Harris, Hunt, Payne (Hon. Treasurer), Carroll, Walsh, and Hardy (Hon. Secretary). The minutes of the last meeting and correspondence were read. On the suggestion of Mr. Hardy, Messrs. Payne, Hunt, Harris, O'Sullivan, and Hardy were appointed to act as an arrangement committee, whose duty would consist in the procuring of lecturers, essayists, and speakers for the future meetings of the Association. The Hon. Secretary would in turn notify beforehand the general body of members as to the nature of the business, etc., to be transacted at each fortnightly meeting. Mr. Hardy was thanked for the satisfactory result of his arrangements for the inaugural meeting on March 13, and Mr. W. F. Wells, President of the Pharmaceutical Society, who presided thereat, was warmly eulogised for having infused new life into the Association by his presence and support. Hopes were entertained that Mr. Wells would become an honorary member thereof, and that others of the Council would follow Councillor Cunningham's and Dr. Falkiner's example in this respect. Mr. W. McCarthy's advice not to suspend the working of the Association for any period, however short, during the summer was acted upon. It was absolutely necessary at present to keep well before the trade generally, and increase the membership by enrolling all who were connected with, or friends of, the pharmaceutical profession. The President said it would be unwise to hold another social evening until they discussed a few more papers, and held one or two additional debates, after which a members' musical "at home" might be advantageously arranged. They would, he hoped, find that the Association had been started to inform, to instruct, and to amuse, but the two first-named should get priority. Their reputation was now at stake, and he trusted that the members would ably sustain the very best traditions of pharmacy by making the Association a medium for developing their intellectual faculties, and raising themselves and their position in the social and professional scale of the country. He was pleased to learn that abstracts of their proceedings would appear henceforth in the *Pharmaceutical Journal*, and this augured well for their future success. A suggestion to obtain a reprint of the rules and amendments thereto was noted for future attention. The financial report and statement of accounts will be presented at next meeting, at which the question of finances—past, present, and future—will be gone into, and suggestions made for the good of the Association.

A CENTRAL DRUG DEPÔT.—Dr. Watson, the Dispensary Officer to the Limavady Union, says that tendering for medicines by drug contractors has developed into such a science that it is impossible to say which is the cheapest tender. He suggests that the Local Government Board establish a drug and medicine depôt in Dublin, which would supply all dispensaries in Ireland. £2000 would, he says, provide the place and pay one good buyer.

THE BELFAST CORPORATION has set up an examination for the position of Sanitary Sub-Officer, the subjects including hygiene and elementary chemistry. Two corporators have been set apart to test the candidates.

FOREIGN NEWS.

NEW HAIR DYES.—The prejudicial effects of hair dyes containing lead and silver salts has been so often pointed out by medical men that numerous attempts have been made to prepare a dye free from metallic salts, and latterly several have been introduced into the Paris market and guaranteed to be free from any mineral substance. These on analysis were found to conform to the statements made, and their colouring properties ascertained to be due to diamidopheno¹, which, used in combination with peroxide of hydrogen, imparts a beautiful brown colour to the hair. Doubts have lately been entertained, however, as to whether these so-called vegetable dyes are as non-injurious as the makers claim them to be. Several instances have occurred of persons using them being attacked by intense headache, local eczema, etc., which have led medical men to suspect these dyes to be the cause. One case in particular is recorded of a man thirty years old, who was in the constant habit of using one of these preparations, being seized with apoplectic symptoms and expiring after ten days' illness. Although the occupation of the deceased (who was a restaurant proprietor) may have been the primary cause of the attack, the doctors assert that while positive proof is necessarily absent, they are of opinion that the use of this preparation must have been a powerful accelerative cause in bringing about the fatal *dénouement*.

NEW APPLICATION OF THE RÖNTGEN RAYS.—Dr. Brouardel, Dean of the Faculty of Médecine, placed before the Académie des Sciences numerous photographs taken by MM. Girard and Bordas, of the Municipal Laboratory, of a book in which had been fitted a tin case containing an explosive, which the act of opening the book would detonate. They affirm that the different explosives usually contained in these destructive engines can be distinguished on account of their varying opacity to these rays. For obvious reasons Dr. Brouardel did not enter into details. One of the photographs exhibited represents the missile which was sent some little time ago to a prominent politician, causing at the time a considerable sensation. In view of the numerous cases arising where packets suspected of containing bombs have to be examined at the Municipal Laboratory, and the risk incurred in opening them, the great practical value of this application of the new photography can be at once realised. At the French Astronomical Society, Dr. Dariex states that, having attempted to photograph the human eye by means of the cathodic rays, he failed to do so, as he found that they cannot penetrate the cornea, and their invisibility is thus explained.

STRYCHNINE AS AN ANTIDOTE TO CURARE.—At the Société de Biologie, M. Bourquelot read a note of M. Sadoréanu, who reported a remarkable cure of strychnine poisoning by the curare treatment. A woman, having absorbed 60 centigrammes of strychnine, was administered immediately an injection of 25 centigrammes of 5 per cent. solution of curare, after eight hours a second injection of 10 centigrammes was given, and the following day a further dose of 2 centigrammes. By the sixth day the patient had entirely recovered.

THE PHARMACEUTICAL ASSISTANTS OF PARIS held their annual banquet recently, at the Restaurant Coquet, under the auspices of their syndicate. The company present, numbering about a hundred, included several members of the Chamber of Deputies, one of whom, M. Louis Brunet, presided.—In the course of the after-dinner speeches, M. Robert, the President of the Syndical Association, took the opportunity to thank the deputies who had so kindly responded to the invitations for the encouragement given by their presence, and eulogised the sympathetic attitude of the present Ministry towards the profession.—The Chairman, in responding, while assuring pharmacists of the support of his party during the impending discussion of the proposed Pharmacy Laws in the Chamber, exhorted them to personally use their utmost endeavours to improve the present unfavourable condition of pharmacy, and to uphold the privileges to which their important duties towards the Community entitled them. The réunion, which proved most pleasant and successful, terminated with the presentation by M. Brunet, on behalf of the Minister of Public Instruction, of the 'Palmes Académiques' to the devoted and capable President of the Association.

NOTES AND QUERIES.

[The information given in this column includes both notes of practical interest to pharmacists, and replies to queries which seem to possess sufficient interest to readers generally. Readers requiring working formulæ for special preparations should intimate their wants to the Editor, who will be pleased to assist them to the best of his ability. The word "parts" invariably indicates parts by weight.]

POWDER FOR WRITING ON STEEL.

There is no alum in the sample of powder you send. As far as can be ascertained from the very minute quantity sent, it consists of copper sulphate and sodium chloride, the latter being disguised by the admixture of a considerable amount of ferric oxide. Confirmation of this is afforded by the fact that on smearing a knife-blade over with soap, then writing on it with a pen and covering with a strong solution of a mixture of equal parts of copper sulphate and salt, an "etching" exactly similar to that obtained with your powder is obtained. [Answer to "Pharmacist."]

THYMOL CAMPHOR.

On heating together camphor and thymol a transparent oily liquid is obtained resembling phenol-camphor, but milder in its action. Schaefer recommends it for use in dermatological practice, it has given good results in scrotal pruritus and in pediculosis pubis. On the normal skin it does not produce any irritation or redness (*Bost. Med. and Surg. Journ.*, cxxxiv., 111).

RESORCIN-CAMPHOR.

This body is obtained as a liquid by heating together equal parts of camphor and resorcin. Schaefer finds that it is superior to mercurial ointment in removing pediculi (*Bost. Med. and Surg. Journ.*, cxxxiv., 111).

NEW REACTION FOR ERGOTININE.

A small quantity of powdered ergot is shaken with ether for a quarter of an hour and filtered. To the filtrate is added 10 drops of ether, acidulated with hydrochloric acid (obtained by shaking ether with 5 per cent. of its volume of hydrochloric acid, and decanting). A yellow flocculent precipitate of ergotinine hydrochlorate is thus formed, which is collected on a filter, washed with ether, and finally dissolved in 2 C.c. of glacial acetic acid. This acetic solution gives, on the addition of sulphuric acid and ferric chloride solution, a blue coloration. Keller states that this reaction is very delicate if care be taken not to add an excess of the acidulated ether (*Répertoire*, lii., 80, after *Neder. Tijdschrift*).

QUICK METHOD OF MAKING MERCURIAL OINTMENT.

Ettore Barbi gives in *Il Farmacista Italiano* a formula by which he says a 1 in 2 ointment of mercury can soon be made. A few grammes of decoction of saponaria root are put in a strong jar or bottle, 500 grammes of mercury are added, and the whole shaken until globules of the metal are no longer visible. The emulsified mercury is poured into a mortar containing 400 grammes of lard and 100 grammes of white wax melted together, and on triturating the metal is soon taken up, and a smooth and perfect ointment results.

RESINATE OF COPPER.

A combination of the acid resins of colophony with copper has been suggested for veterinary use. It is prepared by dissolving 50 grammes of cupric sulphate in a litre of water, and adding 100 grammes of colophony to the boiling solution, shaking well for about ten minutes, and allowing to cool. The resinate thus obtained is insoluble in essential oils and in alcohol, but soluble in amylic alcohol. For use, a solution is made with 100 parts of soft soap in 100 parts of fusel oil, and 60 parts of the resinate added. A limpid solution of a fine green colour is thus obtained (*Journ. de Pharm. d'Anvers*).

CHINOSOL.

Under this name a neutral combination of oxyquinolin has been introduced as a bactericide, in the form of a yellow crystalline powder, said to be forty times more active as a germicide than phenol, and non-toxic.

CORRESPONDENCE.

CO-OPERATION A REMEDY FOR LOW PRICES.

Sir,—It has often appeared to me that the best remedy to provide for the profitable conduct of a retail chemist's business in these days of severe competition with limited companies would be a more economical system of purchasing pure drugs, chemist's requisites, etc. This might be attained by retail chemists subscribing a small amount each (not necessarily exceeding £5) for the formation of their own large wholesale manufacturing limited company, whereby the subscribers might receive back as a bonus proportionate to their purchases the nett profits accruing from the carrying on of this concern after paying, say, a fourth part of the nett profits as dividend on the original shares. If this combination were well supported by a large number of the chemists in business the company would be such large buyers and producers that it must save a substantial amount to the retail chemist. Some advantages would be as follows:—(1) The abolition of the middleman's profits, (2) the guarantee of the purest of drugs and chemicals, (3) preparations of stated and uniform composition, (4) exclusion of limited companies, (5) the institution of copyrighted proprietary articles for sale at fixed prices only, thus ensuring a substantial profit, (6) the reception and publication of new ideas advantageous to chemists, (7) the sale of shares to registered chemists only, (8) the expenses of travellers and advertising saved, (9) a powerful combination for legislative purposes, (10) a good investment. With a view of putting something like the above into practical shape, the writer will be pleased to receive short post-card communications from chemists in business who may be interested, expressing their approval or disapproval of the above scheme, and he will communicate a condensed report to the Journal as soon as possible.

95, Waller Road, New Cross Gate, S.E.
April 6, 1896.

G. T. COOPER.

THE PHARMACEUTICAL SOCIETY'S SUBSCRIPTIONS.

Sir,—Having been connected with the Pharmaceutical Society for some ten or twelve years, and having during that time invariably forwarded my subscription in the usual way (the subscription for this year having been sent some time back), I was very much surprised to receive a post-card from our local secretary "regretting that owing to stress of work he was unable to call upon me for my annual subscription, and stating that he would esteem it a favour if I would send the same to Mr. Bremridge by post." At the foot of the post-card was a note, stating that if I had already sent my subscription I need not take any notice of this. Is it usual for a business man to go collecting accounts without first ascertaining which have been paid and which have not? Personally, I object to being called upon for my subscription at any time, and further, I object very much to such a notice being sent to me on a post-card, which may be read by anyone through whose hands it passes before I receive it.

Manchester, April 1, 1896.

T. R. ASHTON.

SHOPS (EARLY CLOSING) BILL.

Sir,—I have been surprised that so few chemists have written against this shameful early closing Bill. I can only account for it on the supposition that chemists have so continually been ignored with regard to any rights they have by Government, that they look on protest as useless. We know the minority always make the most noise, but that will not altogether account for it. This Act is a most unjust one; it is being forced through principally in the interest of co-operative stores and the like. M. P. S. is correct in saying two have no right to dictate to one, while H. S. Young's statement that a law must hurt somebody if it benefit someone else is absurd. Every law should be founded on moral right. But there is no moral right that two persons should dictate to a third in his own personal business. In London especially, if ever put into force, this Act will do great wrong. There are numbers of small shopkeepers who depend principally on evening trade and are a convenience to a certain portion of the public. There are streets where the most of the business is done early, whilst within a few yards—as the crow flies—are streets where most is done late; it would be gross tyranny that the man whose business naturally comes in the afternoon should compel the man to shut whose business is principally in the evening. The selfishness is all on the other side. The correspondence on this subject is certainly instructive, "Spes," of Aberdeen, would make it penal to supply anything

without the order of doctor or nurse. He does not explain how you are to know if the order is genuine. But on a case of emergency he would say, find a doctor or dentist or nurse, and if your friend is alive when you have got their order come again. And for whose interest is this suggested? Why the man who locks up his shop and goes right away. It is only a selfish attempt to prevent anybody else selling a pennyworth after he has turned the key in his door. Selfishness of one class, with no consideration for the public, is at the bottom of the suggestion. I cannot think why chemists writing to chemists are ashamed to give their names.

91, *Hampstead Road*, April 7, 1896.

WM. G. TAPLIN.

Sir,—“Many men, many minds,” is certainly applicable with a vengeance to the correspondence in your columns on the Shops (Early Closing) Bill. Whilst one man sees in it nothing less than financial ruin to a large number of the trade, another hails it as a ladder to literary and scientific culture, with increased opportunities for outdoor exercise and social intercourse. One opinion, however, all sides must hold, that if early closing for chemists is ever to be an accomplished fact, it is legislation alone that will work the oracle. “M.P.S.” tells us that a two-thirds majority has no moral right to coerce the remaining third. Quite so, and it should be the duty of the Legislature to protect the minority against overbearing action of the majority. Now we, sir, representing considerably more than a two-third majority, want the State to protect us from the infinitesimal minority, who, filled with an insatiable craving for the “last bawbee,” would keep their shops open all night if there was the faintest hope of their picking up a customer from their less avaricious brethren. A few of us are able to adopt an independent line of conduct and close our shops at eight, quite indifferent as to whether Mr. Graball-Smith opposite, or Mr. Everopen-Jones up the street follows suit at nine or midnight. The majority, unfortunately, are not in such an enviable position; they, whilst most sincerely wishing for shorter hours, are obliged to keep open till 9.30, 10, or 10.30, because some brother pharmacist in their district insists upon running a modified “all night pharmacy.” Voluntary closing has been tried repeatedly, with ever the same result. Brotherly kindness, unity, and sympathy are not in the B.P. (they may find a place in the millennium edition), and so, of course, are not dispensed by the minority, against whom I must earnestly hope the trumpet of the law will give a not uncertain sound.

Brighton, March 29, 1896.

ARTHUR T. JEEVES.

Sir,—You ask for an opinion for or against above Bill. I am heartily with it, and cannot understand anyone's objection. There is no necessity for late hours, either in a wealthy neighbourhood like this, or in a poor one like the Harrow Road. I have had a business in both places, and am competent to judge. The poor enjoy short hours, especially those in mechanical trades, and can shop early if so minded. The real reasons for long hours are excessive competition and the fact that there are too many chemists; but if all were compelled to close, as much business would be done as now and a trader enjoy a reasonable amount of freedom from the harassing cares of business, and especially single-handed men would transact their business with more energy, more go, with shorter hours than they do now.

South Hampstead, April 3, 1896.

ARTHUR SANGSTER.

THE OLD FIRM OF GODFREY.

A CORRESPONDENT interested in Mr. Ince's article has drawn attention to the following ancient

Epitaphium:

Here lieth to Digest, Macerate and Amalgamate with Clay, In Balneo Arenæ, Stratum super Stratum, the Residuum, Terra Damnata, and Caput Mortuum of Boyle Godfrey, Chemist and M.D. A Man, who in this Earthly Laboratory pursued various processes to obtain Arcanum Vitæ or the Secret to Live; also Aurum Vitæ, Or the art of getting, rather than making Gold. Alchemist; like all his Labour and Projection, as Mercury in the Fire, Evaporated in Fumo, when he dissolved to his first principles, He departed as poor as the last drops of an Alembic; For Riches are not poured on the Adepts of this World.

Though fond of News, he carefully avoided the Fermentation, Effervescence and Decrepitation of this Life. Full seventy years his exalted Essence was hermetically sealed in its Terrene Matrass; But the radical moisture being exhausted, the Elixir Vitæ spirit had exsiccated to a cuticle. He could not Suspend longer in his Vehicle, But precipitated gradatim, Per Campanam, to his original dust. May that light brighter than Bolognian Phosphorus preserve him from the Athanor, Empyreuma and Reverberatory

Furnace of the other World, Depurate him from the fæces and scorix of this, Highly rectify and volatilize his ethereal spirit, Bring it over the helm of the retort of this globe, Place it in a proper recipient or Chrystalline orb among the elect of the Flowers of Benjamin, Never to be saturated till the general Resuscitation, Deflagration and Calcination and Sublimation of all things.

Note.—Campana, a bell: in old Chemistry, a receiver in which gas was concentrated and condensed into a liquid. Sulphuric acid was described as Oleum Sulphuris per Campanum Athanor, a digesting furnace.

ANSWERS.

“MORTAR.”—Such an arrangement would not come under the exemption that limited companies are held to enjoy, and consequently the provisions of the 1868 Act would apply to it.

J. W. SANDERS.—The plan you suggest is not feasible. Besides, what is required is to ascertain the general wish of the trade, and not of the Society only.

A CORRECTION.

“GRANULAR EFFERVESCENTS.”—A correspondent having pointed out that Mr. Clarke's formula for a slightly acid basis, as printed in the *Pharmaceutical Journal* at page 235, would yield a product containing over three parts of sodium bicarbonate without acid to decompose, the author has been communicated with. The corrected formula is now given as follows:—

Sodium Bicarbonate	17 parts.
Tartaric Acid	9 „
Citric Acid.....	6 „
Sugar	6 „

It appears that an error occurred in type-writing the paper, the proportions of tartaric acid and sugar being transposed.

PUBLICATIONS RECEIVED.

BERICHT VON SCHIMMEL AND Co., IN LEIPZIG. April, 1896. Pp. 87, with map. From the Publishers.

ST. THOMAS'S HOSPITAL REPORTS FOR 1894. Edited by Dr. T. D. ACLAND and Mr. BERNARD PITTS. Pp. 522. (London: J. and A. Churchill, 7, Great Marlborough Street. 1895.) From the Publishers.

ST. BARTHOLOMEW'S HOSPITAL REPORTS FOR 1895. Edited by SAMUEL WEST, M.D., and W. J. WALSHAM, F.R.C.S. Pp. 325. (London: J. and A. Churchill, 7, Great Marlborough Street. 1896.) From the Publishers.

PHARMACOPŒIA OF THE EVELINA HOSPITAL FOR SICK CHILDREN. Second Edition. Pp. 53. Price 1s. 6d. (London: J. and A. Churchill, 7, Great Marlborough Street. 1896.) From the Publishers.

A NEW METHOD OF INHALATION FOR THE TREATMENT OF DISEASES OF THE LUNGS. By W. H. SPENCER, M.A., M.D. Cantab, M.R.C.P., Lond. Pp. 54. (London: The Scientific Press, Limited, 428, Strand, W.C. 1895.)

DAIRY MILK: ITS DANGERS AND THE REMEDIES, with the opinions of twenty eminent British physicians upon sterilised milk for infant feeding. By CHARLES HENRY LEET. Pp. 30. Price 2d. (Liverpool: C. Tinling and Co., Victoria Street.) From the Author.

RÉPERTOIRE DES RÉACTIFS SPÉCIAUX GÉNÉRALEMENT DÉSIGNÉS SOUS LEURS NOMS D'AUTEURS. By FERDINAND JEAN and G. MERCIER. Pp. 111. Price 2 francs. (Paris: En vente chez les auteurs, F. Jean, 17, Faubourg St.-Denis, and G. Mercier, 158, rue Saint-Jacques.) From the Authors.

ANATOMISCHER ATLAS DER PHARMAKOLOGIE UND NAHRUNGSMITTELKUNDE. By Drs. A. TSCHIRCH and O. OESTERLE. Part X. Pp. 223. Price 1 M. 50 Pf. (London: Williams and Norgate, 14, Henrietta Street, Covent Garden. 1896.) From the Publishers.

OBITUARY.

MARSTON.—On March 20, Alfred Marston, Chemist and Druggist, Ludlow. (Aged 61.)

GILLISPIE.—On March 28, John Gillispie, Chemist and Druggist, Dornoch. (Aged 62.)

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs. Arblaster, Baker, Bindloss, Brown, Cooper, Cracknell, Dawson, Evans, Mitchell, Sanders, Sangster, Scoville, Selby, Sinclair, Smith, Stewart, Stow, Taplin, Thompson, Tunnicliffe, West, Wiles.

THE PHARMACOLOGY OF IZAL.

BY F. W. TUNNICLIFFE, M.D., M.R.C.P.

[From the Scientific Workroom, St. Bartholomew's Hospital].

In considering the properties of Izal I shall first describe the result of the pharmacological experiments, shall then consider, for the purpose of comparison, the action of other antiseptics, and, finally, give some suggestions with regard to the probable therapeutic uses of Izal, the emulsion of Izal oil.

PHARMACOLOGY.

For these experiments we had the choice of two preparations, the pure medical oil and the emulsion; control experiments with the mother liquid of the emulsion showed it in the quantities given to have no action. Hence, the only difference in these preparations was one of strength, the activity of the emulsion being entirely due to the 40 per cent. of the oil which it contained. In describing the experiments the equivalent of emulsion will be given.

I.—ACTION OF IZAL ON THE INVERTEBRATA.

Experiments were made upon the tubifex rivulorum. Into three beakers, each containing 100 C.c. of New River tap water, an approximately equal number of tub. riv. were introduced; one of these beakers contained, in addition, 1 C.c. of a 1 per cent. solution of Izal emulsion. After a quarter of an hour's immersion it was found that the worms in the beaker containing Izal emulsion were becoming lethargic and opaque at the ends, whereas the worms in the other two beakers were unchanged. Three-quarters of an hour after immersion the majority of the worms in the beaker charged with Izal were dead, the ones in the other beakers still remaining unchanged. In a second series of experiments the third beaker was "medicated" in double the strength, that is, 2 C.c. per cent.; this strength killed the majority of the worms in fourteen minutes.

Experiments with earth-worms gave similar results.

II. ACTION ON FROGS.

(a) General Action.

Izal emulsion is lethal to frogs in doses of .015 C.c. per 100 Gm. body weight when injected *sub cutem*. Immediately after the injection of the drug in the case of decapitated frogs the "reaction time" becomes increased (Turks' method). Later, although the frog responds by a kick to cutaneous irritation, it is powerless to perform co-ordinated acts, such as returning to the prone from the supine position, or jumping away, as a normal frog would, from an irritating object. At this stage the indirect irritability of the muscles and the motor conductivity of the spinal cord are greatly diminished. The heart continues to beat after other signs of life have disappeared.

(b) Action on the Excised Heart.

When to the Ringer's fluid perfused through the excised frog's heart in a Williams' apparatus, Izal (pure medical oil) is added in the proportion of 1 part in 12,000 the beat is considerably slowed; the slowing is caused by a prolonged pause between the beats. When the Izal is increased to 1 in 8000 the beats become somewhat irregular and diminish in volume. When it reaches the strength of 1 in 6000 the heart stops. Ringer's solution recovers such a heart in fifteen minutes.

(c) Action on the Frog's Muscle-nerve.

Two gastrocnemius nerve muscle preparations were taken from the same frog. Their direct and indirect irritabilities were determined in the usual manner, they were approximately the same. One was placed for two hours in tap water saline solution, to which Izal (pure medical oil) had been added in the proportion of 1 part in 2500. The direct and indirect irritability began rapidly to decrease, and at the end of this time this preparation was both

directly and indirectly unirritable and opaque. The other preparation which had been placed for the same time in tap water saline solution preserved its irritability unimpaired.

To sum up the action of this substance upon the invertebrata and frogs we may say that to the tubifex rivulorum it is rapidly fatal, and that when applied directly to the heart or muscle nerve preparation of the frog it exerts a marked action. When, however, it is administered through the medium of the circulating fluid, it is very much less active, but, when given in relatively large doses it destroys the functions of the spinal cord and medulla. The significance of these experiments will be seen later.

III. ACTION ON MAMMALS.

To determine the pharmacological action of Izal on the higher animals, guinea-pigs, rabbits, cats, and dogs were used. In these animals the effect of Izal was qualitatively but not quantitatively identical. Rabbits being the least and cats the most susceptible to its influence. If in any experiment it is not stated otherwise, it may be taken that the subject of it was a cat.

(a) General Action.

The more highly developed an animal is, the more perfectly developed its protective mechanisms, the less susceptible does it seem to the action of this substance. When a dose exceeding .25 C.c. pro kilo body weight is continued without break for several days, a definite train of symptoms occurs. These consist in restlessness. This is soon followed by inco-ordination of movement. Twitching of the limbs appears next, especially when the animal attempts to perform a co-ordinated act, such as scratching itself. The gait becomes spastic. If no larger a dose has been given these symptoms pass off. If, however, it is still more increased up to .5 or 1 C.c. pro kilo body weight, a stage of paralysis supervenes. The animal presents all degrees of this according to the dose. The sensory part of the reflex arc remains practically unaffected. The temperature falls, and death takes place from paralysis of the respiration, the heart continuing to beat for a considerable time after the respiratory movements have stopped.

It was found that in some cases the paralytic stage was absent; under these circumstances the stage of spinal cord and medullary irritation continued till death. Animals can recover from the effects of this drug even when the paralytic stage has been entered. In some cases the dose can be greatly increased; in one cat, weighing 4 kilos, 4 C.c. of the emulsion were given during four days with temporary symptoms of spinal cord irritation and paralysis, but with perfect recovery on the tenth day; 2 C.c. of this quantity were given *sub cutem*. It was found that the action of Izal was a somewhat cumulative one. It will be obvious from what follows that the doses required to produce these symptoms are far in excess of those necessary to obtain the therapeutic effects of Izal, hence are rather of pharmacological than of practical interest.

(b) Action on the Digestive System.

This substance appears to have, in therapeutic doses, no action on the digestive processes. Animals, even after large doses, retain a good appetite and do not suffer from diarrhoea or vomiting; the faeces smell of Izal, showing that it is capable of exerting its antiseptic influence throughout the alimentary canal. Experiments made *in vitro* confirmed these results.

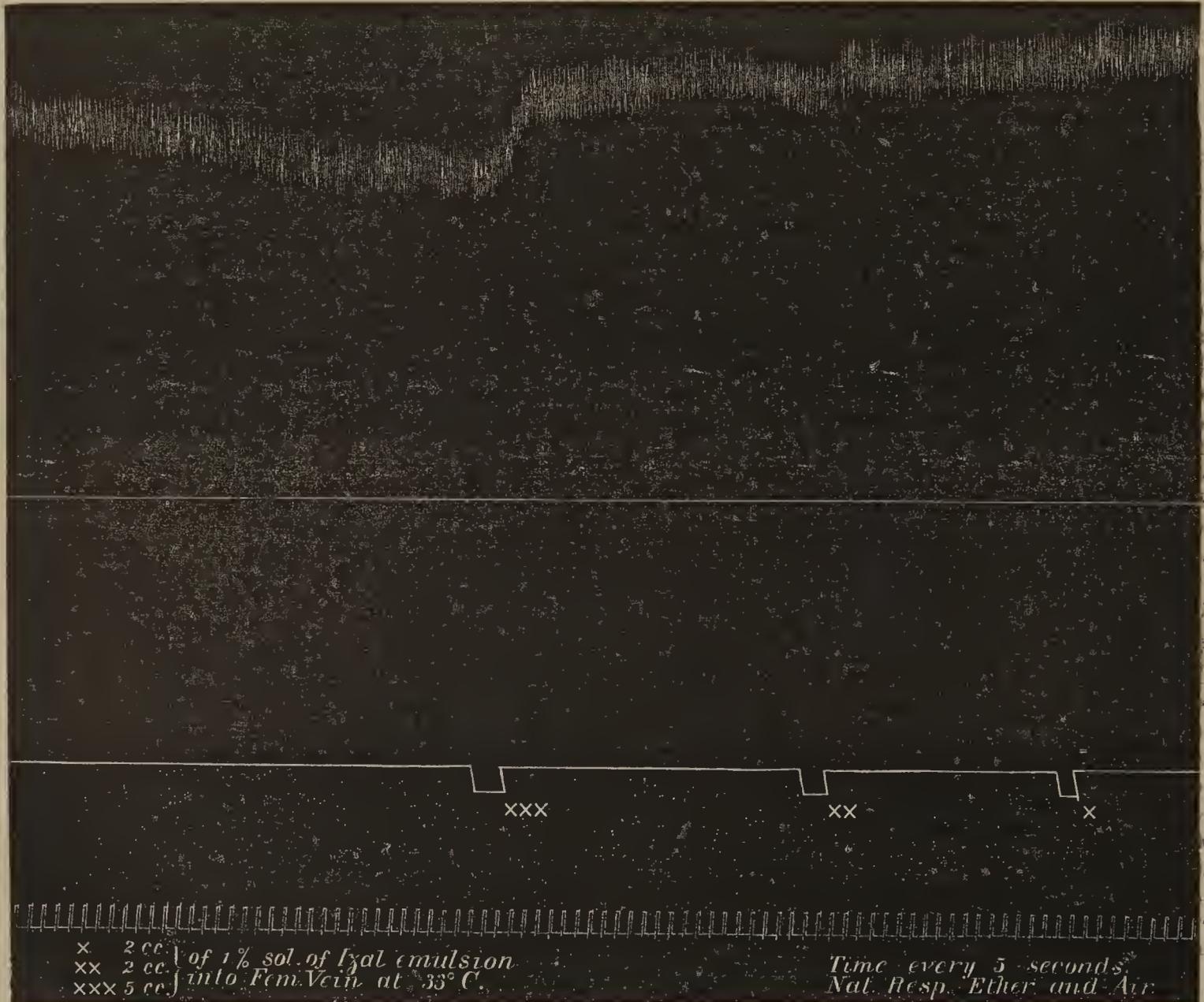
(c) Action on Respiratory System.

In animals taking Izal in large and small doses the lungs and breath smell very strongly of this substance. This is not solely due to the fact that they contain a large quantity of blood, as the liver and the kidneys—equally vascular organs—do not smell. The most probable explanation of this fact is that Izal is excreted by the pulmonary and tracheal mucous membranes.

(d) Actions on Secretions.

Izal causes an increased secretion of tears and probably an increased secretion from the skin; as the animals experimented upon had hairy coats it is impossible to speak definitely upon this subject. In large doses some irritation of the skin seemed caused by Izal, as the animals had a great tendency to scratch themselves. Izal is not eliminated as such in the urine, large doses increase the amount of urine secreted, but, in the cases watched, no sign of irritation or congestion of the kidneys, nor any phenomenon

blood pressure of 2, 2, and 5 C.c., of a 1 per cent. solution* of Izal emulsion in tap water saline solution, injected into the femoral vein.† This cat weighed 4000 grammes. Reckoning its blood-weight at 1-20th of its body weight, this latter would amount to 200 grammes. If we assume that 1 C.c. of Izal emulsion weighs 1 gramme, this means that the blood in this experiment was "Izalated" to the extent of .045 per cent., or approximately one part in 2500. Since outside the body Izal exerts a marked anti-septic action in the strength of 1 part in 200, the above facts are



analogous to carboluria was observed. It is not possible to say what is the ultimate chemical fate of Izal in the body.

(e) Action on the Nervous System.

The action of Izal on the nervous system has been so fully discussed under the description of its general action that it will not be necessary to speak further upon this subject.

(f) Action on the Circulation.

Izal in relatively large doses exerts no deleterious action on the heart, either when introduced into the stomach, into the subcutaneous tissue, or into the blood. A transient and slight fall of blood pressure is produced, which is due to a dilatation of the vessels. This soon passes off, and the blood pressure rises to its former level. The accompanying curves show this. Curve I. is the record taken by a mercurial manometer on a slow revolving cylinder, and shows at X, XX, XXX, the effect on the

of great interest and importance, and show to what a considerable extent the blood can be "Izalated" without any deleterious action on the circulatory organs ensuing.

Curve II. is a record of the blood pressure in the carotid taken by means of a Fick's spring manometer which was allowed to write on a quickly revolving cylinder. It shows the effect of a smaller

* For the sake of brevity, the term solution is used to indicate a mixture of Izal (emulsion or pure medical oil) with water or saline solution, as the case may be.

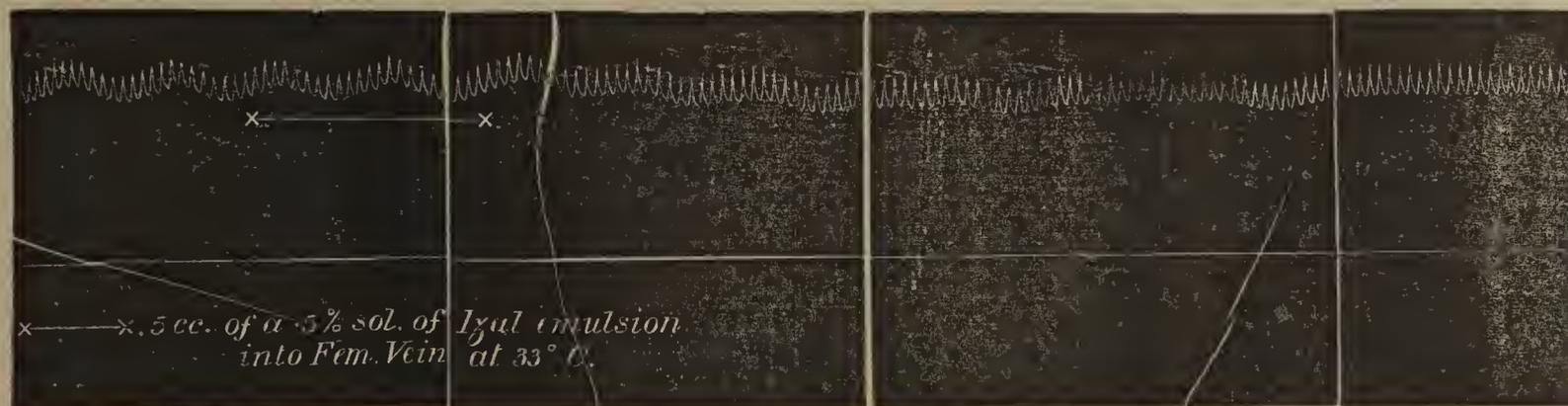
† In this curve, which is to be read from right to left, the topmost line is the blood pressure tracing, which owing to the slowness of the recording cylinder shows only the respiratory and not the cardiac oscillations in pressure. The second is the abscissa, and indicates the level of the mercury in the manometer when the artery was disconnected and the arterial cannula was open to the air at the level of the artery. The third line is that of an electric signal, the descents of the lever marking the beginning, the ascents, the end, of the injections of Izal. The lowest line is traced by an electric time marker arranged to mark five second intervals.

but still relatively large dose of Izal emulsion on the heart, between X and X, 5 C.c. of a .5 per cent. solution of Izal emulsion was injected into the femoral vein. As can be seen from the curve absolutely no effect was produced upon the activity of the heart.

To sum up then the pharmacology of Izal on mammals as deduced from our experiments on rabbits, cats and dogs, it appears that when the emulsion is introduced into the stomach in doses of .2 C.c. pro kilo body weight diluted with water or milk, even in some cases in doses of .8 C.c. pro kilo, it produces no symptoms whatever. It can be injected under the skin in doses of .1 C.c., and into the blood in doses of .02 C.c. in the form of a 1 or .5 per cent solution, without producing any toxic effects. Large doses introduced into the stomach pass down the alimentary canal and some of the substance is contained in the fæces. It also gives evidence of its presence in the breath. If the doses are still considerably increased it exerts the specific action on the central nervous system which has been described above. But it is not until the relatively large dose of from .5 to 1.5 C.c. pro kilo body weight is reached that dangerous symptoms occur, and even when these are pronounced if the large doses are discontinued the animals most often recover.

II.—COMPARISON OF IZAL WITH OTHER ANTISEPTICS.

To determine the capability of any antiseptic to exert its antiseptic action within the living body a judgment must be formed



on the relation between its antiseptic power and its toxicity, or what Bouchard* has termed "the equivalent toxique." The antiseptic power of Izal is high, 1 in 200 (Sheridan Delépine,† Klein),‡ its toxicity has been shown to be low—.5 to 1.5 C.c. of the emulsion pro kilo body weight. The following comparison will show the relation between Izal in this respect and other well-known antiseptics:—

Substance.	Toxicity.	Antiseptic power.
Izal emulsion .....	.5-1.5 C c. pro kilo ...	1:200
Carbolic acid§ .....	.12 gramme	1:50
Guaiacol|| .....	.5 gramme	1:50
Veratrol|| .....	1.5 grammes	1:100
Binioidide of mercury¶ ...	.15 gramme	1:4000
β-Naphthol**	3.00 grammes	1:1500
Strychnine†† .....	.0008 gramme	—

Strychnine has been introduced into this table to show the minimal poisonous dose of an active medicinal agent. From this table it will be seen that Izal compares favourably with many other antiseptics. This method of comparison is, however, not free from error, and must be regarded as approximate and not absolute. The antiseptic power of any substance is not only different for different

micro-organisms but for the same micro-organism under different conditions, hence it is by no means a constant quantity. The same is true of the poisonous power of a substance. Such tables are, however, useful, and may be regarded as sufficiently accurate for practical purposes.

III. SUGGESTIONS WITH REGARD TO THE PROBABLE THERAPEUTIC USES OF IZAL.

From the above experiments it is manifest that Izal can be administered to man for the purpose of exerting its antiseptic properties *in vivo*. For this object it may be given by the mouth in doses of from ℥xv.-℥i. or more of the emulsion, made into an ordinary ounce or half-ounce mixture, or diluted with water or milk, three or four times a day. If a prolonged treatment is desired, for instance, in cases of obstinate foetid diarrhœa or auto-intoxication a day's pause should be allowed at first after from ℥iv.-℥vi. have been administered to avoid the possible occurrence of any accumulation of Izal in the system.

The question of the possibility of appreciably diminishing the number and activity of the micro-organisms in the intestinal canal by the administration of any so-called intestinal antiseptic is at present a disputed one, and this monograph is no place to enter into this controversy. That cases of auto-intoxication from the intestinal canal are improved by the exhibition of such drugs as uaiacol, salol, naphthol, carbolic acid, etc., is, I think, established,

and what should be pointed out here is that Izal is justified in holding a prominent place amongst such remedies, and is well worthy of an exhaustive trial. Its action in the early stage of typhoid fever, cholera, etc., will be similar to that of the antiseptics hitherto used, and since it is in relation to its antiseptic power less irritant and toxic than the majority of these, it may with benefit be substituted for them.

The action of Izal upon the tubifex rivulorum established by these experiments and the similarity between this organism and the thread-worms and tape-worms of the human intestine, render it in the highest degree probable that Izal will act as an anthelmintic. For the oxyuris vermicularis it will be best given in the form of an enema of a strength equal to a 2-3 per cent. solution of the emulsion.

The excretion of Izal by the pulmonary and bronchial mucous membrane points to the fact that it will be of use in cases of foetid bronchitis, bronchiectasis, etc. The extensive use of such substances as creosote, guaiacol, etc., in phthisis indicates that Izal may also be useful in this connection. The entire absence of any depressing action on the heart is for this purpose a great point in its favour, as is also the absence of any disturbing influence on the digestive organs.

The uses of Izal in surgery have been thoroughly investigated by Mr. Bruce Clarke, and upon this subject readers are referred to his article in the *Lancet*,* and the *St. Bartholomew's Hospital Journal*.†

* *Comptes rendus*, cv., 702.

† *Medical Chronicle*, Sept. 4, 1895.

‡ 'Experiments on Izal,' 1892.

§ Notknagel and Rossbach, 'Arznei Mittellehre,' 5th ed., 418.

|| *Comptes rendus Soc. de Biol.*, Aug. 2, 1895.

¶ Bouchard, *loc. cit.*

** Bouchard, *loc. cit.*

†† Notknagel, *loc. cit.*, page 780.

* *Lancet*, July 1, 1893.

† *St. Bartholomew's Hospital Journal*, September, 1894.

LESSONS IN PHYSICO-CHEMISTRY.*

GRAVITY, DENSITY, AND VOLUME.

SPECIFIC GRAVITY OF GASES.

In all matters relative to the specific gravities, or densities of gases, the state of affairs differs considerably from that which obtains with solids and liquids. In the first place the pressure under which a gas exists has a direct influence on its density; increased pressure causes contraction of the gas, and hence increased density, and *vice versa*; whereas the influence of pressure on the densities of solids and liquids is so small that except for very great pressures it is quite negligible. In the second place, all gases, unlike solids and liquids, are equally affected by equal changes of either pressure or temperature, at least as long as they are under conditions far removed from those under which they pass into liquids. Hence, if a certain ratio exists between the densities of two gases at a given temperature or pressure, the same ratio will exist between them at any other temperature or pressure that is the same for both gases, and the conditions of temperature and pressure under which the density of a gas is determined may simply be those that are most convenient at the time of experiment, so long as they are accurately known. As this is an operation that is now rarely necessary, the densities of practically all known "permanent" gases being already fixed, the working details, which are necessarily extensive, need not be given, but the method of procedure is as follows:—A glass globe of two or three litres capacity, fitted at the neck with a brass stop-cock, is completely exhausted of air by means of the air-pump; it is then accurately counterpoised on the balance, a globe of similar size being hung on the other arm and necessary adjustments made by weights. The second globe is employed in order that both sides of the balance may be equally supported by the air, and that deposition of moisture from the atmosphere on the glass may not affect the correctness of the weighing. The gas under examination is now admitted into the first globe by means of the stop-cock, its temperature and the pressure upon it being accurately noted, and the globe is closed and weighed again, the increase being the weight on the gas. The volume is ascertained by filling the globe with a gas of known density and weighing it, or with water, and then measuring the latter. From the information so obtained the weight of 1 litre of the gas measured at 0° C., and a pressure equal to that of a column of mercury 760 millimetres in height, is calculated, the conditions just mentioned being those that are adopted as standard ones. The following are the data required for this calculation:—Any quantity of gas expands or contracts by .00367 of its own volume at 0° C. for every 1° C. through which it is heated or cooled respectively, and when the pressure on the gas is altered it expands or contracts to such an extent that the volumes before and after the change are inversely proportional to the pressures. If both pressure and temperature are changed simultaneously, the effect is the same as if the alteration had occurred in first one and then the other, and it is immaterial which is considered first. It is particularly important to notice that whatever the temperature of a gas may be, the change of volume that it undergoes for every degree through which it is heated or cooled is the above-named fraction of its volume at 0°, and not of its volume at the temperature at which it happens to be. By way of example, suppose it is found that 2½ litres of a gas weigh 3.8200 grammes, the globe having been filled at 12° C., and with a pressure on the gas equivalent to 750 Mm. of mercury. If the gas measures V at 0°, it will

measure $V + (12 \times .00367 \times V)$ at 12°, according to the rule just stated, and this equals 2½ litres, from which, by elementary algebra, we find $V = \frac{2\frac{1}{2}}{1.04404}$ litres. Since this is its value under 750 Mm.

pressure, under 760 it will be $\frac{2\frac{1}{2}}{1.04404} \times \frac{750}{760} = 2.363$ litres, and therefore 1 litre under standard conditions would weigh $\frac{3.820}{2.363} = 1.616$ grammes.

The absolute weights of 1 litre of different gases under standard conditions having been found, it is clear that the ratio between these weights is the ratio between the densities of the gases. It is only necessary, therefore, to adopt one gas as a standard, and refer the others to this one. In physical work air has often been taken as a standard in the past, but in view of the facts that hydrogen is the lightest body known, and is taken as a standard in comparing many other properties, and that air, as a mechanical mixture, is not quite of invariable composition, it is better to adopt hydrogen for all purposes, and its density is therefore taken as unity. Now, since equal volumes of gases under the same conditions contain equal numbers of molecules, the ratio between the weights of equal volumes of two gases is the ratio between their molecular weights as well as between their densities. The density of hydrogen being taken as 1, and its molecular weight being 2, it follows that the molecular weight of any gas is double its density referred to hydrogen; in fact, it is chiefly for fixing the molecular weight of a gas that its density is required to be known.

VAPOUR DENSITY.

The last remark applies not only to those gases which are permanent at ordinary temperatures, but also to those substances that only retain the gaseous state at higher temperatures, and easily condense on cooling to either liquids or solids. It is clear that if a solid or liquid can be brought into the state of gas without undergoing chemical change, the density of this gas and hence its molecular weight can be determined. Gases that condense at ordinary temperatures to liquids or solids are usually distinguished as vapours, and the operation here referred to is spoken of as determining the vapour density of a substance. It is always desirable to know the molecular weight of any new body that may be prepared; when it can be vaporised unchanged this is the method that is always employed. Other methods will be considered later. Several methods are in vogue for determining vapour densities; in some of these the weight of a given volume of vapour is ascertained by a modification of the above process for gases; in others the volume of vapour formed from a given weight of the substance is found directly or indirectly. The method of Victor Meyer, in which the latter principle is followed, is one of the most useful; this is described in *Pharm. Journ.* [3], ix., 936.

SPECIFIC VOLUME.

Specific gravity may be defined as synonymous with relative density, *i.e.*, the ratio of the weight of a given volume of a substance to the weight of an equal volume of a standard substance under similar conditions, and it is in this sense that the term is generally employed. But the expression "specific gravity" is also used to express the idea of absolute density, which may be defined as the mass of unit volume of a substance. Thus the relative density of a substance referred to water at 15°·5 C. is not the same as its absolute density, since the absolute density of water at that temperature is not 1 but about .999. The absolute density of water at 4° C. is 1, that is, 1 unit volume of water at 0° contains 1 unit

* Articles on weighing, correction of apparatus, and specific gravity of liquids appeared in volume xxv. [series 3], pp. 889 and 1141.

of mass, or 1 cubic centimetre weighs 1 gramme.* The quantity of matter in, or the mass of, a given body, is invariable; but its weight varies slightly according to the latitude in which it is weighed, since it is further from the earth's centre, and is therefore less attracted, or weighs less, at the equator than when nearer the poles. This, however, is such an unimportant error that in practice weight is always dealt with instead of mass, and the absolute density of a substance may for practical purposes be defined as the weight in grammes of 1 cubic centimetre of it; and, as has been said, this is sometimes called its specific gravity. The latter term is best discarded altogether, and the terms absolute density and relative density used.

The absolute density of substances is a very important property, it is more conveniently employed, however, under the form of specific volume. The absolute density has been defined as the weight in grammes of 1 C.c.; the specific volume is the volume in C.cs. of 1 gramme. This is clearly the reciprocal of the absolute density; for if 1 C.c. of a substance weighs say d grammes, 1

gramme will obviously measure $\frac{1}{d}$ C.c.

The specific volumes of bodies in the liquid state have received most attention. It is a rather difficult matter to decide on a satisfactory temperature at which to measure this quantity for comparisons; to select any one temperature for all bodies would be of course quite arbitrary; and the best results have been obtained by determining the specific volumes of substances at their respective boiling-points. It is argued that since at these temperatures their vapour-pressures are equal, each being equal to the pressure of the air, they may be supposed to be to some extent in similar and comparable conditions. The adoption of the boiling point, has, however, been objected to by some, and other temperatures have been also employed.

In order to make the specific volumes of different substances more comparable with each other, the quantity $\frac{\text{volume}}{\text{weight}}$ is multiplied by the molecular weight of the substance in question. It is clear that the numbers of molecules contained in equal weights of two substances will be inversely proportional to the molecular weights, whereas if, instead of equal weights, weights proportional to the molecular weights are taken, these will contain equal numbers of molecules. Thus m grammes of a substance of molecular weight m will contain as many molecules as n grammes of another substance whose molecular weight is n . If 1 gramme of the former measured v C.c., that is, if its specific volume is v , m grammes measure $m \times v$ C.c.; similarly, if 1 gramme of the second substance measures w C.c., n grammes measure $n \times w$ C.c. Therefore, mv and nw represent the volumes of equal though unknown numbers of molecules of the two substances; these quantities have been called molecular volumes; similarly, when dealing with an element the specific volume multiplied by the atomic weight gives the atomic volume. The terms "molecular volume" and "atomic volume" are in fairly general use, but several chemists have abandoned them, and denote these quantities by the one term "specific volume." For the sake of clearness, we shall use the terms "atomic" and "molecular" volumes, and reserve "specific volume" for the quantity so defined above, and into which atomic or molecular weight does not enter.

* This is not quite correct. The gramme was originally defined and taken to be the weight at Paris of 1 C.c. of water measured at 4° , and a standard weight of 1000 grammes (1 kilogramme) was made of platinum, and is kept in Paris. The gramme is defined as the one-thousandth part of the weight of this standard, and more accurate measurements have shown that this is not exactly the weight of 1 C.c. of water at 4° , but differs by about a tenth of a milligramme.

The method of determining specific volumes is simple. A glass bulb having a narrow neck and a small opening is filled with the substance in question, and hung in the upper part of another vessel in which the same substance is being boiled. By this means the liquid in the bulb is brought to the temperature of its boiling point, though it is not made to boil; it will expand, and some will be driven out of the bulb until what remains just fills it at the temperature of boiling. The bulb is now taken out, wiped, cooled, and weighed, and its weight when empty subtracted from the weight so found. The volume of its contents at the boiling point of the liquid is ascertained by filling it with water at that temperature and weighing; since the density of water at different temperatures is already known, the volume is found by simple calculation. On dividing the volume so found by the weight of the liquid, the quotient is the specific volume of the latter.

A great deal of the work that has been done on the subject of specific volumes is due to Kopp, and he discovered some important relations, which may be briefly summarised; nearly all the results obtained refer to organic substances. In the first place, a definite difference between the composition of two bodies is accompanied by a definite difference in molecular volume. For instance, in ascending a homologous series, a difference of 22 in molecular volume corresponds to a difference of CH_2 in composition. Further, this difference may be resolved into its component parts, a difference of 11 being due to the carbon, and of 5.5 to each of the hydrogen atoms. Similarly, a definite value may be assigned to each element and is called its atomic volume. When the specific volume of an element in the free state can be determined, the result found multiplied by the atomic weight gives an atomic volume usually identical with that found as just described for the element in combination. The latter value, however, depends to a certain extent on the mode in which the element is combined; thus oxygen in the condition of hydroxyl, that is, when attached both to hydrogen and to carbon has a very different value from that found when it is united solely to one carbon atom, and in this respect it is resembled by sulphur. It appears, too, that carbon in the "unsaturated" condition has a different value from "saturated" carbon; when combined in the benzene ring, again, its value is not the same as when in an open chain. Sufficient data of this kind have been accumulated to enable chemists to predict with tolerable accuracy the molecular volume of a substance whose constitution is known, but very much remains to be done, and the matter is of great importance for the light it should throw on the nature of combination and on the constitution of matter.

(To be continued.)

ALLSPICE, OR PIMENTO.*

BY J. CH. SAWER, F.L.S.

The name "allspice" is given to the dried, unripe berries of the *Eugenia pimenta*, De Cand., by reason of their aroma and flavour, which are considered to resemble a mixture of cinnamon, cloves and nutmegs.

This handsome evergreen tree is indigenous to the West Indies, and is found on calcareous soil near the coast, on the islands of Cuba, Hayti, Trinidad, Domingo, Antigua, all through the Leeward and Windward Islands, and more or less in all the islands of the Carribean, but is most abundant in Jamaica; the groves of this spice tree found there are magnificent, and produce more than one-half of the allspice used in the United States. It is also found in Central America, Mexico, Venezuela, and Costa Rica.

The usual height of the tree is from twenty to thirty feet; occasionally it exceeds forty feet. The trunk is slender, straight, and

* Reprinted from the *Imperial Institute Journal*.

upright, much branched at the top, and covered with a smooth, grey, aromatic bark. The leaves are from four to six inches long, and are very aromatic in the fresh state, abounding in essential oil.

The pimento tree is particularly fond of a white marly or chalky soil having a shallow surface of mould, and therefore thrives on rocky lands which are fit for little else. Strictly speaking, the pimento tree is not really cultivated at all in Jamaica. The trees are found in greater or less numbers all over the island; but in some sections of the country they are the predominating trees, indigenous and growing wild. The nearest approach to their cultivation in these localities is to clear away the underwood and keep the groves free from brushwood and creepers—a difficult task where everything grows spontaneously in the wildest luxuriance. Sometimes the trees will be found singly, sometimes in groups of six, twelve, or twenty. In other places a few hundred will be found; while in ten principal pimento districts in parishes of Manchester, above Kingston, and St. Ann's, there are great forests of pimento trees. These last-named mountainous districts are some 6000 feet above the sea-level; there the harvest is gathered later than in the low-lying districts near the coast.

When a plantation of pimento is laid down, the trees begin to fructify in the third year, and arrive at maturity in seven years, when they abundantly repay the patience of the planter.

In the month of July the head of the tree is covered with an exuberance of branches of very small, greenish-white, fragrant flowers. The fruit is a smooth, shining, succulent berry of a black or dark purple colour when ripe, and containing two kidney-shaped, flattish seeds. When ripe, it is filled with a sweet pulp, and the aromatic property which so strongly characterises it in the unripe state, has, in a great measure, disappeared. The gathering of the berries therefore takes place as soon as they have reached their full size and whilst still green, because if the fruit is allowed to ripen on the tree, it is of no commercial value. A problem which faces the pimento producer is, therefore, the rapid picking of the berries when they are just fully grown. It is often difficult to secure enough help among the indolent natives to pick the crop. A recent instance is known of a producer losing fully 3000 bags of his pimento, which had ripened and fallen to the ground simply because he could get no one to pick it.

The berries are gathered by hand, and for such as cannot be reached by climbing, recourse is had to ladders. The small twigs bearing the bunches of berries are broken off and brought down. During the first and second days they are often turned to be fully exposed to the sun. When they begin to dry they are frequently winnowed to remove the stalks, and are laid in cloths to preserve them from rain and dews, still being exposed to the sun every day and removed under cover every evening until the fruit is sufficiently dry, which usually happens in twelve days, and is known by its having acquired a reddish-brown colour, also by the rattling of the seeds. Some planters kiln-dry the berries, especially when the crop is abundant, security against rain being essential. After the drying process is completed, the pimento is packed in bags, very much in the same way as coffee, and transported to the coast for shipment. In Jamaica, the principal port of shipment is Kingston, but large quantities of the crop are shipped from various other ports along the coast.

In the dried state, pimento is a small, dry, roundish fruit, varying somewhat in diameter, but on an average about the size of a small pea. It is crowned with the remains of the calyx, usually in the form of a slightly elevated scar-like ring; and, rarely, at the other extremity of the fruit there is a short stalked attached. The berry consists of a brittle, somewhat woody shell or pericarp, externally dark brown, and more or less rough on its inner surface from the

presence of small oil receptacles; and of two dark brownish-black, somewhat compressed, kidney-shaped seeds, each contained in a separate cell. The aromatic properties are more evident in the shell than in the seed. The berries yield, on distillation, 3 to 4½ per cent. of a volatile oil, which is a little heavier than water, having a specific gravity of 1.04 to 1.05 at 15° C. Pimento is sometimes adulterated with a Mexican spice called "Pimenta de Tobasco," which is a larger berry and less aromatic; it is produced by the *Myrtus tabasco* (Mocino), a native of the hot regions in Mexico, and is considered to be a variety of the true pimento tree.

Another tree, as variable as *Eugenia pimenta*, and yielding analogous products, is *Myrcia pimentoides*, D.C.; it is a native of the West Indies, and is now cultivated in the East Indies. Its leaves, berries, and flower-buds have a hot taste and fragrant smell like those of *Myrcia acris*, from which the West Indian "Bay" leaves have long been considered to be produced.

Wild Allspice.—During the American war, when allspice was difficult to obtain in the United States, a substitute was found in the berries of *Laurus benzoin*, Linn., commonly known as "Wild Allspice, Spice Bush, Fever-wood, Benjamin-bush, and Spice-bush" (not the Californian "Spice-bush"). Growing to a height of ten or twelve feet, this bush bears an aromatic fruit of about the size of an average olive, bright red, and in clusters. These fruits contain nearly 33 per cent. of a thick fixed oil, of about the consistence of castor oil, greenish-brown in colour, and of a pungent, aromatic taste, which is due to an abundance of volatile oil also contained in the fruit; the amount has been estimated at from 4 to 5 per cent. All parts of the shrub possess pleasant aromatic odours, which, however, are strikingly different from one another, the essential oil of the bark being something like wintergreen, and that from the twigs like camphor and calamus; while the leaves smell very pleasantly of lavender.

MISCIBLE LIQUID EXTRACT OF COCA.

BY J. F. BROWN, DOVER.

It would appear very desirable that the present necessity for keeping two fluid extracts of coca leaf should, if possible, be avoided.

When prepared as officially directed, by maceration and percolation of the powdered leaf with proof spirit, so much chlorophyll is carried into solution that an unsightly turbid mixture is obtained on adding it to water or wine of low alcoholic strength. Hence it is rejected by the public, who generally desire to use it thus. To meet the demand a miscible preparation is supplied by most wholesale druggists, which is certainly more elegant, as it forms a perfectly clear mixture with, say, orange or ginger wine. Probably it is prepared on the lines suggested by Mr. Cripps (*Pharm. Journ.*, [3], xxv., p. 1169) by repercolation with a mixture of one part of rectified spirit with two and a half or three parts water, with or without the subsequent addition of glycerin.

The difficulties to be overcome are two—the solubility of chlorophyll in spirituous menstrua, and the liability to damage of the coca alkaloids on exposure to heat.

Since Squire states that the drug is far from being exhausted by three-fourths of the menstruum in following the Pharmacopœia process, it is not possible to obtain a concentrated percolate and then add to it rectified spirit to bring it up to proof strength. Evaporation of a watery percolate is inadmissible, on the second ground. The question arises whether any objection exists to the employment of a weaker spirit. Two instances in the Pharmacopœia of such employment may be worth considering.

The liquid extract of hamamelis—also a leaf extract—is made with a mixture of one part rectified spirit and two parts water. Apparently this strength does not altogether exclude chlorophyll

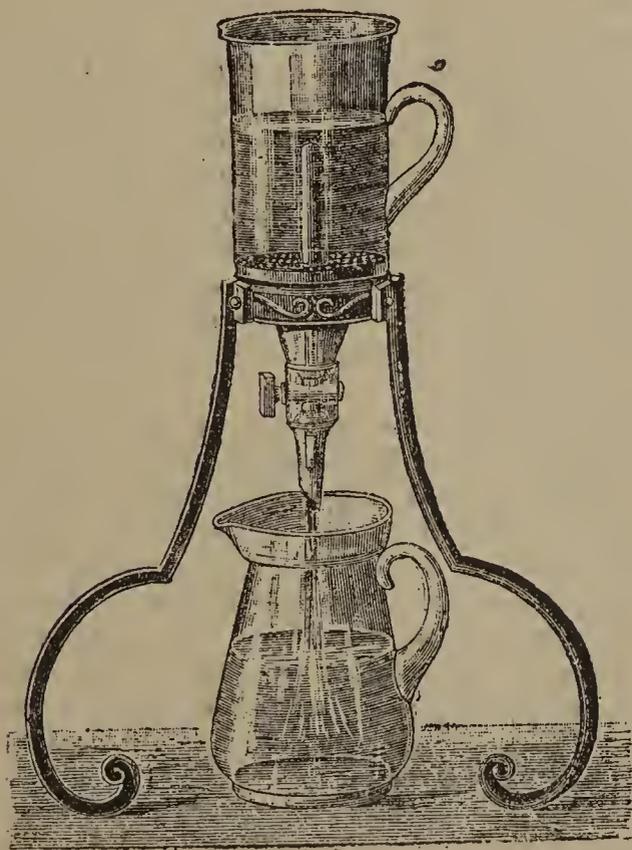
since the extract is somewhat turbid when diluted with water. For liquid extract of pareira, a mixture of one part spirit and three parts water is deemed sufficiently strong to ensure its keeping properties. The strength suggested by Squire for liquid extract of taraxacum, viz., equal parts of proof spirit and water, is practically the same as Cripps', one of rectified spirit to two and a half of water; each containing about 24 per cent. of absolute alcohol by weight. I have found that a liquid extract of cascara made by re-percolation with one part of rectified spirit to three of water had a specific gravity of 1.059, and was much more intensely bitter than the Pharmacopœia extract obtained from the wholesale houses, which had a specific gravity of 1.075.

Unless any loss of therapeutic efficiency should seem likely to ensue, I would suggest that the formula for liquid extract of coca should be altered so as to provide for its being made with equal parts of proof spirit and water, by re-percolation, so as to obtain official sanction for the preparation which consumers decidedly prefer.

NOVELTIES IN PHARMACEUTICAL APPARATUS.

THE "LIGHTNING" FILTER.

At the last meeting of the Austrian Apotheker Verein, a new filter called the "Lightning" was exhibited (*Oesterr. Zeits. für Pharm.*) It consists of a cylindrical vessel of glass, metal, or stoneware, open at the upper end, and tapering at the lower, where it is provided with a tap. A perforated plate in the shoulder receives the filtering medium, which is covered and kept in place by a second perforated disc. In using it the liquid to be filtered is poured into the vessel, from which the upper disc has been removed, and stirred until

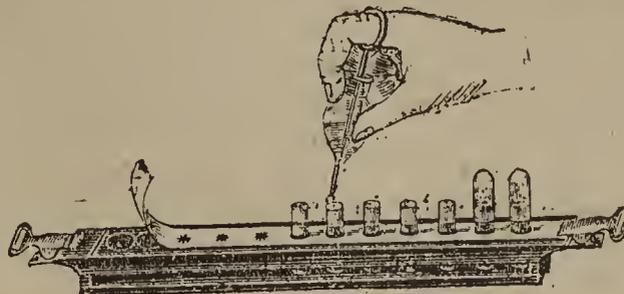


all the air is displaced. The necessary quantity of filtering medium is then mixed with it, and the tap opened. As soon as the liquid has sunk to within about 5 Cm. of the perforated plate, the upper disc is introduced and carefully lowered on to the filter-bed, so as to protect it from being disturbed. The first portions of filtrate must be returned; in two or three minutes it will run perfectly bright. For pharmacists the filter is made in two sizes of 3 and 5 litres

capacity; they are said to deliver 40 and 60 litres of water respectively per hour.

STAND FOR FILLING CAPSULES.

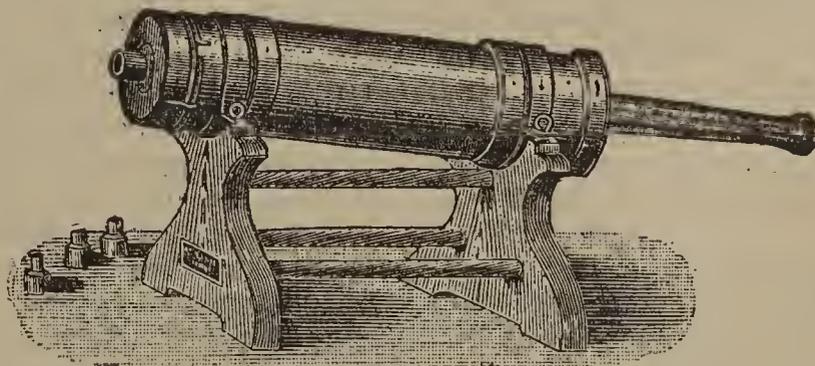
Tschanter, in Oppeln, is introducing a new stand for filling hard gelatin capsules (*Pharm. Zeit.*). Two slips of wood are fixed parallel to, and at a little distance from, one another; the upper is pierced with holes and covered with a strip of paper, in which suitable star-shaped incisions have been made. The empty capsules are passed through the incisions in the paper and the perforations of the upper slip of



wood until they rest upon the lower slip. They will be found to be held sufficiently firmly to allow of their being conveniently filled. This is best effected by a pear-shaped pipette (for liquids), the aperture of which is closed on the inside by a pointed rod provided with a ring, through which the forefinger passes; by this means the flow of liquid can be easily regulated.

APPARATUS FOR FILLING TIN TUBES.

Messrs. Schantz and Junghans, of Vienna, have devised a practical and useful apparatus for filling tin tubes (*Oesterr. Zeits. für Pharm.*). It consists of a strong, neatly made cylinder measuring 35 Cm. by 9 Cm., coppered and doubly nickel-plated on the outside, and closed at



one end by a cap kept in position by a bayonet catch; to this cap points corresponding to the usual sizes of tin tubes can be fastened. In the cylinder a wooden piston works in such a manner as to prevent escape of the mass to be filled. The apparatus is secured to a wooden stand, and can be made to order in various sizes.

NAPHTHALIN AS A VERMIFUGE FOR OXYURIS VERMICULARIS.—Schmitz (*Wien Med. Presse*) employs naphthalin for the expulsion of oxyuris, commencing by administering a cathartic. After a few evacuations have been produced, the naphthalin is given in eight or ten successive doses of $\frac{1}{4}$ to $\frac{1}{2}$ of a grain in powder four times daily. The drug should not be given after eating, and the ingestion of oils or fats should be avoided during treatment. A week later, the same treatment should be repeated, and if needful, a third course at another week's interval. It is seldom necessary to resort to a fourth repetition (*Med. Chron.*, iv., 299).

REVIEWS AND NOTICES OF BOOKS.

A NEW METHOD OF INHALATION FOR THE TREATMENT OF DISEASES OF THE LUNGS by W. H. SPENCER, M.A., M.D., Cantab., M.R.C.P., Lond. Pp. 54. (London: The Scientific Press, Limited, 428, Strand, W.C. 1895.)

The author first sets forth the principles upon which any inhalation method for the direct application of antiseptics and other remedies to the interior of the lungs should be founded, and the conditions under which it should be conducted, prior to describing his new method. In this, volatile oils, with or without the volatile constituents of solid bodies dissolved in them, are evaporated at fixed temperatures, and in such a manner that evaporation is steady and uniform at the temperature decided upon. The patient is kept in the medicated atmosphere produced for days, weeks, or months, as may be thought necessary. The book deals fully with the practical application of the method, and should prove useful to everyone interested in the subject of which it treats.

ESSENTIALS OF VEGETABLE PHARMACOGNOSY. By HENRY H. RUSBY, M.D., and S. E. JELIFFE, M.D. Pp. 149, with 500 illustrations. Price \$2.50. (New York: D. O. Haynes and Co., 1895.)

This work is divided into two parts, the first treating of the gross structure of plants, and the second of their minute structure. It has a special interest for students, inasmuch as the preface indicates that it "represents fairly well the teaching of the subject in the author's class-room." The first part, which is by Dr. Rusby (who is the Professor of Botany, Physiology, and Materia Medica in the College of Pharmacy of the City of New York), is decidedly different in style to that of most European text-books for pharmaceutical students. The keynote to the plan adopted may be found in the following extracts from the first few pages:—"The pursuit of pharmaceutical botany would demand a thorough knowledge of nearly all departments of scientific botany. . . . The pursuit of the study to such an extent would almost necessarily involve the average pharmacist, at least in this country, in financial failure, through the inattention to practical affairs which would ensue. . . . The directions in which botanical knowledge is most useful to practising pharmacists will determine the most important requirements for botanical study. The identification and selection of drugs, that is to say, pharmacognosy, constitute the principal field for the exercise of botanical knowledge on the part of the pharmacist, and it is those departments of botany which bear directly upon this subject, and upon materia medica, to which attention will be restricted in this essay." The practical character of the American people in estimating the relation between the necessities of daily life and the kind of education most useful for the purpose of providing them, is here evident. While admitting that "in attempting a comparative view of the series of plants, it is unquestionably well to begin with the lowest forms and follow the lines of upward development," the author remarks that "in gaining our first knowledge of the structure of the plant organism, sound and accepted rules of pedagogy require that we begin with the more obvious characters of the higher plants," for "not until mankind shall learn to breathe by some different method than that followed by his ancestors will any method of studying botany become popular which passes over the rose, buttercup, and aster, for the making of microscopical preparations of myxomycetes or the sectioning and staining of tissues."

For many reasons the author advises pharmaceutical students to commence with the flower. Beginning, then, with this usually

most interesting part of plants, under the heading of anthology, the author arrests the attention of the student by showing that a flower is merely a reduced shoot modified for the production of seeds. He especially emphasises the laws which regulate the formation of the generality of flowers, and points out in a very interesting manner how the great variety of form is dependent upon the requirements of the plant as affected by its surroundings. In fact, the student is led to feel in perusing the chapters that botany does not so much consist of a knowledge of hard names as of a series of interesting rules that govern the life of plants, and that the number of modifications of plant forms brought about by various conditions render the use of names to distinguish them a necessity. The facts, and not the names, are the prominent features in the mode of teaching adopted. Many of the illustrations are taken by permission from Engler and Prantl's 'Pflanzen Familien,' but there is a freshness about them to European eyes, and a clearness of definition in the explanation of the terms used, especially in those applied to the leaves and fruits, that will well repay the student who consults the work. If there is any part that might be a little more developed, it is that referring to the inflorescence. But the amount of suggestive information conveyed in 101 pages devoted to what may be termed macroscopical botany as opposed to microscopical botany or histology, is simply astonishing.

There is no index, and as there are some terms, such as Phytomer and Antidromy, etc., that are not often met with, and a good many illustrations that possess an interest beyond their immediate use in the text, it may be hoped that this deficiency may be remedied in any future edition that may appear. It should perhaps be mentioned that the botany given in this work is only intended to help in the recognition of parts of plants as met with by the student of pharmacy, and does not enter into systematic botany at all. It is, in fact, botany treated from the point of view of pharmacognosy only.

Of the second section of the work, Professor Jelliffe's "Outline of Practical Plant Anatomy," it is, unfortunately, not possible to speak in commendatory terms. The title is a misnomer in so far as the section is in no way an introduction to practical plant-anatomy. It will, moreover, be readily conceded that in any work written for beginners, as this avowedly is, the style should be simple, and free from ambiguity, and the statements made should be accurate. These two fundamental conditions are, however, frequently unfulfilled, as may best be exemplified by quotations from the work itself.

Of alkaloids, the author says that "they are generally rich in the meristematic tissues, but their exact locality is still in doubt. It is probable that in an unaltered condition alkaloids are not to be detected by the microscope. By means of microscopical tests, however, many have been isolated and studied. In many cases the active medicinal principles depend upon alkaloids, as in Morphine, Strychnine, Physostigmine, etc. Many of the alkaloids are highly poisonous, but there are a number that are inert" (p. 122). Nor is the matter simplified by the statement that "the Alkaloids and Glucosides, microscopically, are more of a hope than a reality in practical work" (p. 149).

Remarkable is the author's idea of the cell wall and of lignification. The cell wall "generally consists of a mixed substance called cellulose," but "cellulose which is generally taken as the substance of the typical cell wall is a carbohydrate with the empirical formula $C_6H_{10}O_5$ " (p. 123). "Lignin is a hypothetical substance which gives a number of certain micro-chemical reactions, but its nature is far from being understood" (p. 124). No less remarkable are the constituents which the cell sap may hold in solution; they include "hesperidin, inulin, asparagin, tyrosin, aloin, sugar, mucilage, tannins, alkaloids, glucosides, bitter stuffs, ethereal oils, gums,

resins, rubbers, milky juices, balsams, plant acids, and various crystals" (p. 149). Nor is the author more happy in the properties of the cell wall or the cell contents, for his cellulose turns blue with strong sulphuric acid, and his oxalate of calcium is unaffected by acids. The frequency with which such statements as these occur render it impossible to recommend this section of the work either as a desirable introduction to plant anatomy for elementary students, or as an aid to those who are more advanced.

RÉPERTOIRE DES RÉACTIFS SPÉCIAUX. By F. JEAN and G. MERCIER. Pp. 121. Price 2 francs, or post free 2 fr. 25. (Paris : F. Jean, 17, Faubourg St. Denis, and G. Mercier, 158, Rue Saint Jacques. 1896.)

The authors of this little book have endeavoured to remove the difficulty so often experienced in searching for particulars of the numerous special reagents distinguished generally by the names of their authors. Those who have had occasion to seek vainly for such information in one work of reference after another, will certainly appreciate the goodness of the authors' intention, and ought gladly to respond to the appeal that intimation should be sent of any errors noted in the book. The arrangement adopted is first to give a list in alphabetical order of the materials employed, and under each name a list of the special reagents into the composition of which the substance enters. This is followed by a list of the special reagents, arranged under the authors' names, full details being given regarding their composition, method of preparation, uses, etc. Each page of matter is faced by a blank page for notes, and the book seems likely to be exceedingly useful for reference.

THE PHARMACOPŒIA OF THE EVELINA HOSPITAL FOR SICK CHILDREN, SOUTHWARK. Second edition. Pp. 53. Price 1s. 6d. (London : J. and A. Churchill, 7, Great Marlborough Street. 1896.)

A work of this sort naturally appeals to but a limited number of people, and it must therefore be gratifying to the compilers that the first addition was sold out within a few months. In the present edition, the various formulæ—for balnea, glycerina, guttæ, haustus filicis, linctus, lotiones, misturæ, oleum acidi carbonici, pigmenta, pilula diuretica, pulveres, solutio cocainæ hydrochloratis, unguenta, vapores, and vinum ferri tartarati—have been carefully revised, and such additions made to them as have been considered expedient. Each prescription is written in English, and the dose regulated for a child six months old. The appendix includes a series of diet tables—milk, broth or beef-tea, fever, fish, and meat diets—suitable for children, the kinds and quantity of the different articles of food being specified for each of the four meals—breakfast at 7 a.m., dinner at 12 noon, tea at 4 p.m., and supper at 6 p.m. In addition there are directions for the preparation of peptonised foods and nutrient enemata, and finally, brief directions for the use of nurses, to enable them to detect albumin and sugar in urine. The book is interleaved, and constitutes a very compact little pharmacopœia.

THE DISEASES OF CHILDREN'S TEETH: THEIR PREVENTION AND TREATMENT. By R. DENISON PEDLEY, M.R.C.S., L.D.S., Eng., F.R.C.S., Edin. Pp. 268, with ninety-nine illustrations. (London : J. P. Segg and Co., 289 and 291, Regent Street, W. 1895.)

Medical practitioners in country districts are frequently called upon to perform for their young patients one or more of the many minor operations in dental surgery, and it is well for their reputation as it is in many cases for the future well-being of the

patient if they possess at least a good elementary knowledge of the subject. Those who are desirous of obtaining such cannot do better than carefully study Mr. Denison Pedley's able work, in which they will find described in simple language the relative and important part that dentition and its pathology play in the causation of many of those ailments which are most common to children.

The work covers a field sufficiently wide to embrace all those cases that are most likely to be met with, and while it does not contain any information that can be strictly called original, it has the great merit of being thoroughly up to date, therefore is equally valuable to the dental student and busy practitioner as the medical man.

The neglect which exists on the part of parents and guardians as to the proper supervision of children's teeth (often so painfully illustrated in after years) is well known to all who are connected with our Dental Hospitals. This is amply exemplified by the author, who quotes some startling and instructive figures culled from his own investigations and other sources. On p. 145 is a table showing that out of 3800 boys and girls in our public schools around London, and who were surrounded by the most favourable conditions, their ages ranging from three to sixteen years, only 828 had teeth that were in a thoroughly sound condition. There were 3187 temporary teeth which required filling among 1786 children, whose ages varied from three to ten years, and no less than 2491 teeth required to be extracted. The permanent teeth were found to be in even a worse condition. These figures demonstrate how much rests with the family doctor in preventing such a sad state of affairs. The author writes:—"The facts mentioned show very clearly that hygiene of the mouth requires some consideration from another point of view, viz., as it affects the community."

A considerable portion of the work is devoted to the important subject of irregularities, their various causes and proper methods of correction. Under the heading "Treatment" the different methods are carefully and plainly described, so that if a physician cannot, through want of previous training, do all that is laid down, he can, at least until the services of a dental surgeon are obtained, greatly mitigate much of the terrible suffering from dental troubles that must at times come under his notice.

The book is well arranged, printed on good paper, and well bound. It contains a large number of excellent illustrations and deals with a subject that it is the duty of every physician to make himself conversant with.

DENTAL MECHANICS. Part II.—THE DENTAL LABORATORY. By HARRY ROSE, L.D.S., pp. 117, with 66 illustrations. (London : J. P. Segg and Co., 289 and 291, Regent Street, W. 1895.)

This is a handy book, dealing with the various departments of the dental laboratory, and has the great merit of being essentially practical. The author explains numerous simple methods of overcoming many of those difficulties which the dental mechanic so frequently meets with. The information is evidently the outcome of Mr. Rose's practical experience, and not obtained from books, nor does he confuse the reader with a lot of unnecessary words, but states in plain language those methods that he has found most expeditious and accurate; no one can read it without more or less profit. Some good hints are given as to fitting up a workroom—how to work with economy, and the proper use of tools, which dentists would do well to place before their students. Some valuable advice is given about taking impressions, and how to overcome the various difficulties met with, also simple devices are described for good models of undercut cases. The book is well illustrated, clearly printed, and the matter carefully arranged.

PHARMACEUTICAL SOCIETY

EXAMINATIONS IN LONDON.

April, 1896.

MAJOR EXAMINATION—PASS LIST.

Candidates examined.....	25
„ failed.....	13
„ passed.....	12

Barritt, Wesley.	Martin, John Woolcock.
Beachell, John.	Playfoot, Frederic Hubert.
Blunt, Henry Rowland.	Smedley, Walter Graham.
Bridges, Herbert.	Williams, John (of Bagillt).
Elwell, Frederick Budd.	Willson, Robert Wherry.
Howard, Alfred.	Wright, Frederick.

EXAMINATIONS IN EDINBURGH.

April 1, 1896.

MAJOR EXAMINATION—PASS LIST.

Candidates examined.....	5
„ failed.....	3
„ passed.....	2

Crombie, James. | Wilson, Thomas.

“FIRST” EXAMINATION QUESTIONS.

April 14, 1896.

LATIN.

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

I. For all Candidates. Translate into Latin:—

- The soldiers were fighting very bravely.
- Both the daughter and the sister will be praised by the queen.
- We cannot defend ourselves and our property from them.
- What business have you here?
- The book which we are reading has not yet been sold.

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

(Candidates must not attempt both authors.)

A.—CAESAR.

1. Cognito Caesaris adventu, Ariovistus legatos ad eum mittit: Quod antea de colloquio postulasset, id per se fieri licere, quoniam propius accessisset; sequi il sine periculo facere posse existimare. Non respuit conditionem Caesar, jamque eum ad sanitatem reverti arbitrabatur, quum il, quod antea petenti denegasset, ultro polliceretur; magnamque in spem veniebat, pro suis tantis; opulique Romani in eum beneficiis, cognitis suis postulatis, fore uti pertinacia desisteret.

2. Hoc proelio trans Rhenum nuntiato, Suevi, qui ad ripas Rheni venerant, demum reverti coeperunt; quos Ubii, qui proximi Rhenum incolunt, perterritos insecuti, magnum ex his numerum, occiderunt. Caesar, una aestate, duobus maximis bellis confectis, maturius pau'o, quam tempus anni postulabat, in hiberna in Sequanos exercitum deduxit: hibernis Labienum praeposuit; ipse in citeriorem Galliam ad conventus agendos profectus est.

Grammatical Questions.

(For those only who take Caesar.)

- Give the gender and the genitive case singular of all the substantives in Paragraph 1.
- Give the third person singular of the subjunctive present and pluperfect, and the present participle, of all the verbs in Paragraph 2.
- Parse fully:—*Ipsa in citeriorem Galliam ad conventus agendos profectus est.* (Paragraph 2.)
- How do you express in Latin (i.) *purpose*, (ii.) *value*?

B.—VIRGIL.

- Lucus in urbe fuit media, laetissimus umbrae;
Quo primum jactati undis et turbine Poeni
Effodere loco signum, quod regia Juno
Monstrarat, caput acris equi: sic nam fore bello
Egregiam, et facilem victu per secula gentem.
Hic templum Junoni ingens Sidonia Dido
Condebat, donis opulentum et numine Divae;
Aerea cui gradibus surgebant limina, nexaque
Aere trabes, foribus cardo stridebat aenis.
- “Quassatam ventis liceat subducere classem,
Et silvis aptare trabes, et stringere remos.
Si datur Italiam, sociis et rege recepto,
Tendere, ut Italiam laeti Latiumque petamus:
Sin absumpta salus, et te pater optime Teucrum,
Pontus habet Libyae, nec spes jam restat Iuli;
At freta Sicaniae, saltem sedesque paratas,
Unde huc advecti, regemque petamus Aecesten.”

Grammatical Questions.

(For those only who take Virgil.)

- Give the gender and the genitive case singular of all the substantives in Passage 2.
- Give the third person singular of the subjunctive present and pluperfect, and the present participle, of all the verbs in Passage 1.
- Parse fully:—
Lucus in urbe fuit media, laetissimus umbrae. (Pas. 1.)
- How do you express in Latin (i.) *purpose*, (ii.) *value*?

ARITHMETIC.

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

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

- Find the value of a gold vase weighing 740 oz. 12 dwt. 12 gr., at £4 4s. 6d. per oz.
 - After walking $4\frac{1}{2}$ miles, a man has accomplished $\frac{2\frac{1}{2}-1\frac{1}{3}}$ of $2\frac{1}{4}+1\frac{1}{5}$ of $\frac{3}{11}+\frac{1}{2}$ of his journey. How many miles has he still to walk?
 - If 4 ozs. of tea cost 5625s., what is the value of 15625 cwt.?
 - If 12 men can dig a trench 40 yards long and 4 ft. wide in 10 days of 8 hours each, how many hours a day must 55 men work in order to dig a trench of the same depth, 220 yds. long and 5 ft. wide, in 18 days?
 - Find the difference between—
£216 + 48 of a shilling and £216 + 48 of a shilling.
 - By selling goods for £225 10s., I gain 12½ per cent. What shall I gain or lose per cent. by selling the same goods for £187 10s.?
- The following question must be attempted by every candidate:—
- A bath contained 4.55 hectolitres; then a tap was turned on which let 32 litres per minute run into the bath. How many gallons (*approximately*) were in it at the end of two hours and a half?

ENGLISH.

Time allowed—from 3 p.m. to 4.30 p.m.

- State the grammatical difference between (i.) *rise* and *raise*, (ii.) *lie* and *lay*, and illustrate their use by examples. Give the past tense (3rd person singular) and perfect participle of these four verbs.
 - Parse fully:—“Let merry England proudly rear her blended roses.”
 - Analyse:—“He inferred from this that the opinion of the judge was that the prisoner was guilty.”
 - In the following passage supply the necessary capital letters, and put in the stops and inverted commas where necessary:—in January Miss Allcard took that step her period of postulancy was an unusually short one and she has told us herself how that came to be I asked her during the three months had you been considering the duties you were to take upon yourself and she said yes I asked why she was admitted so soon and her answer was partly because I wished it then I asked what reason did you give for wishing to be admitted so soon and her reply was I was infatuated with the work
- The following question must be attempted by every candidate:—
- Write a short composition on *one* of the following subjects:—
(i.) Life in the country.
(ii.) Thrift.
(iii.) Arbitration in international disputes.
(iv.) “Absence of occupation is not rest,
A mind quite vacant is a mind distressed.”

PHARMACEUTICAL JOURNAL.

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LONDON: SATURDAY, APRIL 18, 1896.

THE SALE OF DRUGS IN ANCIENT TIMES.

It will doubtless be news to most of our readers that the sale of drugs and poisons in Glasgow, as well as the practice of medicine, was carefully restricted and regulated nearly two hundred and seventy years before the passing of the Pharmacy Act, 1868. Yet such was really the case, evidence to this effect being afforded by the text of certain documents included in the 'Memorials of the Faculty of Physicians and Surgeons of Glasgow, 1599-1850,' recently published by Mr. ALEXANDER DUNCAN, the Secretary and Librarian of the Faculty. Under the terms of a charter granted to the Faculty by King James VI., and dated November, 1599, visitors were appointed and they were given

Full power to call, summond, and convene before thame, within the said burgh of Glasgow, or onie otheris of our said burrowis, or publict places of the foirsa ds boundis, all personis professing or using the said airt of Chirurgie, to examine thame upon thair literature, knowledge and practize; gif they be fund wordie, to admit, allow, and approve thame, give them testimonial according to the airt and knowledge that they sal be fund wordie to exercise thareftir, resave thair aithis, and authorize thame as accordis, and to discharge thame to use onie farder nor they have knowledge passing their capacity, laist our subjectis be abusit.

It was further provided by "James, be the Grace of God, King of Scottis," in his fatherly solicitude for his subjects, that

The saidis visitouris sall visit everic hurt, murtherit, poison't, or onie ither persoun tane awa extraordinarily, and to report to the Magistrate of the fact as it is.

The visitors were also empowered, with the advice of their brethren, to make regulations for the common weal anent the art of surgery, and to inflict punishment upon those infringing them. With regard to the sale of drugs, it was provided that—

Na manir of personis sell onie droggis within the Citie of Glasgow, except the sam be schtitt be the saidis visitouris, and be William Spang, apothecar, under the pane of confiscatioune of the droggis.

The responsibility of the seller is clearly defined in a clause which further stipulates that—

Nane sell retoun poison, asenick, or sublemate, under the pane of ane hundred merkis, excep onlie the apothecaries quha sall be bund to take caution of the byaris, for coist, skaith, and damage.

These powers were confirmed by Charles, "King of Great

Britain, France, and Ireland," in "General Signet Letters, the Surgeons of Glasgow *against* the Magistrates, and all and sundry," dated July 31 and signeted August 14, 1635, whilst King James' Charter to the Faculty of Physicians and Surgeons was ratified on September 11, 1672, by Charles II. —"OUR SOVERANE LORD, with advice and consent of his Estates of Parliament," in the following terms:—

It shall not be leisum to any maner of persons within the foresaids bounds, to exercise medicine, without ane testimoniell of ane famous universitie, wher medicine is taught, or at leist the persons above mentioned ["the chirurgians and professors of medicine within the city of Glasgow for the tyme"], and their successors, under the pains contained in the said Gift; and that no maner of persons sell any drogs within the citie of Glasgow, except they be sighted be the foresaids persons, under the paine of confiscation of the drogs; and that no ratton poyson be sold, except by the apothecaries, who shall be bund to tako caution of the buyers, for coast, skaith, and damage.

An Act for better regulating the privileges of the Faculty of Physicians and Surgeons of Glasgow and amending their charter of incorporation was passed on June 10, 1850. The only powers possessed under the charter, which are quoted in that Act, are those whereby the Faculty was entitled to examine all persons practising surgery within the city of Glasgow, and the Counties of Lanark, Renfrew, Dumbarton, and Ayr; to admit and grant licences to such of those persons as they should find qualified; and to debar all others from exercising the profession of surgery within the specified limits. Nothing whatever is stated regarding the regulation and restriction of the sale of drugs and poisons, which had doubtless by this time ceased to be regarded as functions of the Faculty of Physicians and Surgeons. In view, however, of the fact that the passages in the Charter bearing on the subject do not appear to have been revoked, it is probable that the peculiar powers conferred by the document still remain, though latent.

The "sighting," or inspection of drugs sold in the shops, was rendered necessary by the frequent insufficiency of the druggists' stock and the lack of potency of some of his preparations. A Minute quoted by Mr. DUNCAN reads as follows:—

Because ther ar sundrie who sells drogs wthin this burgh and hes not sufficient drogs. (Minute, January 28, 1612.)

The sophistication of drugs appears to have been, at the time referred to, an unknown art. The "WILLIAM SPANG, apothecar," mentioned in the charter as an inspector of drugs, is said to have been a burgher of note. The development of the class to which he belonged was not the same in Scotland as in England, where the apothecaries ultimately became a corporate body with power to license both as regards the preparation and administration of drugs. In the northern kingdom the surgeon and apothecary were often united in the same individual, known as a chirurgion-apothecary. It often happened, however, that choice or necessity led some individuals to limit themselves to the duties of pharmacists only, and the appointment of WILLIAM SPANG, who was included in that category, to assist the visitors would seem to indicate that his services were required as a specialist and expert. He was in practice in Glasgow as a pharmacist as early as 1574, but was at the same time a member of the Faculty of Physicians and Surgeons of that city.

The founder of the Faculty was PETER LOWE, a fine portrait of whom graces the 'Memorials.' Other notable members were WILLIAM CULLEN, professor of chemistry and medicine in the University of Glasgow; JOSEPH BLACK, the

discoverer of carbonic acid, and exponent of the doctrine of latent heat, who succeeded CULLEN; WILLIAM IRVINE, who studied under and assisted BLACK, and subsequently became lecturer on materia medica and chemistry; and THOMAS CHARLES HOPE, F.R.S., who succeeded Dr. BLACK as professor of chemistry in the University of Edinburgh, The name of ANDREW URE, author of the 'Dictionary of Chemistry,' also appears on the roll of members, together with that of THOMAS THOMSON, the famous chemist and editor of the third edition of the 'Encyclopædia Britannica.' THOMAS GRAHAM, F.R.S., Master of the Mint, who will ever be remembered for his work in connection with the diffusion of gases, entered in 1830. Later additions to the roll are the names of WILLIAM DAWSON HOOKER, the son of Sir WILLIAM JACKSON HOOKER; JOHN D. MUTER, father of the late editor of the *Analyst*, and JOHN ALEXANDER EASTON, professor of materia medica in Anderson's University, who devised the preparation so widely known as "Easton's Syrup." It is noteworthy that the calling of those who were admitted members of the Faculty is variously stated in different cases, the list including physicians, surgeons, apothecaries, pharmacians, barbers, and apprentices. But in addition to these, "all of whom may be regarded as regularly qualified practitioners of the period, there was a motley array of nondescripts, many of them specialists of a kind, nearly all of them very ignorant, who swarmed all over the country."

SHOPS (EARLY CLOSING) BILL.

THE opposition to this Bill has not been destroyed by the heavy defeat inflicted in Grand Committee, and there is reason to believe that a strong effort will be made to prevent the passage of the measure in its present form. As a matter of fact, the Shops Bill is in danger of being killed by the criticisms of too candid friends. Over two pages of amendments stand on the notice paper to testify to the desire of metropolitan and other members to bring the Bill a little nearer perfection, hence the third reading is likely to be still in the future. In the present state of public business, with those Government embodiments of controversy—the Irish Land Bill and the Education Bill—blocking the way, there is very little opportunity for discussing a private member's Bill, especially if it is opposed. It will be a matter for surprise therefore to many persons if the Shops (Early Closing) Bill passes from the House of Commons to "another place" for some time to come. The consideration of the Standing Committee's amendments was to have taken place on Wednesday last, but Irish Boards of Guardians and other vexed questions of Irish local Government were the responsible causes of a very discouraging postponement until June 10. Clause 9, or, as it may be termed, the chemists' clause (*ante*, p. 212), has again attracted the attention of Mr. BANBURY (Peckham), who has notified his intention of moving for its deletion, and the removal of all registered chemists from the operation of the Bill. Mr. MILBANK (Radnor) desires to insert after the word "druggist," in line 1 of the clause, the words "herbalists or vendors of patent medicines." There is reason to believe that Mr. BANBURY'S action is dictated by a conviction that a person standing in so important a relation to the public as a duly qualified chemist, ought not, in the public interest, to be placed under legal restriction such as the Bill seeks to impose.

ANNOTATIONS.

A VALUABLE DISINFECTANT!—A powder laying claim to the possession of powerful disinfecting properties has recently been analysed by Don Gabriel de la Puerta in the Spanish Revenue laboratories, and proves to be nothing but finely crystallised sulphate of magnesia, containing a little menthol, and coloured with carmine. This precious product goes by the name of Chabanel's Disinfectant.

ADULTERATION OF CODEINE.—A Monsieur Etiévant, of Lyon, has come across a new and rather ingenious adulterant of codeine, viz., sugar candy, whose crystals resemble those of codeine very closely. Fehling's solution soon detects the sophistication, whilst the spectroscope shows the dextrogyre rotation of the sugar candy. Codeine should be lævograte.

A NOVEL APPLICATION OF PHOSPHORUS.—An American contemporary states that the Cuban insurgents have adopted a method of firing sugar plantations which is distinctly novel. A small piece of phosphorus coated with wax is fastened to a snake's tail, and the reptile let loose to make its way among the canes. The sun melts the wax, ignites the phosphorus, and the business is done.

QUASSIA AFRICANA has been submitted by Dr. L. Claudel to a careful histological, chemical, and therapeutical investigation. According to the *Annales de l'Institut Colonial de Marseille*, he finds that this species, which is used as a tonic by the natives of the Congo and the Gaboon, is almost identical in structure, and entirely similar from a morphological point of view, with the American species *Q. amara*, thus adding another to the large number of plants that seem to connect the tropical floras of America and Western Africa. Dr. Claudel has also found in the plant a bitter principle which seems to be identical with quassin in its chemical characters and therapeutic properties. A plant very similar to *Quassia africana*, but evidently belonging to the Sapindaceæ, is found in the same countries in Africa, and is described by Dr. Claudel under the name of *Pancovia heckeli*. It is, however, easily distinguished when growing by bearing tendrils towards the apex of the branches. M. Schlagdenhauffen has ascertained that it does not possess any principle available for therapeutic uses.

A NEW METHOD OF PREPARING SERUM AGAR-AGAR.—Drs. Kanthack and Stephens suggest in the *Lancet* the utilisation of pathological serum, such as ascitic, pleuritic, and hydrocele fluids, of which there is always a large supply at a hospital, for the preparation of the serum agar-agar culture medium for the separation of the typical diphtheria bacilli. The following method gives a beautifully clear and transparent medium in less than half an hour. To every 100 C.c. of serous exudation, 2 C.c. of 10 per cent. caustic potash is added; 1.5 to 2 per cent. of agar-agar previously soaked in acidulated water is next added. The mixture is then boiled in a Koch's steamer until the agar is dissolved, after which it is filtered through a hot-water funnel, and 4 or 5 per cent. of glycerin added to the filtrate. The medium is now ready for sterilising in test-tubes in the ordinary way. Sometimes the serous fluid is very rich in albumin. Before adding the potash a little should, therefore, be boiled in a test-tube; if it become practically solid or contain a large excess of albumin, it should be diluted with at least twice its bulk of distilled water.

THE PHARMACEUTICAL SOCIETY'S HERBARIUM.—The whole of the large collection of medicinal plants in this herbarium is now rendered available for reference by the publication of a special catalogue of those plants. A separate catalogue already exists for the plants in the "Daniel Hanbury Herbarium," and a large number of specimens received since the present catalogue was completed are enumerated in the recently published 'Museum Report for 1893-4.' To obviate the necessity of searching three indices, therefore, the curator, Mr. E. M. Holmes, has compiled an index in which the whole of the botanical names appear, together with references to the particular catalogue in which each name appears. This general index is bound up with the new catalogue, and may be regarded as a complete record of the medicinal plants in the Pharmaceutical Society's Herbarium up to the date of publication.

'SCIENCE PROGRESS' for April has for one of its most important articles Part I. of a disquisition by G. C. Bourne, M.A., of New College, Oxford, on the present position of the cell-theory. A few years ago, as he remarks, a discussion of the cell-theory would have seemed superfluous. To-day, however, adverse criticism and increase of knowledge respecting cell structure have led to the acknowledgment of the advantage and even the necessity of such a discussion. The cell-theory is, therefore, examined in the light of recent criticisms and researches. An equally important, and perhaps more directly useful, article is that by A. G. Tansley, B.A., on the stellar theory. The history is given of this theory, which is also criticised, and a perusal of the article should prove of value to botanists who are yet in doubt as to the exact bearings of the theory. Professor James Walker, of Dundee, treats of solid solutions, or mixed solids which seem to partake of the nature of solutions, as in the case of mixed crystals of potash and ammonia alums. The theory of solid solutions has been applied with success to many processes, but the author is disinclined to agree with Witt that the state of dye-stuff in fibres can be fully explained by that theory. Captain Ettrick W. Creak, R.N., contributes an article on the general bearings of magnetic observations, and Dr. E. H. Starling concludes his paper on some applications of the theory of osmotic pressures to physiological problems.

OPIUM IN PERSIA.—The cultivation of opium in Kennan, Persia, increased to an enormous extent during 1894-95 (*vide* Foreign Office Report, Annual Series, No. 1671), and there was also a considerable rise in price. In this district opium for export is dried in the sun, then rubbed with an instrument until quite clear, and packed in paper or poppy-stalks, in lumps resembling a quince in shape and weighing a little over one pound each. It is mainly purchased by merchants of Yezd (see *ante*, p. 173) for the China market. The amount produced is estimated at 12,000 mâns (a mân = $6\frac{1}{2}$ lbs.). Of this, 900 mâns was exported to Yezd, where it is more carefully prepared and then re-exported to India for Hong-Kong, 2500 mâns being consumed locally and 500 mâns exported direct to India. The habit of opium smoking is said to be greatly on the increase in South-Eastern Persia, women especially indulging in the narcotic.

THE PHARMACEUTICAL SOCIETY'S SUBSCRIPTIONS.—Members, associates, and students of the Pharmaceutical Society are reminded that Thursday, April 30, is the latest day upon which the current year's subscription can be received by the Secretary and Registrar, Mr. Richard Bremridge, 17, Bloomsbury Square, W.C.

CHEMISTS AND THE SHOPS (EARLY CLOSING) BILL.—The total number of correspondents who have so far sent expressions of opinion with regard to the Shops (Early Closing) Bill is 22. Of these, 16 are in favour of the Bill becoming law, whilst 6 are opposed to the principle it embodies. A great deal of vigour has been displayed by most of those who have sent letters on the subject, especially the supporters of the Bill, but it cannot be said that the above figures indicate the existence of much anxiety on either side.

CASES FOR BINDING THE JOURNAL.—In response to several inquiries, arrangements have been made by the publishers of the Journal to supply cloth cases, gilt-lettered, for binding the numbers for the half year (one volume), at 1s. 6d. each, post free. Applications should be addressed *Pharmaceutical Journal* Office, 5, Serle Street, Lincoln's Inn Fields, W.C., where reading covers to hold twenty-six numbers of the Journal can also be obtained, in accordance with the notice on page 320.

INTERNATIONAL PHARMACEUTICAL EXHIBITION AT PRAGUE.—Attention has already been directed to the fact that the second international pharmaceutical exhibition will be held at Prague from August 15 to September 15 next (*ante*, pp. 33, 112, and 273). We have now received from the Under Secretary of State for the Home Department a programme of the exhibition, forwarded by request of the Austrian Ambassador. Information with reference to the exhibition, and the facilities afforded to intending exhibitors, will be supplied by Dr. K. Fragner, Apotheker, of Prague, President of the Executive Committee.

THE WINE TRADE OF FRANCE.—During 1894-95 there was a considerable decline in the yield of wine in the Bordeaux and other wine districts of France, and as a result the importations of foreign wines increased, the increase being most marked in the case of Spain and Algeria, and especially the latter, as the following figures show:—

Export countries.	Annual importations in gallons.		
	1893.	1894.	1895.
Spain	16,274,742	11,574,112	17,436,186
Algeria	4,439,996	4,815,360	8,696,930
Italy ..	639,870	245,938	106,436
Portugal	32,142	21,164	25,256
Other countries ...	1,322,288	245,608	1,072,456
Total...	22,709,038	16,902,182	27,337,264

These foreign wines are, of course, used for blending with the lighter and less expensive wines of France. The large increase in the importations of Algerian wines is attributed to the annually increasing production in Algeria, and the greater care now bestowed in that country upon vinification.

THE RÖNTGEN RAYS AND BACTERIA.—According to the daily press the latest application of the now ubiquitous x -rays is as a bactericide. Professors Pratt, Wrightman, and Bennett, of the Medical College, Chicago, are said to claim that they are able to kill the bacteria of anthrax, cholera, diphtheria, glanders, influenza, pneumonia, typhoid, and tuberculosis by the action of the rays. Whether, however, this statement represents sober fact or the "tall imaginings" of the Yankee seeker after marvels yet remains to be seen.

PROCEEDINGS OF SOCIETIES.

Brighton Junior Association of Pharmacy, April 8.—Mr. T. F. Grindley, President, in the chair.—At this general meeting the decision was given regarding the best two essays on the "History of Dispensing," for which prizes were offered. 1st, a guinea's worth of books, by Mr. W. H. Gibson; 2nd, Cripp's 'Galenic Pharmacy,' by the author. Mr. A. H. Price was awarded first, Mr. A. H. Cupit second. Mr. C. S. Ashton acted as scrutineer. The officers elected for ensuing session are Mr. A. T. Jeeves, President; Mr. G. B. Savage, Vice-President; Mr. C. A. Blamey, Hon. Secretary; and Mr. A. H. Cupit, Hon. Treasurer. Committee: Messrs. Yates, Beckwith, Biffin, Davies, Armour, and Kent. Votes of thanks were passed to the retiring officers, Messrs. Grindley, Gosling, and Cupit. This brings to a close the work of a most successful and well-attended session. At a previous social evening, Mr. W. H. Gibson presiding, a handsome smoking cabinet, subscribed for by members and friends, was given to Mr. A. E. Colman, an ex-president and secretary. The Chairman made the presentation, accompanying it with some well-chosen remarks concerning the recipient's long connection with the Society. Messrs. Yates and Jeeves, also old members, spoke in eulogistic terms of Mr. Colman's good services and popularity, to which the latter appropriately responded.

Linnean Society of London, April 2.—Mr. J. G. Baker, F.R.S., Vice-President, in the chair.—On behalf of Dr. F. Arnold, of Munich, the Secretary exhibited several photographs of typical lichens, received in continuation of a series which has been for some time past in course of issue by that well-known lichenologist. Mr. M. F. Woodward exhibited a very young example of the "Spiny Ant-eater," *Echidna aculeata*, taken from the mammary pouch of the parent at Newcastle, Western Australia, by Mr. H. B. Woodward, Curator of the Perth Museum. It was intermediate in size between the two stages described by Prof. Parker, but showed no trace of the calcaneal spur characteristic of the male, nor any trace of the mammary pouch peculiar to the female. He called attention to the flattened and beak-like appearance of the snout and the vestiges of the "egg-breaker," and to the disposition of the spine papillæ. For the purpose of comparison Mr. Woodward exhibited also the heads of *Ornithorhynchus* and *Echidna*, and a male and female mammary fœtus of *Perameles*.

A paper was read by Mr. C. H. Wright, "On the Genus *Stemona*, Lour.," one of the few monocotyledonous genera whose flowers are constructed on a tetramerous type, and remarkable for the diversity of its vegetative characters, while its floral structure varies between comparatively narrow limits. In habit, the plants of this genus are generally climbers, but *S. sessilifolia*, Miq., and *S. erecta*, C. H. Wright, are exceptions. The leaves, whose primary veins are connected by very numerous approximate transverse ones, can be either alternate, opposite, or whorled, and in a few cases their petioles are adnate to the peduncles. The most remarkable structure in the flower is the stamen, in which a broad connective, surmounting a very short filament, is produced on the inner side into a feel completely separating the anther-cells, and also prolonged for a considerable distance above their apex. The pollen of each cell is united into mass connected with that of the other cell by an appendage resting upon the top of the keel. Of the twelve species enumerated by Mr. Wright as concentrated in Eastern Asia, two of them extend to North Australia. The paper was commented on by Mr. J. G. Baker.

Lieut.-Col. C. T. Bingham, in a paper on some exotic fossorial hymenoptera in the British Museum (communicated on his behalf by Mr. W. F. Kirby), enumerated thirty-four species, of which no less than thirty were previously undescribed. The discovery of many of these was due to the researches of the author, who had spent twelve years collecting in Sikhim, Burma, and Tenasserim. In the arrangement of the *Pompilidæ*, a confessedly difficult group of fossoreia, he had adopted the classification proposed by Professor Kohl, of Vienna, but he was of opinion that a thoroughly satisfactory classification had yet to be devised. A new genus, *Paragenia*, was proposed for an insect, described originally from Borneo, but which he had found also in Burma and Tenasserim, possessing the characters of both *Agania* and *Macromeris*, resembling the former in neuration and in habits, and the latter in the conspicuous development of the coxæ and femora, especially in the male.

The President then gave a descriptive account of the Khasia Hills from personal experience, dwelling on their geological formation,

the extraordinary rainfall of the district (120 inches in five days), and the chief characteristic feature of the flora and fauna. His remarks were illustrated by a number of lantern slides, several of which had been prepared from photographs taken by himself, and others from sketches made by Sir Joseph Hooker. Some additional remarks were made by Col. Sir Henry Collett, K.C.B., from experience gained during two years' residence whilst commanding the British forces in that part of India.

Midland Chemists' Assistants' Association, April 8.—Mr. T. C. Clarke, President, in the chair.—Mr. F. H. Alcock, F.I.C., read a paper on volumetric analysis, in which he dealt more particularly with the B.P. test solutions, and the paper was illustrated by practical demonstrations throughout.

Cambridge Pharmaceutical Association, April 10.—Mr. Alderman Deck in the chair. Mr. E. Saville Peck gave an account of a "Holiday Ramble in Switzerland." The lecture was illustrated by means of lime-light views reproduced from photographs mostly taken during the trip. A short stay in Paris was filled up by visits to some of the most important places of interest, such as Notre Dame, the Louvre, and La Sainte Chapelle. The journey to Zermatt was taken *via* Lausanne, the Lake of Geneva, Montreux, Chillon, with a fine view of the Deut du Midi, Martigny, and Visp, and then up the Zermatt Valley. Here a fine view of the Matterhorn was given, about which many a thrilling story of some perilous venture has been told again and again. From the Gorner Grat views were shown of some of the peaks which form the remarkable panorama of snow-covered mountains visible from that point, such as Monte Rosa, the Breithorn, Weishorn and Dôm. Saas Fêe, with its amphitheatre of glaciers and rocky summits, was shown, together with that of the Allalinhorn, 13,235 feet high, which Mr. Peck climbed with two friends in the early summer of last year. The ascent of the Weissmies, 13,225 feet, was also narrated amongst others. The view taken from the Matterhorn Lake of the Schwarzee Chapel, with the Rothhorn and Gabelhorn as a background, was much appreciated, and his experience at the summit of the latter during a storm was listened to with much keenness. The return journey was taken *via* the Rhone Glacier, St. Gothard Pass, with the Devil's Bridge, Goeschenen and Lucerne. After several questions had been put and answered by Mr. Peck, the Chairman moved a hearty vote of thanks, which was seconded by Mr. A. Ivatt, M.A., and carried. Mr. Peck, after responding, moved a vote of thanks to Mr. Hayles for so ably working the lantern, and to Mr. S. F. Barker, the Assistant Secretary, for all the help he had rendered during the session. This was seconded by the President, and after a few interesting scientific slides were exhibited by Mr. Hayles, a very enjoyable evening was brought to a close.

LEGAL INTELLIGENCE.

FATAL DOSE OF SULPHONAL.—An adjourned inquiry into the cause of the death of Mr. John Dillon, aged 69, chemist's traveller, of Sheffield, was held at the Royal Infirmary, Newcastle, where he died on April 6. While at Newcastle on business the deceased was taken ill, and was removed in an unconscious state to the above institution. His friends thought he had died from an overdose of chloral taken to induce sleep, but the medical men did not quite concur, and a post-mortem was made. Extensive disease of the kidneys and lungs was found, but death was due to an overdose of sulphonal tabloids, which in deceased's unhealthy state had acted powerfully upon him. Had he been a sound man he might have thrown off the effects of the tabloids.—The Coroner said no doubt he had been a great sufferer and had taken the tabloids to obtain sleep. There was no reason to suppose that the deceased had taken his life intentionally, and a verdict in accordance with the evidence of the medical men was adopted.

CHARGE OF OBTAINING DRUGS BY FALSE PRETENCES.—At the Mansion House, George Thomas Millership,* 42, dispenser, was charged on remand before Alderman Sir Stuart Knill with obtaining drugs by false pretences from Messrs. Baiss Brothers and Co., wholesale druggists, Jewry Street, Aldgate. The prisoner was now further charged with obtaining and attempting to obtain drugs by false pretences from Messrs. Burgoyne, Burbidges,

* This name does not appear on the Register of Chemists and Druggists for 1896.

and Co., wholesale druggists, Colman Street.—Mr. Humphreys, solicitor, conducted the prosecution. It was alleged that the prisoner, representing himself to be Dr. Miller, wrote to Messrs. Baiss Brothers and Co., and to Messrs. Burgoyne, Burbidges, and Co., requesting them to forward some drugs to an address which he gave. The drugs were sent to the address given, but the prisoner did not pay for them. It was alleged that the prisoner, in the name of Millership, subsequently attempted, by similar false pretences, to obtain other drugs from Messrs. Burgoyne, Burbidges, and Co., but the drugs were not sent to him.—Alderman Sir Stuart Knill committed the prisoner for trial.—*Times*.

PARLIAMENTARY INTELLIGENCE.

PROPOSED SIMPLIFICATION OF PROCEDURE.—If Sir A. Rollit has his way the procedure for parliamentary Bills will be considerably simplified in future. He proposes that every Bill shall, after its second reading, stand committed to a Committee of the whole House of Commons, unless before such second reading a motion is made for the committal of the Bill to a Grand or a Select Committee. Sir Albert further provides against obstruction by proposing that any motion for committal to a Grand or a Select Committee shall be put from the Chair without amendment, notwithstanding that the time for the interruption of public business may have passed.

THE FOOD ADULTERATION COMMITTEE has completed its labours so far as taking oral evidence is concerned, and will devote the remainder of its meetings chiefly to the consideration of its report. If that report be a reflection of the evidence tendered to the present Committee and that accumulated by its predecessor, one may look for a wide alteration in the adulteration laws being recommended. The Committee has been made fully acquainted with the pharmaceutical view of the existing Sale of Food and Drugs Act.

IRISH NEWS.

PHARMACEUTICAL SOCIETY OF IRELAND'S EXAMINATIONS.—*Preliminary.*—The following have passed: Messrs. (S. Browne and A. Wilson, equal), W. J. Burke, F. B. Angley, M. J. Cogan, J. T. Dwyer (R. Prior and G. Wilson, equal), R. L. M. Boyd, A. Hogan, J. W. Burns, E. A. Reilly, P. M. Nugent, A. V. Flynn, and S. Hill. Ten candidates were rejected. *Pharmaceutical Licence.*—The following have passed: Messrs. J. W. McClean, A. Gibson, R. J. Savage, F. H. R. Brady, J. G. W. Boggs, J. Ritchie, J. Horgan, T. O'Sullivan, and R. Barron. Twelve candidates were rejected. *Examination for Registered Druggist Licence.*—The following have passed: Messrs. J. H. Bowden, J. E. Cooper, R. C. Dorman, R. Hall. One candidate was rejected. Mr. J. H. Bowden has also passed the Pharmaceutical Assistants' Examination.

PHARMACEUTICAL CHEMISTS' AND APOTHECARIES' ASSISTANTS' ASSOCIATION OF IRELAND, April 10.—Mr. James B. Alister, M.P.S.I., President, in the chair.—There was a good representative attendance. Some routine business having been transacted and Mr. Alfred H. Barnes, Charlemont Street, elected to membership, a paper on "Camellia Thea" was read by Mr. D. O'Sullivan, L.P.S.I. The reader said *Camellia thea* or *Thea chinensis* was classed by botanists in the natural order Camelliaceæ, or, more correctly, Ternstroemiaceæ. He passed over the tea plant in its dry state and described its chief botanical characteristics, including the nerves, veins, and midribs of the leaf and its flowers and fruit. The history of the tea plant was buried in antiquity. The Chinese ascribed the original discovery of the beverage to a monkey, not a flattering thought to the pharmacist that an ape infused decoctions centuries before pharmacy or the B.P. existed. The essayist quoted Confucius (550 B.C.) and Yo Lu, who flourished in the Tang dynasty (618 to 906 A.D.), on the antiquity of tea, which was even then subject to taxation. It was known to the Arabs in the ninth century, and the leaf was cultivated by the Japs a century later. Its appearance in Europe was only made in the year 1610, when a Dutch merchant introduced the first sample. Half a century later the presentation of a few ounces of the leaf was considered worthy of

acceptance by Catherine, wife of Charles II. At that time tea was known as "chaw," and in 1660 its selling price ranged from 15s. to 60s. per lb., according to quality. In 1666 the import of tea was under 100 lbs. per annum, and in 1745 the figures had run up 730,000 lbs. At present the consumption of tea in the British Islands was over 91 million pounds yearly, or an average of 5.33 lbs. per head. Mr. O'Sullivan referred to the growth of the plant and mentioned the chief varieties thereof; he discriminated between green and black tea, commented on the nomenclature of the plant in various growing centres, and described in an entertaining manner the process of picking the leaves, drying, and preparing them for export. The constituents of tea consisted chiefly of an alkaloid caffeine or theine, and it was the presence in the leaf of an essential oil which imparted the aroma. Tannin to about 26 and 15 per cent. was present in green and black tea respectively. Albumin and dextrin were found in variable quantities in tea, besides chlorophyll and cellulose, which formed the structural composition of plants. The effect of tea-drinking was next referred to, and its action on the cerebral organs dwelt upon. Green tea caused giddiness, and acted as a most powerful stimulant. The effect of the alkaloid of tea was similar to that produced by strychnine. The action of caffeine on frogs was deadly. The imbibing of tanninated tea caused anæmia, and this wide-spread evil might be checked if only the public paid a little attention to the proper infusing of tea. A graphic description of tea-making all over the world was given by the speaker. In Western Siberia tea was both food and drink, the spent leaves being mixed with fat and eaten by the inhabitants. England compared unfavourably with other nations in regard to tea-making, the pernicious habit of "stewing" the leaves being deeply rooted. The use of tea interfered with the gastric juice and prevented the proper digestion of fresh meat, the tannin hardening the soft fibres and lessening its nutritive qualities. Mr. O'Sullivan showed by the following table the results obtained by long and short infusion of the leaves:—

	5 minutes' infusion.	10 minutes' infusion.	20 minutes' infusion.	40 minutes' infusion.
	Per cent.	Per cent.	Per cent.	Per cent.
Extractive matter by water	21.78	25.35	26.81	28.14
Theine	1.11	1.30	1.16	—
Tannin	6.85	8.52	11.73	16.32
Nitrogenous matter...	1.11	1.16	1.11	1.04
Ash.....	3.52	4.09	4.15	4.48

This table shows how prejudicial it is to allow tea to stand longer than ten minutes at the furthest; the caffeine or theine would lessen or disappear altogether if allowed to "stew," and the tannin would proportionately increase. The essayist spoke of the "doctoring" of tea by means of inferior leaves which were artificially scented by dried flowers of the sweet-scented olive (*Olea fragrans*). 500 millions of people used the teapot as a "household god," and greatly outnumbered the worshippers at the shrine of Bacchus. Exhaustive statistics in connection were given, and the use by the Indians of *Ilex paraguayensis* or Brazilian holly, called Paraguay tea or "maté," referred to. The Creoles of Central America drink this "maté" at every meal and chew the leaves in between. Mr. O'Sullivan concluded his paper by briefly alluding to the myrtle tea of the inhabitants of the Eastern Archipelago, and to the "kaat" of the Abyssinians. The paper was favourably commented on by Messrs. Hardy, Hunt, Ewing, Hendrick, Alister, and others, all of whom agreed as to its worth and suitability to those who were studying botany for the coming examinations, and to others who were partial to the "cup that cheers." A hearty vote of thanks to Mr. O'Sullivan was then passed.

EASTER VESTRIES.—The following pharmacists, chemists, and druggists have been elected vestrymen of their respective parishes in Dublin and the surrounding district:—Sir George B. Owens, pharmaceutical councillor, St. Anne's Church; Mr. E. M. Hodgson, J.P. (McMaster, Hodgson, and Co., chemists, Capel Street), Zion Church, Rathgar; Mr. George H. Grindley, L.P.S.I., St. Thomas's parish; Mr. George D. Beggs, pharmaceutical councillor, the Medical Hall, Dalkey, to the vestry of Dalkey parish; Mr. W. Allen, Trinity Church; Mr. Robert White, druggist, churchwarden Molyneux Church; and Mr. Samuel Gordon, chemist, churchwarden Sandford parish.

FOREIGN NEWS.

PUBLIC HYGIENE IN FRANCE.—At the last meeting of the Board of Health of the Department of the Seine, several important decisions relating to pharmacy and public hygiene were announced, in reply to questions formulated by the Prefect of Police. Regarding the application of india-rubber (in which a notable quantity of oxide of zinc had been found) for hermetically sealing vessels containing preserved foods and alimentary liquids, the Board gave its opinion that the use of oxide or other compounds of zinc should be prohibited as prejudicial to health in the manufacture of the rubber employed. A committee of five members had been appointed to ascertain whether for the public welfare it was expedient to permit the purification of rancid butter by a process of washing and afterwards flavouring, and also whether this process constituted a fraud intended to deceive purchasers as to the quality. On this latter question, the Commission estimated that the subject should be decided by the judicial authorities rather than a sanitary board. With regard to the first, it was decided that as no injurious properties were communicated to the butter by the process, there was no reason to prohibit its employment.

The Council also carried the two following resolutions concerning the prohibition of sale and seizure of compounds recognised officially as dangerous to public health:—

"This Board deems it expedient that the Prefects of Police of each department should be authorised by law to seize provisionally and hold, until a judicial decision has been given, all substances—simple or compound, classed as medicines or even as perfumery, offered for sale—which should be recognised by the authorities as dangerous to the public health."

"In view of the power of the authorities in cases of illegal practice of pharmacy to order the closing of the establishment, the Board considers it advisable that the confiscation in cases of illegal sale applied to poisonous medicines by the law of July, 1845, should be extended to any medicines whatever, and expresses a wish that the Prefect of Police will call the attention of the Government to this matter before the discussion takes place of the proposed new pharmacy laws at present before Parliament."

A FIRE AT LYONS is reported, having taken place at the chemical and pharmaceutical manufactory of MM. Givaudan and Trouillat, 35, Quai Fulchiron. The outbreak occurred during working hours and occasioned severe losses, which, however, are covered by insurance.

SOCIÉTÉ LIBRE DES PHARMACIENS DE PARIS.—The centenary of the above Society, parent of the existing Society, occurred on the 20th of the past month, it having been founded in the fourth year of the Republic, conformably to the 300th Article of the Constitution. Its object was to aid the progress of science, especially of pharmacy, chemistry, botany, and natural history, by perpetuating the educational establishment founded by Paris pharmacists, and by continuing in the laboratories and gardens of the Rue de l'Arbalète (Jardin des Plantes) the gratuitous courses of public lectures upon the different branches of pharmaceutical science.

ILLEGAL PRACTICE OF PHARMACY.—The Nîmes Court has just delivered judgment on an appeal made by the Syndicate of Pharmacists of the Department of Lozère for the amplification of a decision given by a local court under the following circumstances:—M. Barnouin, pharmacist, of Villefort, conjointly with the Syndicate, instituted proceedings for illegal practice of pharmacy against a member of a religious order, Sister Victorius, who directed the compounding of medicines at the Hospice de Villefort, and also against M. Réboul, Mayor of the town, acting as President of the Board. The tribunal at Mende, where the case was tried, had condemned Sister Victorius to a fine of 500 francs and 50 francs damages, but, however, declined to grant an order for closing the dispensary. It was against this refusal that appeal was made, with the result that whilst the former judgment is confirmed, the Higher Court has, in addition, ordered the closing of the pharmacy in question.

MIGNONETTE AS A VERMIFUGE.—The *Revue Médico Pharmaceutique* reports a case attended with satisfactory results in which reseda (mignonette) was used as a vermifuge. A strong decoction of the flowers, followed by a dose of castor oil, was administered fasting to a woman suffering from tænia, after three hours the worm was entirely expelled in a mass. This plant has long been a popular remedy against tapeworm in Russia.

ACETYLENE GAS AS AN ILLUMINANT.—The new method of lighting carriages has been lately practised on the Lyons and Mediterranean Railway, and was utilised during the recent journey of the President of the Republic to the South of France. It consists in the substitution of acetylene for coal-gas, and the results, so far, have been completely successful. On account of its marked superiority over coal-gas as an illuminating agent (in the proportion of 1 to 16) a great extension of its use may be anticipated. At present the principal obstacle to the more general employment of acetylene is the relatively high price of the calcium carbide from which it is generated, but as that chemical becomes a current article of commerce, on account of the increased demand, its cost will necessarily diminish. The first experiment in France with this illuminant for railway carriages took place on the same line in the month of October last.

SOPHISTICATION OF DRUGS.—One of the leading Parisian daily papers, *Le Matin*, has lately interested itself with the sophistication of drugs, which it states is unfortunately of only too frequent occurrence. Owing to numerous complaints, a police official had been instructed to make purchases at various suspected pharmacies, and the analyses of the substances bought disclosed a very unsatisfactory state of affairs—50 per cent. of bicarbonate of soda was found when antipyrin was prescribed; quinine was entirely absent in a salt which was represented to be that alkaloid, and various galenicals were seriously sophisticated. Up to the present time, no legal action has been taken in the matter, and the journal in question has sent representatives to interview the Archivist of the "Syndicat des Pharmaciens de Paris," M. Crinon, and also M. Girard, Chief of the Municipal Laboratory. M. Crinon, in course of the conversation, pointed out the illegality of any interference on the part of the police or the Municipal Laboratory with pharmacists, as the *École de Pharmacie* is the body especially charged by law with the regulation and inspection of pharmacies. Two of its officials accompanied by a Commissaire de Police make an inspection of each pharmacy once or twice a year, and if necessary seize any adulterated medicaments. Whilst acknowledging the right of the Prefect of Police to cause visits to be made at pharmacies when he considered necessary, or when a complaint was lodged, M. Crinon said that he personally should resist any seizure by other officials than professors of the *École de Pharmacie*, and quoted the judgment given in a case (from which no appeal had been made) brought against a pharmacist at the request of the Municipal Laboratory for exposing for sale a "Sirop Pectoral," coloured with fuchsine, in contravention of a police regulation. In this case the municipal authorities were condemned in costs as not possessing the right of control over pharmaceutical products.—M. Crinon also stated that for the last three years a committee had been appointed by the Syndical Chamber to prevent malpractices on the part of pharmacists, any one of whom, if suspected of fraud, either in quantity or quality of medicine supplied, became the subject of surveillance, and in case of repetition legal action was taken. Several complaints are now before the Committee, and severe measures will possibly be taken.

M. Girard was at first very uncommunicative, and denied any knowledge of seizures having taken place, stating that he had lately been absent from Paris. He asserted, however, that if instructed by a police magistrate to make a perquisition at any pharmacy on account of complaints received, he did not anticipate any opposition on the part of the proprietor, and explained that the reason the Municipal Laboratory made no such inspections was owing to want of time, as to do so would necessitate a doubling of the staff. When a medicament is brought for analysis, and it is found to be adulterated, the result is communicated to the *École de Pharmacie*, and further action in the matter is left to that body. M. Girard concluded by expressing his opinion that the *École de Pharmacie* is too lenient towards delinquents, and that the public welfare would be best served by prosecution and affixing a copy of judgments obtained on the front of the pharmacy in fault.

DETECTING COLOURING MATTER IN WINE.—At the meeting of the Congrès des Sociétés Savantes, M. Mosnier, Professor at the School of Medicine at Clermont, presented a method for extracting any colouring matter fraudulently added to wine. The reagent used is a cold saturated solution of lead nitrate, which precipitates in the form of lakes any colouring matter, vegetable, animal, or coal-tar derivative (fuchsine excepted). The natural colour of the wine is not affected.

NOTES AND QUERIES.

[The information given in this column includes both notes of practical interest to pharmacists, and replies to queries which seem to possess sufficient interest to readers generally. Readers requiring working formulæ for special preparations should intimate their wants to the Editor, who will be pleased to assist them to the best of his ability. The word "parts" invariably indicates parts by weight.]

DARK TONES IN PHOTOGRAPHIC TONING.

Unfortunately, no information is given as to what paper is used, but, assuming it to be the ordinary gelatino-chloride printing out paper, it may be stated that dark tones are more dependent upon the negative and depth of printing than any particular toning formula. Place a sheet of flashed chromium green glass over the negative whilst printing, and print till the high lights are strongly tinged. Then tone the print—until the shadows, on looking through them, have lost all yellow tinge—in the following solution, after cooling:—

Gold chloride.....	1 gr.
Sodium acetate.....	30 grs.
Hot water.....	8 ozs.

Next rinse the print and tone in—

Potassium chloroplatinite.....	2 grs.
Phosphoric acid (dilute).....	$\frac{1}{2}$ oz.
Water.....	8 ozs.

Then the print should be well washed and fixed. Very dark brown-black tones will thus be secured. For dark purple tones use—

Gold chloride.....	2 grs.
Sodium carbonate.....	120 grs.
Water.....	6 ozs.

Finally fix and wash. [Reply to J. H. Coleman.]

LINIMENT OF SOFT SOAP.

This preparation is official in the U.S. Pharmacopœia, being prepared by dissolving linseed oil soft soap, 650 Gm., in a mixture of alcohol, 300 C.c., and oil of lavender, 20 C.c., then setting aside for twenty-four hours, filtering through paper, and afterwards passing enough water through to make the product measure 1000 C.c. A simple method, devised by C. E. Smith (*Am. Journ. Pharm.*) accomplishes the formation of the soap and liniment at the same time, and gives a product of more uniform strength than is possible by the older process. He dissolves 90 per cent. potash, 75 Gm., in water, 200 C.c., then shakes in a bottle of 1500 C.c. capacity with linseed oil, 325 Gm., and alcohol, 300 Gm. The shaking is repeated from time to time until there is no further separation of oil on standing, and after the solution has been kept in a moderately warm place for twenty-four hours, oil of lavender, 20 C.c., is dissolved in it by agitation and enough water added to make the product measure 1000 C.c. Mix and filter. Refined cotton-seed or olive oil may be used in place of linseed oil, and a lighter coloured preparation will then be obtained.

CHRYSAROBIN GLYCERIN SAPONAT.

The following is the formula of Hebra for this preparation:—Neutral coco-nut soap, 9 parts; glycerin, 81 parts; chrysarobin, 10 parts. Dissolve. [Reply to "Search-light."]

REFINING GELATIN.

Gelatin is rendered bright by straining through flannel while kept at a temperature of 100° to 120° F. A filter pump would be useful for this purpose if large quantities have to be dealt with. It is bleached by exposure to sulphurous acid gas. [Reply to "C. P. R."]

GINGER BEER.

Loaf sugar, 4 lbs.; bruised ginger, 2 ozs.; cream of tartar, 1 oz.; soluble essence of lemon, 4 ozs.; soluble essence of ginger, 2 ozs.; allspice, freshly crushed, 1 drachm; boiling water, 4 gallons. Pour the boiling water on the solid ingredients, cover over with a lid or cloth, and infuse for two hours, then strain. When the temperature has fallen to about 100° F. add a piece of compressed yeast the size of a large walnut, let it stand in a warm place for two or three days, then strain and bottle off. This will give you a far better beverage than that generally sold. Compressed German yeast is best for this purpose. [Reply to "Student."]

HANGING ANAGLYPTA PAPER.

Probably if you first put up a layer of thin brown paper with good stiff paste, allow this to dry, and then cover it with the anaglypta paper, it will not crack. If this does not answer, write to the makers of the paper for special instructions. ["Reply to D. M."]

PERMANENT GREEN FOR SHOW COLOURS.

Soluble indigo, 1 grain; picric acid, 9 grains; distilled water, 20 fluid ounces. Dissolve the picric acid and indigo separately in 10 ounces of water each. Mix. This will give you a splendid permanent green colour which will not fade. If too dark dilute still further. By adding more indigo or picric acid solution you can make almost any tint of green you like. [Reply to "Myrtle."]

MIST. BISMUTHI COMP.

Something on these lines may suit you:—

Ammonio-citrate of Bismuth.....	256 grains.
Scale Pepsin.....	256 grains.
Strychnine Sulphate.....	2 grains.
Prussic Acid B.P.....	128 minims.
Compound Tincture of Cardamoms..	4 fluid ounces.
Syrup.....	2 fluid ounces.
Spirit of Chloroform..	2 fluid ounces.
Distilled Water, to produce.....	16 fluid ounces.

Mix. Dose: 1 Drachm.

[Reply to "Search-light."]

LIQUOR PAPAIN ET IRIDIN.

Papain.....	16 grains.
Glycerin.....	4 fluid drachms.
Distilled Water.....	4 " "
Iridin.....	16 grains.
Carbonate of Potassium.....	12 grains.
Distilled Water.....	4 drachms.

Mix and dissolve with stirring, at a gentle heat, on the water bath.

Mix and warm until dissolved; mix the two solutions and add—
Rectified Spirit..... 4 fluid drachms,
and, if necessary, make up to 2 fluid ounces with water. Dose: 1 drachm.

[Reply to "Search-light."]

EMULSIONS OF CARBOLIC ACID, ETC., FOR AGRICULTURAL PURPOSES.

The best substance for this purpose is an alkaline resin soap something like this:—Resin oil, 5 parts; resin, $3\frac{1}{4}$ parts; soft soap, $2\frac{1}{2}$ parts; caustic potash, $1\frac{3}{4}$ parts; water, 8 parts. Break up the resin small, dissolve it with heat in the resin oil, add the soft soap, and then the potash dissolved in the water. Boil vigorously, with constant stirring, until saponification is complete, then stir in the phenol or hydrocarbon oil with the warm soap. [Reply to Thomas and Co.]

MERCURIC OXIDES.

The experiments of Varet (*Zeit. Phys. Chem.*) have proved the identity of the heats of formation of the two mercuric oxides, hence the total energies are equal for these compounds. Ostwald and Mark find, also, that a galvanic cell of mercury, red oxide, caustic potash, yellow oxide, mercury, gives no E.M.F., whilst also no change in E.M.F. of various cells takes place when red and yellow oxides replace one another. Hence the free energy of the two forms is also equal, and the two compounds are not isomeric but identical.

ANTINOSINE.

This is a new antiseptic, described as a blue powder containing phenol and iodine, combined with sodium. It is readily soluble in water, and is stated by Kruse to be a powerful antiseptic, arresting the development of nearly all pathogenic microbes. It is free from odour and from toxic properties, and has no irritant effects. It has been employed both as a dressing and for washing out cavities; also for mouth washes, gargles, with a half per cent. solution, and for injections into the bladder in cystitis. Lewin has employed it with great success as a dressing for chancres.

CORRESPONDENCE.

All Articles, Letters, Notices, and Reports intended for publication in the Journal, Books for Review, and communications respecting Editorial matters generally must be Addressed "Editor, 17, Bloomsbury Square, London," and not in any case to individuals supposed to be connected with the Editorial Staff. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

ANY INSTRUCTIONS from Members, Associates, and Students of the Pharmaceutical Society, with reference to the transmission of the Journal, should be sent to the Secretary—Mr. Richard Bremridge,—17, Bloomsbury Square, London.

BUSINESS communications—including advertisements, orders for copies of the JOURNAL, and instructions from Subscribers respecting transmission of same—must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London. Cheques and money orders should be made payable to "Street Brothers."

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

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

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

QUERIES addressed to the "Editor" will be replied to in the Journal as early as possible after receipt; answers of sufficient general interest being given under the heading "Notes and Queries." The Editor cannot undertake to reply to queries through the post.

REPRINTS of articles cannot be supplied unless authors communicate with the Editor before publication.

THE SOCIETY'S LOCAL SECRETARIES.

Sir,—Mr. T. R. Ashton's letter would have been better sent direct to me than through your columns, as his complaint is a purely personal one of my action as an individual. Through the same channel, and with as much publicity, I should like with your permission to express to Mr. Ashton my apology for having wounded his hypersensitive feelings, and trust he will accept the same with as much readiness as he did the unintentional offence when he received my post-card. In extenuation of my offence I may just add that as I have not the pleasure of Mr. Ashton's personal acquaintance, I have had no means of learning of his singular objection to having his subscription "collected"; and, further, in reply to his question about business men collecting accounts, I would explain that the list of unpaid subscriptions forwarded to me on February 27 was my latest advice, and my lack of acquaintance with business men and business customs must be my excuse for having thought that the foot-note he refers to would be sufficiently self-explanatory to the average chemist. In the choice of a humble post-card as a medium of conveying my message to nearly one hundred subscribers, I am bound to say I fail to see the slightest ground for objection, but I will promise to bear the matter in mind, and when I have occasion again to write Mr. Ashton I will avoid "the open letter" which Mr. Gladstone and other notables have done so much to popularise. To show him that all do not view my communication in the same light, I give you quotations from two letters received by me in reply to that same post-card: "Many thanks for your kind reminder. . . . One is apt to overlook these little annual affairs." The other wrote: "P.O.'s herewith for 21s. Sorry you have had to remind me." Unwittingly, Mr. Ashton has done me a good service by writing to you, as some kind forbearing correspondents will now see why their letters are still unanswered.

254, *Stretford Road, S.W., Manchester.* HARRY KEMP.
April 11, 1896. *Local Secretary for Manchester.*

Sir,—The appropriately dated note of your Manchester correspondent affords painful evidence of the fact that even twelve years' association with this Society does not, with him at all events, necessitate the exercise of common civility or forbearance to its officers, especially if they happen to be local. Your correspondent appears to have rendered unto Cæsar the things that are Cæsar's with commendable regularity, and is full of virtuous indignation because of a post-card which oddly enough indicated in a foot-note that its substance did not apply to such as himself. He further expresses his emphatic objection to being called upon for subscriptions—and affects to be oblivious of the trifling detail

that he has never been so canvassed—and has no experience of this popular mode of collection, so far as Mr. Kemp is concerned. In view of these facts, our friend's displeasure appears to be strangely misplaced. Surely in these troublous times, full of trade worries and real anxieties, Mr. Ashton might employ his time and ability in better fashion than in conjuring up petty bogus grievances, and in seeking cause of offence where none exists and where none is meant. Mr. Kemp may rest assured that Mr. Ashton is quite singular in his petulant puerile criticisms, otherwise the position of local secretary would be simply intolerable. In the meantime—it will be unwise to treat the matter too seriously—probably the real *casus belli* may be found in some derangement of hepatic origin. We chemists do need a holiday sometimes.

40, *Sankey Street, Warrington,*
April 14, 1896.

J. RYMER YOUNG.

Sir,—It may be some little comfort to Mr. Ashton, of Manchester, to know that he is not the only one who has to complain of the doings of the local secretaries appointed by the Council of the Pharmaceutical Society of Great Britain. During the short time I have been acquainted with the Society I have seen about half-a-dozen gentlemen appointed and re-appointed to the honourable position of local secretary in my district, and yet not one of them ever condescended to call upon me, or, as far as I am aware, on my neighbours, to press home the claims of the Pharmaceutical Society. That duty was delegated to the apprentice whose caligraphy would stand the light of day. When asked the reason why, the answer was they always went by a precedent. Well, but the precedent they looked to happened to be one of those very superior persons who, alas! was "too big for his job," and thought it menial work to make a personal call and collect subscriptions. How does the Society suffer? Associates, members, and money simply slip through its fingers, while those who do subscribe to the Benevolent Fund could easily be made to double their subscriptions if local secretaries would get out of the old ruts.

Inverness, April 14, 1896.

SCOTTISH PHARMACIST.

Sir,—Your correspondent, Mr. Ashton, of Manchester, appears to be the owner of a somewhat thin epidermis. In his position I should congratulate myself that I was in the district of a local secretary with sufficient enthusiasm for, and interest in, his work to trouble to write and send out post-cards in the manner described. The foot-note frees the card from any note of offence. I may say that I have been connected with the Society for fifteen years and in that time have only once received any sort of communication from the district representative. In face of this apathy, which is, I think, general, it seems to me unjust that Mr. Ashton should endeavour to throw scorn upon a gentleman who at the worst was guilty only of excess of zeal. Fortunately, the sympathies of your readers will be with this gentleman, who is quite unknown to me, rather than with your irascible correspondent.

Westgate-on-Sea, April 15.

FREDERICK MARCH.

AUCUBA JAPONICA (BLOTCHED AUCUBA).

Sir,—Although the female plant has been extensively cultivated since the year of its introduction, 1783, under the name of "spotted laurel" (as it is still popularly termed), it produced only blossom until that enterprising botanist and collector, Mr. Robert Fortune, brought home the male plant. Nowadays, thanks to insect fertilisation, it is no uncommon thing to see a profusion of glossy scarlet fruit in lovely contrast with gold and green foliage. In an old neglected garden are growing a considerable number of aucubas, and they present a very degenerate appearance, the blotches being diffuse and pale instead of bright yellow. One very ancient plant, nevertheless, which has leaves resembling those of the male, is in full fruit and bearing flowers also, the peduncles drooping and distorted, the fruit, too, though abundant, much smaller than usual and nearly globular.

It is a recognised natural law that aged female animals are prone to assume the masculine appearance, as instanced in the domestic fowl; when permitted to enjoy the full term of her life she will personate her tyrannical husband with comb, wattles, and ornamental tail, thus asserting her claim to admiration with greater show and circumstance than the most distinguished "woman of the period" is capable of, moreover, as a consummation, crowing lustily as any chanticleere, thus originating the old distich—

"A whistling woman and a crowing hen
Are neither of them good for God nor men."

Yet notwithstanding this vain show of sexual superiority, she is obliged occasionally to drop a tell-tale egg, although of very small size. The hen wife is, however, deceived, and shows it as a great curiosity—an undoubted "cock's egg."

Twickenham, April 14, 1896.

R. GOODWIN MUMBRAV.

CO-OPERATION AND LOW PRICES.

Sir,—I am so enamoured with G. T. Cooper's plan that I shall sacrifice (?) a good deal to attain the ends he so lucidly advocates. The retail chemist has been all along "paying through his nose" for his goods from so-called "wholesale chemists," who are not chemists but simply small capitalists, mostly enrolled under the Limited Companies Act. We have in Liverpool two or three "wholesale chemists" who are not registered individually as chemists, and some of them know no more about chemistry or even druggistry than a cow does about astronomy. The mysteries of the law are so queer that I am sick to inquire into it when we see such a state of things existing. The time has clearly come when we must either abolish the "middleman" or ourselves, and Mr. Cooper has certainly come forward as a benefactor to his comrades. The value of his plan may be illustrated by quoting a few items which have come prominently under my notice lately, in connection with the procuring of a small wholesale contract—

	Usually:	Now.
McDude's mixture	6s. 6d. per lb.	3s. 3d. per lb.
Liq. ammon. fort.....	5d. or 6d. "	2½d. "
Nitric acid	8d. "	2½d. "
Sulph. "	2d. "	½d. or ¾d. "
Acetic "	5d. "	2d. "
Muriatic "	2d. "	½d. "
Potass. cyanid.	2s. 6d., 3s. 6d., 4s., 5s.	11d. "
Meth. spt.	3s. per gallon.	1s. 7d. per gallon.
Resin	8s. per cwt.	4s. 6d. per cwt.

Then with regard to proprietary articles, individual chemists rarely take five pounds' worth of Siegel's Syrup, a thing we sell for nothing, but it would bring in a fair profit under Mr. Cooper's plan. Pears' Soap, ditto. In fine—pseudo "wholesale chemists," with their travellers, etc., constitute the barrier which must be removed. Another point in favour of the proposed plan is that obsolete articles might be exchanged or sold to mutual advantage, and quack nostrums by long firms demolished at will.

Prescot, Lancashire, April 12, 1896.

H. M. WILLIAMS.

CO-OPERATION FOR CHEMISTS.

Sir,—Will you kindly allow me a little space to make known some particulars of a company which is being formed among chemists to meet the ruinous and unfair competition felt on every hand? If chemists can buy as well, or even better, than the limited companies they will be able to sell at the same prices, make a living profit, and increase their trade, besides reducing that of the illegitimate traders, and perhaps in some cases closing their shops for them. Only properly qualified chemists actually in business on their own account will be admitted. Central premises will be rented, and an adequate staff engaged. Members will send in their orders every fortnight for drugs and proprietary articles, etc., the orders will be dissected when received, and the quantities of the various articles required, ascertained. Quotations will then be invited from actual manufacturers, importers, or agents, and the firms giving best quality and price will get the orders. Another feature will be the introducing of some good specialties, more particularly those which do not pay chemists to put up themselves; these will be supplied at just over cost, and the prices protected.

It is not intended to keep much stock in hand, so that the actual capital invested will be comparatively small, but articles such as tinctures, which are better and more cheaply made on a large scale, than bought, will be manufactured at the depôt. Each member will take a share of £5 as an entrance fee, and he will be supplied at a small percentage over first cost. No credit will be given. Result, no making others pay for bad debts; no middleman to support; no travellers to keep going; and it is confidently calculated that a minimum saving of 25 per cent. on drugs, 15 per cent. on those sundries traded in, and 7 per cent. on so-called "patents," will be effected; besides which mutual help will be extended at the same time among the members. To ensure

all drugs, etc., being of the utmost purity and just what they should be, every article will be carefully examined as it comes in (analytically when required) and some trouble will be expended to maintain a high standard of quality. If any of your readers would like further particulars they may be had by addressing a post-card to the subjoined temporary address.

29, Earlsmead Road, S. Tottenham, N. A. GARNETT, Secretary.

April 14, 1896.

COCAINE IN OINTMENTS.

Sir,—In reply to Mr. P. Green's humorous criticism, I am afraid any supplementary information on the above that I can give will neither satisfy his thirst for knowledge nor quench his love for badinage. He wishes to know on what grounds it was concluded that the cocaine hydrochlorate was decomposed in the over-heated lanolin. I thought the therapeutical evidence given was sufficient, but if Mr. Green knows of a more feasible explanation of the phenomenon referred to in my note, we will feel obliged to him if he will let us know what it is. In solving the problem he must please take into account two factors which are absolutely fixed:—(1) The spoiled pot of ointment was prepared from the same sample of hydrochlorate that was used in the preparation of a subsequent lot, which was satisfactory. (2) Exactly the same quantity of hydrochlorate was used on each occasion. The essence of Mr. Green's query is, what is the temperature at which cocaine hydrochlorate decomposes in a neutral and partly aqueous medium? I cannot tell him. As eminent a chemist as Flückiger has stated that an aqueous solution of it cannot be evaporated without decomposition; in other words, that a temperature of 212° F., or less, will decompose it in the presence of water. An equally eminent authority on alkaloidal chemistry, Dr. B. H. Paul, has disputed that statement. He says (*Ph. J.*, March 17, 1888, p. 783) that he has evaporated solutions of pure hydrochlorate of cocaine to dryness over a water bath, and found no decomposition to result. Observe, that was at water bath temperature; our friend's lanolin was warmer than that. What the actual temperature was, of course I do not know; but at any rate, in the exhaustive paper referred to there is nothing to bar the assumption that cocaine hydrochlorate is decomposable in hydrous lanolin at temperatures something over 212°, in fact, there are several passages which rather favour the idea. If Mr. Green will take this knotty question up, and satisfactorily settle it, he will prove that he has less chlorophyll in his composition than his name would seem to indicate.

Now a word in response to his other question, viz., "Why heat the lanolin at all before adding the cocaine and creolin?" Both the cold and hot ways have been tried, and it has been found that the latter yields decidedly the better result. Made in the former way, the lanolin is apt to become "disemulsified" (to show drops of moisture here and there); whereas, when the mortar is warmed, a nice, creamy ointment is producible. As an additional precaution, to retain it in that state, the pot may be slightly warmed before filling the ointment into it.

Whilst on this subject, it may be mentioned that there appear to be two kinds of anhydrous lanolin on the market at present—one almost cheesy in consistence, the other softer and more like the hydrous variety. I am inclined to suspect that the soft kind has been diluted with oil. That makes it easier to manipulate, but lessens its emulsifying power; therefore I should say that, on the whole, the hard kind is preferable.

W. JOHNSTON.

69, Loughborough Road, London, S.W.

April 13, 1896.

SHOPS (EARLY CLOSING) BILL.

Sir,—I perfectly agree with Mr. Wm. G. Taplin's protest against this new Bill, which should be named "A Bill to Encourage Bankruptcy." Trade in Portsmouth is carried on at wholesale prices until 8 o'clock p.m., after which there is a chance to do a little retail trade; but if this chance is taken away, some of us will have to discontinue our subscriptions to the Pharmaceutical Society, as we shall want our guineas and half-crowns to make up our deficiencies at the end of the year. Business nowadays must be transacted as it comes in our way. We are not all independent, neither can we all afford to slam the door in the face of a customer, even at a late hour. Some of your correspondents evidently were born with the proverbial silver spoon in their mouths, and it may be easy for these, who have "plenty," to cry enough! enough! But how about those of us who are making a business, who have life before us, and are anxious to serve those who patronise us? I consider it is hard

and unfair to have forced down our throats this new, but thoroughly up-to-date commandment:—

Thou shalt have no other gods but this "Early Closing" one,
But it thou shalt bow down and serve.

I agree that it may be for the benefit of shop assistants and for those proprietors who are so often anxious to spend a night at the club or elsewhere, but it is of little value to small traders, and I hope will not be enforced in this locality.

Portsmouth, April 11, 1896. HERBERT HENRY BAILEY.

Sir,—In reference to the inclusion of chemists in the proposed early closing legislation, I should like to ask what effect its adoption would be likely to have upon the public health. Would its operation be negative, or would it be deleterious? Speaking from a somewhat lengthy experience in working-class districts, I venture to say that by far the greater portion of the trade done after 8 p.m. is in that which may be properly be called "preventative medicine." The ever-present baby, maybe, is found to be feverish, and an aperient powder, given at once, stops it; or the bread-winner comes home exhausted and aching from exposure or wet, and a sudorific, taken directly, relieves, and permits the resumption of his work on the following day, and many other similar cases. Now I feel certain that in such neighbourhoods as this—were the slightest difficulty put in the way of the inhabitants in getting such medicines—no attempt, involving any extra trouble, would be made to obtain the remedies—at least not until the morning, the proverbial "stitch in time" being thus lost. Personally, I have always looked upon the trade as having somewhat higher duties than the mere selling of physic, and I flatter myself that upon very many occasions the advice given to either call in the doctor or to try some simple remedy overnight has been the means of arresting much suffering and illness, and I should be glad to know if my experience is shared by others in the trade, so that I may draw a more just conclusion as to the merits of supporting or opposing the inclusion of chemists in the proposed Act.

71, Old Kent Road, April 14, 1896. FRANK W. TRUMAN.

A DISCLAIMER.

Sir,—I have received a letter from the President of the Chemical Society, and he denies entirely the statement, published in the *Pharmaceutical Journal* of April 4, p. 274, that he alluded to me in his address at the anniversary meeting of the Chemical Society. As the whole affair is a malicious libel on my character, I hope you will kindly correct the error in your next issue.

12, Knowle Road, Brixton, S.W.

A. B. GRIFFITHS.

April 11, 1896.

[COPY.]

"St. Clare,
"Ryde,
"9th April, 1896.

"Dear Sir,

"You have been misled. At the anniversary meeting of the Chemical Society I did not allude to any letter from you, nor to you in any way.

"I am
"Yours faithfully,
"(Signed) A. VERNON HARCOURT.

"Dr. A. B. Griffiths, F.C.S."

GRANULAR EFFERVESCENTS.

Sir,—Mr. Clarke should have stated that his "base" was the B.P. effervescent citrotartrate of sodium, with the addition to the stated formula of one ounce of sugar. That is what his correction brings his basis to, not a large alteration by any means.

Edinburgh, April 10, 1896.

G. LUNAN.

ANSWERS.

J. H. THOMAS.—The formula for ung. ferri sulph. (St. Bartholomew's) is as follows:—Powdered sulphate of iron, 10 grains; lard, 1 ounce.

H. W. WILLIAMS.—In reply to your first question the retail sale of scheduled poisons by unregistered persons is illegal, whoever the purchaser may be. There is nothing to prevent a medical man setting his stable boy to compound and dispense medicines for his patients if his sense of the fitness of things permits him so far to outrage professional decency.

"MANUFACTURERS."—We see no reason to publish your comments on statements respecting a rival firm which appear in another paper.

"DENTIST."—The *Journal of the British Dental Association* (Baillière, Tindall and Cox, 20, King William Street, Strand, W.C.), or the *British Journal of Dental Science* (J. P. Segg and Co., 289, Regent Street, W.) Either should serve your purpose equally well.

"SUBSCRIBER."—Coal gas of average composition yields roughly its own volume of carbon dioxide, when completely burnt, as in a Bunsen burner, but an illuminating flame in which the carbon is only partially consumed will, of course, yield proportionately less. The volume of carbon dioxide formed by the combustion of any substance capable of yielding it is precisely equal to that of the oxygen combining with the carbon present, and the calculation is extremely simple, the necessary data being obtainable from any elementary work on chemistry. The following will give you an idea how to proceed:—

Substance burnt.	Amount of Oxygen required.	Carbon Dioxide produced.
CH ₄	2 volumes.	1 volume.
CO	$\frac{1}{2}$ volume.	1 "
C ₂ H ₄	3 volumes.	2 volumes.
C ₂ H ₂	$2\frac{1}{2}$ "	2 "

etc., etc.

JOHN HOLDING.—There is no better small book on the subject than Cross and Cole's 'Modern Microscopy' (Baillière, Tindall, and Cox, 20, King William Street, Strand, W.C. 3s. 6d.), but for your purpose reference to Dallinger's edition of Carpenter on 'The Microscope' should also prove especially useful. You can borrow this from the Society's library.

QUERY.

MANUFACTURE OF COAL-TAR PRODUCTS.—"Student" asks "where would a chemist be likely to get practical instruction in modern methods of manufacturing coal-tar products on a commercial scale?"

OBITUARY.

STYLE.—On April 8, J. W. Style, Chemist and Druggist, late of Peckham. (Aged 42.) Mr. Style was an associate of the Pharmaceutical Society. He was on the Chemists' Ball Committee for 1896, and took a great interest in pharmaceutical matters generally.

DOBSON.—On April 9, John Dobson, Shipley, Chemist and Druggist. (Aged 60.)

LONGLEY.—On April 11, J. W. Longley, Leeds, Chemist and Druggist. (Aged 48.)

DODD.—Wm. H. Dodd, Chemist and Druggist, Prescott, passed away last week at the ripe age of 85 years. He was born in Prescott, and for years conducted a splendid business, and was familiarly recognised as "Dr. Dodd." The dapper old gentleman was severely of the old school of pharmacists, and the doctor of the children. He was a contemporary of Alderman Sir Thomas Dakin, George Harker, Colonial Secretary, and Thomas Kershaw, the pioneer of the lozenge trade. His familiar figure will be missed for a long period.

PUBLISHERS' NOTICE.

CASES FOR BINDING AND READING COVERS.

CASES for binding the half year's numbers (one volume) of the *Pharmaceutical Journal* are now ready. Cloth, gilt lettered, price 1/6, post free.

READING COVERS to hold twenty-six numbers of the *Journal* can also be supplied. Plain cloth with strings, and gilt lettered, price 2/3 each, post free. Or, Slade's patent covers, with leather straps and copper wires in place of strings, price 3/6 each, post free.

APPLICATIONS should be sent, accompanied by remittance, to the *Pharmaceutical Journal* Office, 5, Serle Street, Lincoln's Inn, W.C.

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs. Bailey, Bindloss, Brown, Callis, Cracknell, Cupit, Currie, Ferrall, Garnett, Griffiths, Gunn, Hannah, Holding, Ince, Johnston, Kemp, Kirkby, Laing, MacHardy, Mitchell, Mumbray, Peck, Sawyer, Thomas, Truman, Turner, Williams, Young.

CACAO AT THE SAN CARLOS ESTATE, TRINIDAD.

BY WALTER H. INCE, PH.D., F.I.C.

Government Laboratory, Port of Spain, Trinidad.

To reach a cacao estate is by no means always an easy task. From the Port of Spain one is forwarded by rail to (in my case) Arima, the train speeding over the somewhat uneven metals past quaint tropic villages, over shallow brawling streams, through groves of coco-nut palms, past cane patches and swamp. The station at Arima is conveniently separated from the town by about two miles of glaring shadeless road. This may, however, be much shortened by taking a place in an old dilapidated fly. Arima, the centre of a fertile tract of cacao-land, resembles most other West India towns that I have visited. It is striking and somewhat picturesque. As architecture, however, it is not inspiring. The estate lies some five miles to the south. This may be ridden on mules. The road is charming, as all the Trinidad roads are, for the pedestrian; one passes so many beautiful sights, so many quaint peoples, and so many quaint smells. On arriving at the estate an obstacle was reached—a river. After much shouting and whistling, a long glabrous-legged Indian appeared on the opposite side, waded across, and took over the visitors in Sindbad style. A few yards further we were met by the genial host.

After a night's rest we were aroused at dawn from our slumbers, and went to the river to bathe. Then we proceeded to the cacao. The cacao is a stunted tree, standing about twelve feet high. It is very angular, and has no main stem. Its spreading branches are topped by long leaves, about thirteen to fifteen inches long. The undergrowth is carefully kept down, and, as in the culture of the vine, all outward suckers trimmed, so that the whole of the strength of the tree shall be preserved for the formation of pods. The top branches are thinned, but not entirely removed, as the cacao requires shade. Cacao only grows at its best in shady places, so that wherever a plantation is started, immortels as shade trees are planted as well. This "Mother of the Cacao" (immortel, *Erythrina umbrosa*) is a large tree with spreading umbrageous branches, and always forms a characteristic accompaniment to a Trinidad cacao plantation.

With new plantations, where shade trees do not exist, temporary shade is produced by planting the quickly-growing "fig" (banana), whose broad leaves shield the young plants from the overpowering heat of the tropic sun. The cacao plant is, happily, free from many insect pests. It suffers, however, from two deadly enemies. First and foremost is a grub, larva of the beetle (*Stirostoma depressum*), which eats its way in a corkscrew manner under the bark and eventually destroys the tree. The second is a bird, which provides for its coming needs by making the cacao pod its future larder. It picks a hole in the pod, and soon after follows a family of grubs, which some kindly insect deposits therein. As soon as these are established, the bird descends and devours its meal, to the prejudice, however, of the pod which is naturally spoiled in the process.

The flower of the cacao is very small and insignificant. Several flowers appear on the stem at the same place, but usually only one bears a pod. The pod grows from the stem, not as in European pods or fruit from the ends of the branches. First green, then as it ripens it turns yellow or red. In a tropic country one sees spring, summer, autumn, and winter all at once. The cacao trees are always at various stages of ripeness, so that the harvest goes on more or less continuously. The chief harvest is in the spring and autumn (English time). When the pod is ripe, it is severed from the tree with a dexterous whisk of a cutlass—never torn off—and transported to the fermenting boxes in baskets on the backs of mules. The pod is cut open, and the beans, bedded in a glutinous sweet-acid pulp, are placed in a square box to ferment. During

this process heat is developed, and the outer integument becomes loose and falls off. The pods are removed four times (every two days) from one fermenting box to another, and then placed an inch thick on a flat shed to dry in the sun. Here they are danced, *i.e.*, coolies go through the beans with their bare feet to turn new surfaces to the action of the sun. This dries the beans and rids them of the last remnants of the membranous husk which partly adheres after the sweating process. Should rain fall during the drying, the beans are covered by a sliding roof till climatic influences are more propitious. On the estate they have also a steam drying shed, which renders the owner more or less independent of the weather and the desiccating influences of the torrid sun. Good beans when dry are plump and round, and when broken open show a characteristic colour. The quality of the bean, which means its market value, depends on the peculiar shade of the husk and the nibs. If the beans are over-sweated in the fermenting boxes, or become wetted by rain in the drying process, they darken considerably and become much lowered in value. On estates where inadequate drying sheds are provided, this is by no means a rare occurrence. To bring back the blackened beans to their normal (*i.e.*, marketable) light colour, they are "ochre-danced." This consists of stirring up the beans with a mixture consisting of the glutinous exudation of a tree, called in patois *bois d'homme*, the juice of bitter oranges and yellow ochre. After this treatment, they are again exposed to the action of the sun, and "danced" as before.

When dry, the beans are ready for exportation. They are packed in bags, which, when full, weigh about 170 lbs., and taken to the nearest railway station on mule back or in native springless carts.

When the outer husk is removed it is known as cacao (or cocoa) nibs, and in this form is treated in Europe by the various processes for consumption, and is returned to Trinidad in the shape of chocolate and, strange to say, cocoa! For cocoa-essence it is deprived of its fat, which is unpalatable to delicate stomachs, or it is mixed with starch or farina, and sold as "soluble cocoa," or it is mixed with sugar and other substances and appears under the name of chocolate. But with the manufacture we are not at present concerned.

On a first-class estate the ground is as "clean" as a well-kept orchard; at every few yards are ditches to carry off excess of rain, as cacao requires dampness, but objects to swamp. Cacao, with its deep, penetrating roots requires a deep soil. Hence it thrives best in the valleys, where through constant weathering of the mountains a deep alluvial soil is found. Heavy soils, clays and the like, are fatal to the growth of the cacao tree.

In Trinidad the labour is almost entirely supplied by "indentured" coolies recruited from India or East India. These come over passage paid, and bind themselves to work for a certain rate for five years. After this time they are free either to return (passage paid) or in lieu of their passage money they may take a piece of Government land and cultivate for themselves. The free negro, roughly speaking, objects to work of any kind, and he is a *rara avis* on a cacao estate. Nothing could be more picturesque than this imported coolie labour. This coolie population forms one of the most characteristic and, at the same time, picturesque feature of the Trinidad landscape. Most of them retain, at least for many years, their native dress. The women, who in times of stress of work labour with the men, are dressed in long flowing garments. A sort of veil (worhance) comes over the head and reaches to the ground, a sleeveless Zouave-shaped jacket (juláh) of various colours, and a skirt (gangàr) complete the textile part of the costume. Besides this, innumerable articles of jewellery are worn, some common to all creeds, as the bangle, chureah, and bearah (bracelets), and others particular to tribe and religion. The men wear a turban, a sort of loose shirt

and loin cloth, and usually the legs and feet are bare. Emphasis to artistic grace is given by the carriage of the East Indian. Accustomed from childhood to carry everything conceivable on their heads, they walk like sons and daughters of the gods. We left the San Carlos Estate and its manager with regret, which I hope was mutual, and we sorrowfully exchanged the aromatic odours of the estate for the heat radiating asphalt of the streets of the capital.

THE TESTING OF LEMON OIL.*

BY HENRY GARNETT.

This short paper is the outcome of an endeavour to place the valuation of this important oil on a more rational and scientific basis than has hitherto been possible.

In common with most other essential oils whose chemical constituents have been unknown or difficult of exact determination, the physical constants of lemon oil have been chiefly relied on as tests of purity, and, as far as they go, these data are still of great service in helping to form a judgment on the quality of the oil. They comprise specific gravity and optical rotation, and to these has lately been added the refractive index of the oil. With respect to the latter, however, it would appear that its indications are of little value, as the presence of a considerable percentage of such an adulterant as oil of turpentine affects the reading to only a slight extent.

Specific Gravity.—Doubtless the figures afforded by a genuine lemon oil vary within a comparatively narrow range, the addition of oil of turpentine causing a rise in density, yet in view of the fact that the so-called "citrene," a bye-product in the manufacture of the "terpeneless" oils, may be added without materially altering the specific gravity of the oil, it will be seen that too much reliance cannot be placed on this test alone. Further, according to A. A. Barrett (a manufacturer at Messina),† the occurrence of dry and sultry weather during the harvesting of the oil materially increases its density. The United States Pharmacopœia gives the figures .858 to .859 at 15° C. as the limits of specific gravity for a pure oil, and in my experience it should certainly be between .857 and .860, most oils of undoubted purity which I have examined falling between .857 to .859 at 15.5° C.

Optical Rotation.—Doubtless, when first introduced as a test, the polariscope was the means of detecting adulteration to a large extent, as all the varieties of oil of turpentine have a lower rotation than true lemon oil, or one of an opposite nature; but it would now appear, according to Barrett in the paper above referred to, that the wily manufacturers and dealers at the seat of the industry have learned the use of the instrument, and that a product can be arrived at by a judicious mixture of terpene or orange oil with turpentine, which approximates closely in its specific rotation to oil of lemon itself. The figures usually given for a pure oil appear to vary much more than those for specific gravity, but the majority of samples fall within the limits of +60° to +65° for a column of 100 Mm. I have, however, observed as low a rotation as +58°·38 in a genuine oil, and Barrett guarantees the figure +69° as of frequent occurrence.

Fractional Distillation.—This does not appear to afford very much information of value in an assay of the oil, though the presence of any considerable amount of turpentine may be detected in the lowest boiling fraction, its rotatory power being much lower than that of the limonene contained in the pure oil.

Chemical Constituents.—By far the greater part of lemon oil consists of the hydrocarbon limonene, together with probably a very

little pinene and a small percentage of a non-volatile stearopten but the distinctive aroma of the oil is due to the presence of an aldehyde, citral, first discovered to be present in this oil by Schimmel and Co. In passing I may mention that I have found that pure limonene, freed from citral and twice or thrice distilled, and boiling within very narrow limits, still retains an agreeable lemon-like odour; and it is certain that a solution of pure citral in alcohol fails to recall entirely the odour of fresh lemon.

Citral has the formula $C_{10}H_{16}O$, or $C_9H_{15}CHO$: its specific gravity at 15° C. is .895 to .899, and if quite pure it is optically inactive; its boiling point at normal pressure is about 224–228° C., but it probably undergoes some decomposition at this temperature. It may, however, be distilled unchanged in a vacuum. It exists in the free state in several essential oils, among others, in verbena oil (so-called) from *Andropogon citratus*. Semmler* has ascertained that citral is identical with the aldehyde obtained by the oxidation with chromic acid of the alcohol geraniol, $C_{10}H_{18}O$, one of the principal constituents of Indian geranium and of pelargonium oils. Citral also results from the oxidation of the isomeric alcohol linalool, the chief constituent of bergamot and lavender oils; further oxidation converts it into geranic acid.

Hitherto there has been no reliable process published for the determination of the citral in lemon oil. In common with other aldehydes, it forms a crystalline compound with the acid sulphites of the alkali metals, and in a paper read before this Association† J. C. Umney states that he has obtained at least comparative results by absorption of the citral by a strong solution of acid sodium sulphite, the percentage of citral being calculated by difference from the non-absorbed portion of the oil. In my hands, however, this process has given much lower results than the one I am about to describe. Citral also forms a compound with phenyl-hydrazine, and the so-called citryl- β -naphthocinchonic acid on heating it with equivalent weights of β -naphthylamine and pyrotartaric acid; both these compounds, however, are difficult to determine, as their quantitative separation is almost impossible in presence of such a large amount of inactive limonene.

It is true that of late certain analysts have published reports on lemon oil showing a definite citral percentage, but in no case is any hint given of the process by which these figures have been obtained. This is to be regretted, as a working process for the determination of citral in lemon oil has undoubtedly been a desideratum for some time. Schimmel and Co. state in their *Bericht*, October, 1894, that they have repeatedly emphasised the necessity of a quantitative determination of citral "as the sole reliable criterion of the value of lemon oil."

The process which I propose for the quantitative determination of citral is founded on the fact that just as geraniol yields its aldehyde citral on oxidation, so citral can, by a process of reduction, be converted into the alcohol geraniol; this has been ascertained by Tiemann and Semmler.‡ Geraniol, as has been shown by Schimmel and Co.,§ is capable of exact determination by conversion into its acetic ester, the amount of the latter being determined by saponification with a standard solution of alcoholic potash.

It remained to be seen whether this reduction and acetylation could be quantitatively effected in presence of a large excess of an inactive terpene. For this purpose a specimen of citral was prepared from verbena oil, the aldehyde of which, constituting about 75 per cent. of the oil, has been shown by Hefelmann to be citral, identical with that obtained by oxidation of geraniol. The oil was

* *Berichte Deutsch. Chem. Ges.*, xxiii., p. 3556; and xxiv., p. 213.

† *Pharmaceutical Journal*, May 4, 1895, p. 981.

‡ *Berichte Deutsch. Chem. Ges.*, xxvi., p. 2708.

§ *Bericht*, April, 1893.

* Read before the Chemists' Assistants' Association.

† *Pharmaceutical Journal*, September 29, 1894, p. 255.

shaken with a strong solution of acid sodium sulphite, the solid mass of aldehyde compound collected, squeezed in a cloth, washed several times with ether to free it from adhering oil, and exposed to the air till all traces of ether had disappeared. Finally, the aldehyde was regenerated from the compound by heating it with a strong solution of sodium carbonate and distilling the separated aldehyde in a current of steam; after drying with calcium chloride it presented the following characters: s.g. .8952 at 15.5° C, optically inactive. A sample of citral subsequently obtained from a well-known Continental firm had a s.g. .8975, and was also inactive.

In order to work under the same conditions as obtain in natural lemon oil, the citral was dissolved in its natural solvent, limonene. The limonene was obtained by fractional distillation from lemon oil, that portion boiling between 170° and 176° C. being separated and twice re-distilled after drying with calcium chloride. A solution of citral in limonene was made of a definite percentage, approximately that occurring in the natural oil; this solution, it may be added, possessed to a large extent the fresh aroma of a pure lemon oil.

Reduction of the Citral.—Various conditions were tried, and different reducing agents, such as zinc dust, sodium amalgam, etc., but eventually it was found that metallic sodium, cut in small pieces and added gradually, gave the best results. About 20 or 25 C.c. of the oil is dissolved in rather more than an equal volume of glacial acetic acid in a flask holding 200 C.c., and the sodium (about 5 Gm.) added slowly, controlling the action so that the contents of the flask become hot but do not actually boil, a little more acid being added towards the end to hasten the process, which usually occupies about half an hour. When all the sodium has dissolved, the cooled contents are largely diluted with water, transferred to a separator, and the separated oil well washed with water till free from more than traces of acid. The separated oil is then dried by allowing it to stand over night in contact with anhydrous sodium sulphate.

Acetylation of the "Geraniol."—The dried oil is then acetylated by Liebermann's method, *i.e.*, boiled with acetic anhydride and a little anhydrous sodium acetate to convert the geraniol into its acetic ester. Although a much smaller quantity would be theoretically required, I have usually employed of acetic anhydride from one-third to one-half the volume of the oil, with about one-tenth part of anhydrous sodium acetate. The boiling is continued for two or two-and-a-quarter hours in a flask connected with a reflux condenser; when cold, water is added, the whole heated on a water bath to decompose excess of acetic anhydride, further diluted with water, transferred to a separator, and the oil again washed with repeated quantities of water until quite neutral to litmus. The oil is then dried by contact with anhydrous sodium sulphate, and the whole or a portion of it taken for determination of the acetic ester formed. To a weighed quantity of the acetylated oil in a flask, excess of a normal or semi-normal alcoholic solution of potash is added and saponified by boiling for half an hour under a reflux condenser; water (freed from CO₂ by boiling) is then added, and the excess of alkali titrated with a standard solution of acid; the difference gives the amount of alkali absorbed by the oil. From the figure obtained, the percentage of citral in the original oil is calculated from the following formula:—

$$\frac{N \times .152 \times 100.}{W - (N \times .044)}$$

where N = the number of C.c. of normal alkali absorbed, W = weight of acetylated oil taken, 152 is the molecular weight of citral, and .044 represents the increment in the weight of acetylated oil operated on, due to the fact that citral has been increased by

reduction and acetylation to geraniol acetate, molecular weight 196. The following figures were thus obtained:—

1. Percentage of citral in solution in limonene, 7.46. Of this solution, reduced and acetylated as above described, 17.405 grammes required 16.63 C.c. semi-normal alkali, = 7.42 per cent. citral found.
2. Percentage of citral in solution, 6.3; 21.376 grammes required 16.5 C.c. semi-normal alkali, = 5.97 per cent. citral found.
3. Percentage of citral in solution 7.59; 16.516 grammes required 16.5 C.c. semi-normal alkali = 7.76 per cent. citral found.
4. Percentage of citral in solution 6.66; 26.417 grammes required 25.0 C.c. semi-normal alkali = 7.34 per cent. citral found.

In this last case the source of error was probably the fact that the oil, after acetylation, had not been washed absolutely free from acid. The results seem sufficiently accurate for ordinary purposes, especially as the citral employed was probably not absolutely pure.

The process was then applied to lemon oils of good quality, all obtained from first-class firms, with the following results:—

Sample.	Sp. gr. at 15°5.	Rotation 100 Mm.	Citral per cent.
1.....	.8572	+ 62°35'	6.72
2.....	.8588	+ 58°38'	7.07
3.....	.8581	+ 62°30'	6.92
4.....	.8582	+ 62°18'	6.49

The above samples are probably absolutely pure oils; the second sample is remarkable as having an abnormally low rotation, yet the citral percentage comes out slightly higher than in any of the others.

I ought to add that, according to Doebner,* besides citral, a small percentage of citronellal (the aldehyde of citronella oil) is present in lemon oil; at present it seems uncertain whether it would be determined along with the citral by the above process, although theoretically it would seem probable that it would be so included, being probably reduced to its corresponding alcohol. I am making experiments with a view to clearing up this point.

I regret that time has not permitted me to make an examination of a larger number of samples of lemon oil from various sources, but I think I have shown sufficiently that the process is a workable one and probably gives at least comparative if not absolute results. Doubtless the process might be improved or shortened; for instance, it might be possible to effect both reduction and acetylation in one operation, as is done with some organic bodies.

There are other points of interest in connection with lemon oil which also require elucidation, especially as regards the nature of the changes which take place so rapidly in the oil under certain conditions, and whether both citral and limonene are affected.

In conclusion, I must express my best thanks to Messrs. Blondeau et Cie, in whose laboratories the above experiments were conducted.

ARGONINE (SILVER CASEINATE) IN GONORRHOEA.—Bender confirms the statements of previous observers that argonine affords one of the most rapid and certain cures in the treatment of blennorrhagia. He employs a solution of 7½ per cent. in water, 10 grammes of which is injected into the urethra three or four times daily. The injection should be retained if possible for about ten minutes. Of fifty-four cases treated, the longest period before cure was six weeks; in twelve acute cases gonococci disappeared in less than a week (*Rev. de Thérap. Med. Chirurg.*, lxi.iii., 119, after *Ärztl. Raktok.*).

* *Berichte Deutsch. Chem. Ges.*, xxvii., 352.

COMPOUNDS OF CAMPHORS AND PHENOL DERIVATIVES.*

BY THEODORE WM. SCHAEFER, M.D., KANSAS CITY, MO.

I have previously drawn attention to the fact that when common or Japan camphor and crystallised carbolic acid are mixed together and heated, a colourless liquid, possessing antiseptic properties, is the result. This substance is now known under the names of carbolated camphor, phenolated camphor and campho-phenique.

At the time when I was experimenting with phenol-camphor the thought naturally occurred to me to extend my investigations to the other camphors and phenol derivatives. I found that a large number of such compounds could be easily obtained, closely analogous to combinations formed by the union of camphor, with the different phenols.

Besides the common or Japan camphor occurring in the *Laurus camphora* there are many labiate plants which contain camphors. *Matricaria*-camphor, for instance, is found in the oil of *Matricaria parthenium*; absinthol, in the oil of wormwood; myristicol, in the oil of nutmeg; patchouli-camphor, in the oil of patchouli (caryophyllin, in cloves, I find, is no camphor at all); and homologous with these are a number of others found in many essential oils, showing a great analogy in their composition, physical and chemical properties, to common camphor. Most of these camphors readily unite with the different phenols and form characteristic chemical compounds.

The reaction between camphor and chloral, the result being a liquid, has been repeatedly observed. Acetic, benzoic, citric, salicylic, and valerianic acids, salol, alpha- and beta-naphthol form similar liquid combinations with camphor. All these combinations, as well as the one obtained when menthol is acted upon by chloral, have been recently employed in medicine. Even trichlor-acetic acid, as I have observed, forms a liquid compound with menthol. Thymol, when heated with camphor, forms a transparent oily fluid. In this connection I should not fail to mention camphor-menthol, a clear liquid formed by the union of menthol with camphor. Dr. Seth Scott Bishop was the first who described it.

Menthol, like camphor, forms a large number of compounds with the different phenol derivatives. The compound formed by the union of menthol with phenol will be described later on.

Some of the di- and tri-atomic phenols unite with menthol and form characteristic compounds. Pyrogallol-menthol, for instance, is a thick, oily liquid. Resorcin-menthol is even less mobile than the one just mentioned, and gives a beautiful dark-blue colour on the addition of concentrated commercial sulphuric acid. Resorcin-camphor likewise gives a blue colour with the acid.

The compound of menthol with alpha-naphthol is a syrupy liquid, possessing the same properties which characterise phenol-camphor. Beta-naphthol forms with menthol a combination which is exactly like the one just mentioned. Thymol-menthol is a transparent, mobile liquid.

No doubt combinations of this kind, of menthol with the phenols of hydrocarbons allied to anthracene (α -anthrol, β -anthrol, etc.), are theoretically possible. There is no end, so to speak, to these combinations. I do not propose to enter minutely into the chemistry of these compounds, for the constitution of the different camphors has not yet been fully established, especially as there is still some doubt in regard to the manner in which the benzene-nucleus is united. The benzene-nucleus is supposed to exist in the form of a para-compound in common and Borneo-camphor, and it is claimed by some chemists that they (the camphors) do not contain any

bivalent ethylene combination. These phenolated camphors, I would suggest, show a great similarity to ac. tetra-hydro-beta-naphthol.

MENTHO-PHENOL.

Mentho-phenol, as its name indicates, is obtained by adding one part of phenol to three parts of menthol, and then melting the mixture. A transparent liquid is obtained, having an aromatic odour and taste. Applied to the tongue it produces a temporary anæsthesia similar to that of cocaine, although not so lasting as the latter. It is, of course, lighter than water, having a specific gravity of 0.973. It is nearly insoluble in water and glycerin, but readily dissolves in alcohol, ether, chloroform, and most of the light and heavy oils. It dissolves iodine, iodoform, and aristol. Water of ammonia mixed with mentho-phenol changes it to a dark vinous colour in a few days. It is antiseptic with strong analgesic properties. It may be used preparatory to cauterising chancroidal sores and curretting necrotic surfaces. As a mouth-wash it may be used with advantage, two drops being mixed with an ounce of the aqueous menstruum.

My brother, Dr. Edward H. Schaefer, has recently investigated the therapy of mentho-phenol. He employed the agent in chancroidal sores of the penis. In a case of phagedenic chancroid, where there seemed to be imminent danger of sloughing of the entire glans penis, the frequent use of ablations of warm water mixed with mentho-phenol (three per cent.) soon stopped the destructive process and established resolution. He employed the agent in mucous patches, syphilitic in character, making daily application of mentho-phenol, which resulted in the healing of the abrasions.

In a case of facial erysipelas in which the submaxillary and cervical glands were threatened by a destructive, suppurative process, the daily syringing of the suppurating tracks with warm water, mixed with 3 per cent. of mentho-phenol, soon resulted in a subsidence of the suppuration. The most admirable results he obtained in a case of an abscess under the finger-nail, the result of traumatism. There was considerable pain and swelling as is usual in such cases, the slightest touch to the inflamed member being unendurable. The finger was dipped in warm water mixed with mentho-phenol (5 per cent.). My brother plunged the lancet deeply under the finger-nail into the abscess, and to his surprise the patient uttered no cry nor manifested any demonstrations indicative of pain. The patient assured him that the pain had ceased like magic when the finger was immersed in the warm mentho-phenol mixture. The finger was dressed with gauze rendered antiseptic with 2 per cent. of mentho-phenol and healed in a few days.

In a case of suppurative otitis media et interna, accompanied with great pain and throbbing, an offensive purulent discharge created an eczematous eruption in the vicinity of the outer ear. The frequent syringing of the auditory canal with very warm water mixed with mentho-phenol soon checked the suppurative, inflammatory process, and resulted in the disappearance of the eczema. In another case in which a small insect had crawled into the ear of a lady, a warm mixture of 2 per cent. of mentho-phenol produced the insect to the great satisfaction of the patient. Wounds, incised, punctured, lacerated, etc., will heal kindly when cleansed with warm water mixed with 2 per cent. of mentho-phenol.

In dental practice mentho-phenol finds its indications, as an anodyne anæsthetic, in odontalgia, obtunding the sensitiveness of dentine and as an antiseptic in alveolar abscess, suppurating pulps of teeth, periodontitis, etc.

I have used the medicament in pustular acne. The pustules may be opened without causing much pain after having been first touched with vaselin containing 5 per cent. of mentho-phenol.

* Reprinted from the *Boston Medical and Surgical Journal*.

Mixed with almond oil or alcohol, in the proportion of 2 per cent. of the medicament, I have used it as an external application in itching of the skin. I have never used it subcutaneously nor by the mouth. Mentho-phenol, like every other remedy, has its natural limitations of employment. It cannot, for instance, be used in ophthalmological practice on account of the unpleasant burning which follows its use when applied to the conjunctiva. This ends the enumerations of clinical trials with mentho-phenol.

THYMOL-CAMPHOR.

This substance is prepared by heating camphor and thymol together. It is a transparent, oily fluid, and behaves the same way as phenol camphor does towards its solvents. It is milder than mentho-phenol and I often use it in dermatological practice. I have used thymol-camphor in pruritus of the scrotum and in pediculosis pubis with apparently good results. Applied to the normal, healthy skin it does not occasion any irritation or redness.

RESORCIN-CAMPHOR.

This liquid is simply obtained by heating equal parts of resorcin and camphor. Its indications are the same as those of thymol camphor. It is superior to the old mercurial ointment in removing pediculi.

PREPARATION OF OPIUM IN PERSIA.

By no means a small or unimportant industry in Ispahan is the preparation of opium. Almost every native or European merchant who trades in this drug sees the opium prepared under his own eye. The following is the usual manner of doing this in Ispahan:—The people commence to collect the drug early in May. The poppy-head is lanced in the afternoon, and the opium, which exudes and dries during the night, is collected into copper pots early the following morning. The opium gathered is kept in store until it is required to be prepared, in thick earthenware or copper pots. For the process of preparing into cakes, special men are engaged who understand the manipulation of crude opium. First the opium is taken out of the pots and assorted, it is then put into a very large copper pot (as the quality of various villages give different "touch" and morphine), for this reason, they are obliged to mix the bulk together so that all the cakes should be of one quality. Each manipulator has a smooth board about 23 inches long and 11 inches broad, he takes from the bulk about 1 lb. of the crude opium and rubs it on the board, puts in the sun for about ten minutes, and afterwards takes it into the shade and rubs it continuously on the same board with an iron implement having a wooden handle something like a small solid spade, and continues in the same manner until it dries up to a certain degree, it is then collected together in a mass sufficient for about a day's work, and then heated over a slow charcoal fire, in trays, until it becomes plastic; again each man takes about a $\frac{1}{4}$ lb. weight and keeps kneading it on the board and manipulating it with the implement, as already described, until it dries up to the standard degree and assumes a somewhat golden colour.

The opium is then collected and made up into cakes of 1 lb. each. The cakes after a couple of days are wrapped up in pink paper and tied round with string, then put into tin boxes, packed in layers with poppy chaff, so that the cakes do not roll about, then again packed into wooden boxes; the boxes are covered with hide and gunny, and the opium is then ready for exportation. If the drug is prepared in cold weather, it has to be dried in the beginning by artificial warmth and by rubbing on the board, and keeping the boards while in manipulation near a charcoal fire. The highest morphine of Persian opium is 12 per cent., and the "touch" 90 per cent. The tests are made by the best known methods as used in London.—*Consular Report.*

THE MODIFIED-MILK QUESTION.

BY A. WORCESTER, A.M., M.D.

I have lately had opportunity for studying the remarkable work that has been done in Dresden in preparing a perfect substitute for breast milk.

The superiority of the Dresden modification rests mainly upon the recognition of an essential difference between casein and lactalbumin. Professor Lehmann's analyses of breast milk and cows' milk show that while cows' milk is more than twice as rich in casein, it is much poorer than human milk in lactalbumin, as may be seen in the following tables:—

	Cows' Milk.	Human Milk.
Casein	3.0 per cent.	1.2 per cent.
Albumin	0.3 "	0.5 "
Fat	3.5 "	3.8 "
Sugar	4.5 "	6.0 "
Ash.....	0.7 "	0.2 "
Water.....	88.0 "	88.3 "
	100.0	100.0

If, therefore, cows' milk be diluted with water sufficiently to reduce the casein of the mixture to the amount found in human milk, the mixture will contain only one-third enough lactalbumin.

Furthermore, if the milk be sterilised, still further loss is occasioned, as the coagulated albumin is wasted in the scum and by clinging to the sides of the bottle.

We know the disadvantages of too much casein. We rightly dread the cheese-curds in the dejections, for such undigested lumps not only show that the infant has not received the needed albuminous nourishment, but has had its intestine irritated by these foreign masses. But if we dilute the cows' milk sufficiently to avoid these cheese-curds, we shall be starving the baby, unless we add some soluble albumin.

Three forms of soluble albumin are available—peptonised grain-albumin, meat juice, and the white of egg. The last is undoubtedly the best, because of closest resemblance to lactalbumin and of easiest attainment.

THE DRESDEN METHOD.

To the white of one fresh egg slowly add 13 drachms (52 Gm.) of milk sugar, and vigorously stir, taking care not to beat air into the mixture, for egg foam will not mix well with water. To this paste slowly add $1\frac{1}{2}$ pint of water, stirring constantly. This emulsion is then strained through fine linen into a pint of milk. Slight stirring or shaking completes the mixture.

The milk should have $3\frac{1}{2}$ per cent. of fat. The cheap lactometer gives a fairly accurate measurement. When the source of supply is not known to be unquestionable, it is probably better to sterilise the milk. The fresh egg partly compensates for the deadness of sterilised milk. Scurvy is becoming more prevalent in children fed wholly on sterilised milk. The milk sugar ought also to be sterilised in a sealed jar if we wish the mixture to keep good for months. Vessels, strainers, and cover-cloths also should be sterilised.

It is a common mistake to add lime-water or soda to modified cows' milk. Although to litmus cows' milk appears to be acid, it really is not so. The litmus test is deceptive in estimating the acidity or alkalinity of phosphate solutions. Lime-water added to an infant's food overtaxes the stomach by wasting just so much gastric juice as is needed to offset the alkali. When the infant's digestion is weak, dilute hydrochloric acid added to the milk mixture is right in theory and of marvellous advantage in actual practice.

Again, as regards the custom of increasing the richness of the infant's food, or of prescribing different qualities for different ages, it needs only to be said that it is as nonsensical as to prescribe increasingly richer beef and bread and potatoes for children as their

years increase. A mother's breast milk increases in quantity as her baby's stomach grows larger, but there is certainly no such change in its quality as the intricate tables of our text-books would lead us to believe.—*Boston Medical and Surgical Journal*.

THE RELATIONS OF EXPERT PHARMACY TO MODERN MEDICINE.*

BY WYLLYS ANDREWS, A.M., M.D.,

Professor of Surgery North-Western University Medical School, Surgeon of Mercy Hospital and Michael Reese Hospital, Chicago.

When I received the honour of appointment to address you on this crowning occasion of your educational career, I knew that it was a tribute not personal, but to the co-ordinate branch of our great University to which you are most closely related—the Medical School of North-Western University.

As student for seven years, first in the grand old home school at Evanston, and later in the school of medicine, in which I have been a teacher ever since, I saw with satisfaction that on several occasions you honoured some member of our faculty by inviting him to join in your commencement exercises. But aside from this question of a loyal university spirit among the schools, is there not a special significance in the effort to bring into closer harmony the two sister professions of pharmacy and medicine?

Certain conclusions on this subject of the relations of the two professions have been gradually matured in my mind, and I am glad of an opportunity frankly to express them, trusting that you will receive as charitably as you can the suggestions of an outsider, who can lay no claim to that intimate knowledge which you have of your chosen profession.

Pharmacy and medicine surely appear at the present hour to be at the meeting or the parting of the ways. The time is nearly at hand when either a closer union must be formed between the two or else they must drift further apart, with perhaps the gradual intervention of a third and unnecessary profession to fill the gap between them, a danger I will try to explain later on.

Who is to blame for this wrong tendency a wiser head than mine must determine, but to me as a physician the error on the side of the medical profession is exceedingly obvious. From the medical standpoint it is clear that practising physicians have thrown away valuable opportunities for improvement in not acquiring greater insight into this very practical science and art of pharmacy. You have created schools and colleges, and a technological literature, which includes and transcends our own works on materia medica our dispensatories and pharmacopœias. All the refinements and intricacies of modern chemistry, with its marvels of new synthetic remedies are yours. Your art science is upbuilding and expanding in a manner truly inspiring, but the busy physician, perhaps from want of early training, is unable to keep pace with this progress so as adequately to grasp the resources you put at his command.

From sheer helplessness he is led to accept partisan and interested testimony as to the therapeutic value of each new compound, knowing full well that many of them are superfluous if not valueless, but lacking the technical knowledge to discriminate.

Even with common remedies well-educated physicians are only theoretically familiar. They have not handled, weighed, and mixed them with their own hands in the laboratories as you have done. A little of this early training would save many a well-meaning physician from life-long violation of pharmaceutical principles. The average doctor is often intolerant of suggestions from the druggist who puts up his prescriptions. Yet, the druggist may be,

often is, an expert whose candid advice would make his combinations more eligible, palatable and therefore more efficient.

Is it any wonder that physicians sometimes suffer in competition with proprietary and semi-patent preparations which are skilfully combined? It is not to be forgotten that a prescription, whose ingredients are not grossly incompatible, may yet be an offence to pharmaceutical good taste. An early training in pharmacy would prevent the physician from falling into these errors and create a stronger bond between him and his pharmacist as well as his patient.

The limit of pharmaceutical knowledge with most of us physicians is reached when we know what drugs are chemically or physiologically incompatible, and we consider that we have attained much in mastering this. Set the average well-educated doctor to compounding anything, and his ignorance will be fathomless as to the proper order of mixing ingredients, methods of dividing, weighing and other routine matters. This is true in my own case, and I wish that before or during my medical course I had been compelled to take a laboratory course in practical pharmacy and to pass an examination upon it.

If well grounded in these matters, physicians would no longer be the easy dupes of nostrum-makers whose well-advertised proprietary remedies depend for their success upon the easy credulity of the doctors who recommend them. When once these professional recommendations are obtained, many of these products are advertised, not only in medical journals, but in public newspapers as well and become ordinary "patent medicines."

In interviews with plausible drummers and distributors of these over-rated proprietary mixtures I have often felt my ignorance of pharmacy a serious handicap in disposing of what I knew to be ridiculous claims of merit for some good, bad, or indifferent combinations.

"This may be a good formula for some cases." I have sometimes said to these medicine puffers, "I have used such combinations. This is obviously taken from some doctor's prescription book. But why crystallise it into one form? why should I prescribe your one copyrighted article, rather than vary the ingredients for each individual case? Surely you do not claim that your workmen are superior to the expert pharmacists of this city?"

"But, doctor," they declare, "we have facilities for purifying and combining these agents which no local druggist can attain. Specify our 'anti' or our 'ine' with our trade mark. Your druggist will then keep it in stock (and be very careful you don't let him use the *anti* or *ine* of any rival chemical company, which is a gross and worthless imitation)."

By implication, too, they say, "You, as a physician, are not likely to hit upon any combination as reliable as ours which we stole from some other physician or some medical book. Therefore do not try and do not trust your pharmacist to help you, but buy our numerous combinations variously labelled with the diseases for which they are good, and you will find your mental labour very much lightened."

This appeal to indolence and credulity meets some response among the weak sisters of the profession, but I need not tell you that the strong creative minds, those who devote scientific study to individual cases, are not the ones that come to an anti-climax by choosing from a printed list some ready-made remedies for the sick ones whose lives are entrusted to their skill.

Were it so, the outlook for the pharmacist would be indeed a gloomy one, destined as he would be to be ground between the upper and the nether millstone of professional indifference and remorseless commercialism.

Were I an expert chemist, I think, too, I could dispose more

* An address delivered to the graduating class of the School of Pharmacy of North-Western University, Chicago. From the *Apothecary*.

easily of the fellow who calls on me and imputes untold virtues to various earthly leachings called mineral waters. To a man naturally agnostic these claims rank with mind-cure and other superstitions of the weak-minded. Many mineral waters contain salines or alkalis in large and definite amounts, which have the same effect if prepared by a pharmacist—no more, no less.

To the exploiters of mineral springs such a statement is rank heresy. They have one stock answer to anything so commonplace as mere chemical analysis, which is that "Nature's chemistry is best." Deep down in the rocks and soil these substances undergo a subtle and potentising influence which no human chemist can imitate, however accurately he mixes the same ingredients together. "How can this be," I have said. "An expert analytical chemist of my acquaintance tells me there is nothing in it. Besides I have too much sense to believe it anyway."

An appeal to my supposed credulity always angers me. I would rather not be thought gullible.

The physician and pharmacist should co-operate more to fight the devil. For in science the demons we have to overcome are avarice, shams, fanaticism, and superstition, which really did not die in the middle ages, as some suppose.

There are other therapeutical mists and superstitions as to the potencies of drugs, which a basic knowledge of chemistry and pharmacy would do much to dispel from foggy and credulous medical minds.

Turning now to the other side of the question we may as well ask frankly: should the pharmacist make a closer study than hitherto of any matters considered medical?

The time was when every physician was his own druggist—as he is now in remote districts. The profession of pharmacy grew out of the necessity of expert aid to medical art. Are there no other branches of the art which need this aid to an equal or greater extent? A generation past the practising physician knew of but one kind of laboratory, the chemical or pharmaceutical. To-day the conscientious physician frequently spends more time at the laboratory table than at the bedside or operating room. One who equips himself for scientific research in every case has come to be recognised as a "good pathologist" by his associates.

By this they mean that he is one who goes beneath the surface of things, and surpasses his fellows in the application of bacteriology, physiological chemistry, and microscopy to the daily study of disease. Privately, they will tell you that he is the only physician they would call in case of personal need, and although the general public did not at first fully appreciate such men, they are rapidly coming to do so, and rightly regarding others as below the standard.

It is becoming more and more a burning question to physicians, who will do their laboratory work.

The conscientious, advanced worker in medicine and surgery is to-day applying in daily routine practice tests, chemical, biological, bacteriological, microscopical, which only a few years past were unheard of outside the laboratories of a few European pathologists.

To be specific, a physician, and above all a surgeon, must know in grave cases all about the urine, not only as to specific gravity, reaction, albumin, sugar, urea, peptones, blood, pus, epithelium, but many of these tests must be quantitative as well as qualitative. Some of them require troublesome apparatus, separators, pipettes, flasks, and reagents galore, as well as the microscope and accessories. Blood, feces, vomit, stomach washings, fluids aspirated from almost every conceivable cavity, must be tested chemically, biologically, and microscopically in hundreds of cases before even a diagnosis can be made. Bacteriological and microscopical examination is anxiously awaited in tuberculosis, diphtheria, anthrax,

actinomycosis, Asiatic cholera, typhoid fever, and cancer, malaria, a daily increasing list of diseases, before treatment is instituted in many cases. The microscopical examination of tumors alone is made the basis of important decisions as to capital operations. The ever-ready culture tube, sometimes prepared at an immense sacrifice of the physician's time, is daily carried to the operating table or bedside in modern practice, and sometimes turned over for study to the hands of an assistant too busy with many kinds of examinations to be an adept in any one.

On the therapeutical side, dressings, instruments, powders, solutions of various antiseptic soaps, the skin of patients, the surgeon's own hands, nail cuttings, etc., the silk, catgut, kangaroo tendon, etc., must from time to time be tested experimentally for various kinds of infection. The case often needs a chemist's aid.

All these and numerous other forms of expert work have multiplied in the physician's daily life until they threaten to engulf him in a mass of details leaving no time for bedside work.

The systematic and complete study of a single case would, if carefully followed out, absorb all the time of a painstaking physician had he no expert assistants.

How, then, you may ask, does the busy practitioner manage to do his duty to his patient and to himself in the twenty-four hours of one day? The answer to this is that he must employ assistants, often trained by himself, to carry on work in his private laboratory, or he must send numberless specimens to public laboratories. In hospital practice the laboratory question has become a difficult and burning one. In most hospitals it has been found necessary to double the staff of house physicians, one or more internes or externes being assigned to laboratory work alone, and spending the entire time making chemical microscopical, or biological examinations.

Every hospital also contains a pharmaceutical laboratory with one or more registered pharmacists in attendance. Why has it never occurred to any one to combine these two working laboratories into one? Probably the answer would be that the pharmacist could not be considered competent to do biological work, and certainly no ordinary physician is capable of doing the work of a pharmacist.

Since the pharmacy cannot be delegated to the medical assistant, it follows that the pharmaceutical expert must enlarge his sphere to include all laboratory work. If this is true in hospital economy, why is it not true of outside practice? Why multiply public and private laboratories of a separate kind when nearly all the apparatus and reagents are ready at hand in the chemical and pharmaceutical laboratories. Do we not have to send to you pharmacists for the very materials we use, and do we not come to you with formulæ of various kinds to be prepared before we can begin our laboratory work?

If your technical skill and working equipment enable you to compound our reagents for us more quickly, reliably, and cheaply than we can afford to do it ourselves, why not extend the argument to the practical use of these reagents? There is no answer to this except the stock answer of rooted conservatism. "It sounds well, but it would not work." The inferior pharmacist is too timid or too commercialised to realise his opportunity and enter boldly upon his rightful heritage of a professional career.

The unprogressive physician would say "What? send my urine analysis, or sputum examination, or blood tests to the drug store? Why, no! That would be contrary to common sense. The druggist and his clerks know nothing of such important things. A drug store is a place where they sell ice-cream soda, perfumery, toilet articles, postage stamps, and have a public telephone, as well as all patent medicines, and some prescription business."

Nevertheless, the world moves on, and the amount of laboratory work required in medical practice will constantly increase. Either the pharmacist must qualify himself to assume this important work for which he is already by training or equipment partly prepared, or he must see a class of independent laboratories spring up, to which the physician will send a large amount of his best patronage.

To the students of this school I should say, study and cultivate this inviting field. Not only will it be stimulating and attractive to you as professional men, but it will tend to educate the public to a higher idea of your profession. The pharmacist will command the respect and patronage of the other allied professions, of the veterinarian, of the sanitary expert, of the bacteriologist. He will become recognised as a member of a scientific and honoured profession, and not as a mere tradesman.

SPHÆROLITHIN.

A crystallisable albuminous body, familiar to everyone interested in physiological chemistry, is hæmoglobin. Another similarly crystallisable proteid has been named sphærolithin by its discoverer, Hofmeister. Hæmoglobin is an association-product of a proteid belonging to the globulin group and the iron-containing body, hæmatin. The study of the conditions under which proteids can be made to assume a crystalline form is of great importance, inasmuch as it may serve to elucidate some of the problems of nutrition, *i.e.*, the elaboration of living matter. And in this connection a comparatively recent research* upon the composition of sphærolithin is of interest.

Sphærolithin is precipitated when a solution of pure (ash free) casein is treated with ammoniated solution of magnesium chloride prepared in a special way. The deposit, when examined under the microscope, is found to consist of minute spherical masses, which present radial striæ. When the globules of sphærolithin are subjected to pressure they break up into radial segments. If the solution with the deposit is allowed to remain undisturbed for several weeks, Moraczewski found that the globular bodies change to minute crystals, some of which are arranged in groups, the appearance of the latter recalling sheaves of tyrosin crystals, whilst other crystals are isolated and needle-like.

The mass of crystals thus obtained represents only 1 per cent. of the casein employed in the experiment. Sphærolithin thus obtained has the characters of albumin, giving for instance the xanthoproteic reaction and yielding a smell of burnt feathers when heated. It also has the character of a globulin, *i.e.*, it dissolves in sodium chloride solution, from which it is precipitated by acids and by heat. When digested with pepsin, a sediment which resembles nuclein remains. After being washed with saline solution, and heated with nitric acid, the deposit was found to be rich in phosphorus, and in so far resembles casein, from which it differs, however, in being insoluble in weak saline solutions.

The ash of sphærolithin contains magnesium, 22.71 per cent., and phosphorus, 22.31 per cent. The nitrogen was 14.98 per cent., carbon, 51.64 per cent., hydrogen, 13.33 per cent. A trace of sulphur was found, but no chlorine or calcium.

The material for analysis was obtained by washing with the magnesia mixture, filtration, and drying, followed by washing with water and drying over sulphuric acid.

The result showed that sphærolithin is a crystallisable, albuminous body, which cannot be nuclein owing to its being partly digestible by pepsin, yet its richness in phosphorus points to its having some relation to nuclein, probably it may be regarded as a nucleoglobulin allied to casein and associated with magnesium.

REVIEWS AND NOTICES OF BOOKS.

PROOF SPIRIT AND FISCAL HYDROMETRY. By BENJAMIN DERHAM, M.D. (London: John Heywood, 2, Amen Corner.)

The object of this publication is two-fold, viz., to point out the defects in the construction and incidence of the legal Sikes' hydrometer now in use for assessing the dutiable value of spirits and the advantage which would result from substituting for it the natural hydrometer designed by the author.

It is well known that for fiscal purposes the standard for charging the spirit duty is proof strength, and proof spirit is defined by the Act 58, George III., c. 28, to be a mixture of spirits and water, which at the temperature of 51° Fahr. weighs exactly 12-13ths of the weight of an equal volume of distilled water. Unfortunately in this definition it is not stated what the temperature of the water should be for comparison, and this omission has given rise to much discussion as to its exact meaning of the definition.

In this treatise the value of proof spirit is examined from three points of view, viz., the text of the definition, the evidence obtainable from the construction of the hydrometer, and the evidence of the tables accompanying the hydrometer. The conclusion come to is that legal proof spirit has a specific gravity of .92366 at 51° Fahr., distilled water being unity at 60° Fahr.

It is admitted by Sikes, and evident to every student of this branch of hydrometry, that the tables which accompany Sikes' instrument were founded on those prepared by Gilpin and read before the Royal Society on June 19, 1794. These tables are marvellously accurate, and will bear the most rigid examination at the present time. How Sikes built up his tables from them we are not told, and, except to gratify curiosity, it is quite immaterial whether they were founded bodily on Gilpin's work or on original experiments controlled and revised when necessary by comparison with Gilpin's tables.

In their construction Sikes applied to a spirit at all temperatures the strength he had computed to belong to it at one standard temperature, and as a consequence, the tables do not take into account the difference which occurs in the bulk as the temperature is above or below this standard. It follows that, as far as bulk is concerned, the duty on spirits can only be accurately levied at the standard temperature, and that when spirits whose temperature exceeds or falls below this standard are charged with duty the Revenue gains or loses accordingly.

The principle of averages is resorted to to establish a basis for calculation whether the Revenue gains or loses by the use of Sikes' hydrometer, and by a series of assumptions as to the times of the year and localities in which spirits are charged with duty, coupled with the quantity of spirit actually brought to charge, it is estimated that the Revenue sustained a loss of £93,271 in the years 1892-3. To establish this loss the calculations are based on a mean temperature of 46° Fahr. for charging duty, while the standard temperature for Sikes' table is assumed to be 55° Fahr. This portion of the book indicates that the author is not fully acquainted with the regulations for charging the duty on spirits, and he may be certain that if the intricate meteorological observation of temperatures used to prove his case agreed with the actual temperatures of the distillery spirit stores and warehouses of the United Kingdom at the time the spirit was charged with duty, a revolution in the spirit duty assessment would long ago have taken place, and another instrument legalised practically free from the constructive errors of Sikes' hydrometer.

The fact is that in 1838, the Royal Society, at the request of the Treasury, undertook, under the direction of Mr. Lubbock, then the Vice-President, a full and exhaustive inquiry into the whole subject of official hydrometry. The result of that inquiry is thus stated:—"The errors are of little importance as they affect the Revenue," and it was added that there was no necessity to introduce a new instrument free from the defects of Sikes' hydrometer. Such an instrument was prepared at the time, but it has never been brought into use to supersede Sikes.

If the accuracy of the author's conclusions were conceded, it would follow that the necessity of replacing the present system of Revenue hydrometry by a truly scientific one is apparent, but in effecting this substitution it is very properly contended that this reform should only take place with due regard to the public convenience. Thus the standard of proof and the notation of over and under proof should be retained, but true specific gravity should take the place of the present "arbitrary and meaningless indications."

* Moraczewski, 'Zeitschrift für Physiol. Chemie,' July, 1895.

In the reformed system the changes suggested are a slight alteration of the external form of the hydrometer and the substitution of specific gravities for indications.

The manual gives a sketch of the natural hydrometer, and a specimen of the specific gravity tables with corresponding strengths to accompany the instrument. The hydrometer is thus described:—It consists of a ball, stem, and the counterpoise to the latter called the cage, in which the poises are inserted. There are ten poises cylindrical in shape, and they are made to fit very accurately within the basal ring of the cage. The stem of the instrument is graduated from 0 to 20, each division being subdivided into two, the value of each subdivision being .0005.

The stem with the different ten poises indicates specific gravities ranging from .780 to 1.000.

The principle on which the instrument is constructed is mathematically accurate, and the formulæ used for its construction and verification are familiar to those accustomed to verify the accuracy of hydrometers, and especially the one which was officially adopted seventy years ago for determining the gravity of wort and wash, and is familiarly known as Bate's saccharometer.

These two instruments in the hands of a skilled worker soon show their defects and advantages. Both in worts and in spirit solutions the difficulty which has to be encountered in obtaining correct readings is the presence of air bubbles, which attach themselves to the base of the ball and weights, and often seriously jeopardise the accuracy of the work of a careful operator. In Bate's saccharometer the ball and weights are made sharply conical to offer the least resistance to the rising of the bubbles, but in the natural hydrometer its flat cage and cylindrical weights with sharp edges render it, from the same cause, a most tedious instrument to work with, and in unskilled hands not accurate in its reading.

It is remarkable that Bate's instrument, made seventy years ago, should be so vastly superior in form to the natural hydrometer, and from this fact alone it is probable that if at any time Sikes' instrument should be superseded by one indicating specific gravities, a companion to Bate's saccharometer, showing specific gravities lighter than water through the same range as the natural hydrometer, would be brought into use, and not one whose mechanical construction is very objectionable, and presenting so many difficulties in working without any compensating advantages.

HANDWÖRTERBUCH DER PHARMACIE: PRAKTISCHES HANDBUCH FÜR APOTHEKER, AERZTE, MEDICINALBEAMTEN UND DROGUISTEN. Edited by E. A. BRESTOWSKI. In 24 parts at 2 M. 40 Pf. each. (Vienna and Leipsic. Wilhelm Braumüller.)

The twenty-fourth part of the 'Dictionary of Pharmacy' that has just appeared completes the first or general part of an excellent and useful work. This first section comprises two volumes and deals with all the new remedies, single substances, etc., about which the pharmacist, physician, or druggist is likely to require information as well as with the explanation of all terms that he is likely to meet with. A careful examination of the work as a whole shows that the objects the editor had in view, which have already been alluded to in a previous notice of the work (*Ph. J.*, liv., 39), have been satisfactorily attained. Reference to a number of subjects selected at random will easily convince the sceptic that as a work of reference the dictionary will prove of great value, as it is free from that verbosity which frequently robs a busy man of much valuable time, its information being conveyed in language that is at once clear and concise. The last part includes an appendix, bringing the work up to date, a list of errata, and an index. The latter might appear at first sight to be superfluous in a work that is arranged alphabetically. It is, however, extremely useful for cross-references, for synonyms, and for reference to such substances as are not described under their own names, as for instance cephaeline, which is described under emetine. A few omissions in the work are, however, noticeable, conspicuously so is that of a therapeutic agent of such acknowledged value as the thyroid gland, which one would expect to find fully considered, but which is dismissed with the bare mention. Such defects might be remedied in an appendix to the whole work. In the second or special part of the work galenic preparations, formulæ for retail articles, proprietary medicines and specialties will be dealt with, so that, when complete, it will form a veritable 'Dictionary of Pharmacy.'

PARLIAMENTARY INTELLIGENCE.

SHOPS (EARLY-CLOSING) BILL.—No less than eight "blocking" motions await the re-appearance of this Bill before the House, and opponents of the measure are manifesting increasing activity. Mr. Duncombe, in the rôle of the people's friend, notifies his intention of moving that "this House declines to proceed further with a Bill which will inflict great hardship on working men and small shopkeepers," whilst the member for West Bradford (Ernest Flower) dealing with principles, wants the House to express a righteous abhorrence of every attempt to apply the principle of local option to adult labour. Sir John Lubbock has given notice to move the amendment of clause 9 of his Bill, so as to render the saving clause for chemists less liable to be abused. Other honourable members, thinking doubtless that a good Bill cannot have too much committee, have motions for re-commitment of the measure to a committee of the whole House.

THE METRIC SYSTEM.—It was intimated (*ante*, p. 210) that Mr. Arnold Forster contemplated bringing forward the question of the use of the metric system in private Bill specifications. He has now done so in the form of a question to the First Lord of the Treasury. But he did not confine his attention to the alteration of Standing Orders. In an elaborately worded question he placed before the Minister the fact that the system is in use in all civilised countries save Great Britain and the United States; that even the latter nation seemed to be setting its face towards salvation, seeing that all (?) its pharmaceutical dispensing is dealt with metrically; and that in view of these things, he asked whether immediate effect could not be given to the practically unanimous recommendation of the Select Committee on Weights and Measures. Mr. Balfour admitted the facts recited by his honourable friend, but thought the imposition by law of a system so widely differing from the one at present used by the inhabitants of Great Britain was not within the range of practical politics. Mr. Arnold Forster (anticipating Mr. Godson, of Kidderminster, who has a question on the paper on the subject) referred to a Bill before the United States House of Representatives for the compulsory adoption of the metric system, but could not impress the First Lord of the Treasury that that circumstance altered the case. The member for West Belfast will return to the charge by asking whether the Government intends to introduce a Bill this Session legalising the use of metric weights and measures in all transactions in the United Kingdom.

DR. FARQUHARSON has called the attention of the Home Secretary to the loss of time and money incurred by medical witnesses who are compelled to leave their practices to give evidence at sessions and assizes for inadequate remuneration. Pharmaceutical and other professional witnesses have equal reason to complain on this account, and the Home Secretary, in replying to the hon. member for West Aberdeenshire, confessed that the question of remuneration of witnesses generally needed consideration. He did not feel justified in altering the remuneration of any particular class of witnesses, but thought that revision of the scale of payment, which was fixed as long ago as 1858, would have to be undertaken sooner or later. The only lugubrious note in the reply was Sir Matthew W. Ridley's warning that any alteration in the fees would be attended by an increased expenditure on the county rates.

THE COMPANIES BILL will be taken in Committee of the House of Lords on Monday next, the 27th instant. Lord Davey, who, it will be remembered, was Chairman of the Board of Trade Departmental Committee appointed to inquire into the law relating to limited liability companies, has given notice of a few amendments, but they are principally technical alterations—one might almost say finishing touches—suggested by the proposer's ripe legal experience. The modifications in the allotment clauses will render the Bill distinctly less accommodating as a highway for the proverbial "coach and four." No other amendments have as yet been notified, but there is reason to believe that the suggestions of Lord Davey are not the only ones which the Committee will be asked to consider. From a pharmaceutical point of view, the winding-up clauses of the Bill are the most interesting, and if the definition of the words "illegal purpose" in clause 36, Section I., sub. sec. b, should engage the attention of their lordships, it is hoped that the representations of the Pharmaceutical Society to the Board of Trade Committee may influence them to declare specifically that the assumption by companies of the personal privileges granted only after examination to a competent person is illegal.

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LONDON: SATURDAY, APRIL 25, 1896.

A NECESSITY OF THE TIMES.

PROMINENT amongst the worries of professional life, and especially affecting those who are yet engaged in making rather than in enjoying a position, is the dread of leaving children insufficiently provided for, and particularly with regard to educational matters. One result of this feeling of uncertainty respecting ability to do what each individual thinks he ought to do in the way of providing for the future of his offspring, has been the creation of a number of educational foundations, the privileges of which are confined to certain classes. One such institution is the Royal Medical Benevolent College, Epsom, which—in addition to providing pensions for aged medical men, and the widows of medical men in reduced circumstances, much the same as the Pharmaceutical Society's Benevolent Fund—boards, clothes, maintains, and educates fifty foundation scholars selected from among the necessitous orphans or sons of such medical men as would be professionally qualified for pensionerships.

Our attention has been specially directed to this excellent institution, at the present time, by the receipt of a syllabus of the College, sent indirectly. It appears that an appeal is being made to pharmacists to help in supporting the College, the reasons urged in the circular received being the great advance in the education and qualification of the pharmacist, and the large increase in the number of medical men who prescribe through chemists. It is difficult, however, to see that such reasons, or any amount of inter-dependence between pharmacists and medical men, affords any sound argument in favour of the view that one class of individuals should be expected to support an institution the privileges of [which are exclusively reserved for another and much more numerous class. Pharmacists do not appeal to medical practitioners to support their Benevolent Fund, though there would be just as good reason for so doing as in the alternative case under consideration.

The circulation of the appeal may, nevertheless, serve a useful purpose if a number of pharmacists receiving it should be led to consider the advisability of making similar provision for the education and future career of the children of necessitous members of their own profession. There is no reason why the Orphan Fund of the Pharmaceutical Society should not be developed upon lines which would, at least, enable the trustees to endow a number of scholarships or exhibi-

tions in some first-class modern school. The need is as great in pharmacy as in any other craft or profession, perhaps even greater, and there is no way in which spare cash can be put to more profitable use. British pharmacists have ever proved themselves equal to the task of maintaining their own institutions and caring for their distressed fellow-craftsmen. Surely they are no less able to promote efficiently the future welfare of those whom stress of circumstances has prevented their natural guardians properly providing for.

SOCIETY OF CHEMICAL INDUSTRY.

WE have been favoured with a copy of the "provisional" programme of the proceedings at the forthcoming annual general meeting of the Society of Chemical Industry, to be held in London, under the presidency of Mr. THOMAS TYRER, F.I.C. The presidential address will be delivered (probably in one of the City Companies' Halls) on Wednesday morning, July 15, and after luncheon on that day visits will be paid to the Mint and the Tower Bridge, a reception being held by the Lord Mayor at the Mansion House during the evening. On the following day there will be an excursion on the river Thames from Reading to Windsor, the members and their friends leaving Paddington Station for Reading about 9.45 a.m., and proceeding thence by launches, which will stop at Medmenham for luncheon, after which the journey will be resumed to Windsor, where tea will be provided. A special train will leave Windsor for Paddington in the evening.

The third and last day will be devoted to an excursion down the river in the new steamer "Queen Elizabeth," starting from Westminster Pier. Special permission has been given for members to visit the Siemens' Company's Telegraph Cable and Electric Construction Works at Silvertown, the Anglo-American Petroleum Storage and Distributing Works at Purfleet—where luncheon will be provided—and the Royal Arsenal, Woolwich. On returning, about 7 p.m., an informal dinner will be held either at the new Hôtel Cecil or Cannon Street Hotel, and a smoking concert, with a special musical programme, will be held after dinner.

Dr. EDWARD SCHUNCK, F.R.S., has been nominated for election in July as President of the Society, in succession to Mr. TYRER, and he will preside at the Manchester meeting in 1897, the local section having sent a cordial invitation to the Council to visit the northern city in that year. Sir F. A. ABEL, Bart., F.R.S., Mr. HORACE T. BROWN, F.R.S., and Sir JOHN EVANS, K.C.B., F.R.S., are the retiring vice-presidents. Mr. A. H. MASON, an old friend of many pharmacists, vacates the chair of the New York Section and will be nominated as Vice-President of the Society, whilst Professor CHANDLER, Ph.D., M.A., of Columbia College, N.Y. has been elected to succeed him as chairman of the Section. Finally, Dr. KOHN, formerly secretary to the Liverpool Section, has been elected to the chair of that Section.

ANTITOXIN IN LONDON.

Mr. DEMETRIUS C. BOULGER has published in the *Daily News* a statement in which he challenges the accuracy of the statistics and conclusions contained in the recently-published report of the Metropolitan Asylums Board (see *ante*, p. 292), with respect to the effects of diphtheria antitoxin. He disputes the main conclusion that, because the gross death-rate for the year 1895 was 22.5 per cent. as against 29.6 per cent. in the year 1894, "in antitoxic serum we possess a remedy of distinctly greater value in the treatment of diphtheria than any other with which we are acquainted."

It appears that the first nine months of the year 1895 were exceptionally light ones for diphtheria, with a very low total of deaths, whereas the last three months were as clearly marked by the excessive prevalence of the disease and by a high total of deaths. Mr. BOULGER resolved, therefore, to ascertain how far the results at one hospital for the last quarter of the year accord with those published for the whole year. The figures given are the complete returns from October 1 to December 31, 1895, and were taken from the bed cards of the patients. There were in all 193 cases of diphtheria. "Of these, fifty-eight received antitoxin, with the result that thirty-four died, giving the appalling death rate of 58.6 per cent. Of the other 135, who did not receive anti-toxin, only 20 died, or a death rate of 14.8 per cent. The rates for the year in the hospitals were 28.6 for antitoxined cases, and 13.4 for non-antitoxined cases, so that in this fatal quarter the antitoxined cases were 30 per cent. higher than on the whole year, and the non-antitoxined cases only 1.4 per cent."

IMMUNISATION AGAINST SERPENT VENOM.

THE symptoms of poisoning and the fatalities consequent upon the infliction of wounds by serpents of various kinds are due to the venom introduced into the wounds. This venom, as pointed out by Professor T. R. FRASER, F.R.S., in an address recently delivered at the Royal Institution, is a complex mixture of poisons and non-poisonous substances. The first are not ferments, and have no power of reproducing themselves in the animal body, but they produce effects having a direct relationship to the quantity introduced into the system. That quantity varies with the size and bodily and mental condition of the serpent, as well as with the nature of the bite, whilst further variation is caused according as one or both fangs have been introduced at the time of biting, and have penetrated deeply or only scratched the surface. Again, if the serpent had recently bitten another animal, it would probably have parted with a portion of the venom stored in its poison glands. Whilst, therefore, a bite may prove rapidly fatal, it may, on the other hand, result in very little danger. To produce death, a quantity of venom, spoken of as the minimum-lethal dose, must be introduced into the tissues, this quantity being different for different species of animals, and for different individuals of the same species. The body weight of the individual is the chief factor influencing the quantity of venom required to produce death, which is very exactly related to each pound or kilogramme of weight. Although serious and alarming symptoms will be produced, death will not follow an effective bite if a minute fraction below the minimum-lethal dose be introduced into the tissues, but only by the result itself can it be determined whether a fatal quantity of venom has been introduced.

Since then the introduction into the system of a less quantity than the minimum-lethal is bound normally to be followed by ultimate recovery from the effects of the bite, it is obvious that in such a case the recovery may often be attributed erroneously to the use of remedies that have been administered. Consequently a large number of substances have acquired an unjust reputation as antidotes, a similar state of affairs being exemplified in the treatment of many diseases. Experience has proved, however, that all these so-called antidotes are valueless to prevent death when even the smallest quantity of venom required to cause a fatal result has been received by an animal. Such an opinion

was expressed by Sir JOSEPH FAYRER, who stated that after long and repeated observations in India, and subsequently in England, he was forced to the conclusion "that all the remedies hitherto regarded as antidotes are absolutely without any specific effect on the condition produced by the poison." The failure to secure immunity has not been universal, however, if we may put any faith in legends and statements originating with nations and tribes existing outside of the civilisation of the time. In connection with facts derived by Professor FRASER from experiment, many of these appear to be of great significance and possess a deep interest. From a remote period, the belief has existed that immunity may be acquired by drinking, or otherwise assimilating, the poison of serpents, and it is difficult to understand how venomous serpents could resist the effects of absorption of their own venom through mucous surfaces unless a sort of protective inoculation exists. Since this and other evidence, therefore, pointed to the possibility of protection against venom, it was decided to experiment with a view to proving or disproving that possibility, the attempt being made to accustom animals to the effects of serpent bites by the introduction into their bodies of a succession of doses of the venom, no one of which at first approached the minimum-lethal dose.

Small supplies of cobra venom were obtained by Professor FRASER, and he was soon able to satisfy himself that, after the administration of a succession of minute doses, animals became able to receive the minimum-lethal dose without any distinct injury. Larger quantities of venom from different species of serpents were, later, procured from various parts of the world, but meanwhile the results of experiments on the inoculation of disease toxins and proteid toxins of vegetable origin had suggested to several observers that serpents' venom, because of its chemical analogies with some of those substances, might possibly be found capable, like them, of producing immunity against the effects of poisonous doses. In this way further important evidence was obtained in favour of the reality of the protection already referred to. Multitudinous experiments have since been conducted, with varying success, but the practical result at the present time is to show that inoculation with venom in the manner briefly described above confers protection which lasts for a considerable length of time, even when the last protective dose has not been a large one, but the experiments must proceed further to show exactly for what length of time the protection conferred by any final lethal dose may last. Subsequent investigations have had for their object the testing of the antidotal properties of blood-serum from immunised animals. Preliminary experiments showed that such properties are possessed by the serum, and as the result of an endeavour to preserve the latter without any appreciable loss of antidotal power, the powder termed "antivenene" was obtained. This is prepared by drying freshly-separated serum from the blood of immunised animals, in the receiver of an air-pump, over sulphuric acid. The solid residue is easily powdered, and readily dissolves in water when it is required for use. Experiments with antivenene indicate that by its use human life may probably be saved in a considerable proportion of the cases of snake bite which would otherwise terminate in death. Such a result would be eminently desirable, for, in addition to some twenty thousand deaths from snake bites which occur annually in India, there are many thousands in all the tropical and sub-tropical regions of the world.

ANNOTATIONS.

THE ANNUAL DINNER.—Tickets for the annual dinner of the members of the Pharmaceutical Society and their friends can now be obtained from the Honorary Secretary, Mr. Richard Bremridge, 17, Bloomsbury Square, W.C. A list of stewards will be found in our advertisement pages. The dinner will be held in the King's Hall, Holborn Restaurant, London, on Tuesday, May 19, and the price of tickets is one guinea each, including wine.

RADIOGRAPHS BY FLUORESCENT SCREENS.—In last week's *Nature*, Mr. J. W. Gifford, of Chard, explains how by the use of a potassium platino-cyanide screen, the length of electrographic exposures can be diminished to a fourth of the time usually necessary. The screen is first laid on the dark-room table, platino-cyanide uppermost, and a celluloid rapid sensitive film placed upon it, gelatin side downwards and in contact with the platino-cyanide. The object to be electrographed is next placed on top, in contact with the celluloid, and the whole enclosed in a light-tight cloth bag. Finally, expose under a Crookes' tube in the usual way. As the grain of the screen shows, care should be taken to powder the platino-cyanide finely before preparing the screen. Mr. L. Bleekrode, of the Hague, has obtained rapid results by using stiff black paper coated with crushed scheelite or native calcium tungstate suspended by means of gelatin. This paper was laid on a very sensitive dry plate (glass), with the fluorescent side in contact with the film, the objects were placed on top, and on applying Newton's focus tube with an induction coil, sharply-defined radiographs of keys, etc., were obtained in twenty-five seconds. The bones of the fingers required ninety seconds, and the plate then showed distinctly the eye of a needle that had been put in the epidermis of one of the fingers.

INCANDESCENT GAS MANTLES.—Decisions were given in the case of two alleged infringements of the Welsbach patent for incandescent gas burners on Saturday last. Mr. Justice Wills adopted Professor Dewar's view that Dr. Welsbach was the first to show how an enduring incandescent mantle or skeleton could be constructed out of the oxides of the rare metals, and pronounced against the manufacture and sale of lamps in which "plumes" like a small handbrush replaced the Welsbach "hood." In the second case, however, the holders of the original patent were worsted on technical grounds, the judge giving a verdict for the defendants almost in spite of himself. The *Times*, after noting that a cloud of scientific witnesses was in attendance, and that men of great eminence were called on both sides, observes that it must strike any impartial mind that the length of such enquiries would be curtailed, that the expert would be more in his true place than he often now is, and that there would be fewer exhibitions of startling conflicts between the opinions of high scientific authorities, if the Court frequently did what it is not customary to do—namely, took the evidence more into its own hands, nominating one expert, or it may be two, to report for its guidance on some of the matters of controversy. "An expert reporting as the delegate of the Court would sometimes express himself very differently from one paid for his evidence, and many cases would occupy as many hours as they now occupy days."

THE PHARMACEUTICAL SOCIETY'S SUBSCRIPTIONS.—All subscriptions to the Society for the current year must be received by the Secretary, Mr. Richard Bremridge, 17, Bloomsbury Square, W.C., by Thursday next, April 30, at latest. Subscriptions sent after that date must be accompanied by the minimum restoration fee of one shilling.

THE MANUFACTURE OF CALCIUM CARBIDE.—An interesting account of this industry is given in the *Journal of the American Chemical Society*, in a paper by J. T. Morehead and G. de Chalmot. The process as carried on at the works of the Willson Aluminium Company, is a very simple one, and, except for looking after the dynamos, no special skill or training is required. Coke and lime are ground and mixed, a water-wheel is started to drive the dynamos, and as soon as the electric arc is formed the mixture of coke and lime is shovelled into the furnace. This is built of ordinary brick and measures two and a-half by three feet at the base inside. The current enters at the bottom, where there is an electrode consisting of an iron plate covered with eight inches of pieces of carbon. The electricity is conveyed by means of sixteen copper cables, each 0.75 inch in diameter. A similar set of sixteen cables is connected with the top electrode, in the upper part of the furnace, which is composed of six carbon pencils, each thirty-six inches long by four square. They are held together by a sheet of iron, and attached to a bar which can be raised or lowered at will, so as to increase or lessen the distance between the electrodes. The water-wheel employed is of 300-h.p., and the electric current is generated in two dynamos, which give a current of 50 to 100 volts. The carbide is always found in one piece between the electrodes, surrounded by a mixture of unaltered coke and lime. The piece has a conical form, being broader at the base, and may be as high as two and a half feet. A very pure product has been obtained, which yielded 5.59 cubic feet of gas per pound, but it is more economical to produce carbide yielding not more than 5.0 cubic feet per pound. It can be produced at less than \$25.00 per ton, including wear and tear and interest on capital.

PHARMACEUTICAL EDUCATION IN THE UNITED STATES.—According to the *Apothecary*, there are about four thousand students annually attending colleges and schools of pharmacy in the United States. About three-fourths of that number finish less than one-third of a year's school work and do not graduate. Of the thousand who do graduate each year only about one hundred complete courses equal to two years' school work, and not more than three hundred complete courses equal to one full year's school work or over. Only about five per cent., therefore, of all the students of pharmacy in the United States ever finish courses exceeding forty weeks' full school work, whilst the great majority of persons employed in drug stores never attend any pharmaceutical college or school. To meet the requirements of those who wish to be trained for their chosen profession systematically, two courses of instruction are open to students in the School of Pharmacy of North-Western University, Chicago, one of the leading institutions in the United States. The first course—for the title of Graduate in Pharmacy—occupies forty weeks, thirty hours' instruction being given weekly and students being expected to devote their whole time to study. For the title of Pharmaceutical Chemist, students must devote their whole time to study during about eighteen months—forty weeks in the first year and thirty-eight in the second.

A NEW FERMENTING MOULD.—The organism responsible for the production of "Soja" or "Tao-Ju" has been isolated and carefully studied by Dr. C. Wehmer, who has named it *Aspergillus wentii*. It closely resembles *A. oryzae*, but can only be obtained by covering beans which have been boiled and superficially sun-dried with the leaves of *Hibiscus tiliaceus*. The organism then invariably makes its appearance on the leaves. It is described in *Nature* as being easily distinguished from the Japanese form, inasmuch as it produces a light chocolate pigment, whereas *A. oryzae* elaborates a greenish-yellow growth. The method of collecting the mould exactly resembles that employed by the Chinese in the manufacture of arrack.

PHARMACEUTICAL SOCIETY

EXAMINATIONS IN LONDON.

April, 1896.

MINOR EXAMINATION—PASS LIST.

Candidates examined	234
„ failed	153
„ passed.....	81

Blunt, Walter Arthur.
 Brice, Henry Doyle.
 Burgham, Harry Hinsley.
 Burnett, Albert Edward.
 Burrows, Frank.
 Campkin, Francis Sidney.
 Cannell, John Wilfred Patrick.
 Chandler, Martin William.
 Coggin, Archibald H. G.
 Cole, Frederick William.
 Cornfoot, Thomas Boots.
 Coverdale, Arthur Edward.
 Creswell, Harry George.
 Dann, Charles.
 Dean, John.
 Dimmock, Charles Woolman.
 Ellis, William Neale.
 Forbes, James.
 Gerrish, Emerson.
 Goode, Arthur Frederick.
 Green, Sidney Herbert.
 Hallett, William John.
 Hamerton, James.
 Haynes, Arthur Herbert.
 Hill, Charles Alexander.
 Hinde, Ernest Lionel.
 Hitt, Thomas Gabriel.
 Horniblow, Frederick Herbert.
 James, Henry Palmer.
 Johnson, Frederic Ingram.
 Jones, Driver Fitzherbert.
 Jones, John Harrison.
 Jones, John Richard.
 Jones, Morgan Richard.
 Jones, Robert Coetmor.
 Jones, William Rhys.
 Langham, Ebenezer.
 Last, Ernest Charles.
 Last, George Valentine C.
 Lean, Wilfrid.

Lloyd, Hugh William.
 Lloyd, Thomas Henry.
 Manton, James Boughton.
 Nelson, George.
 Oakley, Frank Arthur.
 Orhard, Fred.
 Paddon, Samuel.
 Payne, Roger.
 Pearson, George Ernest.
 Perkins, Thomas Richard.
 Pilcher, Daniel Garnet.
 Pollard, Albert.
 Rackham, Charles George.
 Rhodes, John William.
 Roberts, William Henry.
 Round, William Hopkins.
 Salter, Thomas Lewis.
 Senior, William Arthur.
 Sentner, George.
 Shakerley, William Arthur.
 Sheldrake, Albert Mason.
 Silz, Oscar.
 Smart, Harold William.
 Smith, Albert George.
 Smith, Wm. Hy. Harold.
 Spurge, Edward Charles.
 Stabler, Edgar.
 Stamp, Francis Underwood.
 Stearn, Ralph Marmaduke.
 Sutcliffe, Lot Bains.
 Thomas, Jacob Beynon.
 Thompson, Frederick William.
 Thorpe, Arthur Muxlow.
 Truscott, Gilbert Edgar.
 Umney, Ernest Albert.
 Weston, William Arthur.
 Wheeler, Ernest John.
 Whitchurch, Ernest William.
 Wileman, Frederick Walter.
 Woodruff, Walter.

Wrothwell, Frederick James Hartly.

FIRST EXAMINATION.

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

Attwell, Percy Hillman, De. l.
 Benson, John, Kendal.
 Boddy, Ernest Richard, Northallerton.
 Chesworth, Colin Percy, Levenshulme.
 Currie, Alexander John, Glasgow.
 Davies, Frank Hugh, March.
 Davies, Henry, Peckham.
 Dompè, D. Ouvrato, Milan.
 Ford, Meade Leahy, Forest Gate.
 Griffiths, Alfred, Bristol.
 Holmes, John William, Kensington.

Jones, Hugh James, Towyn.
 Metcalf, Harry Raiton, Newbury.
 Moore, Kate Lillian, Hampstead.
 Sare, Fredk. Samuel Thomas, Bath.
 Saunders, John Frank, London.
 Sparkes, William P., Hereford.
 Steer, Sydney Robert, Kennington.
 Tuck, Percival W. C., Stoke Newington.
 Watkins, Archibald G., Brecon.
 Weir, Thomas, Leith.
 White, Frederick Ernest, Nunhead.

Young, Wm. F., South Tottenham.

EXAMINATIONS IN EDINBURGH.

April, 1896.

MINOR EXAMINATION—PASS LIST.

Candidates examined.....	188
„ failed.....	122
„ passed	66

Adams, Andrew.	McMaster, Thomas.
Andrew, James.	MacRae, John Grigor.
Bannatyne, Ebenezer.	Middler, Robert James.
Bentley, Arthur Mee.	Mitchell, Willie.
Binks, John Durbam.	Mossop, Moses.
Bisset, Arthur William.	Murdoch, James.
Black, David.	Murray, Donald Sutherland.
Boyle, Thomas.	Nelmes, George.
Casson, Frank.	Oliver, John.
Cellars, William.	Pringle, Nicholas Dunn.
Clarke, Peter Thomas.	Procter, Alfred.
Denton, John Gill.	Raw, Herbert.
Duncan, George.	Robinson, John Henry.
Edge, William Drakeford.	Rogerson, Bernard Arthur.
Edwards, Evan David.	Scott, John Wilson.
Eyre, Sidney.	Sherriff, Alexander.
Fenton, Richard.	Shimwell, James Hugh.
France, William Henry.	Simpson, Dundas.
Gibson, Hubert.	Sleggs, William Arthur.
Gray, Herbert.	Stevenson, James Ross.
Halstead, Joseph Ernest.	Sutherland, John George.
Hickes, Charles Edward.	Taylor, Alfred.
Hindmarch, Thomas Forster.	Taylor, William Buchanan.
Holt, William.	Taylor, Wm. Philip Airdrie.
Hudson, Frederick William.	Terry, Ernest Wayte.
Irvine, Alexander.	Thompson, John Robert.
Johnstone, Robert Ross.	Thomson, John Henry.
Knowles, William Richard.	Troup, Alexander Stephen.
Lawton, Richard.	Walters, Howell Jones.
Leak, Frederick Thomas.	Waters, Joseph.
Lock, James.	Whitelam, John Herbert.
Low, John.	Whitney, Alfred.
Low, Joseph.	Wilson, George McLanachan.

MEETING OF THE EXECUTIVE OF THE NORTH BRITISH BRANCH.

A meeting of the Executive of the North British Branch was held in the Society's House, 36, York Place, Edinburgh, on Friday, April 17, at 12 noon, Mr. J. Laidlaw Ewing in the chair. Present: Messrs. Bowman, Coull, Currie, Davidson, Ewing, Fisher, Hardie, Henry, Johnston, Kermath, Kerr, Lunan, McAdam, Moir, Nesbit, Storrar, and Strachan. An apology for absence was received from Mr. Paterson, Aberdeen. The minutes of last meeting were read and approved.

Motion anent First Examination.

The Executive resumed the adjourned discussion of Mr. Coull's motion, which was read by the Assistant Secretary as follows:—

“That it is the opinion of this meeting of the Executive of the North British Branch of the Pharmaceutical Society of Great Britain that the time has now arrived for making the First or Preliminary examination a more efficient test of a candidate's general knowledge.”

The amendment by Mr. Fisher was also read as follows:—

“That the Executive delay further consideration of this matter in the meantime.”

Mr. COULL said he did not think the motion required very much argument in its favour. It appeared to be thought that it would be an act of temerity on their part to move in a matter of this kind before the headquarters had acted. But since their last meeting Mr. Carteighe had taken the thing into his consideration, and he had no doubt that by simply moving the motion now it would be carried. Scotland had been in the forefront as regarded education ever since John Knox's institution of parochial education, and even yet, in the Board schools, they were in advance of those in England. It would be very strange if Scotland did not take first place again in calling attention to the fact that the time had come when the Preliminary examination should be made more stringent.

Mr. LUNAN said it was time they were taking some action in this matter. He did not think Mr. Coull's motion was at all premature. Already the Minor examination had been considerably stiffened on a line with most examinations, including University examinations, and if they stiffened the Preliminary examination they would just be bringing it into line with their other examinations. The fact was that the Minor examination really required a higher elementary education than their Preliminary examination at present demanded, for there were many things in the Minor examination which they were not able to tackle without looking far beyond the requirements of the Preliminary, and if they wanted a monopoly and a higher professional status they required a stiffer Preliminary examination. People outside looked at that examination and measured their Minor examination by it, for they did not know much about the latter. If they had a Preliminary examination almost, if not altogether, equal to the medical preliminary, it would show what was demanded of them, and would be calculated to give them a greater monopoly. If they were able to say that they were really prepared to demand an examination like that, they would be better able to get that monopoly. He thought Mr. Coull at the last meeting stated his case clearly, and the motion should not have been opposed. He did not think it was a right thing for Mr. Fisher to say that the trade was not worthy of a more difficult examination. He thought it was worthy. The Pharmaceutical Society was to-day what it was, because it had passed from voluntary to compulsory examination. If chemists had not put shackles on themselves they would have been nowhere. They were able to get legislation simply because they stiffened their examinations. He sincerely trusted that the North British Branch, representing Scottish chemists, who he knew had the advancement of pharmacy at heart, would be very much in favour of this change, and that it would be agreed to unanimously.

Mr. FISHER said he thought when he made the amendment it was to this effect, that he had no objection in the world to the Preliminary or any of the examinations being made stiffer. But in the meantime, and until they had a compulsory curriculum for the other examinations, it would be folly to stiffen the Preliminary examination more than it was at present. Mr. Lunan had quite misunderstood him in saying that the trade was not worthy of having a more difficult examination. His view was, and always had been, in favour of a curriculum if their status was to be improved, and when that came he would say, let them have as stiff an examination as the medical Preliminary. It was as stiff already for the subjects they had, but let them have as many subjects as in the medical, and let them get a class of young men specially trained, knowing that they would have to study a certain number of years at the university and have a regular curriculum. Until they got that he moved the amendment that it was not time to make the Preliminary any stiffer than it was.

Mr. C. F. HENRY said he would like to say a few words from the point of view of the candidates themselves—the young men entering their trade. It seemed to him that the Preliminary examination was a fairly easy one, and that the Minor examination was a very difficult one; and he thought it was not right that a man should have an easy examination in the first instance. It was too much of the "Will you walk into my parlour, said the spider to the fly" policy; a candidate found it very difficult to get further than the Preliminary. He was led to look at statistics on the subject, and he thought it would be interesting to the Executive to know the percentages and passes in the Preliminary and Minor examinations. As statistics on such a subject were of no use unless one went over a considerable period, he had gone over a period of twenty-five years—from 1870 to the end of 1895—with the following results:—

	Minor Passes.	Preliminary Passes.	Percentage of Preliminaries passing Minor.
1870 to 1875	1335	2899	46.0
1875 to 1880	1505	3293	45.7
1880 to 1885	1582	3424	46.2
1885 to 1890	2377	3853	61.6
1890 to 1895	2479	4268	58.8
	9278	17,737	

That is to say, of 17,713 who passed the Preliminary in twenty-five

years, 9278 passed the Minor and 8459 failed to do so, or during the twenty-five years only 51.6 per cent. of those who passed the Preliminary have since passed the Minor. That appeared to him to be a very serious matter for consideration. There was a number of young men who had recently passed the Preliminary and who would yet pass the Minor, and that would so far account for the deficiency. But taking that into account and the number of young men who went abroad or entered the medical profession, and also those who died, who would amount to one or one and a half per cent., he thought they might take it that there were fully 4000 young men in the trade who had passed the Preliminary who had not yet passed the Minor examination. That did not prove that the Preliminary should be made easy because trade was bad, but that trade was bad because the Preliminary was easy, because these young men were filling positions which ought to be filled by qualified men. If the Preliminary was a bar at the beginning, and if they told the young men "you have a difficult examination to begin with, and if you have not brains or education to pass that, you will not pass the next," that would be a fair way of doing. But at present they were enticed by this Preliminary examination, and when they were in they found it a very difficult matter to get any further. It appeared to him that was a very strong argument for making the Preliminary examination more strict. The institution of a curriculum might be an argument for making the Minor examination stiffer, but he thought it did not at all affect the argument for having the Preliminary examination stiffer. He thought, therefore, as a matter of justice to the young men, that they ought to make the Preliminary a test of their capacity to go further, for if they were not able to pass a stiff Preliminary, they would not have the capacity, and many had not the leisure or means of passing the Minor examination. He could not support the amendment, because the longer the Preliminary remained easy the worse matters would get instead of better.

Mr. KERMATH asked what would be the effect of this motion.

The CHAIRMAN said they would send it to the Council as the resolution of this meeting of the Executive.

Mr. CURRIE said he expressed his views pretty strongly at the last meeting, and he was still of the same opinion. That opinion had been pretty considerably strengthened by what was to him the apparent result of the last Preliminary examination, because the Preliminary paper which had been set was to him a comparatively easy one, and yet to those whom he superintended on Tuesday last it seemed to prove a very serious stumbling block. He felt that it was too easy, for this reason, that he submitted the paper to an ex-sixth standard boy of thirteen years of age, who completed the three subjects in two and a half hours, and he got practically the same answers to all the questions which he (Mr. Currie) got in the examination room. Three of the candidates at that Preliminary examination spent an hour over one of the sums in arithmetic, and one of them came to him afterwards with the paper and said it was too bad that this examination should be so stiff. To spend one hour over one arithmetical question seemed to him ridiculous. He said to the candidate, "Was it necessary to spend one hour over it? I did the sum in twenty minutes," and he replied that he thought there were not many who could do that. He could quite sympathise with those who were averse to making the Preliminary any stiffer than it was at present, but speaking for the good of their trade, he thought it was far too easy, and he was strongly of opinion that if they stiffened the Preliminary it would keep back many who were unworthy to step into the ranks of pharmacy. They in Glasgow had a very great evil to contend with, as he had often stated, and that was the employment of boys in doctors' shops. Of course, doctors took any sort of boys, but he was glad to say chemists did not. The boys they employed generally had a fair idea of elementary education, and if a chemist took an apprentice without letting him know the kind of examination he had to go through was a fairly stiff one it was not fair to that boy. If any young fellow of eighteen or nineteen came up for the Preliminary examination, and failed to pass, he thought he should not be in the ranks of pharmacy at all. He had a conversation with a young fellow of twenty-three or twenty-four years of age who had been four times up, and he was convinced he was "plucked" again. He said that man was not worthy of being in the ranks of pharmacy, and was not capable of conducting himself as a pharmacist. If he made such a mess of the Preliminary, what would he do when he got to the Minor? He thought it was a shame to allow such candidates to go forward. He would go further than Mr. Coull, and say that if a man failed to pass the

Preliminary after a certain number of times he should be debarred from coming up in future. He would apply the same principle to the Minor examination. He did think it was time to step into the breach and get the examinations stiffened all round.

A vote was then taken, when three voted for the amendment and ten for the motion, which was therefore declared carried.

General Purposes Committee.

The Executive then went into Committee to consider the report of the General Purposes Committee, and on resuming, Mr. Fisher moved the adoption of the report, which included an expenditure of £6 3s. for cleaning and painting window-blinds and sashes on the street front of the Society's House, and an expenditure of £31 2s. 4d. for additional fittings and some minor alterations in new laboratories. The report also recommended that the scheme for rearrangement of the Society's House should be again remitted for further consideration, in view of certain proposals that are yet only in the initial stage.

Mr. JOHNSTON seconded the motion, and the report was unanimously adopted.

Annual Report.

The Executive went into Committee to consider the annual report to the Council, and, on resuming,

Mr. CURRIE, in moving the adoption of the report, said he was glad that it gave such a full analysis of the results of the Minor examinations, because the figures fully bore out what he had been contending. The percentage of failures was simply alarming.

Mr. STORRAB, in seconding the adoption of the report, referred to the care which had been bestowed by the Chairman, the Committee, and the Assistant Secretary on its compilation. As the Vice-Chairman had already said, the outstanding feature of the report was the increase in the number of candidates coming up. That bore out what was said that possibly one great reason for the numerous failures in the Minor examination was the imperfect general education of the candidates who came forward. The only way they could increase the percentage of passes was either by increasing the stringency of the Preliminary, or by decreasing the stringency of the Minor examination. These alternatives should not be altogether left out of mind. They could go on increasing the stiffness of the Minor examination and increasing the qualification of the men who joined their body; but unfortunately there was another aspect of the question. Whatever they did there, there was no doubt that young men were taken into shops who were not qualified, and who had not the general education fitting them to become a success in the trade. What would be the result of stiffening the examination knowing that these lads were in the trade? If they made the Preliminary and the Minor also too stiff, it meant that such lads would not even try to pass. They would simply lay themselves out, their object in life would be not to become efficient chemists and druggists but simply to make a living, and they would be "hewers of wood and drawers of water" in the trade all their lives. In his opinion the moment they stiffened the examination it would have a tendency to create greater evils than existed at the present time. They would have a class in the trade who would have no ambition, who would have no means to enter business for themselves, and who on account of the creation of these difficulties would be rendered useless in the trade. The whole question required to be very carefully considered so as to hit upon a happy medium of qualification. They must not have too stiff an examination to quench ambition, and it must on the other hand be stiff enough to secure what they all wished to see—the gradual improvement of the trade itself. The raising of the Preliminary examination was not a question that could be settled in one or two debates.

Mr. KERMAITH said it would be interesting to get some idea of the training these young men had before presenting themselves as candidates; whether they simply came on chance and took the risk of passing, or prepared themselves in any methodical manner. Any apprentice he had under his charge, he asked to leave the shop for a half or whole year and to go in for regular study, because he thought it was a very great hardship to expect young men who worked from morning till night to prepare themselves and make a decent appearance in the Minor examination. It was a very serious question, as Mr. Storrar had said, for provincial men. He had great difficulty in getting young lads with a fair knowledge, such as would enable them to pass the Preliminary examination to enter his shop at all. But he made it a point to let them understand that that was the first thing they had to do, and if he could get them

to pass the Preliminary before they came to him at all he preferred it. He aimed at that and made it a point to give them every encouragement by paying their fees and otherwise, and for the reason already stated, before they left him he always advised any one in his employment, trying to pass the Minor examination, to leave the shop for a half or whole year. There must be some haphazard way in which they came up merely to bother the examiners, and it was terrible to have such a large percentage of failures. He did not object to them paying the fees, but he did object to them coming there and very likely casting a reflection on the method of the examination and the extent of the education they had before they came.

Mr. MOIR said he supposed about 75 per cent. of the Minor candidates came from some school.

The CHAIRMAN said they could not tell how the candidates had been trained, but they might safely say the greater number of them had had most of their training at a school of pharmacy. The weakest part of the candidates' training was their elementary training in science, and in particular they had not acquired the elementary principles of chemistry and botany.

Mr. LUNAN said they were no worse than in the medical examination.

Mr. CURRIE said if they looked at the last report to the Council they would see that the great percentage failed in dispensing. That seemed to him a serious matter.

The CHAIRMAN said that had reference to the London examinations, but not to Scotland. He would say with regard to their examinations that about twice as many failed in practical chemistry as in dispensing.

Mr. COULL asked if it was the case with regard to the Edinburgh candidates that they got more than the six volumetric solutions in the Pharmacopœia.

The CHAIRMAN said they could not discuss that matter there.

Mr. COULL said they got more in London, for he had seen the papers.

The report was then unanimously adopted, and ordered to be forwarded to the Council.

Election of Executive.

On the motion of Mr. Bowman, seconded by Mr. Davidson, it was agreed:—

"That the next election take place on Friday, June 19, and that the Chairman and Vice-Chairman be appointed Scrutineers of the voting papers, with power to add to their number."

Mr. CURRIE said he spoke at the last meeting with regard to the entire body being elected annually. He thought it would be desirable to get some other mode by which a portion only would retire each year, and to get the resolution of Council passed in 1886 altered.

The CHAIRMAN said he did not think they could do that at this meeting.

Mr. CURRIE asked when it could be done.

The CHAIRMAN said he would have to table a motion there and send it up to the Council.

Mr. CURRIE said he thought it was unfair that the whole Executive should retire at one time. The continuity should be preserved.

Mr. MOIR asked why the Executive should not be elected in the same way as the Council of the Society in London.

The ASSISTANT SECRETARY explained that the method of election was so specified in the resolution of Council that the idea of a partial retirement each year could not be easily carried out. It was not like the election of the Council, inasmuch as they had no legal status further than a resolution of Council. They had to make up the number of the Executive to twenty-one, including the President and Vice-President and the members of Council resident in Scotland. The latter was an indefinite number, and they might have one, two, three, or none, and for that reason they could not have the election of Executive till after the Council election was completed, for they could not tell till then how many members fell to be elected in any one year.

It was agreed that the annual meeting on June 19 should be at 11 a.m., instead of 12 noon.

Early Closing Bill.

In answer to Mr. Kermath, the Chairman said Sir John Lubbock's Early Closing Bill had been considered and dealt with by the Edinburgh District Chemists' Trade Association.

The meeting then closed.

PROCEEDINGS OF SOCIETIES.

Midland Chemists' Assistants' Association, April 8.—Mr. T. C. Clarke, President, in the chair.—A lecture on "Volumetric Analysis" was given by Mr. F. H. Alcock, F.I.C., who commenced with a definition of volumetric analysis and its uses, and then made some remarks on the necessary apparatus. Special attention was called to the fact that the B.P. operations in volumetric analysis could be performed at a small cost, and with tolerable accuracy. This was followed by an enumeration of the official standard solutions, their advantages and disadvantages, and the reasons for their adoption. A mineral acid was advocated for alkalimetry in place of oxalic acid. The deterioration of thio-sulphate solution was specially referred to, and a suggestion was made that it could be preserved with some degree of satisfaction by the addition of a little carbon bisulphide which greatly retarded decomposition, and did not interfere with the reactions in which the solution was concerned in the B.P. The stronger oxidation solutions of bichromate of potassium and permanganate of potassium were alluded to, and it was suggested that the latter might be made official, for it could be used for the determination of most of the ferrous salts, and also with care for the hypophosphites. The lecture was illustrated by numerous experiments.

At a meeting held on Wednesday, April 15, the Shops (Early Closing) Bill was discussed. There was a small attendance owing to an extra-ordinary meeting of the Midland Pharmaceutical Association being held at the same time. Mr. T. C. Clarke (the President) occupied the chair.

Mr. H. S. Lawton, who opened the discussion, said he was aware it was to pharmacists a subject of great difficulty to satisfy everyone, and required to be approached with great care. He considered it advisable in opening the discussion to set out the disadvantages that many laboured under on account of the late hours the custom of the business imposed; to criticise and examine the necessity (if it really existed) for keeping these late hours; to discuss the practicability of doing business in more reasonable time, and to declare an opinion favourably or otherwise on the Bill now before Parliament. He had come to the conclusion that the disadvantages were only to be removed by legislation, that there was no real public necessity for keeping pharmacies open so late into the night, and that by actively supporting the Bill, and assisting in putting its provisions into operation, benefit would accrue to all engaged in pharmacy, and that they would also have the sympathy and support of the public at large.

In support of these opinions he remarked that the average time for closing the shops for general trade in that part of the country was 9 or 9.30 p.m., which compared very unfavourably with that of any other well-regulated calling, and the chief cause of this lateness had arisen, not by any public necessity, but by the competition of rival establishments to gain public favour by being available at all hours. In many suburbs, especially working-class neighbourhoods, there was undoubtedly a habit of leaving the purchases until the last hour the shops were open. If all shops in these localities were compulsorily closed at a uniform time which was well known, the trade would be done an hour or two hours earlier as the case might be. Everyone who worked until 9.30 p.m. knew that if they kept open until 10.30 the same customers who rushed in just in time to be served at 9.30 would rush in just the same an hour later, and there was no doubt that those people, if the shops closed earlier, would, instead of hurrying to the chemist just before bedtime, come after tea or earlier in the evening.

He particularly wished to call attention to one disadvantage of the late hours system, one that was equally prejudicial to the interests of masters and assistants, and constituted a great danger to the welfare of legitimate trade. It was this: Every three months men were qualifying as chemists and naturally looking round to turn their abilities and qualifications to the best advantage to themselves. The legitimate chemist in business offered them occupation for their talents at fair remuneration according to the market value of labour, but in most cases the hours were 9 or 9.30 p.m., and many evenings he had to remain on duty until bedtime, with an arrangement for one evening per week at liberty. This left no opportunity for the social intercourse and intellectual pursuits which were the privilege of any other educated and professional man than the one whose lot had been cast in the groove of legitimate pharmacy, as at the present time conducted. On the other hand there was another and apparently a more alluring path for the newly-qualified pharmacist to follow. Offered equal inducements in point

of salary in well-appointed shops, with hours strictly set, averaging 7.30 closing in the evening and one day a week earlier, could it be wondered that so many sold their qualifications to limited liability companies, who almost universally offer the special inducement of early closing and still gained for the shareholders their 10 per cent. dividend?

Not until the hours of legitimate pharmacy were brought into line with these so-called cutting shops should they be able to battle successfully with the degenerate and humiliating tendency to let a great and valuable portion of their trade fall into the hands of grasping and dividend-seeking speculators, who, having unlimited capital to call up, were allowed by the present state of things to wolf the living of legitimate traders. This was a real danger and placed the genuine pharmacy at a serious disadvantage, but those men who lent their aid and qualification to the detriment and injury of their fellow-craftsmen were only as much to blame, he took it, as those who, from motives quite as selfish, would prevent—and, by their opposition to any scheme of early closing, do prevent—their neighbours enjoying any outdoor enjoyment by daylight.

He would deal with the great disadvantage of having a uniform closing-time by illustration. Most people made periodical visits to the bank and in every case reached there before 4 o'clock. Why? Because if they got there later the doors would be closed. Why not transfer the account to another bank? Simply because all the banks close at the same time and therefore each bank keeps its own customers and no one has any grievance to complain of on account of early-closing. That principle he took it applied to all trades.

The Chairman, Mr. J. Selby and Mr. Bindloss also joined in the discussion, and eventually it was agreed that the meeting was in hearty sympathy with the objects of the Bill.

Chemists' Assistants' Association, April 16.—Mr. E. W. Hill, President, in the chair.—Several short papers were read by members. The first was a—

"NOTE ON CREAM OF TARTAR," BY H. H. ROBINS.

In this the author remarked on the faulty nature of the test at present set forth in the British Pharmacopœia. A paper on the same subject by C. A. Hill, which was published in the *Pharmaceutical Journal* (*ante*, p. 281) dealt with the same subject, but Mr. Robins considered the subject of sufficient importance to re-emphasise the necessity for directions being given in the official test which would ensure the detection of calcium tartrate, and also guard against the loss of potassium carbonate from reaction with the calcium sulphate, which occurs in commercial cream of tartar in the process of assay.

Mr. A. Gunn then contributed a—

"NOTE ON AN IMPURITY IN QUININE PHOSPHATE."

It was noticed that a sample from a freshly-opened 10-oz. tin of quinine phosphate, which gave a perfectly clear solution in hydrochloric acid, yielded, upon the addition of sulphuric acid, a dull mixture that, after standing for some time and moving occasionally, gave distinct precipitation. In order to clear up the nature of this deposit one ounce of the salt was dissolved in hydrochloric acid, and after the addition of sulphuric acid the precipitate formed was collected and examined, when it was found to consist of barium sulphate, the weight being 0.364 gramme. This impurity was an unusual one, and Mr. Gunn brought the matter forward for the purpose of ascertaining if anyone else had met with a similar experience. He then gave a demonstration of the use of the filter pump for the purpose of effecting a clear separation of the emulsion-like substance which is frequently formed when dealing with chloroform and ether in the processes of alkaloidal determinations. The method devised by Mr. Gunn evidently acts admirably and greatly facilitates work.

Following this a paper was read by Mr. H. Garnett on—

"THE TESTING OF LEMON OIL" (*see page 323*).

Mr. H. Robins, after complimenting Mr. Garnett upon the practical nature of his paper, remarked that in his own work he often ascertained the commercial value of lemon oils comparatively by preparing a mixture of sugar and glucose with the samples under examination, and those were afterwards exposed for about twenty-four hours, when they could readily be classified. He would like to ask what time was necessary to carry out the process which had been described in the paper?

Mr. W. Crouch asked if Mr. Garnett could give any idea of the results as shown by his process and those given by the bisulphite method.

Mr. Gunn remarked that he had known a case in which a sample of citral crystallised after being kept for some time, and he would like

to know if Mr. Garnett had met with a similar experience. He could confirm what had been said in regard to solutions of the active constituents of oils not having the same bouquet as the natural product.

Mr. H. Garnett, in reply, said that it was rather difficult to give the exact time occupied by the process, but, generally speaking, if started during the afternoon of one day it could be finished during the forenoon of the following day. In regard to a comparison of the bisulphite method with his own, he had found that a sample of lemon oil which yielded between 6 and 7 per cent. of citral by his process only gave between 3 and 4 per cent. by the other method. He had not had any experience of the crystallisation of citral referred to by Mr. Gunn, and concluded it was due to the action of the air.

Sheffield Microscopical Society, April 17.—The members of this Society held what is termed a practical night at the Rutland Institute, Fargate. Mr. Bernard H. Hoole gave a short demonstration on "Dark Ground Illumination as applied to the Microscope," and exhibited a number of views of marine zoophytes and diatoms.

Royal Institution, April 16.—In the course of a lecture on "Recent Chemical Progress," Professor Dewar, F.R.S., commented on the great future opened out to synthetical chemistry by the employment of the electric arc. Some of the most interesting results have been obtained from the electric furnace by Moissan in the shape of carbides, stable bodies produced by the combination at high temperatures of carbon with various metals. Many of these carbides are decomposed by water, the hydrogen of the water combining with the carbon to form hydrocarbons. Thus calcium carbide gives acetylene, that of aluminium gives marsh gas, while others, again, give these and other gases and liquid petroleum. Many years ago Professor Mendeleef speculated that the only reason for the immense localisation of petroleum at Baku is that it is being generated there—probably by the action of water on carbides. His idea was rather ridiculed then, but now it is his turn to smile. When acetylene is heated to a dull red heat, it is polymerised to benzene, which is the source of all the new modern colours, and thus by three direct stages we are able to reach the nucleus of all the colours hitherto manufactured from coal-tar products. First there is the combination of lime and coke in the electric furnace; second, the decomposition of the carbide thus formed by water; and third, the transformation into benzene of the resulting acetylene by means of heat. Professor Dewar concluded by briefly discussing some of the properties of acetylene, explaining, among other things, that the cause of its extraordinarily great luminosity is due to its peculiar endothermic structure.

Liverpool Pharmaceutical Students' Society, April 16.—Mr. T. S. Wokes, President, in the chair. A smoking concert was given by the members of this Society, assisted by their friends, at the Kardomah Café. A very good and varied programme of songs and recitations was contributed by Messrs. Clegg, Field, Jones, Pierson, and others. The attendance was nearly double that at the previous smoker, the students evidently falling in with the new idea of the Committee, in having a smoker on temperance lines. A collection was made on behalf of the Pharmaceutical Benevolent Fund during the evening, a sum of about £1 10s. being the result.

SCOTTISH NEWS.

INTERNATIONAL PHARMACEUTICAL EXHIBITION IN PRAGUE.—The Lord Provost of Edinburgh has received from the Austrian Ambassador, through the Under-Secretary of State for Scotland, a programme of the International Pharmaceutical Exhibition to be held in Prague from August 15 to September 15, 1896. It has been arranged that intending exhibitors from Scotland may communicate with Mr. J. Rutherford Hill, Assistant Secretary to the Pharmaceutical Society of Great Britain, at 36, York Place, Edinburgh.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION, April 17.—Mr. J. Mackintosh Cameron in the chair.—At the annual business meeting the Chairman reported that at the request of the Treasurer the accounts had been audited by Messrs. Rowland and J. D. Sinclair, and this was approved of.

The Secretary read the report of the Prize Committee on the "Ewing" Pharmacy Prize Competition. Only one of the candidates who entered had attended the examination, and he obtained 60 per cent. of marks and had been awarded a third prize.

The President then presented a copy of the British Pharmacopœia, given by Mr. S. G. Crowden, to the prizeman, Mr. Alexander MacSween, 23, Bernard Street, Leith. In doing so the President expressed regret that so few had offered themselves for these prizes, and mentioned that a former prizeman, Mr. George Senter, had further distinguished himself by carrying off three sessional medals at Bloomsbury Square. He had also just observed that another former prizeman had, after a distinguished career as a student, been appointed medical officer of health for Shanghai. He referred to Dr. James T. Grant, M.B., B.Sc.

The Secretary read a letter from Professor Patrick Geddes inviting the members of the Association to visit his botanic garden at University College, Dundee, on the Queen's birthday holiday, May 21 next.

On the motion of Mr. Hay, seconded by Mr. Gordon, it was agreed to accept the invitation, and it was remitted to the Committee to make arrangements.

The Secretary and Treasurer then read the annual report and financial statement, which were approved of. The former showed an increased membership, and that the attendance at the meetings had been good, the average being forty and the highest ninety. The summer meetings instituted last season had also been very successful. The financial statement showed a balance of £3 12s. 1d., and it was agreed to vote a sum of £1 1s. to the Benevolent Fund of the Pharmaceutical Society.

The following office-bearers were elected for the ensuing year: President, James McBain; Vice-President, George Sinclair; Secretary, William F. Hay, 139, Princes Street; Assistant Secretary, J. Harris Burns; Treasurer, Alexander Murray; and as Members of Committee, Messrs. Cameron, Cowie, McSween, Rowland, Seivwright, Sime, J. R. Thompson, and Thwaites. Messrs. Cameron, Dey, and Cowie were elected members of the Prize Committee.

The arrangements for summer meetings and botanical excursions, and the consideration of the prize scheme having been remitted to the Committee, the meeting closed with a hearty vote of thanks to the retiring office-bearers.

LEGAL INTELLIGENCE.

INCANDESCENT GAS BURNERS.—In the Queen's Bench Division on Saturday last, Mr. Justice Wills gave judgment in the case of the Incandescent Gas Light Company, Limited, *v.* De Mare Incandescent Gas Light System, Limited. He said it had long been known that certain substances, notably lime, magnesia, and zirconia, when subjected to the heat of a flame of mixed coal gas and air will produce a brilliant incandescence, but it was quite safe to say that for all practical purposes Welsbach discovered a practical and simple method of arranging oxides to be rendered incandescent in a shape which made it possible to use them in burners, and also discovered that a class of substances, which for convenience and brevity are generally spoken of by chemists and throughout the hearing of this case have been called "rare earths," would afford at once the necessary illumination and the necessary coherence. The process adopted by Welsbach begins by taking a fabric made of cotton of suitable pattern, then proceeding to impregnate it with salts of the rare metals lanthanum and zirconium, or of those with salts of yttrium added, and lastly ammoniating it. The result of the soaking is to get the salts into every minutest portion of the fibres of the fabric, so that when finally the cotton fabric itself is eliminated by fire there may be left a solid substance occupying almost the very portions of space now filled by the impregnated fabric. The result of ammoniation is to convert the salts into hydrated oxides, filling, as did the salts, the innermost recesses of every portion of the fabric. The fabric is not yet fit for permanent use in the burner. The last operation is when the hood is placed in the burner and set on fire by lighting the gas. This process drives off all the water of the hydrated oxides and reduces them to their final condition of anhydrous oxides, in which state they perform the business purpose of giving illumination by incandescence. The claim made by the patentee is the combination of the various essential elements in the process described.

As to the question of infringement it was clear that the defendants intended to construct and sell in this country plumes for incandescent lamps. A plume consists of a number of threads tied on to a platinum wire and arranged so as to form a sort of fringe, all the threads of which are brought very closely together while they are strung on to the wire, but allowed to separate as they leave it, so that the apparatus looks like a housemaid's small handbrush, the cross sections of which would take the shape of a fan. This plume is then to be dipped into a solution consisting preferably of one part of sulphate of magnesium, two parts of sulphate of erbium, and two parts of sulphate of zirconium (all chemically pure) in 25 parts of water. The plume may be dipped into collodion or varnish, for the sake of strength, and is then to be suspended in the flame of a gas-burner to produce incandescence. Moreover, fringes delivered by the defendants as specimens of what they propose to make were found to consist of oxide of zirconium, 84 per cent. ; oxides of yttrium sub-group, 9 per cent. ; and oxide of magnesium, 7 per cent. Welsbach's limits of proportion are very large. Enough appeared to satisfy the Judge that, unless the omission of ammoniation, the omission of lanthana, and the variation in the form of the illuminant appliance prevented him from saying that the substance of Welsbach's patent had been taken, the defendants were about to infringe and ought to be restrained. Judgment was therefore given for the plaintiffs.

In the case of the Incandescent Gas Light Company (Limited) v. the Sunlight Incandescent Gas Lamp Company (Limited) and Others, Mr. Justice Wills, in giving judgment, said the defendant company was formed to work a patent granted to one Dellwik. The defendants take the idea of the skeleton hood produced by the Welsbach process, but make it of about 50 to 60 per cent. of alumina, about 30 per cent. of zirconia, and then coat this with a thin coating of oxide of chromium. It seemed to him that this is essentially different from what is claimed by the Welsbach specification. Welsbach might have claimed the hood made of any materials, but that would have entirely altered his patent and would have exposed it to a fresh set of dangers. He might have claimed the hood, of whatever material, applied for the purpose of illumination, but that would again have altered his patent and have made it void, for it would have been a patent for the use in the form of a hood of whatever substances would answer. But he did claim nothing of this kind. The use of the rare earths is beyond all doubt of the essence of his invention. He could not by any adaptation make a strong groundwork of alumina, or alumina and zirconia, and then spray it or saturate it with the salt of an illuminant oxide to be reduced to the oxide on putting it into the flame, which is what the defendants have done. It was a necessary consequence of the nature of Welsbach's process that his skeleton should be absolutely homogeneous throughout. He felt that the defendants were taking a very valuable process bodily from Welsbach without any remuneration ; but that is the necessary fate of a patentee who confines himself to claiming the aggregate of a whole string of processes of which this is one. The fatal difficulty in this case was that the formation of a Welsbach skeleton by other means and of other substances than those pointed out in the specification is not claimed. No use is made by the defendants of any of the rare earths, and their choice of substances and their method of applying the illuminants appeared to be as far asunder as the poles from that contemplated by Welsbach. He must therefore give judgment for the defendants upon the issue of infringement.

A CORONER ON THE SALE OF CARBOLIC ACID.—Some severe remarks were uttered by the coroner, Mr. Smelt, at an inquest held at the City Coroner's Court, Manchester, on April 16. A woman had died as the result of taking carbolic acid, which she had sent a boy of nine years to purchase. According to the evidence, the poison was supplied after little, if any, inquiry, and the coroner, commenting on this, said that if chemists did not exercise more discretion, the sooner they were prevented from selling poison the better. It was naturally expected, he continued, that a chemist should exercise a little more discretion than was indicated in that case, and not sell such a dangerous poison indiscriminately simply for the sake of the paltry profit got on it. Common decency suggested that every chemist who had any respect for himself should of his own free will exercise discretion, and not be compelled to do so by law. It was ridiculous that an Act of Parliament should have to be got to prevent the sale of such a poison to children of tender years when chemists held the alternative in their own hands. Whilst agreeing that the seller had done all that was legally required of him, he was astonished that he had not acted with more discretion.

CORRESPONDENCE.

SHOPS (EARLY CLOSING) BILL.

The following letter has been addressed to the Secretary of the Pharmaceutical Society, and serves as a good example of the extent to which a fancied grievance will lead some individuals. The writer would surely act more wisely by remaining a member and continuing to bring his influence to bear upon the Council in regard to matters that interest him. But perhaps in this case, as in so many others, there is no resisting the fascination of the all-pervading cycling craze.—[*Ed. Pharm. Journ.*]:—

[COPY.]

"Sir,—I intend to discontinue my subscription to the Pharmaceutical Society. The reason I give is the apparent disinterestedness (*sic*) of the Council to the welfare of assistants and small chemists, chiefly with regard to the Shops (Early Closing) Bill at present before the House of Commons. I had intended becoming a life member, but I now think I should derive more benefit by investing the money in a bicycle."

Sir,—Having read with interest the expressions of opinion in regard to the above Bill I should like to mention one thing. Why do qualified assistants go over to the large general stores? The greatest attraction undoubtedly is the shorter hours and weekly half-holiday. I have now several in my mind who have given themselves to the stores almost solely for that reason, and others who are oscillating. So by supporting this Bill and getting our hours shortened we shall make the ranks of true pharmacy more inviting for qualified assistants to remain with us.

Knightsbridge, April 18, 1896.

QUALIFIED ASSISTANT.

Sir,—In reply to the invitation for expressions of opinion on the shops Bill, I desire to enter an emphatic protest against it. "Early closing" and holiday time are not so intimately associated as to be necessary for each other's existence, and even under this measure it is not to be conceived that the chemists and all their assistants would be out scouring the country in search of health, or whatever it is supposed to be necessary they should shut their shops for, so, unless the "single-handed" man were willing to place his business at a great disadvantage compared with others, he would still have to stay in himself. Any adverse or detrimental effects which might accrue from this scheme would primarily affect and have to be borne by, proprietors; and it is not universally admitted that the best way assistants could redress any grievance they may have is by curtailing the time during which employers obtain their income. Every purchase made by the public is not a necessity, and it may reasonably be conceded that the passing of this Act would result in a material proportion of business being absolutely lost. Possibly this would benefit the health of the public more than that of the shopkeepers.

With regard to the suggestion of "Spes" that the public should have a supply of remedies on hand—can it be expected of the great mass of working-men to keep a medicine chest in their homes? Consider that they are only able to provide much more commonly necessary domestic commodities in a "hand-to-mouth" way. Also I do not think the majority of chemists do, or should wish to, relegate themselves to such a subsidiary position as to require the authority of a medical practitioner or nurse during certain hours for the exercise of their calling. In conclusion, I think the Bill a most vexatious interference with individual rights, and broadly, does it not stultify itself by having to exclude from its workings such a large proportion of notorious offenders? The attainment of its object might be left to the progress and enlightenment of the age, which will surely develop a higher perception of the duties employers and employes owe to each other; and also a greater spirit of charity in not ascribing every difference of opinion to a desire for the extermination of our *confrères*, but rather to a wish to conform to what one considers the requirements of his district.

Exeter, April 20, 1896.

C.

MANUFACTURE OF COAL TAR PRODUCTS.

In reply to "Student," a correspondent says the best book on the manufacture of coal tar products is probably the second edition of Mr. George Lunge's 'Treatise on the Distillation of Coal Tar' (London: Gurney and Jackson), which contains 191 working diagrams to scale.

ILLEGIBLE HANDWRITING.

Sir,—The enclosed order was handed in to-day, written by a local surgeon. As we are acquainted with his handwriting we managed to execute the order, but we send the original to you as a rather good sample of illegibility.

Bognor, April 18, 1896.

X.

[FACSIMILE OF ORDER.]

Pharmaceutical Journal

London

Edw. Ashton Esq

THE SOCIETY'S LOCAL SECRETARIES.

Sir,—I am much obliged to Mr. Kemp for his letter of the 11th. The replies he has had to some of his post-cards show that there are some people who do not object to that form of notice. Nevertheless, I still think that where it is necessary to send a reminder to subscribers, the method adopted by the Pharmaceutical Society is far preferable to that of the humble post-card. Mr. Rymer Young, who speaks as one having authority, assures Mr. Kemp that I shall be quite singular in my criticisms. That is merely an assumption on the part of Mr. Young, and one which I can assure him is incorrect. Mr. March is mistaken in supposing that I wish to throw any scorn upon our local secretary. As to my epidermis, he may be right; all men are not alike. It is just as possible for one man to have a rather thin epidermis as for another to be blessed with an excessively thick one.

Manchester, April 20, 1896.

T. R. ASHTON.

THE VAGARIES OF PUBLIC ANALYSTS.

Sir,—The cocksureness of paid analysts is a spectacle to make angels weep. How many would have to report before two could be found alike as regards the prescription dispensed by Mr. Meacher (*vide* your last Supplement)?

Ingredients according to Dispenser.	Found by Vestry Analyst.	Somerset House Analysis.
Pot. iodid. gr. 99	gr. 108	gr. 103·8
Iodine gr. 66	gr. 57	gr. 92·4
Aqua ℥iij.	℥iij.	℥iij.

Where does the public benefit come in?

London, April 20, 1896.

E. WARRELL.

* * * The Somerset House analysts appear to have expressed the opinion that the iodine was not fully dissolved when the division of the medicine into three parts took place. The cause of the discrepancies would be quite clear if that were so, but the dispenser would then be open to criticism for sending out an imperfect solution.—[Ed. *Pharm. Journ.*]

CAFFEINE IN TEA.

Sir,—Under the heading "Irish News" in your last issue you publish a report of a paper on "Camellia Thea," by Mr. D. O'Sullivan, which states that caffeine would lessen or disappear altogether from an infusion of tea if it be allowed to "stew." My experience, and that of other observers, is that caffeine is not volatilised by the evaporation of an aqueous infusion of tea on a water bath, and, further, that by boiling tea with water for several hours a larger proportion of caffeine is extracted than by boiling for half an hour. It would be interesting to know the cause of the diminution and subsequent disappearance of the caffeine from Mr. O'Sullivan's infusions, for certainly his results are sufficiently original to call for some confirmation.

7, Oseney Crescent, N. W.
April 22, 1896.

C. EDWD. SAGE.

MODERN PRESCRIBING.

Sir,—I am living in a country town, and received the following prescription to dispense (?) save the mark! I had to write to the different manufacturers; D. and F. and tabloids I know, but who is Randall, or of what his emulsion, castor oil, or any other oil?

Miss.—

℞ Blaud's pill c quina and arsenic.

"Duncan and Fleckhart's," No. 2.

Mitte 48. One to be taken twice a day after meals.

℞ Randall's Emulsion.

One tablespoonful to be taken every morning.

One tabloid of cascara sagrada, 2 grs., to be taken when an aperient is required at bedtime.

Of what use are the examinations, Minor or Major? What use is the B.P., of which I read, see preface: "It is intended to afford the medical profession and those engaged in the preparation of medicines throughout the British Empire one uniform standard and guide, whereby the nature and composition of substances to be used in medicine may be ascertained and determined." Cannot the medical man of the present day trust himself to write a prescription without being obliged to fall back upon some fellow's syrup, emulsion, or liquor?

April 20, 1896.

"MAJOR."

ANSWERS.

"ANTITOXIN."—The sample of so-called egg powder for colouring milk, which you send, is nothing but a water-soluble aniline dye, probably a "safranine" yellow.

J. BIENVENU.—The specimen you send is the seed of *Martynia diandra* (Pedaliaceæ).

"AMICUS."—You will find full information in the 'Regulations for Army Medical Services,' published by Eyre and Spottiswoode, East Harding Street, Fleet Street, E.C., price 1s. 6d.

"A REGISTERED ONE."—The regulations of the Local Government Board relative to the appointment of dispensers apply to poor law infirmaries and dispensaries only. You will find particulars in the 'Calendar of the Pharmaceutical Society.' See also the *Pharmaceutical Journal* for March 30, 1895, p. 841, and June 22, 1895, p. 1178.

J. HICKING.—The licence is required for the still, not for the condenser.

J. H. W.—There are differences of opinion as to what preparation should be dispensed when "liquor taraxaci" is ordered in a prescription. Some dispensers think the liquid extract should be used, others, again, dispense the succus. But there is no reason for assuming that an official preparation is of necessity intended, the more especially as there is a distinct preparation known as "liquor taraxaci" (*vide* Squire's 'Companion'). This differs from the succus; spirit being added to the bruised fresh root directly before pressing, instead of being added to the expressed juice.

QUERY.

SYRUP OF CAMPHOR.—Can any reader of the Journal supply the Bristol Royal Infirmary formula for syrup of camphor? It appears to be published, as the preparation is supplied by chemists in the West of England.

OBITUARY.

PARKER.—On April 14, William Parker, Chemist and Druggist, Derby. (Aged 26.)

PEIRCE.—On April 15, P. S. Peirce, Chemist and Druggist, Croydon. (Aged 33.)

POWELL.—On April 17, Edward Powell, Chemist and Druggist, late of Winchester. (Aged 81.)

LITTLEFIELD.—On April 19, in London, James Wavell Littlefield, Pharmaceutical Chemist, of Ventnor, I.W. (Aged 68.) Mr. Littlefield had been a member of the Pharmaceutical Society since 1854, and was local secretary at Ventnor.

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs, Adams, Ashton, Bard, Bayley, Bienvenu, Bindloss, Bolton Burrell, Charles, Hickering, Hill, Jones, Lander, Lunan, Russell, Sage, Sawyer, Thomas, Tyrer, Wallace, Ward, Warrell.

“THE MONTH.”

A New Zirconium Carbide.

Some time ago H. Moissan pointed out that zirconium could easily be obtained in the metallic state on reducing zirconia by means of carbon in the electric furnace, and at the same meeting of the Academy of Sciences, Troost

described the formation of a carbide of zirconium, ZrC_2 . Later experiments by Moissan and Lengfeld have resulted in the discovery of another compound of the same metal with carbon. This carbide, ZrC , was obtained by heating its components in the now celebrated electric furnace, and is described as crystalline and non-decomposable by the action of water up to $100^\circ C$. This great stability is in marked contrast to the behaviour, when exposed to the action of water, of the metallic carbides previously formed (*ante*, p. 241), and seems especially curious when it is considered that carbide of thorium—a metal very near to zirconium in Mendéléeff's classification—decomposes readily when acted upon by cold water, acetylene, ethylene, methane, and hydrogen being evolved. Zirconium carbide has a greyish colour and metallic appearance, and remains unaltered in both dry and moist air. It scratches glass and quartz easily, but does not affect the ruby. The hydracids attack it readily—hydrofluoric in the cold, hydrochloric at 250° , hydrobromic at 300° , and hydriodic near 400° . At a red heat the carbide burns in oxygen, and in the presence of sulphur vapour a small quantity of sulphide is formed. Ammonia and hydrochloric acid are without action on the new compound, but it is decomposed by nitric and sulphuric acids, whilst strong oxidising agents attack it energetically (*Comp. rend.*, cxxii., 651).

Constitution of Rhodinol.

Barbier and Bouveault recently alleged that the so-called “rhodinol” extracted by Eckart from rose oil is in reality a mixture of two alcohols—lemonol and rhodinol, the composition of the latter being represented by the formula

$C_{10}H_{20}O$ (*ante*, p. 241). By oxidation of this “pure” rhodinol they have obtained a volatile product, boiling at 90° under a pressure of 10 Mm., possessing a very strong odour of mint, and apparently corresponding to the formula $C_{10}H_{18}O$. This aldehyde, which they name “rhodinol,” was associated with an oily monobasic acid—rhodinic acid, $C_{10}H_{18}O_2$ —which possesses a strong and disagreeable odour, boils at 147° , and is identical with a product of the oxidation of rhodinol from pelargonium oil, to which the formula $C_{10}H_{16}O_2$ was wrongly attributed at the time it was described. A third product of the oxidation of the new rhodinol is a neutral oil, $C_{20}H_{36}O_2$, which boils at 190° and also possesses a disagreeable odour. This body—the rhodinate of rhodinyll—is easily split up into rhodinol and potassium rhodinate by the action of alcoholic potash. The authors claim that the results of these later experiments afford further proof of the identity of the so-called “rhodinol” yielded by the oils of rose and pelargonium, and prove that true rhodinol is a primary alcohol with closed chain, possessing an ethylenic bond (*Comp. rend.*, cxxii., 673).

This aldehyde, as mentioned above, was observed by Barbier and Bouveault to possess a very strong odour of mint. Pursuing their investigations, the later results of which are published in another paper, they find that it is in reality a mixture of true rhodinol and menthone. The presence of menthone in the oxidation products of rhodinol naturally suggests the idea that the alcohol may have been mixed with menthol, but this is disproved by the fact that no odour of menthol was distinguishable in the rhodinol, and there is, moreover, a difference of 20° between the boiling points of the two

alcohols, so that the presence of menthol should have been readily apparent. It seemed more probable, therefore, to the authors that the menthone was formed by isomerisation of rhodinol, and they claim to have effected such a change experimentally. They point out also that more light is thus thrown upon the constitution of rhodinol, or dimethyloctenol, as they now prefer to regard it (*Comp. rend.*, cxxii., 737).

A New Elementary Substance.

E. Demarçay publishes evidence in support of a suggestion that a hitherto unknown element exists in the rare earths yielding samarium. From these earths he has obtained a colourless, slightly-soluble nitrate, showing only slight traces of the absorption bands of samarium, together with the spectrum of gadolinum, an element discovered by Marignac, and other lines not belonging to that spectrum. The oxide prepared from this nitrate is distinguished by its lack of colour, the formation of colourless salts without absorption spectra, and differences between its spectrum and those of the oxides of lanthanum, cerium, gadolinum, ytterbium, and terbium, the only ones so far known that form colourless salts. It is further distinguished from lanthanum and cerium oxides by its relatively feeble basicity and the solubility of its double potassium sulphate; from ytterbium oxide it is distinguished by its relatively strong basicity and the slight solubility of its double sulphate; but it strongly resembles the oxides of gadolinum and samarium, the use of the spectroscope being required to distinguish it from them. The new element is provisionally designated as Σ , and its oxide is therefore Σ_2O_3 . It is stated that spectrum analysis also indicates the existence of another oxide, but further comment on this point is deferred. Since samarium oxide prepared by Clève, and supposed by him to be pure, has been found by Demarçay to contain definite traces of terbium and gadolinum oxides, together with a considerable proportion of the newly-discovered oxide, it is suggested that the atomic weight ascribed to samarium—150—may probably require to be modified (*Comp. rend.*, cxxii., 728).

Kresochin.

A disinfectant preparation introduced under this name by F. Fritzsche, of Hamburg, is described as consisting of neutral quinoline tricresyl sulphonate and a combination of quinoline with tricresol: it contains 33 per cent. quinoline and 17 per cent. tricresol. It differs from other cresol solutions in being free from alkali, and the constituents are said to be in a condition especially favourable for the exercise of their bactericide action. This preparation dissolves in water to the extent of 5 per cent., and the solution does not give rise to the slimy feeling of soap preparations (*Pharm. Centralh.*, xxxvii., 247).

Scopola Bases.

In reference to the observations by Hesse, Professor Schmidt points out that in his examination of the bases of scopola root he was never able to detect hyoscine, $C_{17}H_{21}NO_4$, or the base named by Hesse atroscine, but he obtained scopolamine $C_{17}H_{21}NO_4$, in considerable amount. The material employed in this investigation was the definitely crystallised hydrobromide, having a rotation of $-25^\circ 43'$. A substance having the same characters was isolated from a salt supplied by E. Merck as hyoscine hydrobromide (Ladenburg). It was not until 1894 that scopolamine salt of lower rotatory power ($[\alpha]_D = -14^\circ 58'$) was observed in the course of an examination with Luboldt of a crystalline salt obtained from Gehe and Co., and the base isolated from that salt had in water solution a rotation of $-4^\circ 30'$, in alcohol solution only $-1^\circ 37'$. Further quantities of scopolamine hydrobromide obtained this year from E. Merck and from Gehe and Co. gave respectively rotations $= -17^\circ 9'$ and $-6^\circ 62'$. The last-mentioned salt was not distinguishable from that having a higher rotation, which was prepared

by Professor Schmidt, and a careful crystallographic comparison by Dr. Busz showed no difference between them. This was also the case with the gold salts and the products obtained by the action of baryta water. In both cases the scopoline melted at 109°–110° C., and the atropic acid boiled at 241°–243°. In reference to the observation by Hesse that the rotation of scopolamine is much reduced by contact with caustic soda, Professor Schmidt mentions that by the action of silver oxide upon scopolamine hydrobromide having high lævo-rotation, he has obtained scopolamine that was almost inactive, and that the very soluble hydrobromide of this base generally crystallises without water. It is suggested that these observations, together with the known facts relating to the conversion of hyoscyamine into atropine, offer a simple explanation of the varying rotation of commercial scopolamine, and in fact Schmidt has succeeded in obtaining from the same scopolia roots products of different rotatory power according to the method of preparation adopted. When ammonia or sodium bicarbonate was used, a product of normal rotation was obtained, and when caustic soda or other strong base was used, the product was but slightly rotatory. Hence the reduced rotation may be due to the presence of inactive scopolamine—a base that does not pre-exist in normal scopolia root, but is formed during the process of extraction. On these grounds the application of the name atropine to this inactive base is thought by Professor Schmidt to be undesirable. This view is held to be supported by the circumstance that there is no practical difference in the action of the substances having different rotation. This has been ascertained by Drs. Uthoff and Axenfeld, and, moreover, it is possible to produce scopolamine salts of the same rotation as formerly by avoiding the use of strong bases (*Apotheker Zeitung*, xi., 260).

Under this name a substitute for cocaine has been introduced by the Schering Company. It is the hydrochloride of an oxypiperidine derivative, and has been found useful for producing local anæsthesia. The base itself is almost insoluble in water, but the hydrochloride is readily soluble (*Pharm. Zeit.*, xli., 279).

This is a compound of tannin with albumin, which is not readily dissolved by the gastric juice, but is soluble in the intestinal canal. It has been prepared in accordance with the suggestion of Dr. Gottlieb by Knoll and Co., of Ludwigshafen, for use as an intestinal astringent. It is prepared by long continued heating of tannin albuminate, which has the effect of rendering that preparation highly resistant to pepsin digestion. Tannalbin is a pale yellow tasteless powder, containing about 50 per cent. of tannin. It is recommended by Dr. von Engel in cases of acute diarrhoea and intestinal catarrh (*Deutsch. Med. Wochens.*, 1896).

E. Kremers and O. L. Schreiner have prepared pure carvone by fractionating caraway oil under reduced pressure (30 Mm.), and collecting two fractions—one up to 110°, and the other 110° to 125°. These were mixed and again distilled, the fraction passing over between 120° and 123° being collected separately. The specific gravity of this was 0.957 at 20°, and the angle of rotation in 100 Mm. tube = +59° 7' at the same temperature. One-fourth its volume of alcohol was added to the fraction and the carvone precipitated as hydrosulphide. This was re-crystallised from a mixture of chloroform, 3 parts, and alcohol, 1 part, as suggested by Beyer, and the angle of rotation of a 10 per cent. solution in chloroform was then found to be +8°, and sp. gr. 1.426 at 20°, "hence $[a]_D = +56.101$, and not +5° 53 as reported by Beyer." The carvone was regenerated by Beyer's method, 3 parts of the hydrosulphide being treated with a cold solution of potassium hydrate, 1 part, in

alcohol, 20 parts, and allowed to stand three or four hours in the cold. The mixture was then poured into ten times its volume of water, and the separated carvone collected and dried. It was slightly yellowish in colour, and the following constants were indicated: Sp. gr. 0.979, angle of rotation = +58° 47', hence $[a]_D = +61.19$. Upon distillation with water the carvone came over perfectly colourless. The sp. gr. of the dried oil was 0.96058 at 20°, and in a 100 Mm. tube it turned the plane of polarised light 60° 11' to the right, hence $[a]_D = +62.65$. The changes in specific gravity and angle of rotation during purification are therefore very slight (*Pharm. Rev.*, xiv., 77).

Dextrogyrate carvone is a natural constituent of the oils of caraway (*Carum carvi*) and dill (*Anethum graveolens*), whilst lævograte carvone occurs in spearmint oil (*Mentha viridis*), the allied krauseminz oil (*Mentha crispa*), and in kuromoji oil (*Lindera sericea*). Various methods have been devised for assaying the carvone content of these oils, but Kremers and Schreiner have found them all more or less unsatisfactory. They have experimented, therefore, upon pure carvone, prepared as described in the preceding note, with a view to finding a satisfactory assay process, and now publish the details of one which gives results that come within one per cent. of the true carvone content. A mixture of 5 grammes each of pure carvone and limonene was dissolved in 25 C.c. of alcohol; hydroxylamine hydrochlorate, 5 grammes, and sodium bicarbonate, 6.5 grammes, were added, and the mixture was then boiled for half an hour upon a water bath, in a flask connected with a reflux condenser. Water, 25 C.c., was next added, and the alcohol distilled off, carrying with it a large quantity of limonene. Steam was then passed through the liquid until traces of carvoxime came over, the last portions of the distillate being collected separately in test tubes and the operation interrupted when traces of crystals of carvoxime appeared on the surface. The tube of the condenser was now washed with a little hot water which was afterwards run into the flask, together with the last collected distillate. After the contents of the flask had cooled, the solidified carvoxime was removed from the sides of the flask by means of a stiff wire-loop, then thrown upon a pressure filter, washed, and dried by suction. The air-dried carvoxime was transferred to a tared glass dish, heated for one hour on a water bath, and weighed when cool. To the weight obtained, 0.100 Gm. was added to allow for loss during heating, and the amount of carvone calculated from the weight of carvoxime, as follows:—

$$\frac{C_{10}H_{14}NOH}{164.67}, \frac{C_{10}H_{14}O}{149.66} = 1:0.9088$$

or, the weight of carvoxime expressed in grammes, when multiplied by 0.9088, gave the weight of the equivalent amount of carvone. A 50 per cent. carvone mixture was found to give by this method the following figures:—

I.	5.525 grammes Carvoxime	=	50.22 per cent. Carvone.
II.	5.592	"	" = 50.88
III.	5.579	"	" = 51.71
IV.	5.508	"	" = 50.00

When more than 50 per cent. of carvone is present, a larger quantity of hydroxylamine must be used (*Pharm. Rev.*, xiv., 78).

A. Reychler has confirmed Barbier's statements that the body $C_{10}H_{17}Cl$ cannot be isolated, and that geraniol reacts with two molecules of hydrochloric acid to form a liquid dihydrochlorate, $C_{10}H_{13}Cl_2$, which when decomposed by means of a boiling solution of potassium acetate yields dipentene. Schimmel's geraniol, extracted from citronella oil, was used in Reychler's experiments, and readily absorbed gaseous hydrochloric acid, 40 grammes of geraniol taking up 22.4 grammes of acid. On

Geranyl Chloride.

washing with dilute sodium carbonate solution, part of the acid was removed, and subsequent analysis proved that 40 grammes of the alcohol had combined with 18 grammes of acid, theory requiring 18.9 grammes. It was also found, thus confirming an observation by Eckart, that the whole of the chlorine could be removed from the geranyl dihydrochlorate by boiling it for two and a half hours with an alcoholic solution of caustic potash, geraniol being thus regenerated (*Bull. de la Soc. Chim.* [3], xv., 364).

E. Cabannes has confirmed the results of Borscow with regard to the localisation of the glucoside, frangulin, in the bark of *Rhamnus frangula*. He examined sections of the bark as they were being acted upon by alcoholic potash solution, and observed a reddish colour at once develop in the bast and cortical parenchyma, being especially marked in the medullary rays. On treating sections of the bark of *R. purshianus* in the same manner a different result was apparent, the coloration affecting only the five or six layers of bast adjoining the cambium, then spreading through the medullary rays and developing in one or two layers of the cortical parenchyma. Red granulations were observed in the bast cells, which were unaffected by acetic, nitric, hydrochloric, and sulphuric acids. Ammonia and soda were found to produce the same reddish coloration as potash, and the conclusion drawn from the experiments is that the active principles of the bark—in so far as these are represented by cascarin, rhamnetin, frangulin, rhamnoxanthin, and chrysophanic acid—are concentrated in the layers of bast immediately adjoining the cambium, and in the medullary rays traversing those layers (*Répertoire* [3], vii., 97).

According to W. A. Setchell and W. J. V. Osterhout, the selection of aqueous media for preserving algæ for class purposes is a matter requiring careful consideration. They find, too, that no one medium can be used indiscriminately for all kinds of material. The Cyanophyceæ are best prepared with a solution containing 1 per cent. each of chrome alum and formalin. The gelatinous sheath and matrices are rendered firm by this solution, the cell contents are kept in a very natural condition, and in most cases the colours are retained in their ordinary tints. Formalin solution, 1-2 per cent., preserves the cell contents very well, but does not preserve the colours or the softer gelatinous sheaths and matrices. Camphor water fails with many blue-greens, and is not strong enough for species preserved in the mass and associated with many bacteria. The Chlorophyceæ are very satisfactorily preserved in any of these media, but chrome alum is preferable in most cases, though membranaceous forms like *Ulva lactena*, etc., are rendered very brittle, and are, therefore, better placed in simple formalin solution. The Phaeophyceæ do well when placed immediately in 1 per cent. formalin solution in sea-water, but the larger forms are better fixed in 1 per cent. chrome alum for three to six hours and then preserved in 2 per cent. formalin solution or camphor water. Specimens for crushing may remain indefinitely in chrome alum solution. The coarser forms of the Rhodophyceæ may be kept in excellent condition in any one of the three solutions recommended, chrome alum preserving more colour than formalin or camphor water. For finer study, specimens are best left in a concentrated solution of picric acid in sea-water for twenty-four hours, then washed in plain sea-water for twenty-four hours longer, and preserved in camphorated sea-water. Such genera as *Nemalion*, *Champia*, *Rhabdonia*, *Cystoclonium*, etc., respond best to this treatment. Delicate species like *Griffithsia bornetiana*, *Callithamnion baileyi*, *C. borneri*, *C. seirospermum*, etc., must be placed in 2 per cent. formalin in sea-water, with plenty of fluid, so

as not to be crushed, and though the colour disappears, the cells keep their shape and the plants present a life-like appearance so far as form goes. To prevent *Dasya elegans* dropping its hairs, and the more delicate species of *Polysiphonia* breaking up into short pieces, they should be put whilst fairly fresh into formalin or chrome alum solution (*Bot. Gazette*, xxi., 140).

A. Sapin remarks that creosote perles and capsules are usually bought ready for use by the pharmacist, and that to facilitate their preservation it is usual to diminish the causticity of the creosote by adding to it a certain proportion of oil. He finds, however, that the articles supplied often contain only traces of creosote, and the following method of assaying them is recommended:—Fifty perles are placed in a conical flask, covered with distilled water, and allowed to macerate for some hours in the cold. The application of moderate heat then suffices to liquefy the contents of the flask, and the oil holding the creosote in solution rises to the surface. On cooling the flask, the lower layer—containing gelatin, gum, and water—solidifies. The upper layer should then be shaken with 25 C.c. of ether and decanted into a tared vessel after which the gelatin mass is reliquefied and treated with ether in a similar way. The ethereal liquids are next mixed, the ether is distilled off, and the creosote separated from the oil by solution in ethylic or methylic alcohol, on evaporating which the amount of creosote actually present can be readily ascertained by weighing unless the oil should be castor oil, which is easily distinguished. Usually, however, the oil employed is liver, almond, or nut oil, and the following table shows the results that have been obtained with mixtures specially prepared for the purpose:—

Quantities of Creosote and Oil mixed.	Found after two exhaustions with Alcohol.	Found after three exhaustions with Alcohol.
Creosote 2.2902 Gm.	2.4162 Gm.	2.4762 Gm.
Liver oil..... 2.1022 „	2.3762 „	2.3162 „
Creosote 2.6820 „	2.8157 „	2.8797 „
Almond oil..... 2.3742 „	2.2405 „	2.1765 „
Creosote 2.6176 „	2.7428 „	2.8352 „
Nut oil 2.4792 „	2.3540 „	2.2616 „

—(*Moniteur*, xlvi., 1081).

In the Journal for November 23 last (p. 445) there appeared a notice of a new form of accumulator, described by H. N. Warren, in which plates prepared by compressing spongy lead were employed. He now describes in detail the preparation of such plates for a non-sulphating phospho-accumulator. Lead grids of special construction are treated with a paste composed of litharge mixed with phosphoric and sulphuric acids, and these, after drying at 250° F. for several hours, are further treated with acids and dried until biscuit-like plates are obtained. The plates being then arranged in pile fashion, with alternate layers of amalgamised zinc, and insulated from each other by small carbon blocks, the pile is immersed in dilute sulphuric acid, when a somewhat violent reaction takes place, gas being copiously evolved from the lead plates. They are rendered porous by this treatment, and are afterwards freed from zinc salts by washing. They are then treated electrically until the whole of the spongy lead is converted into peroxide, and finally rendered non-sulphating by soaking in dilute phosphoric acid. It is claimed that such plates compare most favourably with any now upon the market and that they can be formed in less than half the usual time (*Chem. News*, lxxiii., 191).

Creosote in Perles.

A New Storage Cell.

Action of Copper Compounds on the Organism.

Filehne has studied the action of copper when combined with albuminous substances, and finds that a cupratin compound, analogous to Schmeideberg's ferratin, can be administered to dogs and cats in doses of 2·6 grammes within twenty days without injurious effects. He infers that compounds of copper with albumin would not be injurious in human food, and that from ·01 to ·02 gramme of copper daily in this form would not cause any sensible disturbance. The case is very different with copper stearate, which causes serious degeneration of the liver and kidneys when administered for some long time, though it was not possible in this way to produce acute poisoning (*Deutsch. Med. Wochensh.*, 1896)

Oysters and Disease.

Professor W. A. Herdman points out, in the report for 1895 of the Lancashire Sea-Fisheries Laboratory, at University College, Liverpool, that experiments conducted in that institution demonstrate the beneficial effects of aëration to oysters, by the addition of air or change of water. With regard to the food that is found suitable, oysters are said to thrive best upon living Protophyta (diatoms, desmids, algæ) and Protozoa (infusoria, etc.). Sugar is found to exercise an exceedingly harmful effect on the bivalves, causing them to decrease in weight and die. Oatmeal and flour, on the other hand, enable them to maintain their weight, or even increase, but after a time they sicken and die. Peptonised broth is tolerated by oysters to a considerable extent. Stagnation of the water above the oyster beds produces deleterious effects, owing to the collection of excretory products, growth of micro-organisms, and formation of scums upon the surface. Up to a certain point oysters have been found capable of rendering sewage-contaminated water clear, and they can live for a prolonged period in water rendered completely opaque by the addition of faecal matter, that from typhoid cases proving more inimical than that obtained from healthy subjects. With regard to infection by micro-organisms, the typhoid bacillus dies off very rapidly in ordinary seawater, and it seems possible that, by methods similar to those employed in the "Bassins de dégorgeement" of the French ostreiculturist, where oysters are carefully subjected to a natural process of cleaning, oysters previously contaminated with sewage can be freed from pathogenic organisms or their products without spoiling them for the market. The green coloration of certain oysters, which has been attributed to the presence of copper, is considered at length in the report, but the opinion is expressed that, though copper is probably always present in oysters, the green colour is due to disease, the liver in specimens exhibiting "this pale green leucocytosis" being in an abnormal, shrunken, and degenerate condition. Practically, no more copper is found in the green parts than in the corresponding parts of colourless oysters.

Natural Aluminium Succinate.

J. H. Maiden and H. G. Smith have examined a natural deposit found in the wood of *Grevillea robusta*, R. Br., and proved that it consists of aluminium succinate. In describing this deposit before the Royal Society of N.S. Wales, they stated that it was quite soft, almost white, and partly crystalline, minute acicular crystals being seen between crossed Nicol prisms, with a quarter-inch objective. The composition of the substance is given as succinic acid, 43·464 per cent.; alumina, 31·447 per cent.; water, 25·089 per cent., and it is regarded as a basic aluminium succinate, $Al_2(C_4H_4O_4)_3 \cdot Al_2O_3$. A trace of acetic acid was detected, and its identification is probably indicative of the mode of formation of the succinic acid by fermentation of malic acid. The probability is that the aluminium originally circulated through the vessels of the

tree in the form of malate, in aqueous solution. The insoluble aluminium succinate, however, does not appear to have been found in any tree before.

Reference has already been made to Buguet's observations on the possibility of distinguishing diamonds and jet from many of their imitations by the application of the x -rays (*ante*, p. 244). The transparency of aluminium to the rays has since led them to study the effects produced in the case of precious stones of which that metal is a constituent. They find that the crystalline forms of alumina known as the corundum, ruby, sapphire, emerald, topaz, and cat's-eye, may be classed between their imitations and the diamond with regard to the effect produced. The turquoise, which consists of aluminium phosphate, is also clearly distinguished from its substitutes by means of the rays, and mellite is almost as transparent as carbon. Fine pearls of small size are less opaque to the rays than false ones of the same size, and may be clearly distinguished from them; but in the case of larger specimens the result is less certain, depending greatly upon the manner in which the false pearls have been made (*Comp. rend.*, cxxii., 726).

Arsenic in Coal.

At a recent trial in Sydney, N.S.W., in connection with a case of arsenical poisoning, the accused was alleged to have disposed of the arsenic remaining in his possession by burning it in the kitchen stove, and on examination the soot and flue dust was found to contain eight grains of arsenic to the pound. In defence, however, it was urged that arsenic exists naturally in some portions of coal seams, and that the poison found in the flue might thus be present quite innocently. To discover if it were possible to find arsenic in New South Wales coal, W. M. Doherty obtained and examined various samples of soot, taken from flues where coal had been burned for years, in addition to samples of coal from the different coal seams in the colony. In no instance could the slightest trace of arsenic be found, though copper and lead were found in two instances, and arsenic-free brasses occurred in comparatively large quantities in some of the samples (*Chem. News*, lxxiii., 191).

The report for 1895 on the trade of the continental district of Suakin shows that there has been during the year a large increase in the quantity of gum exported. More than 1900 tons, valued at £61,711, was shipped during the twelve months and considerable stocks remained on hand at the end of the year. The market price in March of the present year was 16½ to 17 dols. the "kuntar," this being roughly equivalent to £2 per cwt. At the time of writing the report large quantities of gum were believed to be on their way from the interior, but the Berber road had recently been closed by the Dervishes at Kokreb, so preventing any of it from reaching the coast at present.

Poisoning by Caterpillars.

Girard, a veterinary surgeon, at Barnewit, has observed numerous fatal cases of poisoning in ducks after eating caterpillars, notably those of *Pieris brassicae*, the large, white cabbage butterfly. About six hours after eating these larvæ poisoning became evident, diarrhoea and staggering gait, followed by dyspnoea, and ultimately by death. Autopsy showed the essential lesions to indicate inflammation of the digestive tube. It is probable that these symptoms are caused by the inflammation produced in the alimentary canal by the very minute hairs with which this caterpillar is covered. It has been noticed that chickens invariably refuse the larvæ of *P. brassicae*, although they greedily eat the smooth larvæ of the various Noctua.

A BOTANICAL RAMBLE IN SPRING.

BY E. F. SALMON.

Certainly a pharmacist ought to take some interest in the flowers of the field, since botany forms an essential part of the syllabus prescribed for his training. Therefore when an ardent Brighton botanist invited the writer to a day's botanising on Chailey Common, he felt in duty bound to accept at once, if only for the honour of the profession to which he is attached, including as it does many men of first-class botanic reputation, although, perhaps, with the majority the interest in the science is less keen than in their student days.

Since Sussex, then, is a county of delight to the field botanist, and Chailey Common one of its happy hunting grounds; since the guide was one of those men who have the Sussex flora at their fingers' ends—"a man" who, as "Dr. George Baker, one of Her Majesty's chief surgeons," said of John Gerard, "I protest, upon my conscience, I do not think for the knowledge of plants he is inferior to any"—the writer was only too pleased to find himself with his botanical friend and guide at the Haywards Heath railway station, on a fine morning when April was nearly three parts spent. Both the local Natural History Society and the Corporation are greatly indebted to my guide—the one for the greater part of the specimens and the mounting, etc., connected with the Society's herbarium of Sussex plants which it is forming, and the other for assistance rendered, as well as specimens contributed to the exhibition of wild plants, which has been held the last two years in the Corporation Museum during the flowering season (an exhibition, by the bye, which ought to prove extremely valuable to pharmaceutical students in the locality). Starting then on a four-mile walk to the Common, passing woods filled with anemones, primroses, and violets, the signs of bursting buds everywhere visible on the trees, save the oaks, Scayne's Hill was reached, where stone is being quarried for the Brighton Parish Church. Here in a hedge *Vinca minor*, the lesser periwinkle, was gathered, and in a field daffodils had been abundant, but now nothing except their leaves remained visible. However, specimens of *Orchis mascula* and *O. morio* were gathered, this being tolerably early.

Chailey Common at last reached, *Carex præcox*, the earliest sedge, was very much in evidence, and a few specimens of *C. glauca*, so named from its glaucous foliage. "What is this?" said the writer, as he picked a piece of straggling stem with catkins on it, "it looks like willow." "Oh, yes, *Salix repens*, there are several varieties of it," said the guide, and, as a matter of fact, Sowerby gives seven plates of the varieties. Passing down to one of the boggy spots, water blinks, *Montia fontana*, var. *rivularis*, is seen, a little plant with inconspicuous flowers, yet occurring in clusters, and therefore easily seen; farther on in another bog the marsh violet, *V. palustris* was found, which, says Dr. Arnold,* is rare. In a pool was found *Ranunculus peltatus*, var. *floribundus*, one of the water crowfoots, in another a far rarer species, *R. lenormandi*, the petals of which are not so broad and do not overlap one another as in *R. peltatus*. "In a pond over there," said the leader, "Mr. Druce and I found specimens of *Damasonium stellatum*," a rare plant (Mr. G. C. Druce, M.A., of Oxford, is no stranger to the Sussex flora). Passing by the cotton sedges, not yet sufficiently advanced to show their curious cottony tufts, the writer and his botanical friend pushed on, for the Common is of very large extent, to where it was hoped to find *Carex montana* which by Dr. Arnold is marked very rare. Everywhere was the *Viola sylvatica* conspicuous, this led to a discussion on the dog

violet. To the public every violet not possessing the strong perfume of *V. odorata* is a dog violet; true it is sometimes called Gerard's dog violet, but the botanist needs be more careful; *Viola canina* of the London Catalogue has a central flowering stem, whereas the flowers of *V. sylvatica* are axillary only; the petals are of lighter colour and the spur is often tinged with yellow. After diligent search some specimens of the true *V. canina* were found, though it was early for them.

The mention of Gerard provokes a reference to his herbal, where says he, in his chapter on violets, speaking of the March violets in particular and flowering plants in general, "the recreation of the minde which is taken hereby, cannot be but very good and honest, for they admonish and stir up a man to that which is comely and honest, for floures through their beautie, variety of colour, and exquisite forme, do bring to a liberall and gentle, manly minde, the remembrance of honestie, comeliness, and all kindes of vertues." But this is a digression, resuming the journey, the field woodrush, *Luzula campestris*, with its clustered heads, and *L. pilosa*, with its panicle of solitary flowers are noticed, with their curiously hairy leaves; the milkwort, *P. vulgaris*, var. *serpyllacea*, the petty whin, *Genista anglica*; bitter vetch, *Orobus tuberosus*, anemones, the sphagnum moss, and at last the spot is reached where *Carex montana* is to be found, but twenty minutes or more elapse, spent in diligent search before a plant is discovered, and then but a few others are to be seen. Having secured a specimen of this rare sedge, which has an appearance something like that of *C. pilulifera*, the spikes being roundish, the walk is resumed, when, lo! a veritable plantation of *C. montana* is discovered and more samples gathered. Still onward pushes the enthusiast, followed by the pharmacist, to a part where the oxlip is said to grow.

Now the common narrows, and a copse appears on one side. Presently a little clump of *Oxalis acetosella*, the beautiful wood-sorrel, is seen in full flower; in another place a sprig of common broom is cut, and then, as the common is finally left, a meadow whose banks are studded with primroses is itself bearing cowslips abundantly, and a little search soon reveals the oxlip. But this beautiful flower is not the *Primula elatior* (Jacquin) which Dr. Arnold says is found only in the eastern counties, it is a hybrid between the primrose and cowslip, *Primula vulgaris*, var. *caulescens*. Thus farewell to Chailey Common. But the journey stationwards is made somewhat circuitous that a small copse at Freshfield may be visited for the sake of the woodruff, and we notice on the way plants in full flower of species common enough, yet pleasing withal—goldilocks, marsh marigold, celandine, cuckoo flower, and so on. Now the copse is reached, and here the wild hyacinth is beginning to show itself abundantly, presently to make a brave show.

Penetrating within, signs of *Asperula odorata* are perceived, and at length some plants are gathered in flower of this sweet-smelling species, and agreeing with Master Gerard's description of it, the day's botanical ramble is brought to a close, and the "enthusiast" and the "pharmacist" return home laden with spoils of from between thirty and forty different species. Appended is old John Gerard's description of woodrooffe:—"Woodrooffe hath many square stalkes full of ioints, and at euery knot or ioint seuen or eight long, narrow leaues, set round about like a star, or the rowell of a spurre; the floures grow at the top of the stems, of a white colour and of a very sweet smell, as is the rest of the herbe, which being made up into garlands or bundles and hanged up in houses in the heat of Sommer doth very wel attemper the aire, coole and make fresh the place, to the delight and comfort of such as are therein."

* 'Flora of Sussex,' by the Rev. Dr. Arnold.

MALT EXTRACT.*

BY M. CONROY.

In consequence of this article being now largely made for confectionery and other purposes quite outside the range of pharmacy, it is being offered to pharmacists at very low prices. Several samples of this kind of extract have recently come under my notice, and I have found them to be absolutely devoid of diastasic power. A peculiar and important feature about these extracts, in which the diastase has been destroyed by over-heating, is that they keep much better than extracts that have been prepared at a low temperature and of full diastasic strength. I have seen samples of this non-diastasic kind twelve months old, quite good and mobile, whilst samples only a few weeks old of carefully prepared extract of full diastasic strength have become granulated and quite solid. This has been a common experience with me for some years past, and there can be little doubt that diastase in malt extract has a tendency to promote granulation.

Medical men attach great importance to the diastasic value of malt extract, and prescribe it in cases of weak digestion on this account quite as much as for its nutrient value in waiting diseases. It is, therefore, of importance that pharmacists should examine this extract for diastase on account of the large quantity that is manufactured and offered containing no diastase whatever. The following simple method is a good one:—Take 10 grains of potato starch or arrowroot, and boil in 2 oz. of water for three minutes, cool to 110° Fahr., and add 10 grains of the extract to be tested, dissolved in oz. of water. Keep the solution at 100° Fahr. until small quantities (about 30 minims) taken out at intervals of one minute cease to give a blue colour with 1 drop of tincture of iodine. A good extract should not take longer than five to six minutes.

NOTE ON CREAM OF TARTAR.*

BY M. CONROY.

In the *Pharmaceutical Journal* of April 11 there is a communication by Mr. C. A. Hill on the assay of cream of tartar, in which he recommends the direct titration process with standard alkali. Mr. Hill explains that he recommends this process not only because it is far more convenient and expeditious than the ignition process of the Pharmacopœia, "but also in order to notify the fact that the latter process is quite inaccurate, owing to the loss of potassium carbonate from reaction with calcium sulphate, which occurs in commercial cream of tartar." Mr. Hill gives examples of three samples of commercial cream of tartar, one of which contains 4.2 per cent. and another 2.46 per cent. of calcium sulphate. By the direct process recommended by Mr. Hill, the first of these samples tests 96 per cent. potassium acid tartrate, whilst by the B.P. ignition process the percentage found is only 84.5 per cent., this difference being due as explained to the loss of potassium carbonate from reaction with the 4.2 per cent. of calcium sulphate. I quite agree with the figures given by Mr. Hill, and also with his statement that the direct process is much more expeditious and convenient, but I must take exception to his statement that commercial cream of tartar contains calcium sulphate in sufficient quantity to appreciably affect the B.P. method of assay. Hundreds of samples have passed through my hands, and in only three instances have I found calcium sulphate present in quantity sufficient to affect the B.P. method. Those three samples I wish particularly to point out were from cream of tartar imported in the powdered state, and I have reason to believe they were all from the same source. In no instance have I found more than a trace of sulphate in crystallised cream of tartar.

Judging by my own experience of these facts, I think I am justi-

* Read before the Liverpool Chemists' Association.

fied in saying that cream of tartar containing the amount of calcium sulphate found by Mr. Hill must have been wilfully adulterated, and does not represent the commercial article. There is no difficulty in obtaining cream of tartar of 98 to 99 per cent. purity, and I would recommend that the B.P. standard be raised from 92.15 per cent., at which it now stands, to at least 96 per cent. The United States Pharmacopœia requires it to be not under 99 per cent.

One advantage of the B.P. ignition method is that it excludes samples containing any appreciable quantity of calcium sulphate, but provided a qualitative test for sulphate be included in the B.P., as is done in the U.S. Pharmacopœia, it would certainly be an advantage to adopt the direct alkali titration method as the official test. In adopting this method, we cannot do better than follow on the lines laid down in the U.S. Pharmacopœia test, which is as follows:—“A solution of 1.88 Gm. of potassium bitartrate in 100 C.c. of hot water should require for complete neutralisation not less than 9.9 C.c. of normal potassium hydrate V.S. (each C.c. corresponding to 10 per cent. of the pure salt), phenolphthalein being used as indicator.”

MEDICINE AND PHARMACY IN CHINA.*

In many Buddhist monasteries in China the science of medicine is taught to those who wish to dedicate themselves to its practice, and some of these establishments are, either directly or indirectly, under Imperial patronage. There are some extremely well-endowed monasteries, which, in addition to the fat incomes they enjoy, are the possessors of libraries of medical literature, consisting of more than 40,000 volumes; but the teaching given is of the poorest and most deficient description one can well imagine. Official protection exists only in name, and the exercise of the medical and pharmaceutical professions is entirely free. Any individual becoming tired of his proper calling, be it labourer or cobbler, can soon become a doctor if he has a wish to do so, and to attain his object must first enter one of these monasteries, where he is allowed to copy out certain volumes of medical books, particularly such as treat of the pulse and of herbal remedies. Afterwards, without any other instruction or information than what he has derived from these books, he is a fully fledged medical man, ready to practise, and when he wishes to do so he locates himself in some central position, at a street corner, in a square or market, or any spot where there is plenty of traffic and people passing to and fro, there to wait consultations. But in order that a consultation should bear fruit, our improvised doctor must give an air of mystery to his acts and words. With this in view, he procures a small bird about the size of a sparrow, which he trains to draw a little folded paper from a tin box. This paper has written on it, in Chinese characters, the number of a certain paragraph in his dictionary of medicine, which is thereupon turned to, and such remedies as are therein mentioned are applied to the patient, whether they are appropriate or not. The bird, when its duty is accomplished, is regaled with a grain of rice, and hops back into its cage. Before proceeding to specify the remedies to the patient, the doctor feels his client's pulse, and whilst noting its peculiarities discourses learnedly on the infirmities from which the sick man's ancestors suffered, which he pretends are revealed to him by the pulsations. The advice and remedies having been given the consultation is paid for at the rate of ten or a dozen "cash." If the doctor succeeds in making a name for himself in this fashion, which in China is not difficult, he stops his street practice and establishes himself in a house, whereupon the fees increase in amount until, if he be very fortunate, he may even receive one or two dollars for each, or about

* From "La Cronica de Ciencias Medicas de Filipinas."

1600 to 2000 cash. In China a doctor's fame is measured not by his numerous *clientèle*, or by his learning, but by the number of sick persons who have died under his treatment; and whenever a patient dies in his hands the authorities place a small lantern by night over the doctor's door, so that the public may know of his want of success. To lend an air of wisdom and gravity to their appearance, Chinese doctors wear large spectacles with gold or silver mounts, and with smoked glasses; they clothe themselves with brown or yellow silk garments, and for head-gear adopt a sort of black biretta, shaped like a Grecian helmet, and topped with a red ball the size of a walnut.

They wear the Chinese shoe, more or less artistically worked according to lucrativeness of their practice. A long pigtail is by them regarded as a sign of distinction and well-being, so that they all have this adornment carefully plaited and dressed; but if this, by reason of its scantiness, does not lend the requisite tone to their presence, they increase its length artificially until it meets with their approval. During the time the medical apprentice remains in the monastery, his tonsured masters, the monks, feed him upon boiled rice, vegetables, and tea, so that by simplicity of diet he may become impressed with the small amount of food really necessary to bodily well-being. By this means he is so imbued with the monkish ideas concerning medicine, that on his setting up in practice he tells his clients that the origin of all suffering are the good or bad spirits, cold, heat, hunger, or abundance. Medical schools on the European system have been established by the English Protestant missionaries in various parts of the Chinese Empire, but their halls are nearly deserted, for the Chinese say that European doctors' science consists simply in the use of the knife—an instrument for which the Chinese have an ineradicable horror.

PROCEEDINGS UNDER THE PHARMACY ACT.

ALLEGED ILLEGAL SALE OF TOWLE'S CHLORODYNE.

At Leeds County Court, on April 29, 1896, the case of the Pharmaceutical Society *v.* Sleight came on for hearing before His Honour Judge Greenhow. In this action the Council of the Pharmaceutical Society of Great Britain sought to recover a penalty of £5 from Ernest Sleight, of 265, Hunslet Road, Leeds. Mr. Grey, barrister, of London, appeared for the plaintiffs, and Mr. Sheppard, barrister, for the defendant.

Mr. Grey stated to His Honour that the defendant was sued for selling, on January 30 last, poison in the shape of chlorodyne which contained morphine. The Act under which this proceeding was taken was the 31st and 32nd Victoria, c. 121, which is an Act to regulate the sale of poisons, and one of the sections makes it unlawful for any person to sell scheduled poisons unless he is registered under this Act. Morphine, opium, and all preparations of opium are specifically mentioned in the Schedule. Another important section is the 13th, which makes the Register of Chemists and Druggists evidence of qualification, and the defendant's name did not appear there. Section 15 provides that any person who shall sell any of the drugs in the Schedule without being qualified shall for every such offence be liable to pay a penalty of £5.

Mr. Arthur Foulds was then called and said he resided at Manchester. In consequence of instructions received from the Pharmaceutical Society, he went to 265, Hunslet Road, Leeds, to make certain purchases, on January 30 last. On going into the shop, witness saw a person behind the counter, and that person was now present in court. He asked for a bottle of glycerin and a bottle of Towle's chlorodyne. Witness identified the bottles produced as those he purchased on the day in question. The bottle of chlorodyne was sealed up in the usual way, and was wrapped in the printed paper now produced. He asked the person in the shop if Mr. Sleight was out, and he was told "yes." He afterwards handed over the articles he purchased to Mr. Harry Moon, and they were then in the same condition as when he bought them.

Cross-examined by Mr. Sheppard, witness said he was an inquiry agent, and was occasionally employed by the Pharmaceutical Society. His instructions in this case were to go into the shop and

purchase some poison from the assistant. He knew Towle's chlorodyne contained poison, because he had purchased it previously at different shops, for the same purpose.

Mr. Harry Moon said he was clerk in the office of the Pharmaceutical Society. He received the two bottles produced from the last witness, and handed them over to Mr. E. J. Eastes.

Mr. E. J. Eastes said he was an analyst, a pharmaceutical chemist, and a Fellow of the Institute of Chemistry. He received the bottle of chlorodyne produced, and it was opened in his presence. He analysed the contents of the bottle, and found it to contain among other ingredients a quantity of morphine. The quantity was seven-tenths of a grain, and the bottle contained three fluid drachms of the mixture. Morphine was the chief active constituent of opium, and the quantity of morphine in the bottle was sufficient to be fatal to a grown-up person.

Mr. Sheppard then addressed the court and said his case for the defendant was that as this was an action for a penalty it must be strictly proved. His instructions were that the person now sued for a penalty of £5 never was in the shop at all, as alleged in the evidence for the plaintiffs. The defendant did not work there, and so far as he knew he never saw the private detective before that day in court. He submitted that this action being for a penalty the plaintiffs must have the right person there or they failed. His Honour would remember that the plaintiffs' detective never saw the defendant before, and had never seen him since, a material fact regarding the question of identity.

Ernest Sleight was called by Mr. Sheppard, who informed the Judge, in answer to his inquiry, that defendant was not the owner of the shop. He was only an assistant. Witness said he had never served in his father's shop in Hunslet Road. On January 30 last, he was at Burley Road with his brother, William Wilson Sleight. They were working there together all that day making neuralgia mixtures. He was not in Hunslet Road at all that day, and there was no truth in the allegation that he sold the bottle of chlorodyne to Mr. Foulds on that day. He never saw him.

Cross-examined by Mr. Grey: He was served with a summons in this case, and had got the summons with him. It was brought to him from the Hunslet shop, and was not served on him personally at all. His father was the owner of the shop, and witness had two brothers.

Mr. Sheppard objected to this cross-examination. He said this was substantially a criminal prosecution, and it was obvious what the object of those questions was. His friend wanted to find out who it was that really had sold this poison, and he (Mr. Sheppard) felt he was bound to protect his client from being led to divulge what the plaintiffs should have found out for themselves.

Mr. Grey: We say this man was not served with the summons. This is not the man we are suing to-day.

Cross-examination resumed: The name of one of witness' brothers was William Wilson Sleight, and the other Herbert. They were both in court that day.

William Wilson Sleight was called, and examined by Mr. Sheppard. He said he had heard what his brother said about January 30. He was on that day working with him the whole day in Burley Road. He never sold poison in his father's shop on that day, and was not even in his father's shop in Hunslet Road on that day.

Cross-examined by Mr. Grey: He had never served in the shop in Hunslet Road at all. He was not served with the summons in this case, and had never seen Mr. Foulds before. He would swear that he never served him with chlorodyne. He was never away from the Burley Road shop on January 30. He was down below in the laboratory, as he did not serve in the shop—not in either of the shops.

Herbert Sleight, in answer to the learned counsel, said he lived at 134, Burley Road. He was in charge of the Hunslet Road shop, and had been for two years. His brother Ernest never served there, and was not there on January 30, nor was his brother Wilson. He did not remember seeing Mr. Foulds on January 30 and selling him anything.

The Judge: Mr. Sheppard, you say the defendant had nothing whatever to do with it.

Mr. Sheppard: It is obviously so, because you hear that the defendant never was in this shop at all, nor was Wilson. I have put the three brothers into the witness box. I may say to your honour that we now have a properly qualified assistant to sell such articles as chlorodyne, and he could have sold it with impunity.

Mr. Grey: I cannot carry the case any further, your Honour, Verdict for the defendant with costs.

THE SALE OF POWELL'S BALSAM OF ANISEED
AT BRADFORD.

An action by the Pharmaceutical Society of Great Britain against James William Savage, of Bradford, came on for hearing before His Honour Judge Gates, Q.C., at the Bradford County Court, on Tuesday last. The plaintiffs sought to recover a penalty of £5, which they alleged the defendant had incurred by selling, on January 30 last, a bottle of "Powell's balsam of aniseed," containing morphine, he being at the time of such sale an unqualified person within the meaning of the Statute. Mr. T. R. Grey, barrister, instructed by Messrs. Flux, Thompson, and Flux, on behalf of the Pharmaceutical Society, appeared in support of the action, and the defendant was represented by Mr. W. H. Hines, of Messrs. Gaunt, Bottomley, and Hines, Bradford.

At the outset of the proceedings, Mr. Grey remarked that the summons had been amended. It was originally taken out against J. L. Savage, but the defendant was J. W. Savage. This was an action, Mr. Grey went on to state, in which the plaintiffs sued for a penalty of £5 against the defendant under the Pharmacy Act. The plaintiffs in this action, owing to complaints as to the sale of poisons, instructed a Mr. Foulds, of Manchester, to go to the shop, 140, Listerhills Road, Bradford, and there make a purchase on January 30 last. Mr. Foulds went there and bought, among other things, a bottle of Powell's balsam of aniseed, and Mr. Foulds would tell the Court that at the time of the purchase he saw James William Savage in charge of the shop, and that the defendant actually supplied this bottle of Powell's balsam of aniseed. The bottle was purchased and paid for, and since that time the contents had been analysed, the certificate of analysis showing that the mixture contained morphine (which was a poison scheduled under the Act, as would be shown). The balsam was what was called a proprietary medicine. The bottle was labelled and contained in a wrapper—as was also a bottle of glycerin, which was among the purchases made—bearing the printed address, "J. L. Savage, chemist, 140, Listerhills Road, Bradford; also 190, Westgate, Bradford, and 238, Manchester Road, Bradford." Mr. Grey went on to state the terms of the Statute under which action had been laid. The Statute, he said, was one which regulated the sale of poisons, and set forth in the first section that it was illegal for any person to sell any poison unless he had been duly registered under this Act. The word poison was applicable to the scheduled poisons, not only when sold separately, but also when they were used in dispensing and compounding, or contained in made-up medicines. Under Section 15 it was enacted that any person offending against the Statute should be liable to a penalty of £5.

Mr. Grey proceeded to refer to the case of the Pharmaceutical Society *v.* Wheeldon, and quoted the judgment delivered by Mr. Justice Hawkins at length. He also spoke of the judgment given for the Pharmaceutical Society against Armson, in which Powell's balsam of aniseed was the medicine in question.

Mr. Arthur Foulds, Manchester, was the first witness for the plaintiffs. He said he was instructed by the Pharmaceutical Society to go to Bradford. He went to Bradford, and proceeded to the shop at 140, Listerhills Road, where, at his request, the defendant supplied him with a bottle of Powell's balsam of aniseed. The bottle produced was the one he obtained. He handed the bottle as he received it to Mr. Moon. He also purchased a bottle of glycerin.

Cross-examined by Mr. Hines, witness said he did not know that the late Mr. J. L. Savage carried on business at 140, Listerhills Road, up to the time of his death, for a great many years. He also said he did not know that he could buy as many of these bottles of balsam as he liked at the large drug stores. Only qualified chemists were entitled to sell the balsam anywhere.

Harry Moon, clerk in the office of the Pharmaceutical Society, deposed to the receipt of the bottle of balsam and the wrappers, and to handing the balsam to Mr. Eastes.

Ernest John Eastes gave evidence that he had analysed the balsam. Among other ingredients he detected morphine. There was one-seventh of a grain in the whole bottle. That was sufficient to be injurious to a child if the whole bottle were taken.

Mr. Hines, in defence, said the facts were these. Mr. J. L. Savage was a well-known chemist in Bradford for many years. He died in the year 1893, and he left behind him trustees under his will, one of these trustees being his widow. Mr. Grey had quoted Section 15 of the Act, and he (Mr. Hines) would go on to quote the succeeding Sec-

tion. That section, he submitted, made it legal for the administrators or trustees or widow of a deceased chemist to continue the business with the aid of a properly-qualified assistant. In this case the business of the late J. L. Savage was being continued by the widow, who actually had in her employ at the time this purchase was made a registered chemist and druggist. The young man, J. W. Savage, would undoubtedly be in the shop when the purchase was effected, and so, too, would the registered chemist. Both would be called, and, although neither of them remembered this actual sale, they would both swear that the business had been carried on with full regard to the provisions of the Act.

His Honour: It must be under a qualified man's direction; personal superintendence.

Mr. Hines said it was only a small shop, and in any part of it the qualified assistant is in direct supervision. He went on to say that the time the purchase was made was 2.50 p.m. Now Mr. Simpson was always in the shop at that time in the afternoon. But it appeared as though the object of this prosecution was to prosecute Savage, who was actually qualifying for a position on the Register of chemists and druggists, and whose apprenticeship had been retarded to some extent by the sudden death of Mr. J. L. Savage. No doubt the Society, in directing this prosecution, thought that the business was being carried on by unqualified persons, and therefore in an illegal manner. They never took the pains to inquire whether there was a properly-certificated assistant in charge. Since this action was entered, both Mr. Simpson and Mrs. Savage had written to the Society to explain the circumstances; and what he (Mr. Hines) would say further was this, that if there was any case for a penalty, the case was one in which His Honour was only bound to inflict a nominal penalty. It was not a case for the full penalty of £5, and a nominal penalty would certainly meet the justice of the case under the circumstances.

Mr. Grey protested against any suggestion that the prosecution wished to punish Mrs. Savage through her son. According to the Act they must proceed against the actual offender.

His Honour: That is what I understand.

James Wm. Savage, who was then called by Mr. Hines, said he was twenty-one years of age last June. The business at 140, Listerhills Road was conducted by his mother, and he was an assistant under Mr. Simpson, who was registered as a qualified chemist. He did not remember selling a bottle of the balsam to the witness for the prosecution. He could not swear he did so supply a bottle.

Alexander H. Simpson said he was a duly registered chemist and druggist, and managed the shop of Mrs. Savage at 140, Listerhills Road. He entered the employ of Mrs. Savage on January 20. He had been in the shop from nine o'clock until evening every day, with the exception of an hour for dinner between one and two o'clock. In the course of cross-examination he admitted that on certain occasions he had to go to the other shop in Westgate.

After this witness had been disposed of, Mr. Hines said: As I have said, I think the intention of this prosecution was to prosecute the owner of the shop, and not this young man only.

His Honour: I do not think so.

Mr. Hines: We have heard that some of the other chemists had been making complaints. There are a great many chemists, I may state, who are anxious to get a repeal of Section 16 of this Act if it could be done, and prevent a widow being able to carry on business in this way.

His Honour: It may be so, but I shall have to deal with the Act of Parliament.

Mr. Hines: My friend has said that before the alteration the summons was against J. L. Savage.

His Honour: That was clearly an error. The name was obviously wrong. If they had desired to prosecute the widow they would simply have had to fill in her Christian name.

His Honour, in giving judgment, said there could be no doubt that this medicine was sold by an unqualified man. The next question was that of the amount of the penalty. Mr. Hines had suggested that a nominal penalty would be sufficient to meet the case. What did Mr. Grey say to that?

Mr. Grey: The penalty is £5 or nothing. Your Honour has no discretion. It has been decided over and over again that the penalty, if a penalty be found against the defendant, must be £5, and no less.

His Honour, after some further discussion, said there would be judgment for the plaintiffs for £5, and it was intimated that the judgment would carry costs in the usual way.

NOTES AND QUERIES.

[The information given in this column includes both notes of practical interest to pharmacists, and replies to queries which seem to possess sufficient interest to readers generally. Readers requiring working formulæ for special preparations should intimate their wants to the Editor, who will be pleased to assist them to the best of his ability. The word "parts" invariably indicates parts by weight.]

DISPENSING DIFFICULTY

"Doubtful" asks what changes occur when the following mixture is compounded:—

R̄ Acid. Phosph. Dil.	℥xx.
Liq. Strychninæ	℥iii.
Ferri et Quin. Cit.	gr. v.
Glycerin	ʒss.
Aqua Chlorof. ad	ʒss.

A basic phosphate of iron is thrown down. Mix the citrate of quinine and iron with the glycerin and three drachms of chloroform water; dissolve, and add the dilute phosphoric acid and solution of strychnine, previously mixed with the remainder of the chloroform water. Attach a "Shake the bottle" label.

CONCENTRATED SOLUBLE ESSENCE OF LEMON.

Probably something on the following lines will suit you: Freshly grated lemon peel, free from white, 10 ozs.; rectified spirit, 15 fluid ozs.; glycerin, 1 fluid oz. Macerate for fourteen days in a closed vessel, shaking well once daily; then strain, press, add citral, 4 fluid drachms, filter, and make up to one pint with rectified spirit. [Reply to "Subscriber."]

CONCENTRATED ESSENCE FOR GINGER ALE.

Soluble essence of ginger, 7 ozs.; burnt sugar, 1½ drachm; soluble essence of lemon, 30 minims; oil of pimento, 10 minims; tincture of quillaya, 2 drachms; oil of bitter orange, 5 minims; tincture capsicum (quadruple B.P.), 2 drachms; water to 10 ozs. Mix and allow to stand for twenty-four hours, then filter bright through clean powdered pumice stone. [Reply to "Subscriber."]

DISPENSING PHENAZONE.

E. C. Evans asks for an explanation of the decomposition which appears to take place on compounding the following mixture:—

R̄ Chloral. Hydrastis,	
Phenazoni.....aa	ʒiss.
Atropin. Sulph.	gr. ʒo.
Aq. ad	ʒii.
Ft. Mist.	

What really happens is that chloral separates from the mixture in oily drops on account of the water being insufficient for perfect solution. On the addition of a little more water, the chloral re-enters into solution. [Reply to E. C. Evans.]

ASEPTOL AS A TEST FOR ALBUMIN.

Barral (*Lyon Méd.*) finds a new reagent for albumin in aseptol, which is a mixture of sulphuric acid and phenol. It is extremely delicate and precipitates as little as 3 or 4 milligrammes of albumin in a litre. It dissolves phosphates and urates but precipitates mucus and peptones.

NAPHTHA FOR CLEANSING WOOL.

According to *Les Nouveaux Rems.*, naphtha is coming into use for removing the fat from wool. The solvent is pumped several times over the wool, by which means not only is all the natural fat removed, but the fleece is left in excellent condition for working, since naphtha does not act upon the fibres as alkaline washes do. The wool fat removed by this method is available for many purposes.

NON-IRRITATING EXCIPIENT FOR OPHTHALMIC OINTMENTS.

Dr. Jamieson, *Brit. Journ. Dermat.*, finds the following formula to afford "an ideal ophthalmic salve."

Lanolin	ʒij.
Olei Amygdalæ,	
Aquæ Dest, aa.....	ʒss.

M.

A couple of grains of boric acid may be added to correct any slight tendency to rancidity.

PARLIAMENTARY INTELLIGENCE.

THE COMPANIES BILL was not, as contemplated, taken in Committee on Monday last, but has been deferred for a week. Meanwhile amendments are growing on the notice paper with weed-like rapidity. One, at least, of those amendments should create in the minds of chemists something akin to interest, for it is an outward and visible sign of an inward pharmaceutical activity. The motion in question is that of which the ex-Lord-Chancellor—Lord Herschell—has given notice. His Lordship has evidently been made fully acquainted with the extent to which the decision in the case of the Pharmaceutical Society v. London and Provincial Supply Association has been utilised for abusing the privileges of incorporation, and he proposes to so amend the law that it will be impossible for an incorporated group of unqualified and unregistered men to hold themselves out to the public as possessing personal professional qualifications. The words of the proposed clause are as follows:—

"No company shall be registered under a name which shall include or consist of a name, title, sign, description, or addition which cannot by law be taken, used, or exhibited by a natural person unless such person has a personal qualification.

"If any company shall take, use, or exhibit any name, title, sign, description, or addition which cannot by law be taken, used, or exhibited unless the person taking, using, or exhibiting the same has a personal qualification, such company shall (1) be deemed to be carrying on business for an illegal purpose within the meaning of this Act, and shall (2) be subject to the same consequences in all respects as though the company were a natural person taking, using, or exhibiting such name, title, sign, description, or addition without having such qualification.

"No petition for the winding-up of a company on the ground that it is carrying on business for an illegal purpose within this section may be presented except by or with the authority of a society or association empowered or entitled by Act of Parliament, Royal charter, or letters patent to grant, confer, or inquire into the qualification entitling any person so taking, using, or exhibiting such name, title, sign, description, or addition as aforesaid."

Whether the Government will be induced to accept this inhibitory clause is an open question, for the dread of fostering monopolies unawares renders Ministers exceedingly circumspect. It may be difficult to convince them that no new professional tyranny is in contemplation, but that it is desired simply to effect an equitable adjustment, and to render the law as to the use of professional titles equally applicable and operative in the case of a "company" as it is in the case of a natural "person."

THE FATE OF PRIVATE BILLS.—A Government with a majority ranging from one hundred upwards is apt to be somewhat brutal so far as regards private members' Bills. The present Government is no exception to the rule, and by swallowing up the whole time of the House for Government business for the remainder of the session it has not only sealed the fate of Sir John Lubbock's Shops Bill, but has destroyed the hopes of those who looked to the Bill as a kind of harbinger of pharmaceutical prosperity. Sir J. Lubbock feebly protested that Bills which had passed through Grand Committees ought to be exempted from the general massacre of private members' measures, but Mr. Balfour could only promise that the first two Wednesdays, and possibly the third, after Whitsunside might be set aside for discussion of Bills which had passed the Committee stage. With this grain of cold comfort the promoter and the supporters of the Shops Bill have to rest content.

SHOP ASSISTANTS' HALF-HOLIDAY BILL.—A Bill to provide that all shopassistants shall have one half holiday in each week was on Tuesday introduced into the house by Messrs. Duncombe, Dalbiac, Richardson, Harry Samuel, and Flower—members who have become somewhat prominent by their consistent hostility to the Shops Bill. The promoters of the Assistants' Bill claim that it is free from the grave objections which exist in other Bills introduced with similar beneficial intent to persons employed in shops. The second reading is down for Wednesday, June 10, which, curiously enough, is the date fixed for the further consideration of the Shops Bill.

PHARMACEUTICAL SOCIETY

"FIRST" EXAMINATION RESULTS.

A meeting of the Board of Examiners for England and Wales was held on Wednesday, April 29.

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

Collins, Samuel Morrison, Norwood. | Livesey, Henry Ayrton A., Bradford.
Kidd, David Bell, Melton Mowbray. | Smith, Harold James, Grimsby.

The report of the College of Perceptors on the examination held on April 14 was received.

408 candidates had presented themselves for examination, of whom 234 had failed.

The following 174 passed, and the Registrar was authorised to place their names upon the Register of Apprentices and Students:—

Ainelle, John, Galashiels.
Alcock, Robert Frank, Southampton.
Alexander, Isabella, Banff.
Anderson, James Archibald, Lockerbie.
Archer, William Taylor, Cambridge.
Atkins, George David, Heaton.
Bailey, Arthur Joseph, Birmingham.
Bailey, Thomas Harvey, Bournemouth.
Baines, Richard, Lancaster.
Barnes, Ernest Edward, Hackney.
Barry, Robert Allan, Ayr.
Beardsley, Cyril, Belper.
Bentley, Henry Percy, Bradford.
Blunt, John Henry, Northampton.
Braggins, Albert Edwin, Banbury.
Bussey, James Edward, Wareham.
Butterworth, Ernest, Rochdale.
Caesar, Henry Wilkin, Dumfries.
Cairns, Thomas, Alnwick.
Caitness, Augustus, Liverpool.
Campbell, George, Penrith.
Carson, Robert William, Bradford.
Church, William Elsey, Batley.
Clarke, Herbert Renshaw, Nottingham.
Clarke, Thomas John, Toabridge.
Clarko, William J., Stockton-on-Tees.
Cleeland, Robert Henry, Belfast.
Coles, Charles Avery, Reading.
Collins, Joseph Henry, Falmouth.
Cook, James Booker, Banff.
Corke, Harry Malcolm, Woolston.
Cornish, Archibald Franklin, Taunton.
Cox, Horace Nelson, Edinburgh.
Crossley, Arthur, Gorton.
Darroll, Horace Henry, Clun.
Davies, Henry Charles, Groydon.
Davison, Henry Spours, Gateshead.
Daykin, Albert Ernest S., Ripley.
Derman, Thomas John, Bath.
Dewar, A. Owen Cameron, Cupar.
Duncan, Charles, Dundee.
Elliott, Bertie T. J., Newport, Mon.
Elms, Henry, Hornsey.
England, Thomas, Scarborough.
Ewart, Samuel, Crofton.
Farrow, Leslie John, Lowestoft.
Fewtrell, Patrick Roy, Turriff.
Findlay, Adam, Aberdeen.
Fionis, Sydney, Dover.
Fisher, William Edgar, Camberwell.
Futty, Alfred, Scarborough.
Gamer, Stanley R., Newark-on-Trent.
Gartside, William, Oldham.
Gellately, James Blair, Dundee.
Gill, Henry John Turton, Brighouse.
Gittings, Arthur Henry, Bilston.
Glaholm, William, Jarrow.
Gooch, James Bowles, East Dereham.
Gordon, John R. C., Friockheim.
Graham, Margaret T., Lochgelly.
Granger, Ernest R., Whitby.
Griffith, Robert William, Portmadoc.

Griffiths, Thomas, Carmarthen.
Hadfield, James Ernest, Buxton.
Hall, Henry, Cardiff.
Hammond, Albert, Bollington.
Harrison, Clement, Caversham.
Heald, Gerard, Heckington.
Helliwell, Hubert Wellesley, Bradford.
Henderson, John McGregor, Ayr.
Hewitt, Joseph, York.
Hibbert, Arthur Byron, Chester.
Hocking, Samuel John, Redruth.
Holden, Wilfred Curtis, Southampton.
Hopkins, Cyril John, Towcester.
Hovell, Thomas Henry, Norwich.
Howell, James Bonnell, L'anely.
Howell, Taliesin Thomas, Llanblethian.
Hughes, Ernest Ethelbert, Altrincham.
Hull, Edward Frank, Croydon.
Hume, George, Gatehouse.
Humphreys, Sidney, London.
Hunt, Frederick, Chichester.
Innes, John Langland, Dumbarton.
James, Edmund, Kidderminster.
James Lewis August, Ruthin.
Jolly, William Isaac, Bradford.
Jones, John William, Plymouth.
Jones, William Brittain, Brynmawr.
Jones, William Richard, Bangor.
Kendrick, Robert Edward, Wrexham.
Kitching, George C, Morecambe.
Klein, Frederick, Carlisle.
Lemmon, Reginald John, Chichester.
Lewis, Thomas Ed. Banks, Grimsby.
Lewellyn, Thomas, Oswestry.
Lloyd, Robert Edmunds, Portmadoc.
Loney, Sidney Thomas, Eltham.
Lord, William, Bury.
McCallister, William, Bolton.
McCreath, William Fletcher, Leven.
McDougall, Duncan, Campbelltown.
McGeorge, Richard, Edinburgh.
McGuffie, David, Stranraer.
McIntyre, George, Ellesmere.
Macintosh, John, Brechin.
Mackay, James D., Leith.
McRobb, William, Lochleask.
Male, Charles Edgar, Cottenham.
Mann, John, Alness.
Manson, John, Glasgow.
Martin, Harry, Aylesbury.
Martin, John Muir, Sunderland.
Masterton, William David, Brechin.
Mathers, Ernest Thomas, Cambridge.
Moffat, William John, Dumfries.
Mogford, Frederick Thomas, Tiverton.
Mogg, Ernest Hubert, Wells (Som.).
Moore, John William, Wigton.
Mortimer, Harold, Cleckheaton.
Morton, William Jas., Newton Stewart.
Muir, John, Laurieston.
Murray, Alexander, Aberdeen.
Nicholson, Thomas Brightmore, Hanley

Oliver, John James, Liverpool.
Oswald, John Seath, Kinghorn.
Otter Wilfred, Otley.
Parsons, Maurice James, York.
Pearce, Stanley Littlejohn, Tavistock.
Perkins, Francis G., Hammersmith.
Petrie, William Peddie, Dundee.
Porter, Frank, Leicester.
Powell, Charles W., Middlesbrough.
Priestley, George Edward, Paisley.
Prosser, Thomas William, Oxford.
Rapson, Florence Helena, Bungay.
Rayner, George Lancelot, Cranswick.
Reavley, Robert, Jarrow-on-Tyne.
Redfern, Harry Chaplin, Leek.
Rennard, Herbert, Leeds.
Richardson, Herbert Stanley, Hull.
Richardson, Joseph, Louth.
Ripley, John H., Berkhamstead.
Robertson, Bessie Brown, Markinch.
Russell, William, Leith.
Scott, William, Newcastle-on-Tyne.
Sharp, Jeremiah, Drumburgh.
Shelley, George A. Henry, Southwark.
Shepperd, Henry George, Penzance.

Smith, Frank, Downham Market.
Smith, Robert Harman, Chelmsford.
Starmer, George F., Tunbridge Wells.
Stiles, Percy C. G., St. Ives (Hunts).
Stopforth, William Henry, Wigan.
Storey, Richard, Ulverston.
Swaby, Harry Coupland, Lincoln.
Swinnerton, George, Hanley.
Tait, Joseph, Edinburgh.
Thomson, Robert B., Thornhill.
Thornhill, H. John, Gosforth.
Turnbull, William, Grangemouth.
Turner, George, Longton.
Warmington, Frank E., Loamington.
Watts, Bertram Adam, Woolwich.
Webb, Walter J., Newcastle-on-Tyne.
Whittingstall, Ernest E., Wakefield.
Wigglesworth, William, Ingrow.
Williamson, Andrew, Fortrose.
Williams, David Gwilym, Tycross.
Williams, Edward, South Petherton.
Wilson, Alexander W., Edinburgh.
Wilson, John A., Askam-in-Furness.
Wood, Robert John, Driffield.
Wright, William, Newcastle-on-Tyne.

The questions set at this examination were published in the *Pharmaceutical Journal* for April 18, p. 310.

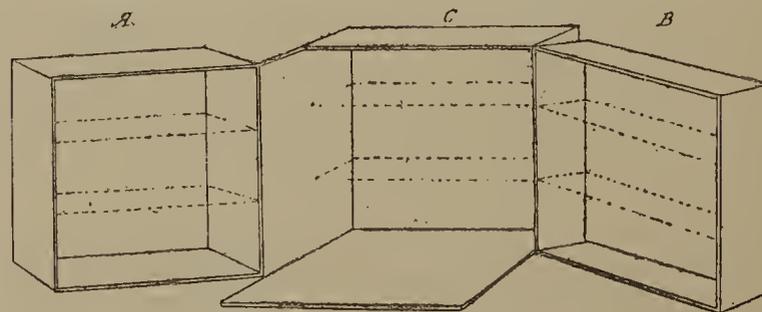
The following is a list of the centres at which the examination was held, showing the number of candidates at each centre, and the result.

	Candidates.				Candidates.		
	Exam-ined.	Passed.	Failed.		Exam-ined.	Passed.	Failed.
Aberdeen	18	6	12	Lancaster	8	4	4
Birmingham	20	6	14	Leeds	29	11	18
Brighton	7	3	4	Lincoln	7	4	3
Bristol	8	3	5	Liverpool	16	6	10
Cambridge	8	4	4	London	26	15	11
Canterbury	5	1	4	Manchester	34	11	23
Cardiff	10	4	6	Newcastle-on-T....	18	11	7
Carlisle	15	8	7	Northampton	3	1	2
Carmarthen	7	3	4	Norwich	8	4	4
Carnarvon	8	3	5	Nottingham	10	5	5
Cheltenham	2	0	2	Oxford	8	4	4
Darlington	3	1	2	Penzance	6	3	3
Dundee	10	6	4	Peterborough	1	0	1
Edinburgh	35	14	21	Plymouth	6	2	4
Exeter	6	2	4	Sheffield	1	0	1
Glasgow	29	10	19	Shrewsbury	6	3	3
Hull	11	4	7	Southampton	8	5	3
Inverness	3	2	1	York	8	5	3

A FOLDING CUPBOARD FOR STORING SMALL BOTTLES.

BY ARTHUR A. DECK, CAMBRIDGE.

The accompanying sketch is that of a cupboard I have had made after my own design, and I send it in the hope that it may prove useful to some of the readers of the *Pharmaceutical Journal*.



As shown in the sketch, B folds on C, and A on B. A has a glass front, so that when closed it looks like an ordinary cupboard. The dotted lines represent shelves, which should have a piece of picture wire about an inch above them, on A and C, to prevent the bottles slipping off.

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THE ACTIVE PRINCIPLE OF THE THYROID GLAND.

THE interesting observation made by Professor BAUMANN as to the existence of an iodine compound to which the therapeutic action of the thyroid gland is due (see *ante*, p. 161), has acquired additional importance from the results of further investigation undertaken with the object of isolating the active therapeutic constituent. In the newly-issued number of the *Zeitschrift für Physiologie* there is an account of the work carried out in that direction by Professor BAUMANN and Dr. ROOS, from which the following particulars are extracted. The frequent occurrence of goitre in the Black Forest has afforded favourable opportunity for testing the efficacy of the preparations obtained by chemical treatment of thyroid glands, and the prompt effect produced, in such cases, by an active preparation, as pointed out by EMMINGHAM and REINHOLD, has been made the test of remedial activity, the administration of these preparations to patients in the Freiburg Hospital having been carried out by the resident medical officers, Dr. THOMAS and Dr. ESCHBACHER. It has been ascertained that the active principle of the thyroid gland is not destroyed by exposure to a temperature of 100° C., or by the action of strong mineral acids. When the minced gland is digested for some time with 10 per cent. hydrochloric acid its activity is scarcely at all affected. After neutralising the acid with caustic soda and evaporating, the dry residue obtained was found to have a marked effect when administered, in cases of goitre, in quantities corresponding to one gramme of the fresh gland. On boiling the gland with about four times its weight of dilute sulphuric acid (1:10) almost perfect solution is effected after a few hours, only a finely divided flocculent precipitate remaining suspended in the liquid, the quantity of which is not reduced by longer boiling. The fat always present in the interior of the glands collects at the surface of the liquid, and can be separated, after cooling, by straining through muslin. By this treatment it was found that the active substance was not destroyed even when the boiling was continued for three days: it passed into solution and was for the most part deposited on cooling as a brownish precipitate amounting to from 0.75 to 1.5 per cent. of the gland material operated upon, according to the length of time the boiling had been continued. After separating the precipitate by filtration, the acid liquor still contained a small portion of the active thyro-iodin. By neutralising nearly all the

acid with caustic soda, and evaporating the liquid to one-fifth or one-sixth, most of the thyro-iodin separated on cooling: the deposition being more complete when the sulphuric acid was removed by treatment with barium carbonate before concentrating the liquid. Even then the liquid contained some thyro-iodin, and when a considerable quantity of it was administered to a goitre patient it was found to have a slight action. By treatment of the evaporated liquor with alcohol the thyro-iodin can be extracted, but at the same time other substances also pass into solution, and they cannot be readily separated. The chief portion of active principle is contained in the residue remaining undissolved after treatment of the gland material with sulphuric acid as above described. This product still contains fat, fat acids and other substances as well as thyro-iodin. For further purification it was repeatedly washed while moist with 90 per cent. alcohol, which gradually dissolved the thyro-iodin; the residue obtained on evaporating the alcoholic solution was then mixed with ten times its weight of milk sugar and digested with petroleum spirit or a mixture of it with dry ether, to remove fat.

For the separation of thyro-iodin from the milk-sugar the powder was dissolved with a little dilute caustic soda, the liquid filtered, if necessary, and on acidification thyro-iodin was deposited in flocks, collected on a filter, washed, again dissolved with caustic soda, and re-precipitated. By this treatment some portion of the adherent colouring material was separated without much loss of thyro-iodin. The purified thyro-iodin thus prepared was, after drying, a brownish-coloured powder, insoluble in water, sparingly soluble in alcohol and readily soluble in caustic alkaline solutions. It contains a considerable amount of nitrogen, some phosphorus (about 0.5 per cent.), and about 10 per cent. of iodine. When heated it evolves an odour of pyridine bases. The iodine is very intimately combined: it is only with difficulty separable by the action of alkalis. Even by treatment with sodium amalgam the iodine is but gradually separated. Further information as to the chemical nature of thyro-iodin will be given in subsequent communications. In the administration of thyro-iodin prepared in the manner described, it has been found that a dose of one milligramme produced, after two or three times, a very distinct and appreciable effect in cases of goitre. The inference is that the effect is not due to the minute quantity of iodine present in the thyro-iodin given, but that it is produced by the specific action of a peculiar organic iodine compound which is formed in the thyroid gland under normal conditions from the minute traces of iodine compounds contained in food materials. In the preparation of thyro-iodin by the method above described, a loss of from 25 to 30 per cent. of the quantity actually present in thyroid gland material is unavoidable. Such loss is reduced when the separation of thyro-iodin from the gland material is effected by digestion with artificial gastric juice. The product thus obtained is also less coloured than that resulting from treatment with acids. The most suitable procedure is to use a digestive liquor containing three-thousandths of hydrochloric acid and to digest for two days at a temperature of 40° C. Almost the whole of the thyro-iodin then remains undissolved, while the rest of the gland material passes into solution as hemi-albumose and peptone, this solution being almost free from iodine. The residue obtained by evaporating the solution was found to have only a very feeble effect in cases of goitre when administered in relatively large quantities.

In reference to the question as to the condition in which thyro-iodin exists in the gland, BAUMANN and ROOS are of opinion that only some small portion of it can be there in a free state; they come to that conclusion because experience has shown that the thyroid gland extracts prepared in various ways with water or glycerin are less active than equivalent quantities of the fresh gland. For the elucidation of this question the following experiments were carried out. A quantity of fresh sheeps' thyroid (25 grammes) was boiled three times with alcohol: the residue obtained by evaporating the alcoholic liquor was found to contain iodine and the iodine compound to be identical with thyro-iodin; but the quantity was not more than a fifteenth part of that corresponding to the total quantity of iodine in the gland material operated upon. Further experiments showed that though the greater part of the iodine compound can be extracted by treating thyroid gland with cold water, a considerable portion remained in the undissolved residue, as shown by the effect produced when it was administered to goitre patients. The extraction of the iodine compound is effected somewhat better by treatment with glycerin; but even in that case the residue, after three or four extractions, contains very sensible quantities of iodine. By extracting three or four times with 0.75 per cent. salt solution the iodine compound is so completely dissolved that only slight traces of iodine can be detected in the residue. On diluting the extract with fifteen times its volume of water, it becomes turbid, and on passing through it carbonic anhydride, flocks separate consisting of the globulin substance described by BUBNOW and NOTKIN. It contains iodine and the smaller part of the thyro-iodin present in the gland. On boiling it with sulphuric acid, thyro-iodin is separated. The liquid from which this globulin has been separated by filtration gives, on acidification with acetic acid, an abundant precipitate of an albuminous substance, which also contains iodine and contains the greater part of the thyro-iodin combined with it. Both these albuminous substances are active, but the liquor is free from iodine and inactive. The same result is arrived at by coagulating the salt-water liquor before separating the globulin. It appears, therefore, that thyro-iodin exists in the glands for the most part in combination with the albuminoid substances which BUBNOW has examined and found to be analogous to globulins. The substance isolated by NOTKIN and named thyreoproteid, was considered by him to be a product of metabolism and the poison which, accumulating in the system after extirpation of the thyroid gland, gives rise to the consequent phenomena. He considers that, under normal conditions, this thyreoproteid is destroyed by an enzym—thyroidin—contained in the gland secretion, and is thus rendered innocuous. According to that view the enzym would be the specific active constituent of the gland. The results obtained by BAUMANN and ROOS have led them to entirely different conclusions, namely, that the activity of the thyroid gland has nothing whatever to do with an enzym or any similar substance, but is entirely referable to thyro-iodin—the specific constituent of the gland—existing partly in a free state, and partly combined with albuminoid substances from which it may be detached by digestion with gastric juice or by treatment with acids. Lastly, it is stated to have been established by numerous observations that thyro-iodin is capable of producing all the effects which have been recognised as characteristic of thyroid gland treatment, even to

the specific action in myxœdema, this point having been conclusively established by Professor LEICHTENSTEIN, of Cologne, and more recently also by Professor EWALD.

ROYAL MEDICAL BENEVOLENT COLLEGE.

SINCE referring to this institution in last week's Journal, we have been favoured with additional particulars regarding it. In addition to the fifty foundation scholars—who must be the necessitous orphans and sons of medical men—the College is open to receive about two hundred ordinary scholars, and admission is in no sense limited to any particular class. These "non-foundationers" are eligible for nearly all the exhibitions and scholarships offered, including open entrance scholarships offered for competition every July for boys under fourteen; thirty "College" exhibitions, of the value of fifteen pounds per annum, for boys under thirteen; four annual "School" scholarships for boys already in residence; four scholarships of forty to sixty pounds per annum, tenable at the Universities; and ten annual scholarships at various London hospitals, each of the value of about one hundred and twenty guineas a year.

The School is divided into upper, middle, and lower schools; also into classical and modern sides. The classical side is chiefly intended to prepare pupils for the Universities and the learned professions, the education being therefore mainly classical. On the modern side, the subjects are arranged more in accordance with commercial requirements. Particular attention is paid to the teaching of natural science, a well-appointed chemical laboratory and lecture theatre being supplemented by a physical laboratory, and a class-room for biological studies. The arrangements for recreative purposes and physical training also appear to be very complete, and any pharmacist desirous of doing the best he can educationally for his son might do worse than apply for full particulars of the College to the Secretary, 37, Soho Square, London, W.

As suggested last week, it seems well worth the consideration of pharmacists whether the Orphan Fund of the Pharmaceutical Society might not be developed in the direction of supporting one or more scholars on the foundation of such an institution as this. Assistance would thus be provided in the manner best calculated to give satisfactory results in the case of orphan children—whether boys or girls, and a comparatively small annual payment by every registered chemist and druggist would yield a total amount which would probably have the effect of serving as an efficient educational assurance fund.

PHARMACEUTICAL CONGRESS AT BUDAPEST.

THE business of this Congress will commence on June 26 with an introductory address by Mr. A. Z. ZBORAY, President of the Association of Hungarian Pharmacists, and after the election of an honorary president, the following papers will be read:—

- "History of Hungarian Pharmacy," by Alex. Schédy.
- "Importance of the Pharmacy in Relation to State Hygiene," by Géza Gallik.
- "Education of Pharmacists," by Prof. Etienne Györy.
- "On Personal-Right Pharmacies," by Etienne Lukács.
- "The Flora of Hungary and the Cultivation of Medicinal Plants," by Prof. Charles Schilberszky.
- "The Question of Chambers of Pharmacy," by G. Karlovsky.
- "Reports on Pharmacy in the Great European States," by Jules Muzsa.
- "The Question of an Institution for Retired Hungarian Pharmacists," by Etienne Lukács.

The reading of papers and discussions thereon will be continued on June 27.

ANNOTATIONS.

SUBSCRIPTION TO THE BENEVOLENT FUND.—The Editor has pleasure in acknowledging the receipt of an annual subscription of one guinea to the Benevolent Fund, sent through him by Dr. Constantine Holman, J.P., Treasurer of the Royal Medical Benevolent College, Epsom. The sending of the cheque, which has been duly handed to the Secretary, Mr. Richard Bremridge, serves to point the moral of the good understanding that should exist between medical men and pharmacists.

GERMAN APOTHEKER VEREIN.—The general meeting of the German Apotheker Verein will be held this year in Dresden, and in addition to the attraction offered by the central position of that town, the celebration of the fiftieth anniversary of the Verein may be expected to ensure a more than ordinary assemblage of members and visitors. In connection with the meeting, an exhibition of objects of pharmaceutical interest is being organised.

RADIOGRAPHS PRODUCED BY A MAGNET.—In the *Scientific American* for April 18, Professor John S. McKay publishes an account of some experiments with magnets, which resulted in the formation of "shadowgraphs" similar to those produced by the action of the Röntgen rays. The method of procedure followed is to place a paramagnetic substance upon the sensitive film of a photographic dry-plate, and the poles of a permanent or electro-magnet are then brought near the other side of the plate. After a time the plate is removed, and when developed shows a clearly defined image of the object. Positives prepared from such plates will give in shadow the outlines of any object used as armature, well-defined silhouettes of keys, pliers, or any iron or steel implements being thus obtained. Again, if the dry plate be placed with its sensitive side facing the poles of a magnet, and a disk of iron nearly as large as the plate be placed on the opposite side, in the position of armature, "shadowgraphs" will be formed upon the plate, of any non-magnetic or diamagnetic bodies placed on the other side, between the plate and the poles of the magnet. The shadow pictures produced by either of these methods are said to be as clear and distinct as those produced by the Röntgen rays. With an electro-magnet capable of lifting a hundred pounds or more, a "magnetograph" has been obtained through a block of wood two inches thick. The object must be in contact with the sensitive film, and a thin sheet of mica or paper seems to check the action, whilst the best results have been obtained by suspending the magnet in a vertical position. It is suggested that the results of these experiments seem to indicate that the ether in the field of a magnet is in a state of permanent stress, perhaps due to ether vortices, and that any change in magnetic force produces a change in the degree of stress, and thus originates ether waves capable of affecting sensitive plates. The question is also asked: "May not the Röntgen effects be due to the magnetic component of a Hertz wave?"

MORE SENSIBLE ADVICE.—In the *Ph. J. Supplement* for April 11 the advice of the *Patent Medicines Journal* was quoted, to the effect that "grocers and other unregistered persons should stop off all poisonous proprietaries." It is gratifying to find that similar sensible advice to obey the law is given to its readers by the *Grocer*, which observes that for the retail grocer who has been selling proprietary medicines there is but one course open, and he should therefore "absolutely decline to stock any proprietary preparations the manufacturers of which refuse to give him a written guarantee that they contain none of the scheduled poisons, and a written indemnity against all costs, expenses, and charges which he may at any time find he has incurred by their sale."

THE METRIC SYSTEM IN THE UNITED STATES.—Great Britain and Russia are frequently quoted as the sole remaining important adhesions to the older systems of weights and measures, but apparently the United States must yet be regarded as belonging to and likely to remain in the same category. A Bill proposing to make the metric system the only legal standard was brought before the House of Representatives at Washington, on April 8, and passed by the narrow margin of two votes only, the figures recorded being 119 for and 117 against. Later, however, the vote was "reconsidered," and to save the Bill from defeat its supporters were fain to consent to have it recommitted to the Committee on Coinage, Weights, and Measures. The use of the system has now been authorised and permitted by law for the last thirty years, but it has not been adopted, except to an exceedingly limited extent. Even pharmacists in the States do not appear to take to the newer system very kindly, in spite of the fact that it is exclusively used in the U.S. Pharmacopœia. Many seem to continue to employ their old weights and measures, even when compounding or dispensing quantities specified according to the decimal system, thus troubling themselves with quite unnecessary calculations. As illustrating the prevailing tendency to continue to think in accordance with the old system whilst working with the new, the following ingenious compromise, quoted in an American journal, is worthy of passing reference:—"When making use of a 2 ounce mixture, remember that the number of grains ordered of any medicament should be exactly the dose in minims or grains of the medicine. In other words, write (for a 2-ounce mixture) the same number of grains of a remedy that you wish grains or minims administered."

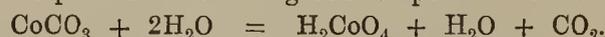
BOTANICAL EXCURSIONS FROM EDINBURGH.—The Committee of the local Pharmaceutical Association at Edinburgh has once more arranged an attractive summer programme for the members. Botanical excursions to Blackford Hill, Colinton Dell, and Craigcrook Quarry are to take place on June 5 and 19, and July 17, respectively, at a convenient hour in the evening, whilst meetings for the examination of collected plants will be held in the Pharmaceutical Society's House on May 8, June 12, and July 15. A book prize will be presented to the apprentice member who writes the best report on the excursions and demonstrations. Last in the programme, but not least attractive, is a statement to the effect that the Association has accepted an invitation from Professor Geddes to visit his botanical gardens at Dundee, on May 21. The Secretary, Mr. W. F. Hay, 139, Princes St., Edinburgh, will be glad to hear as early as possible from members who intend joining the excursions.

CALIFORNIA COLLEGE OF PHARMACY.—According to the prospectus of this College, the requirements for admission are now made to cover the first year's work in the High Schools of the State of California. Intending students are also advised to gain some experience in a pharmacy before they begin to attend the College, as "the practical knowledge thus gained enables students to comprehend readily, and therefore to make more satisfactory progress." The College syllabus is an extremely satisfactory one, and the title of Graduate in Pharmacy is not conferred except the candidate be of good moral character, is twenty-one years old, and has attended two full courses in each of the departments of the College, or one course after attending a course at another recognised College of Pharmacy. He must also have had four years' experience in a pharmacy "where physicians' prescriptions are compounded," present an account of some special work done in the laboratory in lieu of a thesis and exhibit some chemical or pharmaceutical product made under supervision, and finally he must have attended at least three-fourths of the lectures, reviews, and laboratory work. The California College graduate ought to be a good pharmacist.

PROCEEDINGS OF SOCIETIES.

Chemical Society, April 23.—Mr. A. G. Vernon Harcourt, F.R.S., President, in the chair.—The first paper down for reading in the published list was "On the Temperature of Certain Flames," by Professor W. N. Hartley, F.R.S., but for some reason or other it was not forthcoming. That there would have been some discussion on this polemical subject it is evident, as more than one authority on the matter was noticed among the audience. The published list of papers turned out to be no indication of the nature of the meeting which was held, as only two out of this list of five papers were read, and those only in brief abstract. These were: "On the Constitution of the Cereal Celluloses," by C. F. Cross, E. J. Bevan, and Claud Smith, read by Mr. Cross, and "Ethereal Salts of Optically Active Malic and Lactic Acids," by Professor Purdie, F.R.S., and Sydney Williamson, Ph.D., read by the latter.

A paper, from a supplementary list, of considerable interest was that by Mr. R. G. Durrant, "On a New Compound of Cobalt." The author has studied the action of hydrogen dioxide on salts of cobalt and a few other metals, and finds that a green compound is formed, under proper conditions, in the case of cobalt. As hydrogen dioxide is very unstable in solution of caustic potash, it occurred to the author that potassium acid carbonate might not be so active as the caustic solution, and he found that when applied to his new test for cobalt it answered the purpose admirably. An experiment was next performed. A solution of cobaltic chloride in a small quantity of water was made, then a solution of potassium acid carbonate, as concentrated as possible, added. This gave a slight precipitate. Excess of hydrogen dioxide was now added, and the precipitate became green and then went into solution, the latter remaining green. At the same time there was effervescence which the author thinks is probably due to carbon dioxide. The green body is supposed to be cobaltic acid, or a cobaltate of potassium. The green colour may also be produced by using the "aërated" water of a syphon. The lecturer then proceeded to perform five experiments, arranging five glass cylinders in front of the bench, where they could easily be seen by the audience. Into the first he ran some of the syphon liquid, then two drops of the solution of cobaltic chloride and a little solution of potash. The order in which they are added does not matter much. In the second glass he used solution of soda, in the third solution of calcium hydrate; the fourth had barium hydrate, which acts somewhat better than calcium hydrate, and the fifth glass contained solution of ammonia. Ammonia, it appears, tends to decompose the body, and there is only a green solution for a few moments. Hydrogen peroxide was, of course, added to each, and the green colour was seen in each case. The author sketched on the board an equation, which, he believes, expresses the reaction that occurs in the production of this green compound. It is as follows:—



The CoCO_3 of the equation expresses the result of the action of the carbonate on the cobalt chloride originally used. The green compound produced when potassium acid carbonate is used may remain perfectly stable for the matter of a month or so. The latter part of the paper was devoted to the consideration of this test as a means of separating cobalt and nickel, as no similar compound is formed in the case of the latter. Some pure nickel carbonate, however, which the author obtained from a certain London drug house, which he named, for the purposes of his research, was found to be anything but pure, as it contained more than an appreciable proportion of cobalt as shown by his test. Cobalt in nickel in the proportion of one to a hundred, or even very much less, can be easily demonstrated. Incidentally, he remarked that most salts of nickel are liable to contain cobalt to a greater or less degree. Experiments performed with nickel salts containing cobalt as impurity were very distinct, and evidently quite satisfactory. Instead of attempting to isolate the green compound with a view to its identification, the author proposes to arrive at that result by means of a series of standardised solutions.

The discussion which followed the reading of this paper was carried on in a sort of *dolce far niente* style, at least, in so far as the author himself was concerned, for he remained in the sitting posture whilst replying to his critics, answering each question as it was put to him. Dr. Rideal said something about cyanides and their blue colour, but it was difficult to understand exactly what he meant, especially as the author of the paper particularly drew attention to the formation of a green compound.

The President mentioned that there was no decomposition of

hydrogen peroxide with CO_2 in alkaline solution when the solutions are dilute.

Acting up to the suggestion put forward in his address at the anniversary meeting a few weeks ago, the President made a commendable effort to find another paper which could be illustrated either by experiment or apparatus, but without success, and the meeting was therefore brought to a close.

The following papers were taken as read:—

"Halogen Additive Products of Substituted Thiosinamines," by Augustus E. Dixon, M.D.; "An Apparatus for the Detection of Boic Acid," by W. M. Doherty; "Metadichlorobenzene," by F. D. Chattaway, D.Sc., and R. C. T. Evans; "The Determination of the Composition of a 'White Son' by a Method of Spectrographic Analysis," by Professor W. N. Hartley.

Midland Chemists' Assistants' Association, April 22.—Mr. T. C. Clarke, President, in the chair.—The following paper was read:—

"THE SPECTROSCOPE AND SOME OF ITS WORK," BY F. SMITH.

The spectroscope may justly lay claim to be placed in a prominent position among the greatest discoveries of this century, for although the bare fact that a prism decomposes white light into its component parts was known so long ago as the time of Newton, it was not until the early part of this century that any decided advance was made in the study of spectroscopy, whereas, since then the spheres of work opened out by this science, its capabilities and the actual work accomplished, are nothing less than marvellous.

The experiment of Newton in permitting a ray of sunlight to enter a darkened room through a circular hole in the shutter and interposing a prism in the path of the ray, by which means he obtained a band of colours upon a white screen, is a well-known historical incident. For nearly a century and a half after this time no further development took place.

Then an important step was taken by Wollaston, who, in place of the circular aperture for the admission of the light, used a narrow slit, thus obtaining a spectrum of greater purity, and thereby discovering that the band of colours was not absolutely continuous, but was crossed by a number of dark lines. A few years later (in 1814) Fraunhofer further improved the process by introducing a telescope, by which to observe the spectrum, and since then various other improvements have been introduced by various workers, resulting in the efficient instrument of the present day.

The spectroscope may be defined as an instrument for the analysis of light, this being accomplished by passing it through a prism, and so separating the diverse rays of which it is composed. To understand the action of the prism in producing a spectrum an acquaintance with the elementary principles of light is necessary. I will, therefore, recall to your minds as I go on a few of those principles that you may the more readily follow my description. Light consists of a wave-like motion of the particles of ether which penetrate all space, and in which the molecules of matter are so to speak bathed. The waves of light which are emitted by all self-luminous bodies are exceedingly minute, averaging but a 50,000th of an inch in length, and are in nearly all cases exceedingly complex, being composed of an almost infinite variety of wave-lengths, blended together, and all travelling with an equal velocity of 186,000 miles per second. It is the work of the spectroscope to sort out these waves of different lengths, to arrange them in their proper order, and to demonstrate which are present and which absent. When light passes from one medium into another of greater density, its direction is altered unless it falls perpendicularly upon the surface, and this bending of a ray of light, which is known as refraction, is unequal for the rays of different wave-lengths; therefore, when a ray of white light enters a glass prism, all the rays which are of one definite length take a certain direction within the prism, while rays of other wave-lengths take other directions, and as these are almost infinite in their variety, we have on their emergence from the prism, where the refraction is further increased, a fan-shaped ray; and if we place in its path a sheet of white paper we shall have delineated thereon a line of light, one end of which will represent rays of greatest wave-length and the other end the shortest waves, and each intermediate point will represent the rays of a certain definite and determinate wave-length which varies gradually from one end to the other. If now this line of light be widened into a band of light it will be found that the rays at one end of the continuous spectrum thus formed are violet in colour, and passing along the spectrum they change by imperceptible gradations through violet, indigo, blue, green, yellow, and orange to red. If we draw a line at right angles across this band of light, this line will

represent rays of one definite refrangibility, and the whole band of the spectrum may be looked upon as an almost infinite number of such lines placed side by side, each being of a slightly different colour from its nearest companions. Such a continuous spectrum as this we obtain from all solids and liquids which are in a state of incandescence, or, in other words, which are white-list. If, on the other hand, the light that is emitted from a glowing gas or vapour be examined after it has passed through a prism, an entirely different result will be obtained. One of the simplest of spectra is that belonging to the vapour of sodium, and if a loop of platinum wire, dipped in a solution of a sodium salt, be placed in a Bunsen flame, and the spectroscopy directed thereto, instead of a band of various colours we shall see merely two very brilliant yellow lines, as if the whole of the continuous spectrum had been blacked out with the exception of two thin transverse lines in the yellow portion. The explanation of this is to be found in the fact that the vapour of sodium emits light which is composed of but two different wave-lengths, these being of that particular length that corresponds to the yellow portion of the continuous spectrum. The light is admitted by means of a narrow slit, and each of these two lines is actually an image of this slit produced by that portion of the light which is of one particular wave-length. A continuous spectrum may similarly be regarded as an almost infinite number of images of the slit placed side by side, so that the finer and truer the slit of the spectroscopy the purer and more exact will be the spectrum obtained. I should perhaps mention that in the spectrum of sodium, as obtained under the best conditions, there are nine lines in all, but the two yellow lines stand out with such distinctness, and are so universally present, that the other lines are in ordinary cases neglected.

The spectrum obtained from sodium vapour is known as a line spectrum, and whatever vapour or gas is examined a spectrum similar in character will be observed—similar in that it will consist of a certain number of fine lines upon a dark background.

These lines spectra vary in the number of lines they contain, from four in the case of hydrogen to four or five hundred in the spectrum of iron vapour, and the spectrum of any particular vapour or gas varies according to the temperature and pressure at which it is examined. With an increase of temperature certain of the lines lose in distinctness and ultimately disappear, while others make their appearance, and in general higher temperatures lead to the simplification of spectra.

With increased pressure other lines make their appearance, and, as the pressure is still further increased, these continually grow in number until at length, when the vapour has become condensed into a solid or liquid, the spectrum becomes continuous.

The general construction of the spectroscopy is as follows:—Upon a stand, raising it some 8 or 10 inches above the table, is a glass prism, with its axis vertical, and fixed and pointing towards the prism are three metal tubes, each somewhat like a telescope in general appearance.

The first of these, known as the collimator, is fixed in position, and serves to collect a suitable beam of light for examination. The light is received upon the end of the tube, and by means of a narrow slit is allowed to enter; it is then rendered parallel by means of a lens, and passes on to the prisms. After passing through the prism this beam of light enters the second of these tubes, which is in effect a telescope, and by properly focussing this tube and looking through it the spectrum is seen. By means of the third tube, at one end of which is a microscopic glass with lines ruled thereon, and illuminated from a separate light source, a fixed scale is thrown upon the prism, and is observed along with the spectrum, serving for the identification of the various lines of the spectrum.

So far I have dealt only with radiation spectra; I have now to speak of what are known as absorption spectra.

When the light given out by an incandescent solid is examined, we have a continuous band of colours, but if between the source of light and the prism we interpose a gas or vapour, relatively cool, the coloured band is crossed by a number of dark lines; if, for instance, the light from the carbons of an arc lamp be allowed to fall upon the slit of the spectroscopy after passing through the vapour of sodium, the spectrum will be crossed by two distinct lines in the yellow portion, and if this be examined side by side with the spectrum obtained from glowing sodium vapour, which may readily be done by placing a special appliance over a portion of the slit, it will be seen that the two bright yellow lines radiated by sodium and the two dark lines, caused by the absorption of sodium, are identical in position. This is explained by the fact that sodium both emits and absorbs rays of the same period.

The molecules of the sodium vapour vibrate under the influence of light and heat in a certain definite period, and if mixed light is passed through sodium vapour those vibrations which are of this definite period are spent in communicating their motion to the molecules of the sodium vapour, in consequence of which, when the various portions of the mixed light are separated by the prism, these particular vibrations, and these only, are found to have been retained or absorbed, so that the images of the slit which would have been produced by these rays are absent, and we have dark lines in their places. This is true of all vapours and gases; all absorb exactly the same rays as they radiate, and consequently the absorption spectra are the exact negatives of the radiation spectra, and consist of a number of dark lines across the bright background of the continuous spectrum. Perhaps an illustration from the theory of sound will help to make this clear. A tuning-fork produces waves of sound of one particular wave-length yielding a definite note. If this particular note be sounded in the vicinity of the tuning-fork a portion of the vibrations will be spent in communicating motion to the tuning-fork, which under their influence will commence to vibrate, whereas a note of a different pitch will have no such effect.

One of the principal applications of the spectroscopy, and the one which has most conduced to the development of the science, is the examination of the light we receive from the sun. If a ray of sunlight be examined by this instrument, the spectrum is seen to consist of a band of colours such as is formed by light from an incandescent solid or liquid, which band is crossed by an exceedingly large number of dark lines, and as the greater number of these lines may be identified as corresponding with those connected with various elements with which we are familiar, the physical and chemical constitution of the sun can by means of the spectroscopy be approximately arrived at. The dark lines upon the bright background teach us that the light-emitting portion of the sun is either in a solid or liquid condition—probably liquid, in somewhat the same manner that the clouds which float in our atmosphere are in reality liquid—and that before leaving the sun the light has to pass through a vaporous atmosphere. In this atmosphere upwards of thirty of the elements known to us have been proved to exist, chief among which may be mentioned sodium, calcium, iron, magnesium, chromium, nickel, zinc, and hydrogen. Several other elements are probably present, while others have as yet given no indications of their presence.

A portion of this atmosphere forms what is known as the chromosphere, and for the examination of this solar appendage the spectroscopy has proved eminently useful. Except during the last two or three decades, the chromosphere could only be observed at the time of a complete solar eclipse, when the direct light of the sun being obscured by the moon, all round the dark disc were to be observed glowing red prominences, presenting the appearance of an enveloping discontinuous ring of flames. By using a spectroscopy the moon's help is dispensed with, and it is found possible to examine the chromosphere and solar prominences at any time during which the sun is visible. The spectroscopy shows them to be composed of glowing gases, chief among which are hydrogen and magnesium.

When the sun's light is allowed to fall upon the slit of the spectroscopy in the ordinary way, the spectrum obtained is that of the sun taken as a whole, for it is evident that any part of the slit is illuminated by light from every portion of the sun's disc; for the examination of a portion of the sun's surface, the chromosphere, for instance, or sun-spot, a different procedure is needed. By means of a telescope an image of the sun is obtained and projected upon the spectroscopy; any portion of this image may then be brought into coincidence with the slit, and the light from that portion alone will enter the instrument and so yield its spectrum. It is by a modification of this method that the chromosphere is examined and is shown to extend completely round the sun, forming a kind of atmosphere of vapours, principally metallic, the denser of which are situated close to the sun's surface, while some of the lighter constituents, such as hydrogen, extend outwards to an enormous distance, and this atmosphere is found to be in a state of intense activity, uprushes of vapour from the sun's interior to a height of hundreds of thousands of miles being of frequent occurrence.

By means of the spectroscopy our knowledge of the frequently observed phenomena of sun-spots has been considerably extended, and their vortex-like character established. They are probably caused by the partial condensation of huge masses of vapour in the sun's atmosphere, which are drawn downwards under the influence of gravitation.

The light we receive from the planets and stars may likewise be subjected to analysis, and from the former of these bodies conclusive proof may be obtained—if any such were needed—that they shine merely by reflection of the sun's light. The fixed stars, on the other hand, although giving spectra similar in general character to that of the sun, yet show marked distinctions.

Those dim patches of light which may be observed in various parts of the heavens, and which are known as nebulae, yield spectra of a different order from those of the sun and stars. Instead of bright spectra crossed by dark lines, due to absorption, the spectra obtained from them consist of bright lines upon a dark background, conclusively proving that these nebulae, which are inconceivably great in extent and of almost infinite variety of form, are composed of masses of heated vapour, thus bearing out the nebular hypothesis, which assumes that they are primary aggregations of matter destined in future ages to become suns. Following this hypothesis, the stars spectroscopically considered may be separated into four great classes.

Of the first of these, Sirius may be taken as an example. The spectrum obtained from this star, which you will recognise as the brightest in the heavens, is much simpler than that of the sun. It consists of a bright background crossed by only six dark lines, and this characteristic of a small number only of absorption lines is shared by other very bright stars, which we have independent evidence for believing to be in a younger and hotter state than our sun. The lines distinguished in Sirius are those of hydrogen with faint indications of magnesium and sodium.

Of stars belonging to the second class our sun may be taken as a type; there is probably no need to remind you that the sun is actually a star, and only appears so much larger and brighter to us on account of his comparative proximity. Stars belonging to this division, and which we may reasonably consider to be passing through the same stage of existence as our sun, resembling him to a certain extent as regards temperature and physical constitution, yield spectra crossed by a great number of dark lines, while the hydrogen lines are less prominent, showing that their atmospheres are much more complex than those in the former division.

In the third class of stars, these dark lines are still further increased by elements of higher atomic weight, such as bismuth, tellurium, antimony, and mercury, and in the fourth division a still further darkening of the spectrum is observed by the change from dark lines to wide bands. The stars in this last class are probably much cooler than our sun, and some of them are possibly on the verge of extinction as far as their light emitting properties are concerned. This great variation in the spectra of the stars is, according to Lockyer, not necessarily to be regarded as proof of distinctly different chemical constitutions, but is indicative rather of different physical conditions, temperature and pressure being the chief determining causes. A totally different kind of information which the spectroscope affords to astronomers is in measuring the velocities at which the so-called fixed stars are moving. In examining the spectrum of a star it is sometimes found that the dark lines are shifted to a minute degree either to right or left of their positions in the spectrum of the sun, and the cause of this phenomenon lies in the fact that the star is either approaching or receding from us at a velocity which will bear comparison with the velocity of light. If we stand at the side of a railroad, and a train approaches at a high rate of speed while blowing a whistle, the note heard will be higher in pitch than it would be were the train at rest; because the number of sound waves impinging upon the ear each second is greater in the one case than in the other. Similarly, if a body emitting light of one particular wave-length, light, for instance, yielding one of the sodium lines, be rapidly approaching us, the number of waves falling upon the prism in each second will be greater than if the source of light were at rest, and consequently will be differently refracted by the prism, and the bright line will occupy a different position upon the scale of the spectrum.

The same reasoning will hold good in the case of the dark lines due to absorption, and by this means the motions of a great number of stars on the line of sight, that is, towards or away from us, has been determined.

By astronomical methods it is impossible even to recognise these movements, only those taking place in a transverse direction evidencing themselves to the eye of the telescope, while by a combination of the telescopic and spectroscopic observations, the true motions of the stars may be obtained. These, in some cases, are found to be exceedingly great, some speeding through space with velocities upwards of a hundred miles per second.

In some cases, too, double stars have been discovered by means of the spectroscope. Although the telescope has failed to divide them, yet the spectroscope is enabled to do so, a double series of dark lines appearing in the spectrum, one due to one star whose motion is towards us, and the other to the companion star which is moving in the opposite direction, by this means even the period during which the one star revolves round the other may be determined.

The grouping of stars into systems, which can only with probability be accomplished by the telescope, is often rendered certain by spectroscopic examination, either on account of their yielding similar spectra, or on account of their movements being shown to be similar. As a case in point, the stars in the great nebula in Orion all show similar spectra and are evidently closely connected with each other and with the nebula.

Apart from the astronomical side of the question, although the spectroscope is a most useful instrument in a thoroughly equipped chemical laboratory, yet spectroscopy as a means of chemical analysis has not undergone the vast development which it has in astronomical work. Still, from the extreme delicacy of the work it is capable of doing it is in some departments of chemistry most useful. As an illustration of this delicacy I may mention that it has been calculated by Kirchoff and Bunsen that the eighteen-millionth part of a grain of sodium can be distinguished by the spectroscope, and this with entire independence as regards admixture of other ingredients. In fact the occurrence of sodium as an adventitious integer is so general that it is a difficult matter to obtain a spectrum in which no trace of sodium may be observed. Lithium also, which before the time of the spectroscope was known only as an ingredient of four minerals, is now found almost everywhere. Of other metals, we owe caesium, indium, rubidium, and thallium to the discovery of the spectroscope.

The instrument is occasionally found to be of practical utility in manufacturing processes, and as an example may be quoted the production of Bessemer steel. In this process everything depends upon turning out the mass of metal when a certain chemical composition has been reached, and a mistake of a few seconds might result in the whole batch being spoiled. The vapour given off by the heated mass is watched by means of the spectroscope, and directly certain lines in the spectrum due to carbon disappear it is known that the correct moment has arrived, and the mass of metal is run off.

When light yielding a continuous spectrum is passed through smoked glass or neutral tinted glass, a general absorption ensues, causing a decrease of brilliancy along the whole of the spectrum. If it be passed instead through coloured glass, a selective absorption ensues, that is to say, certain portions of the spectrum retain their brilliance while other parts are darkened. Various liquids yield a like result, absorbing each certain definite portions of the light, and so yielding certain definite and distinctive spectra.

Solution of magenta, of iodine, of permanganate of potash, and in fact nearly all coloured solutions, may be distinguished by their absorption spectra. Blood yields a quite distinctive spectrum, and it has been stated that a blood stain containing but one thousandth part of a grain may be thus detected.

A chemical salt is found to have a definite spectrum when observed at a comparatively low temperature, and if the temperature be gradually raised, a variation in this spectrum is observed, until at length the spectrum is that of the elements concerned, showing that the increase of temperature has resulted in the breaking-up of the chemical compound into its elements.

Increase of temperature on a higher scale when examining certain of the elements leads to a similar alteration and simplification of the spectrum; and reasoning from analogy, Lockyer has advanced the hypothesis that at the higher temperatures of the electric arc and spark, and especially in the spectra of the sun and stars, where the temperature is far beyond any that we can utilise in our laboratories, there exists a certain dissociation of the so-called elements, and that what we know as the elements consist of molecular combinations of similar or dissimilar more elementary bodies, and that continued increase of temperature leads to continued dissociations into simpler forms.

It is at least possible that important discoveries with regard to the ultimate constitution of matter may be made with this instrument; at any rate the history of spectroscopy up to the present day is such as to amply justify our looking forward hopefully to its future; and no new sphere of its usefulness could be specifically greater than those in which it is already established.

A hearty vote of thanks was conveyed to Mr. Smith and proceedings terminated.

Nottingham and Notts Chemists' Association, April 22.—Mr. C. A. Bolton in the chair.—This meeting was held to hear the report from the secretary of the Proprietary Articles Trade Association, and if necessary, to take steps to support the movement by local organisation. Mr. Bolton was supported by Councillor Fitzhugh, President of the Association, and there were also present: Messrs. Gascoyne, Spencer, Parker, Sergeant, Lumby, Ashby, Widdowson, Wilford, Lane, Gill, Aberlin, Rayson, Middleton, Holgate. Delegates from the new association were Messrs. Glyn-Jones, Corbett, and Jones, Birmingham.

The Chairman said that the meeting was one of the greatest importance, and there was no chemist in Nottingham but what had thought very earnestly for some time past on the subject. No doubt every chemist had felt that the difficulty of cutting was one of grave consideration to all members of the trade. Hitherto they had looked at the question from an independent point of view. The scheme of the Proprietary Articles Trade Association seemed a practical solution of the cutting difficulty, and he could not help feeling that Mr. Glyn-Jones looked at the matter with a view of benefiting brother chemists. They were not asked to look at the question from a childish point of view, but as business men.

Mr. Glyn-Jones then spoke, and explained the history of the movement, and declared that the difficulty of cutting could be solved on a firm business foundation. The three sections of the trade had everything to gain by co-operation. Mr. W. Jones said it was to the interest of chemists to support an association which was *bonâ fide*. Mr. Norris, Condal Water Company, and Mr. Corbett Halls, cocoa wines, also spoke.

Mr. Eberlin, Secretary of the Nottingham Chemists' Association, at this point announced the receipt of letters from a number of chemists, without exception all expressing themselves strongly in favour of the objects of association. Mr. Bell Stapleford next spoke. He said the movement was a good movement, and he should be most happy to forward it. Mr. Widdowson would be very pleased to join if he was not hampered in competing with neighbours. Mr. Gascoyne expressed entire approval of the objects of association, and said he was in favour of full-faced price.

Mr. Middleton moved "That this meeting of chemists residing in Nottingham and district pledges itself to support the Proprietary Articles Trade Association, and calls upon the Council of the Nottingham and Notts Chemists' Association to act in conjunction with the London organisation." Mr. Sergeant seconded, remarking that three halfpence was the proper distinction between book and cash purchases, and thought the shilling limit would be best. Messrs. R. Widdowson, Gill, Warriner, and Beverley took part in the discussion. Mr. Lumby asked if it was likely that patent medicine proprietors would fall in with the scheme. Mr. Beverley considered that they should not stipulate prices, but leave them to the manufacturers.

Mr. Jones having replied to questions, the resolution was carried unanimously. Mr. Gill then proposed the following resolution:—"That this meeting of Nottingham and district chemists desires to point out to manufacturers who have not joined the Proprietary Articles Trade Association the importance of their assisting the movement in the interests of themselves and of the distributors of their articles. We also state that they decline to exhibit show-cards, distribute handbills, or in any way encourage the sale of articles upon which adequate profit is not guaranteed to us." Mr. Wilford seconded the resolution, which was supported by Mr. Gascoyne, and carried unanimously. Twenty members joined the Association at the close of the meeting, and votes of thanks were accorded to the deputation and to the Chairman.

British Pharmaceutical Conference (Meeting of Executive), April 22.—Mr. Wm. Martindale, President, in the chair.—The other members of Executive present were Mr. Moss (Treasurer), Messrs. Bird, Farr, and Holmes, Messrs. Naylor and Ransom (Hon. Gen. Secretaries), and Mr. Nightingale (Assistant Secretary). It was announced that letters had been received from Messrs. Atkins, Martin, Ewing, Conroy, Coull, Wells, and Smith, regretting their inability to be present. The minutes of the previous meeting were read and confirmed.

The senior Honorary Secretary was requested to communicate with each member of the Executive, asking for suggestions relative

to additions or alterations in the Blue List, and having adopted such as might seem desirable, to issue the list to members.

Mr. Naylor reported that since the last meeting of the Executive the Publication Committee had met, and had considered by what means the cost of the production of the Year-Book might be reduced. Tenders for printing had been submitted by London firms and a provincial house, and that of Messrs. Butler and Tanner had been accepted. Certain alterations, mainly editorial and sectional, connected with future issues of the annual volume had been discussed and agreed upon.

The secretaries reported that in accordance with instructions given at the last meeting of the Executive, they had conferred with the local committee as to the date of the Liverpool meeting. It had been decided that business should commence on Tuesday, July 28, the reception being held the previous evening.

Some discussion ensued as to the best methods to be adopted for increasing the membership, and the hope was expressed that considerable additions would be obtained from the populous district in which the meeting is to be held this year. Thirteen gentlemen having been duly nominated were elected to membership.

Liverpool Chemists' Association, April 23.—Mr. Conroy, President, in the chair.—The Secretary, Mr. Wardleworth, said that he had not written to the Inland Revenue authorities concerning the point raised at the last meeting by Mr. Ellam's letter relating to the liability to stamp duty of pure drugs vended entire as proprietary articles. His reason for this was that an authoritative opinion on the subject could be found on page 104 of Alpe's 'Medicine Stamp Duty.'

A fine specimen of bdellium was shown by Mr. Wardleworth, and also some canaigre bark from the root of the *Rumex hymenosepalum* (Linnaeus) grown in Mexico and the Southern States as a source of tannin. A packet of snuff done up in plaited palm-leaf found in a bale of Egyptian senna was also exhibited by Mr. Wardleworth.

A Röntgen photo of a bullet embedded in the hand of a patient of Dr. Robert Jones was passed round by Mr. P. H. Marsden, pharmacist to the Royal Infirmary, who mentioned that a patient in the wards of that institution had been examined by means of the Röntgen rays to see if a Murphy's button used in an intestinal operation was still *in situ*. The result was satisfactory in the extreme, the button being clearly visible.

Mr. H. Wyatt, Junr., said he had been lately asked by a photographer for a solution of Schlippe's salt, 10 grains to the pint, to be used to restore printing density of negatives which had faded after mercurial intensification. Such a salt was not mentioned in Watts' 'Dictionary,' nor in Meldola's 'Chemistry of Photography'; in fact, in none of the usual sources of information. An order was therefore sent to a retail dealer in photographic materials, from whom a packet of this Schlippe's salt was received, labelled: "Sulphate of Soda." That the contents were anything but the latter could be seen at a glance, for they smelt strongly of H₂S, and were covered with a red-brown efflorescence. An examination proved that the substance was sodium sulphantimonate. References were then discovered in 'L'Officine de Dorvault,' p. 921, 1893 edition, where it is mentioned as Sel de Schlippe or Kermès des Allemands, and in Remson's 'Text-Book of Inorganic Chemistry,' p. 346, 1889. It is a salt with the formula Na₃SbS₄·9H₂O, made by dissolving Sb₂S₅ in NaHS. By the action of acids or exposure to the air it gives off H₂S, and deposits Sb₂S₅, or the golden sulphide of antimony. When a negative is intensified with a solution of mercuric chloride, a deposit of mercurous chloride is left on the portions of the film containing the reduced silver; washing with ammonia removes traces of silver chloride, and converts this mercurous salt into a compound mercurous ammonium. This gradually loses its intense black colour, so that the Schlippe's salt very likely remedies this by converting the mercurous salt to sulphide. The difficulty of finding any mention of the body as Schlippe's salt was the reason for bringing it before the meeting for the members' information.

Mr. Cowley had been asked to prepare some a while ago, but not as Schlippe's salt—sulphantimonate of sodium was what was demanded. There was considerable care necessary in its crystallisation as it very quickly became coloured on concentrating its solutions.

The President then read papers on "Cream of Tartar," and "Extract of Malt" (see page 346).

In the discussion following the paper on cream of tartar, Mr. Wardleworth said that it was an undoubted and much to be

deplored fact that cream of tartar was very seriously adulterated, but in his opinion the standard demanded by Mr. Conroy of 96 per cent. could easily be obtained for medicinal use, at, however, a proportionate rise in price.

Mr. Wokes was somewhat surprised to hear that a 96 per cent. cream of tartar could be obtained commercially, for, if his memory served him, a short time since it was said to be impossible to get even the B.P. standard, low as it was.

Mr. Conroy replied, and, in answer to a member's suggestion that tartaric acid might be present, stated that he had never yet found it in any sample he had examined, nor had he noticed very low grades of cream of tartar in crystals, it was invariably the powder that was not up to the mark.

After the paper on malt extract there was a lively discussion in which Messrs. J. Smith, Wardleworth, and Marsden joined, a vote of thanks being afterwards accorded to the President for his two practical papers.

Pharmaceutical Chemists' and Apothecaries' Assistants' Association of Ireland, April 24.—Mr. T. J. Walsh, L.P.S.I., in the chair.—The programme for the evening consisted of short discussions on pharmaceutical questions of every-day interest, of which the following formed the greater part: (1) The best methods of dispensing curious prescriptions (submitted by different members); (2) the most approved system of pearl-coating pills; (3) in spreading plasters what is the objection to the use of a water bath for melting the plaster? (4) what is the best way of dispensing resinous tinctures in mixtures, as per examples given? The questions were debated at some length, amongst those who spoke being Messrs. O'Sullivan, Hunt, Payne, Ewing, Hardy, Hegarty, etc. Mr. O'Sullivan's remarks in favour of the use of mucilage of acacia were well received. He acknowledged his indebtedness for the information to the late Dr. Digges, of Messrs. Hamilton and Long's state pharmacy, whose plan in dispensing a resinous tincture ordered in the prescription was to fill the bottle with water, pour off a drachm of the liquid, dry the neck of the bottle, then drop in the tincture, and shake thoroughly. Mr. Payne, thought a very nice way was to rub up the tincture and then add syrup. Mr. Hardy deprecated the addition to a prescription of any substance not ordered by the physician, but generally speaking, he was in favour of the use of mucilage on account of its binding qualities. Mr. Hunt concurred, but feared the after effect of mucilage was to clog the bottles. Mr. Hegarty spoke on the dispensing of croton chloral. He found the use of hot water very beneficial, as it gave the best results. The solution in cold spirit was slow and apt to precipitate the compound. He had tried both methods of dispensing. Mr. Payne spoke at some length on the best method of pearl coating pills. His plan was to varnish the pill and roll it in French chalk, after which the chalk would be blown away and the pill rubbed with waxed paper. This operation was invariably found successful and in some cases the pills were indistinguishable from those made by Barren, Harveys and Co. Mr. Harvey thought the use of varnish was unwise in pill making on account of its insolubility in the stomach. He favoured coating with pulverised white sugar and a thin solution of gum. He admitted that varnish filled up the pores in the pill and made the powder uniform, but the same result could be secured by the use of gum, which had the advantage over varnish on the score of solubility. Mr. O'Sullivan thought the use of varnish in pill making was unavoidable, but it need not be applied so strong that the gastric juices would not dissolve it. If the doctor wanted the therapeutic action of the medicine to be experienced at once by the patient he need not order the pills to be coated. If the varnish be of the proper consistency, an interval of from fifteen to thirty minutes after taking them would suffice to peel off the outer coating. Mr. Hunt favourably criticised Mr. Payne's description of pill making; the action of chamois leather as a polisher of sugar and chalk-coated pills was uniformly successful. Generally speaking, pearl-coated pills were not an unmixed blessing. Occasionally it took as long a time as forty-eight hours before they obtained the desired result. Mr. Hegarty was in favour of gelatin-coated pills. Mr. Payne, speaking on plaster spreading, thought the ordinary mode of preparing plasters was the best way, there was less to clean up afterwards. Mr. O'Sullivan deprecated the conservatism of pharmacy in forbidding any deviation from the beaten track: the etiquette of pharmacy restricted the boundary of progress, and it was considered unprofessional to go outside that limit. If he had to make a plaster a yard and a half long he would certainly use the warm bath. He

referred to the test of plaster spreading given at the examinations of the Society, and said, like Euclid, there was no royal road to plaster spreading.

Subsequently a short business meeting was held, at which the report of the visiting committee was read. Mr. Ewing was co-opted a member of the Committee. Some financial business having been transacted, and the holding of a social reunion discussed, the proceedings terminated.

LEGAL REPORTS.

PROCEEDINGS UNDER THE COMPANIES ACT.

PROSECUTION OF BOOTS' PURE DRUG COMPANY AT BRISTOL.

At the Bristol Police Court on Friday, April 24, before Messrs. J. C. Godwin and W. Lane, a case of interest was heard in which the complainants were the Pharmaceutical Society of Great Britain, and the defendants were Boots' Pure Drug Company, of 16, Island Street, Nottingham, who have a branch at Queen's Road, Clifton.

Mr. R. E. Vaughan Williams (instructed by Messrs. Flux, Thompson, and Flux) appeared for the Pharmaceutical Society, and Mr. H. J. Stanger, Q.C. (instructed by Messrs. Wells, and Hind) represented the defendant company.

The information was laid by Thomas William Stroud, of Walthamstow, in the county of Essex, on behalf of the Pharmaceutical Society of Great Britain, for that the defendant company on April 16, 1896, at No. 13, Queen's Road, Clifton, in the city and county of Bristol, unlawfully did not paint or affix, and keep painted or affixed, the name of the said company on the outside of the office and place there in which the business of the company was then carried on, in a conspicuous position in letters easily legible.

Mr. Vaughan Williams, in opening the case, explained that it was a summons taken out under the Companies Act of 1862, Sections 41 and 42, against Boots' Pure Drug Co., Limited, and it was for not lawfully affixing the name of the said company to the premises in which they carried on business. He might say that these proceedings were taken in the interest of the public by the Pharmaceutical Society. It was considered desirable that since limited companies were allowed to sell drugs and poisons, every precaution should be taken to make them comply with the Companies Act, so that those persons who dealt with them might know that they were dealing with a limited company. While chemists and druggists individually were required to pass a very stringent examination, so that in the case of anything going wrong it was very easily detected and investigated, a limited company could not pass an examination. More than that, it was very difficult to ascertain in a big business of that sort whether the individual at the head of it had passed his examination, and whether the men who served behind the counter were qualified chemists. Therefore in a great business having many branches it was difficult to bring anything home to any individual. Under these circumstances he thought he should succeed in the summons if he proved that that company was a duly registered company, that it had carried on business at 13, Queen's Road, Clifton, and if he proved that on the outside of the premises the name of the company did not appear.

Mr. Stanger said his friend had said he was going to prove the three matters mentioned in the summons. He admitted these three things, but the explanation was a very simple one, which he would be able to make when his turn came.

Mr. Vaughan Williams said under those circumstances he should put the case very simply. He was much obliged to his friend, as it enabled him to make the matter very much shorter and save the time of the Court. Their Worships would see by the photograph he produced that there was no trace on the outside of the premises that they were occupied by a limited company. There was not even what was sometimes found, an "L" with a small "td.," and even if there were so, he did not think that it would be complying with the Statute, which required the word to be put in full. At any rate, that was how it was spelt in the Statute. Moreover, in that case they did not have the name of the company. There they had only the name Boots, whereas the name of the company was Boots' Pure Drug Company, and any ordinary person going into that shop to make a purchase would fail to know that he was dealing with a limited company. Their worships would see that the forty-first section imposed a penalty of £5 for every day during which the name was not put up. There was no doubt

that the name had been absent from the time the business was started about three months ago. It was, however, thought sufficient to claim a penalty for one day only, as there was no desire on the part of the Pharmaceutical Society to appear to act with vindictiveness against the company. He asked their worships to look at the extreme desirability of the public being protected in those matters, and to inflict the penalty he had named.

Mr. Stanger said it would save much time by his admitting that on the 16th April the name was not put up. He would dispense with proof of that, as the managing director, who was there, admitted it through him (the speaker).

Mr. Vaughan Williams said if his friend pleaded guilty he had only to prove the facts.

Mr. Thomas William Stroud said on April 15, he was in Bristol and about six o'clock in the evening he went to the premises, 13, Queen's Road, Clifton. He saw a shop there with the name "Boots, Cash Chemists," put up. A chemist's business was being carried on there, and perfumery, brushes, and various other things were offered for sale. He did not see on the outside of the shop "Boots' Pure Drug Company, Limited," or the abbreviation "Ltd." He saw over the shop the words "Boots, Largest Chemists in the World." Upon three other places there were the words "Boots, Cash Chemists," and on each plate of the door there was the same. On the pavement in connection with the shop appeared the word "Boots" simply. That was in the doorway. There was no word "Limited," or the name of the company. He went into the shop and made some purchases, and received the receipt produced, on which he saw the name "Boots' Pure Drug Company" for the first time. Except from that he had no other indication as to who carried on the business. The labels used in the business did not bear the name of the company or the word "limited." He again visited the shop on April 16. The name was in the same state as on the previous evening. He looked at the shop three times and made some purchases in the shop. Amongst other things he bought some soap liniment and laudanum. The bottles in which they were supplied he produced.

Mr. Stanger said the offence was not for omitting to put the name on the bottles, but for not setting up the name outside. As soon as the information came to the head office in Nottingham the name was put up.

Witness said he was at the shop on the previous evening, and the name of the company was not there.

Mr. Stanger replied that he had been there and seen the name.

This was the case for the complainants.

Mr. Stanger said it was only fitting that he should make an explanation. It was a very simple one, and he thought the magistrates would be of opinion that it was a most trivial case, and need not have been taken there. The company was well known, and had a branch at Clifton. The firm was known as "Boots' Pure Drug Company," though it was chiefly known as "Boots." As to that branch, it was opened on February 6, and there was no object to be gained by the company in concealing that it was a company. The facts of the case were that on February 8 the man who was sent down to fit up the shop sent to the Nottingham headquarters asking for a glass tablet for the door, and on February 10 the order was given for the plate which was to be put up. The plate which had been used before for the fitting up of shops was of an inferior character, and though there were some of these plates in stock it was desired to put on the shop in question one that would correspond to the fittings, and an order was given for plates of glass with bevelled edges. Either of these plates would have complied with the Act of Parliament; though the order was given on February 10 the plates were not supplied immediately as they were out of stock. The simple explanation of the whole matter was that the order was not completed for the opening of the shop, and, therefore, there had been a technical breach of the law. His friend had said that it was important that every person purchasing anything at the shop should know it belonged to a company. He should be able to prove by his friend's own evidence that everyone making purchases there had a paper given him, on which was printed "Boots' Pure Drug Co., all complaints to be made to the managing director." It was only through inadvertence that the name was not put up. The plate was there in the court, ready to be put up, and there was a substitute placed on the premises at the present time which fully complied with the Act. He was anxious to lay stress upon the fact that it was only through inadvertence that the offence had been committed, so that the Court might look more lightly upon the case, the more especially when it was seen that no mischief was likely to take place. His friend had said it was

desirable that the names of limited companies should be known, because it was necessary to pass examinations, and it was not known if the persons behind the counter had passed those examinations. He was happy to be able to relieve the feelings of the Pharmaceutical Society upon that matter, for all the branches of the company were under the care of properly qualified pharmaceutical chemists. There was no desire on the part of the company to hide the fact that it was a limited company. No harm had been done and no one had been injured. There had been what he said under the circumstances was a technical breach of the law, and he asked their worships to consider it as a very trivial matter indeed. He had only this further observation to make. It was this: the magistrates were asked by his learned friend to inflict a penalty of £5 for the one day, but he, on behalf of the company, asked the Bench to take the view that it was an extremely trifling matter. He did think that if the Pharmaceutical Society was so anxious to protect the public, the attention of the company should have been directed to the matter. Instead of that, a summons was issued, and that was the first intimation the company had. There had been no contumacious breaking of the law, and, on the other hand, as he hoped he had made clear, no mischief could have been caused.

Mr. Frederick James Mead was called, and said he was a pharmaceutical chemist, and manager of Boots' Pure Drug Co., in Queen's Road, Clifton. He was assisted by Mr. Pitt, who was a qualified chemist and druggist. It was his practice to give invoices, similar to that given to Mr. Stroud, to all purchasers, and the name of "Boots' Pure Drug Co." appeared on the invoices.

Mr. Jesse Boot said he was the managing director of Boots' Pure Drug Company, and also of a company called Boots', Limited. There was a distinct registration in the case of each, and they were different companies—one company in the Midland and the other in the Western district. There were branches of the Pure Drug Company at Clifton, Bath, and other towns. There was no desire on his part to conceal the fact that it was a company which owned the shop; it was understood that in every case where a shop should be opened by the company a plate should be put up. Whenever anyone made a purchase he was given a receipt, upon which was the name of the company in full.

Cross-examined by Mr. Vaughan Williams: There were two companies, the one being Boots' Pure Drug Company and the other Boots', Limited. He was managing director of both. He admitted that on the photograph produced the name of the company did not appear. He gave the order for the plate for the shop in question. The company ordered the plate from one of its own departments. There was a shop fittings' department, which was a private one of his own.

The accounts of the fittings' department were kept in his own name. That was an entirely different concern. He did not make any personal profit out of the shop fittings, but it was done for the benefit of the company.

Mr. Albert Edward Smith, manager of the shop fitting department, said he had charge of the fitting up of the branch at Clifton, and on February 8 a letter was received asking for a glass tablet for the door. He had no glass tablets in stock such as in his judgment should be put up, and he gave an order for some on February 10, which, however, was not completed before the day previous to that on which the summons was received. He was on the point of sending it off when the summons came.

Mr. Stanger asked the magistrates if they did not see their way to dismiss the summons, to inflict the smallest fine in their power.

After a short consultation, the Chairman, Mr. J. C. Godwin, said the case had been very carefully argued on both sides. It was admitted that there had been a technical offence, and as they were there to administer the law and see it was not broken they would fine the defendant 20s. and costs.

PUBLICATIONS RECEIVED.

KING'S COLLEGE HOSPITAL REPORTS, 1894-95. Pp. 376. (London: Adlard and Son, Bartholomew Close, E.C. 1896.) From the Publishers.

FOODS: THEIR COMPOSITION AND ANALYSIS. By ALEX. W. BLYTH, M.R.C.S., F.I.C., etc. Fourth Edition, revised and enlarged. Pp. 735. (London: Charles Griffin and Company, Limited, Exeter Street, Strand. 1896.) From the Publishers.

CORRESPONDENCE.

SYRUP OF CAMPHOR.

Sir,—In answer to query on page 340 of this week's *Pharmaceutical Journal*, I shall be very pleased to forward him the correct formula for the B.R.I. Syr. Camphoræ Co. if he will communicate with me. The majority of chemists in and around Bristol prepare a Syr. Camph. Co. according to a formula in the *Infirmiry Pharmacopœia* which has long been obsolete.

Bristol Royal Infirmary, F. J. KILNER, Head Dispenser.
April 25, 1896.

C. J. M., in answer to our correspondent (*ante*, p. 340), gives the following as the formula for compound syrup of camphor:—

℞ Syr. Opii ʒj.
Tr. Camph. Co. ʒii.
Oxy. Scillæ ʒvi.

Misce.

The syrup of opium is prepared as follows:—

℞ Gum Opii ʒii. { Macerate 12 hrs.
Aq. Oiss. {
Brown Sugar, 7 lbs. in Aq. Oii.
Misce sec. art., and make up to 6 pts.

D. KINGAN says his formula for syr. camphor co. (*Bristol Infirmary*) is as follows:—

℞ Syr. Opii ʒi.
Tinct. Camph. Co. ʒij.
Oxymel Scillæ ʒvj.

and for the syrup of opium—

℞ Gum Opii gr. viij.
Sacch. alb. ʒviiss.
Aquæ ʒviij.

* * * As the differences in the two sets of formulæ are important, perhaps Mr. Kilner will kindly settle the matter authoritatively. [*Ed. Pharm. Journ.*]

RE THE APPROACHING COUNCIL ELECTION.

Sir,—I hope the gentleman who intends to discontinue his subscription to the Society (*vide* page 339) will reconsider that decision, forward the usual amount, and exercise his vote and influence to make the Council more representative of the trade. I also have a grievance, that my last communication to the Journal, about the anti-cutting scheme, was severely cut down before insertion, but possibly you were justified in so doing. However, it is my intention, on receipt of the voting paper for the Council, to erase the names of all who are not openly pledged to support the same. If 1500 voters who never return their papers will do likewise all the newer aspirants for the Council will be elected. It will be with regret that I shall erase names of some gentlemen for whom I have voted for, possibly, the last eleven years, but a more vigorous trade policy must, in my opinion, be inaugurated.

Northampton, April 27, 1896.

J. CLOWER.

As a fitting supplement to the above letter, the following passage is quoted from a letter received by the Secretary of the Pharmaceutical Society this week:—"With pride and pleasure I enclose you postal order for one guinea, my first full subscription, as an Associate, to the Pharmaceutical Society. I would like very much to support the wheels (like your correspondent), but consider supporting the Society I have worked so hard to become connected with will pay me better."

* * * The correspondent referred to is evidently the one whose letter was quoted last week (p. 339). Thus do opinions differ. [*Ed. Pharm. Journ.*]

THE TESTING OF LEMON OIL.

Sir,—The determination of the aldehyde citral by reduction to its corresponding alcohol geraniol, acetylation and saponification, put forward by Mr. Garnett in his paper under the above title—as well as the estimation of citronellal by the same means—has formed the subject of experiments for some time past with me. There are, however, several points in connection with the simple process suggested in his paper that make its application open to doubt. No check experiment is first made by Mr. Garnett to ensure the absence or determine the amount of alkali-fixing bodies in the lemon oil, such as one makes in peppermint oil in the process for the estimation of menthone. I have found, however, as a result of

many experiments, that after acetylation without reduction of lemon oil, and most thorough washing, as much alkali-fixing power indicated as would be equal to 6 or 7 per cent. of citral in the original oil. The body that effects this absorption may be an alcohol or an acid formed by the reaction between the aldehyde citral and acetic anhydride (Perkin's synthesis). Whether the percentages of citral obtained by Mr. Garnett, and calculated by him from the saponification equivalent of the ester of the alcohol, geraniol, formed by reduction, are in reality such or the equivalents of other alkali-fixing bodies formed by the action of acetic anhydride on the aldehyde, needs proof. If it could be shown that quantitative formation of an acid by the reaction between citral and acetic anhydride occurred, this method might be available for the determination of citral. I have placed the results of my experiments, both with lemon and citronella oil at the disposal of Mr. Garnett to clear up the difficulties that appear to be indicated by them. Whether the determination of citral as a means of ascertaining the value of lemon oil has the significance that has recently been attached to it, is very doubtful. The high percentage of citral in some lemon oils, the other characters of which show unmistakable sophistication, and the advance in price of lemon grass oil (it yields about 60 per cent. of citral!) are suspicious circumstances.

London, April 29, 1896.

JOHN C. UMNEY.

SHOPS (EARLY CLOSING) BILL.

Sir,—I am an old-fashioned Conservative and do not much approve of interference with the liberty of the subject, but the question seems to be whether a man should be obliged to keep his shop open half the night or submit to legislation until common sense is driven into our heads all round. I consider my hours of business to be from 8 a.m. until 7 p.m. I have two customers from outside who have occasion to send into the town soon after 7 p.m. They expect me to be up and wait upon them and if they happen to meet me with my carriage and pair (of wheels) to turn back and spoil an early spin. Then neighbouring brother chips keep open, one until 10 p.m. the other very often until 11.30 p.m. Of course I do not imitate them; at the same time they give the public the idea that chemists keep open very late and my customers come pretty regularly until 9 o'clock, and I contend that there is no necessity for it and that the only way to stop it is the closing. Therefore my vote is for the early closing Bill.

April 25, 1896.

GILGEN.

UNQUALIFIED DISPENSERS.

Sir,—The leading article in your issue of the 28th ult., on the subject of "Poor Law Dispensers," merits more attention than has been bestowed upon it, and points out the direction in which an amendment is most urgently required in the existing Pharmacy Act. I am perfectly aware that it is needless going to the Legislature with an appeal for protection or with a cry that our craft is in danger, but if we proceed on the lines of the Act of 1868 and propose legislation for the safety of the public, we shall probably get, with a little diplomacy, all that we can reasonably look for. If it is expedient for the safety of the public that persons keeping open shop for the retailing of poisons should be qualified, surely it is far more necessary for the general safety that those who are constantly employed in dispensing potent poisons for the consumption of a very considerable portion of the public, should be so qualified. The ever-growing class of unqualified dispensers, continually flowing from the services of the Crown and seeking employment in civil life, constitutes a very real danger, both for the outside public and for the Society. Restriction is therefore loudly called for.

April 22, 1896.

ARUNDO.

RANDALL'S EMULSION.

Sir,—The information which your correspondent "Major" seeks will be found on the enclosed label for cod-liver oil emulsion with hypophosphites, supplied by this firm.

Southampton, April 27, 1896.

RANDALL AND SON.

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs, Barclay, Bignon, Bindloss, Bolton, Clower, Cruickshank, Deck, Elms, Essam, Gardner, Greenhalgh, Guyer, Hay, Hill, Idris, Ince, Ingham, Kilner, Kingan, Leslie, Littlefield, Miles, Mitchell, Muir, Randall, Reade, Reynolds, Rimmington, Salmon, Skinner, Stanley, Thomas, Umney, Wall.

ANNUAL REPORT OF THE COUNCIL.

The fifty-fifth financial statement submitted with this Report shows an increase in several items of expenditure. The adverse balance on law charges is large, but not out of proportion to the work done. The duty of carrying out the provisions of the Pharmacy Act imposed on the Council can only be efficiently accomplished by considerable expenditure, which the costs allowed, even if obtainable, fail to cover. The Council has spent a considerable sum in completing the decoration of the rooms of 16, Bloomsbury Square. It has also invested in the remodelled *Pharmaceutical Journal* a considerable portion of its annual income, the financial benefit of which, it is believed, will appear in succeeding years in reducing the balance against that account. The Council has had to meet in the years 1894 and 1895 a capital expenditure in the building and equipment of the examination hall and laboratories in Edinburgh, of about £3300, of which a sum of £2243 has been provided from revenue. The income from fees was considerably less than in the preceding year owing to there being fewer candidates for examination. Variations of this kind occur from time to time, followed by increased receipts.

The number of candidates presenting themselves for the pharmaceutical technical examinations during 1895 was considerably less than in the preceding year. The total number of candidates was 1450, of which 1304 were for the qualifying examination and 146 for the Major examination. The rejections in the case of the Minor examination were 65.72 per cent.; 857 candidates (574 in London and 283 in Edinburgh) having been found to lack that "competent practical knowledge" which the Pharmacy Act, 1868, declares it essential for persons practising pharmacy to possess. This high percentage is doubtless due to the increased scope of the examination, which, to quote from the last report of the Government Visitor for England and Wales, is "a fair one, and the stringency of the practical examination in chemistry commendable." The statistics for the Major examination show that of 146 persons presenting themselves (130 in London and 16 in Edinburgh), 78 failed, or 60 per cent. There were 1430 candidates for the First examination in 1895, as against 1541 in the previous year. The rejections, which were a little over 50 per cent. a few years ago, have steadily risen to 52.65 per cent. during the past twelve months. In connection with the examinations, it may be noted that the Executive of the North British Branch has forwarded a resolution to the Council, advocating the increasing of the standard and scope of the Preliminary examination. The Resolution will receive the careful consideration which the subject demands.

Considerable progress has been made in cataloguing the rich collections of the Society. The catalogue of the medicinal plants in the herbaria of the Society is now complete. An annual report of 105 pages, including the additions to the Museum and Herbaria in London during the year 1893-4, has been issued. The catalogue of the Herbarium of British plants is now in the printer's hands, and will be published in the course of the year, having been thoroughly revised and brought into accord with modern botanical nomenclature. Duplicate specimens of drugs and medicinal plants have been distributed to various local associations, and exchanges made with other museums. Numerous and important donations have been received from correspondents, both at home and abroad. In addition to other

services rendered to pharmacists by this department of the Society, reference may be made to the large number of enquiries relating to drugs which are addressed to the Curator, and dealt with by him.

The maintenance of the Libraries in London and Edinburgh is a prominent feature in the Council's work, and during the past year many additions have been made to that department. The main growth in the Libraries is in the periodicals, of which the Society possesses many very valuable sets. Nearly all new books which are considered worthy of a place are obtained, either by purchase, or through the much appreciated generosity of the authors.

The fifty-fourth session of the School was inaugurated in October by an able address from Dr. F. T. Roberts, Professor of Medicine in University College. The distribution of prizes to successful students was rendered more than usually interesting by the attendance of Count Siegfried Clary from the Austrian Embassy to receive the Hanbury gold medal on behalf of Professor August Vogl, of Vienna, to whom it had been awarded.

The scientific meetings in London and Edinburgh have furnished a number of papers, which were in many cases productive of interesting discussions on important practical matters relating to pharmacy. In London, papers were provided by Professors Dunstan and Greenish, Messrs. Martindale, F. Browne, A. Gunn, Tickle, Carr, and J. C. Umney; in Edinburgh, by Dr. Lockhart Gillespie, Dr. W. Inglis Clark, Messrs. Dott, Boa, and Forret, whilst Dr. Gibson delivered an admirable introductory address.

At the meeting of the Council in June a resolution was adopted appointing a special committee to inquire as to how far the objects of the Research Laboratory had been attained. The Committee was also asked to report upon any suggestions that might appear desirable to adopt in the future conduct of the laboratory. The Committee after full and careful deliberation reported (a) that in its opinion "the completed work which has emanated from the laboratory is on the whole satisfactory, and reflects credit on the Society," and (b) suggested that "concurrently with such work as has already been undertaken, it is desirable that attention be devoted to the chemical and physical examination of substances used in medicine, whether official or non-official." It was further suggested that the Director of the Laboratory should attend each meeting of the Library, Museum, School, and House Committee, and that the Research Committee should report to the Council twice a year. These suggestions were adopted at the July Council meeting, and in accordance therewith an Interim Report of the Research Committee was presented early this year.

During the year 1895 upwards of 350 cases of alleged infringement of the Pharmacy Acts were reported to the Registrar, and investigated. In the majority of cases in which proceedings were taken, the penalties incurred were paid without contest, and it is satisfactory to note that in practically every instance in England and Wales where it was necessary to go into Court, judgment was given for the Society. One of these cases was that of the sale of arsenical fly-papers by a firm of oilmen, wherein it was held by the County Court Judge that they had sold "a poison" within the meaning of the Act. Leave was given to appeal, but the manufacturers ultimately accepted the decision of the County Court Judge, and have since intimated that they do not intend to issue any more fly-papers

GENERAL FUND.

FINANCIAL STATEMENT FOR 1895.

Receipts.		£ s. d.		£ s. d.		Expenditure.		£ s. d.		£ s. d.	
Balance January 1, 1895:—											
London and Westminster Bank	1890	15	4					
In Treasurer's hands	28	17	4					
In hands of Chairman of Executive (Scotland)	45	8	0					
				1965		0	8				
Interest on Investments:—											
Dividends and Ground Rents	166	1	0					
Rent of 15, Bloomsbury Square	187	10	8					
				353		11	8				
Sale of £1000 Two and a half per cent. Annuities..						1057	9	0			
Subscriptions:—											
1357 Members, Pharmaceutical Chemists	1424	17	0					
582 " Chemists and Druggists	611	2	0					
1652 Associates in Business	1734	12	0					
946 Associates not in Business	496	13	0					
797 Students..	418	8	6					
				4685		12	6				
12 Life Subscriptions	126	0	0					
Fees paid upon Restoration to the Society	5	17	0					
				4817		9	6				
Examination Fees:—											
1433 First Examination	2582	9	0					
1 Modified "	1	1	0					
1357 Minor "	5713	1	0					
143 Major "	403	5	0					
				8699		16	0				
Fees for Restoration to the Register	26	5	0					
Registration Fees as Chemists and Druggists	14	14	0					
				8740		15	0				
Journal:—Advertisements and Sales..						3954	10	7			
Register:—											
Sales to the Government	147	10	0					
Sundry Sales	13	10	0					
				161		0	0				
Calendar—Sundry Sales						27	17	0			
London and Westminster Bank—Advance	1500	0	0					
Due to Treasurer December 31, 1895	13	18	9					
						£22,591		12	2		
						1292		11	4		
						215		15	6		
						73		4	0		
						152		19	4		
						57		1	1		
						388		2	2		
						2179		13	5		
						1039		12	5		
						2179		13	5		
						3219		5	10		
						190		9	0		
						2409		14	10		
						81		4	7		
						340		6	6		
						279		13	0		
						6715		18	17		
						980		10	11		
						771		1	4		
						250		0	0		
						89		19	0		
						10		10	0		
						350		9	0		
						400		0	0		
						52		0	0		
						10		10	0		
						27		7	7		
						489		17	7		
						210		0	0		
						67		11	7		
						81		8	1		
						339		6	6		
						638		6	2		
						1149		9	9		
						216		8	5		
						£37		1	10		
						1053		10	3		
						68		10	8		
						45		0	0		
						177		19	2		
						791		14	3		
						1053		5	8		
						281		4	5		
						105		5	5		
						1575		19	0		
						350		0	0		
						10		0	0		
						13		0	10		
						487		18	3		
						50		3	4		
						785		6	9		
						5		15	7		
						791		2	4		
						£22,591		12	2		
						£22,591		12	2		

containing arsenic. In several cases proceedings were instituted against unqualified persons for the sale of arsenical weed-killers, and in two cases penalties under Section 17 of the Act have been imposed on limited liability companies.

In the Scottish courts the principal cases were those of Turnbull and Hume, who respectively used the titles "photographic chemist" and "technical chemist," kept open shop, and sold poisons. The Sheriff-Substitute held that the words "photographic" and "technical" so qualified the title "chemist" that the use of such a description was not an offence under the Act. Upon appeal to the High Court of Justiciary, the Lord Justice Clerk, Lord Young, and Lord Trayner unanimously reversed this decision, and gave judgment for the Society.

The Society has experienced some difficulty in carrying out the provisions of the Pharmacy Acts in Scotland. In an action taken against a firm of seedsmen in Glasgow for selling an arsenical preparation unlabelled, the Sheriff held that the Registrar of the Society had no title to proceed in Scotland under Section 17 of the Pharmacy Act, 1868, and that the proper person to take action was the Procurator Fiscal for the district. All the evidence in the case was sent to that officer, who, however, declined to take any action in the matter. Proceedings were afterwards instituted by the Society against the unqualified assistant who sold the article above referred to, and although the respondent pleaded guilty, the Sheriff dismissed him with an admonition and refused the Society any expenses. In other cases in Scotland, although the evidence of infringement has been quite clear, only nominal penalties have been inflicted.

During the year the official list of applicants for patents has been carefully watched, in order to prevent any scheduled poisons from becoming the subject of a patent. In fifty-nine cases of applications in respect of medicinal preparations, the prospective patentees were communicated with, and in most instances abandoned further patent proceedings after receipt of intimation that the Society would move for revocation. The result has been that only three actions have been necessary in the Court of Chancery for the revocation of patents for medicines. None were seriously contested, and in each case the revocation asked for was granted.

The Council has been fully alive to the **Parliamentary** necessity for carefully watching the work of the Legislature during the session, and with that view sanctioned the appointment of a Standing Sub-Committee of the Law and Parliamentary Committee to act in cases where prompt action seemed expedient to preserve the interests of chemists in Great Britain. Much good work has been effected by judicious representations to Public Departments, and the Council may refer to the efforts made to secure an amendment in the law relating to limited liability companies as an indication of the determination not to permit the evils which press against pharmacy to remain unremedied for want of official protest. With the valuable co-operation of various corporate bodies representing medicine, dentistry, and veterinary surgery, the Council hopes that the Companies Bill now before Parliament may be so modified as to effect a satisfactory amendment of the law relating to limited liability companies.

The Report of the Executive of the North **North British Branch** British Branch presented to the Council at its last meeting, indicates that the work of the Examinations and of Administration have been efficiently carried out. The advantages offered by the extension of the Society's premises, and the erection of the new Chemical and Pharmacy Laboratories, have facilitated Examination work very considerably.

The Council has recently added to the roll of **Honorary and Corresponding Members.** Honorary Members the following:—Professor I. Bayley Balfour, F.R.S., Director of Royal Botanic Gardens, Edinburgh; Professor T. E. Thorpe, F.R.S., Head of the Government Laboratories, Somerset House; and Professor Tschirch, Professor of Pharmacognosy, Berne. The following have been elected Corresponding Members:—W. R. Carles, H.B.M. Consul at Corea, and Dr. Louis Planchon of the Montpellier High School of Pharmacy.

The Council has agreed to act as trustees of the **Burroughs Memorial Scholarship.** the Burroughs Memorial Fund, and with the consent of the subscribers and the approval of the Council, it is intended to endow an annual scholarship of the value of about £25 per annum in advanced pharmaceutical education.

There was a slight falling off in the annual **Benevolent Fund.** subscriptions in 1895, £1694 having been received as against £1712 in 1893, and £1702 in 1894. The amount distributed in casual grants and in the payment of annuities was £2693. The generous gift of one hundred shares from the Chemists' Aerated and Mineral Water Association, Limited, and its Chairman, Mr. H. Davenport, will produce an encouraging addition to the annual income. Mr. Wm. Hooper's legacy of £100 was received during the year, but the aggregate amount of donations and legacy falls short of that received from the same source in 1894 by nearly £400. In view of the falling revenue of the Fund, the Council hopes that local and divisional secretaries will make special efforts to bring to the notice of their fellow craftsmen—who are non-subscribers—the claims and needs of the Benevolent Fund.

Among deaths the names of the following have **Deaths.** to be recorded:—Dr. H. Cleghorn and Professor Pasteur, Honorary Members; M. A. Lawson, M.A., and Dr. R. Godeffroy, Corresponding Members; B. Cordley, Colchester; W. Gunn, Duns; J. W. Littlefield, Ventnor; and R. H. Swingburn, South Molton, local secretaries; T. Howard Hall, Divisional Secretary for East Islington; J. S. Linford, a former Examiner; and J. W. Forbes, of Bolton; H. B. Cocksedge, of Sandown; H. H. Millhouse, of London; G. Dudgeon, of Nottingham; and E. Taylor, of Rochdale, well-known members of the Society.

CHROMATIC PHOTOGRAPHY AND RADIOGRAPHY.*

BY E. J. WALL.

CHROMATIC PHOTOGRAPHY.

Chromatic photography is the reproduction of objects in the colours of Nature by the aid of photography. This can be accomplished by three distinct methods, (a) the direct, (b) the interference method, and (c) the indirect method. The first method is based upon the power of the subchloride of silver to assume certain colours when exposed under coloured objects, but no method has been discovered of fixing them, that is, of removing the unaffected subchloride without destroying the colours. The second method is based upon the interference of light by thin laminae of silver, and was discovered by M. Gabriel Lippmann in 1891. He used a very transparent and thin film of gelatino-bromide of silver in contact with a reflecting surface of mercury, which sent the incident light back on itself, and thus formed stagnant waves. This caused the deposition of the silver in strata, which, similar to the thin films of the soap bubble, reflect light of one wavelength only. The thickness of the gelatin film was at the most about 1/10th Mm., and in this thickness were no less than 500 separate laminae of silver required to reproduce violet light. The

* Report of a lecture delivered before the Society of Chemical Industry on May 4.

development and fixing were precisely the same as in ordinary photography. The third and indirect method is based upon the Young-Helmholtz theory of the three colour sensations. A negative is made through a violet screen, another through a green screen, and a third through an orange screen, and from these negatives printing blocks or surfaces are prepared, which are printed in yellow, red, and blue on top of one another, the results being more or less faithful reproductions of the original.

RADIOGRAPHY, OR THE NEW PHOTOGRAPHY.

Possibly there has been no discovery since the practical introduction of photography in 1839 which has caused so much noise as the so-called "New Photography." To some extent this is due, of course, to the fact that the possibility of seeing through and photographing through opaque objects has struck the public fancy, and, secondly, the process itself is so simple and easy that anyone who has a little capital can obtain the results.

There are two forces employed in the production of these wonderful results which possibly should be briefly explained; the first is light, the second electricity. When a beam of white light is allowed to fall upon a prism it is refracted or bent out of its course, and is at the same time dispersed or split up into its constituents, forming a ribbon of colours, called the spectrum, ranging from red through orange, yellow, green, blue, into violet. By the aid of photography we are able to prove that the visible spectrum is an extremely small part of the constituents of light; beyond the red lies a region which is called the infra-red, where really lie the majority of the heat rays, and Professor Langley, of the Smithsonian Institute, has proved by means of the bolometer, an extremely delicate calorimeter, that the infra-red spectrum extends fourteen times the total length of the visible spectrum beyond the red. Schumann, of Vienna, has proved by the aid of photography, using Iceland spar prisms and quartz lenses, and the whole apparatus being exhausted of air, that the ultra-violet or that portion lying beyond the violet extends almost as far on the other side.

Electricity may be defined as an invisible agent which may be produced by chemical action as in an ordinary Grove, Daniell, or bichromate battery, or by dynamic or mechanical work, as with the dynamo. If the two poles or elements of a battery or series of batteries be connected by a wire, the electric current, though absolutely invisible, may be made manifest by its raising the temperature of a thin wire or filament to the point of incandescence, when we obtain the ordinary incandescent lamp. If, however, we break our wire and separate the ends by a very small air-gap (for instance two-thirds of an inch), it will be found that it requires an enormous number of cells—10,000, actually—to overcome the resistance of the air. The electric force, therefore, which produces lightning must be of very high potency or potential. What is wanted for radiography is not a very great amount of electricity, but electricity of high potential to enable it to overcome the resistance offered by various media. This can be produced in two ways—by the aid of a Wimshurst machine, or, better still, the modified form known as the Bonetti-Wimshurst, or preferably by means of an induction coil, usually known as a Ruhmkorff coil. An induction coil may thus be explained:—If we take a closed coil of wire and place beside it another coil with a battery in its circuit, then pass a current of electricity through the second coil, we find a current is generated or induced in the first coil, but flowing in the opposite direction to the other. A coil of wire is used, and outside this another coil of very fine wire very carefully insulated, the former being called the primary, the latter the secondary. The primary is always constructed of stout wire, and inside there is placed a bundle of iron wires which increases the strength of the magnetic field. The primary circuit is joined to the terminals of a powerful Grove or other primary battery, and there is also included an interruptor, hammer or contact breaker, which makes and breaks the primary circuit in very rapid succession. By this means an alternating current of extremely high electro-motive force is induced in the secondary coil, which will discharge itself across an air gap, giving the well-known spark. The length of wire required for the secondary is extraordinary; for instance, for a 6-inch spark, that is a spark which will pass across a 6-inch air gap, about ten miles of wire are required. Mr. Spottiswoode has a veritable giant induction coil, the secondary of which contains no less than 280 miles of wire, wound in 340,000 turns, and with thirty Grove cells this yields a spark $42\frac{1}{2}$ inches in length.

If the terminals of the wire from an induction coil are connected with two platinum wires fused into the ends of a tube or bulb of glass, which is filled with air or some other gas and connected

with a mercury pump so that the gas may be drawn out and a vacuum formed, we shall find that the ordinary sparking will take place at first, when the current is turned on; but as the exhaustion of the air is continued, the sparks lose their definite form, and are seen rather as a glow of reddish colour, or if carried still further bluish-violet bands of light are formed.

The well-known vacuum tubes, known as Geissler tubes, have approximately a pressure in the tube of $\frac{1}{500}$ th of an atmosphere, and when the current is passed through such a tube the negative or cathode is seen to be surrounded by a bluish-violet light, whilst from the anode or positive a purplish-red light or glow proceeds, which reaches very nearly to the cathode.

Faraday was the first to study the phenomena of electric discharges through attenuated gases.* The subject was further examined by Abria in 1843, Spottiswoode, Fernet, and lastly Hittorf,† Gassiot, and Hertz. Hittorf showed that when the rarefaction of the gas was extremely great, 0.5 Mm. for hydrogen, the rays proceeding from the anode always sought the cathode, and would follow any curves, contortions, or twists of the tube, whereas the rays proceeding from the cathode proceeded in a straight line, and were, so to say, too haughty to take the slightest notice of the anodes. It was also found that substances, such as the ruby, the diamond, etc., which were not fluorescent to ordinary daylight, glowed with great brilliancy under the cathode rays.

Crookes, in his presidential address to the British Association in 1879, first put the facts known on this subject in a popular and taking form, hence his name has become so intimately associated with the tubes. He proved that not only would the cathode rays cause fluorescence in gems and other chemical substances, but that ordinary glass fluoresced very brilliantly, and that the glass struck by the cathode rays might under certain circumstances be heated so much as to be unable to withstand the external pressure of the air, and it would then give way. Further, by using a Maltese cross cut out of mica he proved the absolute rectilinearity of the propagation of these cathode rays, that is, they moved in a perfectly straight line; further, by mounting a small paddle-wheel with mica blades on a pair of rails he proved that the cathode rays could cause the paddle-wheel to revolve and traverse the rails from end to end. Crookes considered that there was a stream of gaseous molecules proceeding from the cathode at enormous speeds, and he called this "radiant matter."‡

Goldstein, a German *savant*,§ who had been studying this subject since 1871, opposed Crookes' arguments, and many other physicists joined in the dispute, ranging themselves on one or the other side. Wiedemann, Ebert, Hertz, and others took up the study of the subject with vigour, and Thompson|| considered the theory of the discharges in the tubes to be ascribed to the disassociation of the gases. But the most important researches were made by M. Ph. Lenard, of Bonn.¶ These were founded on a discovery of Hertz, that the cathode rays could penetrate thin sheets of metal,** and Lenard proved that not only did these rays penetrate metal, but they were rendered visible at a distance of 3 Cm. if tissue paper soaked in pentadekylparatolyketone was placed at this distance, and that an electroscope was discharged at a distance of 30 Cm. from the tube. He also discovered that ordinary sensitised paper was blackened by these cathode rays, and that they acted upon the ordinary dry plates, a fact which was also noticed by Goldstein, in the interior of the tube. One of the most interesting observations of Lenard was that the cathode rays could be deflected by a magnet, and that when the rays struck a body charged with electricity, no matter whether positive or negative, it was discharged.

In December 1895†† Professor Röntgen discovered quite accidentally that a piece of paper coated with platino-cyanide of barium fluoresced when near a Hittorf or Crookes' tube, although the latter was entirely surrounded by opaque card, and, further, that it was also feebly illuminated behind a ponderous German treatise of 1000 pages, a sheet of wood, and a piece of aluminium 15 Mm. thick. It was, of course, but a natural sequence of experiment to

* Faraday, 'Experimental Researches,' 13th series, 1833.

† Poggendorf *Annalen*, cxxxvi, p. 1, 1869.

‡ Crookes, "On a Fourth State of Matter," *Pro. Royal Soc.*, vol. xxx., p. 469. 1880.

§ *Monatsberichte*, K.K. Akademie, Berlin, Jan., 1880.

|| *Philos. Mag.*, 5th series, vol. xv., p. 427, 1833.

¶ *Wiedemann's Annalen*, vol. li., p. 225, 1894.

** *Wiedemann's Annalen*, vol. xlv., p. 28, 1892.

†† *Sitzungsberichte der Würzburger Physikalisch-medizinischen Gesellschaft*, Dec., 1895.

try whether a photographic plate would be affected by these rays, which Röntgen called x -rays.

Röntgen has stated that these rays proceed from that part of the tube where the cathode rays strike, and that they must be considered distinct from the cathode rays themselves. On the other hand, there are, of course, many who consider these the same. Then, again, they have been considered to be ultra-violet rays, but it may be pointed out that whereas ebonite, wood, and glass are approximately opaque to ultra-violet light, they are transparent to the x -rays; quartz, however, which is extremely transparent to ultra-violet, is comparatively opaque to the x -rays, and, further, the rays cannot be regularly reflected, and their power of being polarised has not been definitely determined although Prince Galitzine and M. de Karnojtzky state that they have been able to discern slight traces of polarisation after the rays had passed through tourmaline. As a matter of fact the precise nature of these rays is not yet known, and speculation is useless, although it should be stated that Edison considers them to be sound waves, but his reasoning is somewhat weak at present.

The conditions necessary to produce the x -rays are extremely simple; a Bonetti-Wimshurst machine may be used, and the ordinary sparking or discharging terminals must be removed, and the tube connected by wires with the pillars at the back of the machine. The chief objection to the influence machine is the tremendous vibration which it is not possible to avoid, and further it is no easy task to keep on turning the handle for about five minutes. With an induction coil, the tube is of course held by a Wolf's holder or any convenient support, and the electrodes are connected up with the terminals of the coil.

The Ruhmkorff need not be designed for a very long spark unless of course experimental research is the object, when anything above a 6-inch spark will be an advantage, whereas for ordinary work a 3 or 4 inch, or even a 2-inch spark coil is quite enough. At present so little is known actually of the subject that we do not know whether the secret of success lies in the coil or tube, or both, although it would seem that more depends upon the tube than the coil.

There is one form of tube which so far has given excellent results, that is the so-called focus tube, which has a concave plate of aluminium for the cathode, and at the centre of curvature of this concave surface is placed at an angle of 45° a flat plate of platinum, which is the utilisation of a principle laid down by Hittorf. In this case undoubtedly the platinum plate is the source of the x -rays which proceed at right angles to the surface and strike the glass wall of the tube, proceeding thence in straight lines in the air. Another very quick-acting tube is that devised by Prof. Puluj, of Prague—in this the principle of M. Piltchikoff and Silvanus P. Thompson is utilised, which is to place in the path of the cathode rays, at an angle of 45° , a mica screen covered with a phosphorescent substance like calcium sulphide. This tube was used by Puluj for his researches on the cathode rays in 1892, but he has slightly altered the shape of the tube, making it now more bulbous and utilising a larger fluorescent screen.

The focus tube can be obtained from several dealers, but Puluj's tube can, so far, only be obtained from Dollond and Co., of Ludgate Hill. There has not been sufficient time to experimentally prove which is the more active tube, as, in consequence of a breakdown of the coil in use, resource had to be made to a Bonetti-Wimshurst machine, which did not permit of such careful comparisons.

For obtaining photographs or radiographs, or radiograms as they are sometimes called, there seems to be some doubt as to the best plates to be used, but, so far, the most successful results have been obtained with the new cathodal plate specially placed on the market by the Imperial Dry Plate Co., of Cricklewood, N.W. The plates should be placed in light-tight negative bags, such as are placed on the market by Tylar, of Birmingham. On these envelopes should be placed the object to be radiographed, and the larger the object and plate the further away must be the tube, about 5 or 6 inches is enough to cover a whole plate, or $8\frac{1}{2} \times 6\frac{1}{2}$ ins. The exposure will vary from two to five minutes, according to the nature of the object, three minutes being sufficient to obtain distinct images of the bones of the hand, whilst for the arm or foot it may vary from ten to fifteen. Far sharper results, sharper as regards outlines, may, it is said, be obtained by limiting the source of the x -rays, or rather their field, by means of a metal plate, lead for preference, pierced with a comparatively small aperture. On this point, however, more experiments are required.

(To be continued.)

PHARMACEUTICAL SOCIETY

MEETING OF THE COUNCIL.

WEDNESDAY, MAY 6, 1896.

Present:

MR. MICHAEL CARTEIGHE, PRESIDENT.

MR. JOHN HARRISON, VICE-PRESIDENT.

Messrs. Allen, Atkins, Bottle, Corder, Cross, Gostling, Grose, Hampson, Hills, Johnston, Martin, Martindale, Savory, Southall, Storrar, Warren, and Young.

The minutes of the last meeting were read and confirmed.

DIPLOMAS.

The undermentioned, being duly registered as Pharmaceutical Chemists, were granted diplomas stamped with the seal of the Society:—

Barritt, Wesley.	Martin, John Woolcock.
Beachell, John.	Playfoot, Frederic Hubert.
Blunt, Harry Rowland.	Smedley, Walter Graham.
Bridges, Herbert.	Williams, John.
Crombie, James.	Willson, Robert Wherry.
Elwell, Frederick Budd.	Wilson, Thomas.
Howard, Alfred.	Wright, Frederick.

ELECTION OF MEMBERS.

Pharmaceutical Chemists.

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

Beachell, John, Boston Spa.	Leslie, Robert, Aberdeen.
Blunt, Henry Rowland, Birmingham.	Marsh, Albert, Caislehurst.
Bridges, Herbert, Norwich.	Playfoot, Frederic Hubert, Dorking.
Brown, Wm. J., St. Leonards-on-Sea.	Smedley, W. G., Kingston-on-Thames.
Elwell, Frederick Budd, Southsea.	Tully, Fred Herman, Torquay.
Jones, Charles, Royton.	Williams, John, Bagillt.
Jones, John, Bridgend.	Willson, Robert Wherry, Peterborough.

Chemists and Druggists.

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

Gooch, Thomas Pratt, Leiston.	Hardman, James William, Leeds.
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ELECTION OF ASSOCIATES IN BUSINESS.

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

Minor.

Adams, Herbert Samuel, Forest Gate.	Nosworthy, Allan P., Tunbridge Wells.
Attenburrow, James, Melton Mowbray.	Owen, Alfred Herbert, Christchurch.
Beckwith, Christopher, Hove.	Page, William Irwin, Boston.
Beringer, Heinrich Roland, Camborne.	Palmer, Frank Elijah, Ipswich.
Brauer, Frederick H. F., Middlewich.	Payne, Hiram, Welshpool.
Burge, William George, London.	Pendlebury, James, Castleton.
Corrigall, Peter, Newcastle-on-Tyne.	Pepperdine, Harry, London.
Evans, David Llewellyn, London.	Reynolds, Albert Bright, Wallingford.
Harper, James William, Starbeck.	Robinson, Ernest Temple, Leeds.
Harries, John D., Milford Haven.	Rogers, Francis Alfred, London.
Jackson, F. W., Ashton-under-Lyne.	Ross, Andrew Leighton, Montrose.
Jones, H., Blaenau Festiniog.	Scmerville, W. A., Upper Brighton.
Kitchin, George Shiach, Glasgow.	Spinks, Louis Leopold, Liverpool.
Lee, John C., Barton-on-Humber.	Stewart, Charles, Kirkcaldy.
Lee, John Edward, London.	Swinburn, Banks, Penrith.
Maley, George J., Douglas (I. of M.)	Talintyre, William John, London.
Medley, Fred, Barnsley.	Uttley, John Richard S., Masboro'.

Modified.

Clark, William George, London.	Reedman, William H., Birmingham.
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ELECTION OF ASSOCIATES.

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

Batty, Thomas Edward, York.
Beckwith, John Batty, Liverpool.
Benney, John Herbert L., Constantine.
Brice, Henry Doyle, Guernsey.
Burnett, Albert Edward, Bristol.
Campkin, Francis Sidney, Cambridge.
Cannell, John Wilfred P., Douglas.
Casson, Frank, Birmingham.
Clark, George R. H., Hammersmith.
Coggin, Archibald H. G., Ware.
Coverdale, Arthur E., Kennington.
Creswell, Harry George, Bremsgrove.
Dann, Charles, Whittington Moor.
Daubeny, George, Sutton-in-Ashfield.
Davies, David Jonathan, New Quay.
Dean, John, Asbourne.
De Morgan, Fred. F., Newport, Mon.
Edge, William D., Newcastle, Staffs.
Ellis, William Neale, Peterborough.
Finlayson, Wm., Stockton-on-Tees.
Forrester, Thomas, Edinburgh.
Foster, Ernest Lionel, Plymouth.
Gerrish, Emerson, Bristol.
Goodo, Arthur Frederick, Nuneaton.
Green, Samuel Marston, London.
Halstead, Joseph Ernest, Burnley.
Hamerton James, Oundle.
Hewitt, Silas, Duk'nfield.
Hill, Charles Alexander, London.
Hilde, Ernest Lionel, Stoke Ferry.
Hitt, Thomas Gabriel, Long Eaton.
Horniblow, Frederick H., Worcester.
Jones, John Richard, Aberystwith.
Langham, Ebenezer, Salisbury.
Last, Ernest Charles, Ipswich.
Last, George Valentine C., Liverpool.
Leak, Frederick Thomas, Edinburgh.

Lean, Wilfrid, Ackworth.
Lloyd, Hugh William, Bala.
Lloyd, Thomas Henry, Southport.
McCorquodale, John C., Dumbarton.
Mason, Herbert, Wigan.
Meynell, Henry, Northallerton.
Mitchell, Willie, Halifax.
Munton, James Boughton, Stamford.
Orchard, Fred, Highbridge.
Payne, Roger, Saffron Walden.
Pearson, George Ernest, Wakefield.
Pileher, Daniel Garnet, Margate.
Rackham, Charles G., Halesworth.
Rhodes, John William, Leeds.
Roberts, William Henry, Chester.
Round, William Hopkins, Oldbury.
Scotchburn, Alfred, Driffield.
Scott, John Wilson, Birmingham.
Senter, George, Mossat.
Shakerley, William Arthur, Clapham.
She'drake, Albert Mason, Colchester.
Smart, Harold W., Willesden Park.
Smith, William Henry Harold, Cromer.
Spurge, Edward C., Stratford-on-Avon.
Stabler, Edgar, Levens.
Stamp, Francis U., Hampstead.
Stearn, Ralph M., Cambridge.
Sutcliffe, Lot Bains, Thorne.
Swanson, Alexander J. R., Edinburgh.
Taylor, Alfred, Morrision.
Thompson, Frederick W., Southend.
Thompson, John Robert, Edinburgh.
Thorpe, Arthur Muxlow, Spalding.
Truscott, Gilbert Edgar, Southampton.
Ward, Tom Goodrich, Tiverton.
Whitchurch, Ernest W., Nottingham.
Wileman, Frederick Walter, Lincoln.

Woodruff, Walter, Stockport.

ELECTION OF STUDENTS.

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

Allen, William John, Cardiff.
Callander, Thomas Gardner, Falkirk.
Carnegie, J., Kibworth Beauchamp.
Cassells, Thomas Henry, Southend.
Chalmers, Edward, Willesden.
Cleland, Robert Henry, Belfast.
Collins, Joseph H., Falmouth.
Collins, Samuel Morrison, Norwood.
Crossley, Arthur, Gorton.
Daniel, Robert, Derby.
Drust, John Hubert, North Ormesby.
Elms, Henry, Hornsey.
Ford, Meade Leahy, Forest Gate.
Foster, Charles Elkins, Brixton.
Gellately, James Blair, Dundee.
Gregory, Arthur, Weymouth.

Livesey, Henry A. A., Bradford.
Moore, Kate Lillian, Hampstead.
Pollard, Evelyn William, Ryde.
Priestley, George Edward, Paisley.
Rae, George Ernest Alfred, Exeter.
Russell, Robert, Lerwick.
Shelley, Geo. A. H., Southwark.
Smith, Harold James, Grimsby.
Smith, Richard Wallis, Hornsey.
Starmer, George F., Tunbridge Wells.
Storey, Richard, Ulverston.
Trick, P. W. C., Stoke Newington.
Warmington, Frank E., Leamington.
Watkins, Archibald G., Brecon.
Watts, Bertram Adam, Woolwich.
Williams, John, Carmarthen.

Wilson, Harold Oates, Nottingham.

RESTORATION TO THE REGISTER.

The name of the following person, who had made the required declarations, and paid the restoration fee, was restored to the Register of Chemists and Druggists:—

George Jeanes, 323, Park Road, Liverpool.

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

ELECTION OF HONORARY MEMBERS.

The PRESIDENT moved that the following be elected honorary members of the Society:—Professor I. Bayley Balfour, F.R.S., Regius Professor of Botany, Edinburgh, and Director of the Royal Botanic Gardens, Edinburgh; Professor T. E. Thorpe, F.R.S., D.Sc., Chief of the Government Laboratory, Somerset House; Professor A. Tschirch, Ph.D., Professor of Pharmacology, University of Bern. These names had been selected by the Council sitting in Committee and the list had been suspended in the Library for a month, in accordance with the bye-laws. He now asked the Council to elect these gentlemen as honorary members. It was unnecessary to do more than mention the names, so well were they known in connection with botany, chemical science, and pharmacology, and to say that he was sure these gentlemen would add dignity and lustre to the roll of honorary members.

The VICE-PRESIDENT, in seconding the motion, said the Committee exercised very great care in the selection of the names, and he thought all would agree that their choice had been a wise one.

The resolution was carried unanimously.

ELECTION OF CORRESPONDING MEMBERS.

The PRESIDENT proposed that the following be elected corresponding members of the Society:—W. R. Carles, H.B.M. Consul at Corea; and Dr. Louis Planchon, École Supérieure de Pharmacie, Montpellier. Mr. Carles was an ardent botanist, and one of those typical Consuls who took care to keep his country informed of anything new in the way of drugs.

The resolution was carried unanimously.

REPORT OF THE EXECUTIVE OF THE NORTH BRITISH BRANCH.

This report was as follows:—

"The Executive of the North British Branch has now to submit the following report on the work of the year, from March, 1895, to March, 1896.

"At a meeting of Executive, held on April 19, 1895, it was arranged that the annual election should take place on Friday, June 21, 1895, and the present Executive was accordingly elected at a meeting of members and associates in business of the Society residing in Scotland, held on the above date.

"The Executive has held three meetings during the year. At the first meeting on June 28, 1895, Mr. James Laidlaw Ewing, Edinburgh, was elected Chairman, and Mr. William Little Currie, Glasgow, Vice-Chairman, and the resident members, with the Chairman and Vice-Chairman, *ex-officio*, were appointed a General Purposes Committee to attend to business arising between meetings of Executive.

"The General Purposes Committee has met three times and has had charge of the arrangements for evening scientific meetings, the completion of furnishings etc., for new premises, and the preparation, in consultation with Mr. Blanc, architect, of a plan for the rearrangement of the Society's House, consequent on the removal of examination work to the new hall and laboratories.

"At the meeting of Executive in June, 1895, a special committee for nomination of examiners was appointed. This Committee held two meetings, and reported to the meeting of Executive in November, when the following were nominated for election by the Council as the Board of Examiners for Scotland for 1896:—

"Professor Patrick Geddes, Dundee; Professor John Gibson, Edinburgh; Peter Boa, Edinburgh; James Laidlaw Ewing, Edinburgh; Jonathan Innes Fraser, Edinburgh; James Jack, Arbroath; John Nesbit, Portobello; and John William Sutherland, Dumfries.

"The financial statement for the year ending December, 1895, showing a total expenditure of £2550 17s. 4d. as compared with £3114 12s. for the previous year has already been forwarded to the Council. The expenditure for 1894 includes a special expenditure of £2015 0s. 9d. in connection with the new buildings, leaving a sum of £1099 11s. 3½d. as the ordinary expenditure for 1894. The expenditure for 1895 includes a special expenditure of £1149 9s. 9d., also in connection with new buildings, leaving a sum of £1401 7s. 7d. as the ordinary expenditure for 1895. This indicates an apparent increase of £301 16s. 3d. on the ordinary expenditure, but this includes a considerable expenditure for chemicals and apparatus, including additional chemical balances, microscopes, etc., required to stock the new laboratories, and extra service required during the removal to and fitting up of New Hall and Laboratories. There has also been permanent increase in taxation on the new buildings, the assessment valuation of which has been fixed at £100, the Executive having succeeded in obtaining a reduction of £50 from the annual value first fixed by the assessor. The permanent additional cleaning and service, and also fuel, light, and water rendered necessary by the extension of premises, also accounts for some of the increase. Otherwise the additional expenditure is entirely owing to an

increase in the expenses connected with the examinations, which have been larger than usual.

"The following particulars indicate that the departments connected with the Branch continue in a satisfactory state:—

"*The Examinations.*—The minor alterations and improvements in the fittings and fixtures of the laboratories referred to in last year's report have all been carried out, and the work of the Board of Examiners is now carried on in a convenient and efficient manner, the slight alterations having given entire satisfaction. A longer experience only tends to confirm the opinion that the scheme sanctioned by the Council and carried out by the Executive is admirably adapted for examination work, and has enabled the Board to cope with the increased numbers of candidates presenting themselves with a facility and expedition that would have been impossible under the old arrangement.

"There has been an increase in the number of Major candidates, 18 as compared with 10, and there has been a decrease in the number of passes, 44.4 per cent as compared with 60 per cent. last year, the percentage of passes in the previous year being 30.8 per cent.

"The number of Minor candidates shows a considerable increase, 540 as compared with 453 last year, and 395 in the year before that. The percentage of passes remains unsatisfactory and shows a slight decrease, 40 per cent. as compared with 42.17 per cent. in the previous year, and 40.25 per cent. in the year before last.

"*Evening Meetings.*—The session was opened in November with an able and most interesting address by Dr. John Gibson, Professor of Chemistry in the Heriot-Watt College, when a large audience completely filled the new hall. Three evening meetings have been held, and a fourth had been arranged for, but had to be abandoned at the request of the lecturer, who had been medically advised to avoid all extra labour for a time. All the meetings have been well attended, and the Executive take this opportunity of recording their thanks to all those gentlemen who gave valuable help by contributing papers.

"*Library.*—The Library continues to increase, and a number of standard works on Chemistry, Botany, Materia Medica, and Pharmacy have been added during the year, chiefly by purchase, and a few also by donation.

"The donations include an interesting parchment manuscript containing the 'Articles of Association of the Society of Druggist-Apothecaries in Edinburgh in 1785,' presented by Mr. James MacKenzie, F.S.A. Scot. The need for extended accommodation for the larger number of books is increasingly felt.

"The number of volumes lent out during the year is seen from the following table:—

April, 1895, to March, 1896	1494
April, 1894, to March, 1895	1346
Increase	148

"The number lent to provincial readers was:—

April, 1895, to March, 1896	140
April, 1894, to March, 1895	130
Increase	10

"This shows an increase of 148 over last year and 271 over the year before that, indicating a steady increase in the lending department of the Library. The circulation of books to provincial readers also shows a satisfactory, though still comparatively small, increase. During the year 1894-95, 130 volumes were circulated to readers outside Edinburgh and Leith; during 1895-6 140 volumes were so circulated, being an increase of 10 volumes for the year. There is, therefore, still ample room for the extension of this feature of the Library's usefulness, to which special attention was directed in last year's report.

"For purposes of reference the Library is, to a gradually increasing extent, consulted by university and extra-mural lecturers and others engaged in teaching science and in scientific and historical research, who cannot become members of the Society. It is also increasingly consulted by members, associates, and students of the Society. The Executive has to record thanks to several gentlemen who have given donations of books during the year.

"*Museum.*—The Executive has to record thanks to several donors of specimens, and a few have also been received from London. The additions to this department have, however, been fewer than usual during the year. The students' specimens are in good order and are largely taken advantage of. It is felt, however, that in connection with the re-arrangement of the Society's House, an extensive alteration and improvement may be effected in this department, which is in abeyance till the plan has been finally adjusted.

"The Library and Museum continue to attract a large number of visitors. A considerable number from various parts of Scotland and England have visited the Society's House during the year, and all have expressed the highest admiration of the way in which the Council has provided for the interests and requirements of the Society, as represented by the handsome premises now devoted to the work carried on in connection with the North British Branch.

"*House.*—The Society's premises in Edinburgh are now all in thorough repair and good order. In addition to the slight alterations in the laboratories already

referred to, some necessary cleaning and painting on the street front of the Society's House have been effected, but nothing of an extensive or important character has been done. The scheme for the re-arrangement of the Society's House, referred to last year, has been fully considered and is still under deliberation. The chief reason for some further delay is that a proposal for making an addition to the Museum is in process of adjustment, and nothing definite can be decided upon till the terms of this proposal have reached a more advanced stage.

"33, York Place, Edinburgh,

"JAMES L. EWING, Chairman.

"April 17, 1896."

The PRESIDENT having said that he thought this a very satisfactory report, and invited a member to move its reception,

Mr. STORRAR said he had pleasure in congratulating the Council on the general tone of the report. A little friction which once existed amongst the Scotch pharmacists had, he was glad to say, entirely disappeared, and he believed that at the present moment the Pharmaceutical Society had no more ardent supporters than the Scots. The principal work of the local executive during the past two years had been the building and setting up their new premises. This had necessarily involved a considerable increase in the annual expenditure, but he believed they had provided no more than was absolutely necessary to meet their needs and what was required for examination purposes, and he thought there was a general feeling that what had been accomplished was perfectly satisfactory and a credit to the Society. Most of the work in carrying out the scheme in its details had been done by the General Purposes Committee; in fact, that Committee had shown such diligence and energy as to leave the Executive nothing to do, but anything they had done, he felt sure, had been rendered willingly and in the hope that it would give satisfaction to the Council.

Mr. JOHNSON, in supporting and corroborating the views to which Mr. Storrar had given expression, said the Executive had met, he believed, in respect to those works only some three times, but they had done their best, and he hoped had succeeded in giving satisfaction.

Mr. HAMPSON said he did not know whether it was due to the climate of Scotland, but it had been brought home to the Council that law matters were carried out there in what he might call a rather ruinous fashion. He did not suppose the Executive there had any influence in the matter, but should that be the case he trusted it would be exercised in the right direction. He must express his great gratification at feeling that their Scotch friends were now thoroughly in touch with the Pharmaceutical Society, and he trusted that they in England would take care to reciprocate that feeling, so that the union might result in the next report of the North British Branch showing an appreciable increase in the number of members, especially in view of the considerable sum that had been expended in doing justice to Scotland.

The VICE-PRESIDENT, whilst thoroughly agreeing with the Treasurer that a considerable sum had been spent in Scotland, hoped it would not go forward that any idea was entertained of their having done anything more than justice. They all regarded Edinburgh as a great centre of learning, and they had done well to advertise the Society and its work by having in that city a building and home worthy of the aims they had at heart. He had listened to the report with exceeding pleasure, and thought it most satisfactory to find every branch of their work in so thoroughly satisfactory a condition. He hoped that as time went on and their Scotch friends came to realise the Society's aims, and the way in which its work was done, they would find no reason to complain, and that the result would be a substantial accession to the membership of the Society. He moved the reception and adoption of the report.

Mr. MARTINDALE expressed his gratification with the report, and looked forward, now that he supposed their arrangements in Edinburgh were about as complete as they could be made, to the Board of Examiners in that city materially contributing to the usefulness of the Society. As everybody knew, a not inconsiderable number of students went to Edinburgh to be examined, and now that there were better facilities than had hitherto prevailed, he trusted the two Boards would work together with the object of making the best use of their advantages.

The report was then adopted.

The PRESIDENT said that as arising out of this report he might here add that a resolution had been received from the North British Branch as follows:—

"That it is the opinion of this meeting, and the Executive of the North British Branch of the Pharmaceutical Society of Great Britain, that the time

has now arrived for making the First or Preliminary examination a more efficient test of a candidate's general knowledge."

He would suggest that this resolution be referred to the General Purposes Committee, which could thrash out the subject and bring up a report respecting it.

This suggestion was adopted.

FINANCE COMMITTEE.

The SECRETARY read the report of this Committee, which was of the usual character, and recommended the payment of various accounts.

The PRESIDENT, as Chairman of the Committee, moved the adoption of the report and recommendations. He said the principal receipts were from subscriptions and examination fees. The payments did not call for any special comment. On the Benevolent Fund account £745 had been received in subscriptions, and a donation of £10; also 13s. 3d., the result of a collection by the Liverpool Pharmaceutical Students' Society at a social meeting.

The report was unanimously adopted.

LIBRARY, MUSEUM, SCHOOL, AND HOUSE COMMITTEE.

The SECRETARY read the report of this Committee, which had held two meetings. It had considered the petition from some of the students for a room to be allotted them for social purposes, and recommended that the signatories be informed that their request could not be acceded to. The draft annual report was considered and referred to the Council. A request from the Pharmaceutical Association of Quebec for a copy of the Calendar had been received, and the Committee recommended that it be sent and also the Journal as published.

Library.

The report of the Librarian had been received, including the following particulars:—

	Attendance.	Total.	Highest.	Lowest.	Average
March.....	Day.....	610	31	14	23
	Evening.....	214	20	2	10
Circulation of Books.	Total.	Town.	Country.	Carriage paid.	
March.....	198	96	100	£1 4s. 6d.	

Donations to the Library had been announced (*Pharm. Journ.*, April 11, p. 290), and the Committee had directed that the usual letters of thanks be sent to the respective donors.

The Committee had recommended that the under-mentioned works be purchased:—

For the Library in London:—

Atlas Chemical Company, Chemical Recipes.

For the Library in Edinburgh:—

Roscoe and Schorlemmer, Treatise on Chemistry, new edition.

Dittmar, Analytical Chemistry (Qualitative), latest edition.

Museum.

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

	Attendance.	Total.	Highest.	Lowest.	Average.
March.....	Day.....	719	42	14	27
	Evening.....	56	17	1	2

Donations to the Museum had been received (*Pharm. Journ.*, April 11, p. 290), and the Committee recommended that the usual letter of thanks be sent to the respective donors.

The PRESIDENT, in moving the adoption of the report and recommendations, said the chief matter dealt with, apart from the routine business, was the application from the students for a common room. The Committee carefully considered the matter, and having regard to the peculiar condition of the building, found there were great difficulties in providing any room in a suitable part for this purpose. There were also other difficulties of a somewhat serious character, which, having been carefully considered, weighed with the Committee to the extent of recommending that the request be not granted. The sympathies of the Committee were, of course, with the students in any desire for social converse and mutual improvement; but, on the other hand, it was the duty of the Council not to afford facilities for the neglect of work during working hours, and the Committee had a difficulty in seeing at what time a common room could be made use of, excepting meal times, and its view was that the best place for meals was outside

the house. Looking to the fact that the students only attended during certain hours, and that there was a great deal for them to do in those hours, and also to the fact that there were no second or third year's students as there were in the large institutions to which the petition referred, besides the difficulty of maintaining discipline and good order where there were no senior students to take the lead, the Committee had no hesitation in recommending the Council to say that it was not practicable to accede to the wishes of the students.

The report was unanimously adopted.

BENEVOLENT FUND COMMITTEE.

The report of this Committee included the recommendation of grants amounting to £55 in the following cases:—

The widow of an associate who died in 1893. She has seven children, five of whom are dependent on her. (Carnarvon.)

A chemist and druggist member from 1869 to 1893, and subscriber for one year to the Fund. Was in business for twenty-seven years, and is now seeking a situation. (Rotherham.)

The widow of a registered chemist and druggist with four children, one only dependent on her. She has had five previous grants. (Redhill.)

A former associate, 1842 to 1846, who has had several previous grants. (Croydon.)

The widow of a chemist and druggist who has had nine previous grants. (Birmingham.)

The widow of an associate in business and subscriber. (Crawley.)

One case was deferred for further inquiries, and another one was not entertained.

Mr. BOTTLE moved the adoption of the report and recommendations, and said there was very little need for comment. He would like to say, however, with regard to the case which the Committee declined to assist, that it appeared the applicant was in possession of £170 under her own control. It was very natural that she should desire to allow the money to remain at interest, and get some little addition to the income it yielded, but the Committee could not relieve cases of that sort.

Mr. ATKINS said the Committee was greatly helped in dealing with the applications by the assistance of members, local secretaries, and others who furnished valuable information. One case struck him very forcibly and he feared it was a typical one. It was that of a man of reputation and intelligence who had simply collapsed, it seemed to him, under the pressure of fierce modern competition, a man against whom nothing could be said, and of whom they heard everything that was good. Some assistance had been given him, and it was hoped he would be put in the way of earning his own living for some years to come. It had occurred to him that practically they had a set of small annuitants, most deserving cases, who received aid year after year, but never seemed to be able to improve their position. He felt that much good was done in assisting those persons, and thought that some day the Society might see its way to establish annuities on a smaller scale to meet those cases. He knew the value of the annuities now given, but thought there were many cases in which a smaller sum, supplemented from other sources, would be also very useful.

Mr. CROSS hoped the time was very distant when the Council would adopt the suggestion just thrown out. By having these cases coming forward time after time, the Committee could review the circumstances, and either increase or diminish the assistance given according to circumstances; but if small annuities were granted they would continue to be paid with very little inquiry. He thought the present system was far preferable to the one suggested.

Mr. ATKINS said he did not wish to press the matter, nor did he desire in any way to interfere with the principle of making grants from time to time.

The resolution was then put and carried.

PHARMACEUTICAL CONGRESS AT BUDAPESTH.

The PRESIDENT said he had received a circular announcing the holding of a Congress of Pharmacists at Budapesth, on June 26 and 27, and stating that the Committee would be glad to welcome any foreign pharmacists who could attend. If any members of the Council or of the Society would like to attend, he was sure the Council would authorise him to give them the necessary credentials.

The PRESIDENT then announced the receipt of a photograph of the Philadelphia College of Pharmacy from Mr. Howard B. French, in recognition of the courtesy shown him by the Society when in

England. He had also received from Mr. Sandell, an associate of the Society and a specialist in photography, a number of very fine photographs of different parts of the Society's House and School taken with the Sandell plates.

REPORT OF EXAMINATIONS.

The following report was presented:—

April, 1896.

	Candidates.		
	Examined.	Passed.	Failed.
England and Wales:—			
Major	25	12	13
Minor	234	81	153
Scotland:—			
Major	5	2	3
Minor	188	66	122
First Examination	408	174	234

27 Certificates by approved examining bodies were received in lieu of the Society's First examination.

Certificate in lieu of First Examination.

The PRESIDENT moved that the Board of Examiners be authorised to receive the certificate of the Annen-Realschule of Dresden in lieu of the First examination, in the case of Arthur Rosenloecher.

This was agreed to.

THE COMPANIES ACT AMENDMENT BILL.

The PRESIDENT said he had to report officially what many might have seen in the press that Lord Herschell, with whom he had an interview on the subject of this Bill, had placed an amendment on the paper, which was in the terms agreed to by the Joint Committee representing that Council, and other bodies representing medicine, surgery, dentistry, etc. The committee stage of the Bill having been postponed from Monday week to last Monday he then attended at the House of Lords and had another interview with Lord Herschell, and then learned that an amendment would be moved to refer the Bill to a Select Committee, which was done. He was present during the discussion, and the observations of Lord Salisbury seemed to show the intention that the Select Committee should receive evidence. Consequently, he took it, it would be the duty of the "Watch" Committee to take such steps as might be necessary to appear before the Committee in due course. He thought this reference to a Select Committee might be an advantage. Anything which required or enabled them to put their case before a number of careful and thoughtful men was an advantage, and whatever might be said about the House of Lords, a Select Committee of that body was generally very painstaking, and inclined to listen to the representations of any class which felt itself aggrieved, and possibly educational qualifications might be considered more carefully than they would be in the House of Commons. Even if it involved a year's delay, he was inclined to think it was well that the Bill had been referred to a Select Committee.

The VICE-PRESIDENT concurred in the view expressed by the President. He felt convinced that if they could, in conjunction with other bodies similarly constituted, have an opportunity of laying their case before men of legal mind, sound judgment, and ripe experience, their claims would be fairly considered, and very probably granted.

Mr. HAMPSON also thought it an advantage that the Bill should go before a Select Committee. The law officers were most able men, and would give due attention to the matters brought before them.

THE ANNUAL REPORT.

The draft annual report and statement of accounts having been considered, were ordered to be printed and circulated (see page 361).

GENERAL PURPOSES COMMITTEE.

The Council went into Committee to receive and discuss the report of this Committee, dealing with legal matters.

On resuming, the report and recommendations of the Committee were adopted, and special resolutions passed authorising the Registrar to take proceedings against certain persons for alleged infringements of the Pharmacy Act.

PRELIMINARY REPORT ON TWO BURMESE TURPENTINES.

BY PROFESSOR HENRY E. ARMSTRONG, F.R.S.

Large samples of *Pinus khasya* and *Pinus merkusii* have been received by me through the kind offices of the Imperial Institute; and the following are the results arrived at by their preliminary examination:—

The crude turpentine from *Pinus khasya* was a grey, thick, pasty mass, containing a quantity of small pieces of wood. That from *Pinus merkusii* was more fluid and cleaner in appearance. By distilling with steam, I separated about 13/100th of its weight of oil from the *Pinus khasya* turpentine, and nearly 19/100th from the *Pinus merkusii* turpentine. On a previous occasion I obtained nearly 17 per cent. of oil from a sample of the first-named turpentine. I imagine that the present supply of turpentine was collected under less favourable conditions, and that some oil was lost by evaporation, in the case of the sample now under examination.

The original turpentine and the distilled oil in each case have a very slight but agreeable odour, which is even less pronounced than that of French turpentine, and distinctly characteristic, although indescribable. The two oils are very similar in this respect. I am satisfied that the oil from *Pinus khasya* is identical with that which I received from the Colonial and Indian Exhibition, and examined several years ago, but which I was then led to believe came from the same tree.

The examination of oils of this description, with a view to determine their precise composition, is a matter of great difficulty, and we are but beginning to discover methods. From the experiments I have been able to make thus far I am satisfied that the oil from *Pinus khasya* is strictly comparable with French oil of turpentine, thus confirming the opinion I arrived at several years ago. The oil from *Pinus merkusii* is very similar to that from *Pinus khasya*. Like French oil of turpentine, both these oils distil within a very narrow range of temperature, near to 155° C., but the oil from *Pinus khasya* appears to contain a somewhat larger proportion of a constituent of higher boiling point.

The two oils are very nearly alike in relative density, viz.:

	<i>P. khasya</i>	<i>P. merkusii</i>
at 20° C.	·8627	·8610

They both turn the ray of polarised light to the right, the so called specific rotatory power being—

	<i>P. khasya</i>	<i>P. merkusii</i>
	+36"28	+31"45

The rotatory power of French turpentine is practically always about -36". The *Pinus khasya* oil now examined agrees with that I previously obtained from British Burma in this respect.

Practically, French oil of turpentine and that from *Pinus khasya* exactly correspond in properties. The difference between the oils from the two Burmese turpentines is of such a kind as to be of no practical consequence—they are essentially similar, and the slight difference is due to the presence, in one or the other, of some substance besides the chief constituent. I am at present inclined to think that the oil from *Pinus merkusii* may be the more uniform. It will be my endeavour to thoroughly examine the two oils in comparison with French turpentine, and, if possible, to discover their exact nature.

Meanwhile, I may say that both oils are of the highest quality, and that I believe they would serve every purpose for which oil of turpentine (French or American) is used. They even compare favourably with the French oil, which is the highest quality in the market. The rosin left on distilling off the oil would also, I believe, be available for all purposes for which ordinary rosin is used. There is no reason, I venture to think, why India should not obtain whatever turpentine is required from native sources, if the industry can be developed, and the cost of carriage be not too great. I hope, later on, to submit a more detailed report, if I should be successful in devising methods of separating the constituents of the oils; and, in any case, to obtain results of considerable scientific interest which may throw light on the, at present, obscure relationship between the various oils of the turpentine class.—*Imperial Institute Journal.*

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THE COUNCIL MEETING.

At the meeting last Wednesday the additions to the Society comprised 16 members, 111 associates and 33 students. Three honorary members were elected, viz., Professor I. BAYLEY BALFOUR, Professor T. E. THORPE, and Professor TSCHIRCH, and two corresponding members, Mr. W. R. CARLES, British Consul at Corea, and Dr. LOUIS PLANCHON, of Montpellier.

The report of the Executive of the North British Branch (printed at page 367) was then read. It gave a satisfactory account of the facilities afforded for examination work by the extension of the Society's premises in Edinburgh, and showed generally that in other departments the Branch continues its efficiency. Both Mr. STORRAR and Mr. JOHNSON gave expression to the belief that the Society has loyal supporters in Scotland, and that the expenditure which has been incurred in properly providing for the requirements of the examinations was a credit to the Society. The Treasurer hoped that the good feeling existing in Scotland would be reciprocated, and that it would result in an appreciable increase of members. The Vice-President, in moving the adoption of the report, repeated that hope, and pointed out the desirability of having an establishment in Edinburgh worthy of the Society's aims. An important resolution relating to the Preliminary examination was then mentioned by the PRESIDENT as having been sent by the Executive of the North British Branch, and it was referred to the General Purposes Committee for consideration. This resolution was carried at the meeting of the Executive on April 17 last (*ante*, p. 334), on the motion of Mr. GEORGE COULL, B.Sc., and after a lengthy discussion, which had been adjourned from a previous meeting. Mr. COULL remarked on that occasion that Scotland had long been in the forefront as regarded education, and it would be strange if it did not again take a prominent position in calling attention to the fact that the Preliminary examination ought to be made more stringent.

The report of the Finance Committee did not offer any exceptional feature for comment. In addition to a considerable amount received from subscribers to the Benevolent Fund, the Liverpool Pharmaceutical Students' Society

had sent a donation resulting from a collection made at a social meeting.

The report of the Library, Museum, School, and House Committee included a reference to the provision of a room to be used by the students for social purposes, and the decision that the request could not be acceded to. This was explained by the PRESIDENT as having been the unavoidable result of careful consideration of all the circumstances of the case.

In accordance with recommendations in the report of the Benevolent Fund Committee, six grants, amounting in all to £55, were ordered to be paid. In moving the adoption of the report, Mr. BOTTLE mentioned that in the case of an application the Committee had declined to entertain, the applicant having possession of a sum of money was not in such a condition of distress as would call for assistance from the Benevolent Fund. Mr. ATKINS spoke of the useful assistance afforded to the Committee by members who supplied information concerning applicants for assistance. He suggested that the recipients of grants were in many cases practically small annuitants, and that the good done from time to time might lead to the establishment of annuities on a smaller scale to meet the needs of such applicants as are deserving, but unable to improve their position. Mr. CROSS objected that such annuities would be paid as a matter of routine, and the Committee would not be able to review the circumstances which might require consideration.

Mention was made of an invitation from a committee of pharmacists at Budapesth in reference to the Congress to be held there on June 26 and 27.

A resolution was passed authorising the Board of Examiners to receive the certificate of the Annen-Realschule of Dresden in lieu of the First examination in the case of ARTHUR ROSENLOECHER.

In reference to the Companies Act Amendment Bill, the PRESIDENT reported that the amendment placed on the paper by Lord HERSHELL was in the terms agreed to by the joint Committee representing medicine, surgery, dentistry, etc., as well as the Council of the Society. The observations of Lord SALISBURY in the discussion last Monday appeared to indicate not only the intention that the Select Committee to which the Bill had been referred should have power to receive evidence and seek legal assistance if requisite, but also that in dealing with interests of the highest importance the views of those practically acquainted with the working of the commerce of the country should be heard and considered without restriction. From this it may be inferred that the "Watch" Committee would require to take steps for being heard before the Select Committee of the House of Lords. The reference of the Bill to a committee might therefore be an advantage, even if it involved some delay. Both the Vice-President and the Treasurer expressed themselves as holding similar views as to the prospect of a fair consideration being accorded to the claims put forward by the Society and by other bodies.

The annual report and statement of accounts were considered in committee, and subsequently ordered to be printed (see page 361).

After the discussion of the report of the General Purposes Committee in reference to legal matters, the report was adopted, and on the recommendation of the Committee, the Registrar was authorised to take proceedings in various cases of alleged infringement of the Pharmacy Act.

THE CENTENARY OF VACCINATION.

THURSDAY next, May 14, will be the one-hundredth anniversary of the day upon which Dr. EDWARD JENNER performed his first vaccination, the subject being JAMES PHIPPS, a boy of eight. The Editor of the *Practitioner* celebrates the occasion by publishing a "vaccination number," in which many writers deal with as many aspects of the case for vaccination, whilst EDWARD JENNER poses as the month's hero of medicine. JENNER came of a Gloucestershire family and was born at Berkeley, a village in that county, of which his father was vicar. His tastes early led him to investigate living things rather than to study dead languages, and on leaving school he was apprenticed to a country medical practitioner at Sodbury, near Bristol, of considerable reputation. Whilst residing at Sodbury JENNER was struck by the remark of a young countrywoman that she could not take small-pox, having already had cow-pox. The idea thus suggested remained in his mind, slowly maturing, but did not attain its realisation for some thirty years.

It was in 1770 that JENNER arrived in London, to finish his medical education at St. George's Hospital and work as a pupil with JOHN HUNTER, under whose roof he lived for two years. His skill as a naturalist accompanied him, and on Captain COOK's return from his first voyage of discovery, Sir JOSEPH BANKS recommended JENNER for the purpose of preparing and arranging the natural history specimens that had been collected by the illustrious circumnavigator. Two years later, in 1773, the young practitioner returned to his native place, and soon won for himself a high reputation for skill in the art of healing and general scientific knowledge, the study of natural history continuing meanwhile to engage as much of his attention as his professional engagements allowed. In 1788 he presented a paper to the Royal Society on "The Natural History of the Cuckoo," and in the same year he was elected to membership of that body. Four years later he graduated as M.D. at the University of St. Andrew's, having determined to confine himself to the practice of medicine.

After worrying all his medical friends for years about the supposed protective effects of cow-pox, JENNER at last obtained an opportunity of testing the prophylactic efficacy of inoculation of the healthy human subject by cow-pox virus. On May 14, 1796, matter was taken from the hand of SARAH NELMES, who had been infected by a cow, and inserted by two superficial incisions into the arms of a healthy boy, named JAMES PHIPPS. On July 1 the boy was inoculated with matter from small-pox pustules without any result, and thus proof was obtained of the success of JENNER's first vaccination. A book on the subject was published by JENNER in 1798, and he was continually kept busy vaccinating people who came to his house for the purpose, as many as three hundred sometimes being at his door at one time. He also conducted an enormous correspondence and sent out lymph where required. As a result, his practice was interfered with to such an extent that it required grants from Parliament, amounting in all to £30,000, to prevent him being impoverished. He died at Berkeley, of apoplexy, on January 26, 1823, having been the recipient of honorary degrees, diplomas, etc., from nearly every learned body in the world, whilst medals had been struck in his honour and his praises sung by poets as if he were a conqueror. It has been estimated that during his own lifetime he saved more lives than the ambition of NAPOLEON destroyed.

ANNOTATIONS.

THE ANNUAL DINNER.—The annual dinner of the members of the Pharmaceutical Society and their friends will be held on Tuesday, May 19, in the King's Hall, Holborn Restaurant, London, and applications for tickets, accompanied by a remittance (One Guinea) must be received by the Honorary Secretary, Mr. Richard Bremridge, not later than Saturday next, May 16, after which date it will not be possible to allot seats.

THE VOLUMETRIC COMPOSITION OF AMMONIUM CHLORIDE.—Experimental proof of the fact that a certain volume of ammonia combines with an equal volume of hydrogen chloride to form ammonium chloride, by the usual method, requires the use of a mercury trough and a large supply of mercury. Carnegie and Wales, however, have devised a method which does not involve the use of mercury, and appears, moreover, to prove the volume composition of ammonium chloride to a much higher degree of accuracy than usual. The mercury is replaced by kerosene saturated with dry ammonia, and an illustrated description of the apparatus employed will be found in the *Chemical News* for May 1.

RECENT WORK WITH THE RÖNTGEN RAYS.—Probably no scientific discovery has ever excited so much interest from the very outset as that of the x -rays by Röntgen, and certainly it would be difficult to find a parallel for the number of investigators at work upon the subject within so brief a time. Perhaps it is because nearly everyone at the present time knows something about photography, and a very large number of people had most of the necessary apparatus at hand. A remarkable illustration of the amount of detailed information already brought together is afforded by the fact that *Nature* last week devoted four pages of its extremely valuable space to a collection of notes on papers and communications on the subject received during a few days only. This indicates that a special journal of Röntgenography may shortly be needed to record the multitudinous results obtained by the small army of workers. A report of an interesting lecture on the subject by Mr. E. J. Wall will be found on page 364 of our present issue.

PHARMACY IN VICTORIA.—According to the report for 1895 of the Pharmacy Board of Victoria, the number of would-be pharmacists in that colony is greater than ever, 148 students having entered for the Preliminary Examination, and 71 passed, during the year, as against 126, of whom 60 passed in 1894, the highest number previously on record. For the certificate of the Melbourne College of Pharmacy, 48 students presented themselves for examination in chemistry and practical chemistry (30 passed), and the same number in materia medica and botany (26 passed). Having passed the Preliminary Examination before apprenticeship, served for not less than four years as an apprentice, attended courses of lectures in materia medica, botany, chemistry, and practical chemistry, and passed College examinations in those subjects, 29 candidates presented themselves for the Final Examination in Practical Pharmacy and 16 passed. In 1891 there were 37 entries and 26 passes. For the Modified Examination, open to those whose apprenticeship commenced before the passing of the Pharmacy Act, 1876, 4 candidates presented themselves and all failed. The additions to the register of pharmaceutical chemists during 1895 were 20 only, the smallest number for any year on record, but the number of apprentices registered was 51, the highest on record. There are now 1170 pharmaceutical chemists registered under the Act, of whom 137 were registered under certificates from the Pharmaceutical Society of Great Britain, and 523 apprentices.

A SATISFACTORY RESOLUTION.—The Royal College of Physicians of Ireland has signified its disapproval of the practice by which the services of professional men are exploited for the financial benefit of other persons, by passing the following resolution: "That the Royal College of Physicians of Ireland desires to express their (? its) disapproval of their (? its) licentiates accepting office in medical aid associations as at present conducted in England, inasmuch as the independence of the physician is destroyed by the system, and the services of the physician are used so as to produce a profit for lay persons." It would doubtless prove useful were pharmaceutical associations throughout Great Britain to pass similar resolutions as guides to conduct, and endeavour to enforce them so far as they were able, by moral compulsion.

CASES UNDER THE SALE OF FOOD AND DRUGS ACT.—In two cases that were recently brought before Mr. Bros, at the Clerkenwell Police Court, the defendants were charged with improperly dispensing a mixture that ought to have consisted of tartarated antimony, 1 grain, potassium nitrate, 1 drachm, and water, 6 ounces. One defendant, a registered chemist and druggist we regret to say, had omitted the tartarated antimony, and pleaded that this was the result of a mistake. Mr. Bros, who probably thought that such carelessness was as deserving of punishment as a wilful breach of the law, remarked that it was important that drugs should be mixed in accordance with prescriptions, and imposed a fine of ten shillings and costs. In the second case, Elizabeth Horton, whose name is not on the Register of Chemists and Druggists, was charged with omitting one-third of a grain of the tartarated antimony. The solicitor for this defendant having called in question the value of an analysis of one-third only of the mixture, Mr. Bros said that where the skill of a chemist was called in question he thought the whole mixture should be analysed, and the case was adjourned to allow the remaining two-thirds to be examined. The magistrate said also that it seemed to him such cases should be heard before a different tribunal than a police court, a statement with which many people will cordially agree.

VOLUNTARY EARLY CLOSING.—Reference was recently made to the fact that the chemists and druggists of Hunslet had decided to close their pharmacies every Wednesday afternoon until the end of October, and this good example is now being imitated by the whole of the chemists in Darlington, who close their places of business at 1 p.m. on each Wednesday. Cannot chemists all over the country agree to limit their hours of work in a similar way, and so remove the reproach that they must be compelled by Act of Parliament to treat their assistants and apprentices considerately in this respect?

CASE UNDER THE APOTHECARIES ACT.—Actions are not often brought against chemists nowadays by the Master, Wardens, and Society of the Art and Mystery of Apothecaries of the City of London, and it is doubtless only in flagrant cases that such steps are taken. In the case of James Eteson Walker, of Preston, who is described in the Register of Chemists and Druggists as having been in business before August 1, 1868, the defendant prevented the consideration of the case by paying the penalty of twenty pounds into court, and so rendered it impossible to judge whether his conduct had been illegal and unprofessional or not. His Honour Judge Coventry, before whom the matter was argued last week, considered however that it was of interest to the public to know whether defendant was or was not a qualified apothecary, and decided that under the circumstances he must allow costs for the plaintiffs on the higher scale.

OPPOSITION TO THE METRIC SYSTEM.—The writer of the letters that recently appeared in the *Times*, advocating the re-organisation of the existing system of enumeration on a duodecimal basis, in preference to adopting the decimal system of weights and measures, is now stated to be Mr. Herbert Spencer. The letters will shortly be reprinted in pamphlet form, with appendixes, by Messrs. Williams and Norgate.

"KNOWLEDGE—AN ILLUSTRATED MAGAZINE OF SCIENCE, LITERATURE, AND ART."—Founded many years ago by the lamented Richard A. Proctor, this paper has undergone many changes since it commenced, and now seems to have settled down as a sober monthly organ of exact but popular science. The current number has a remarkably healthy appearance, and contains an attractive series of articles, appealing to astronomers, coin collectors, chess players, botanists, geologists, and naturalists generally. The twenty-four pages of literary matter are profusely illustrated, and the high class of the contents of the paper should render *Knowledge* a necessity to every one interested in the world around him.

THE CHANCES OF THE COMPANIES BILL.—The *Times*—commenting on the fact that the Companies Bill was referred by the House of Lords on Monday night to a Select Committee, with the admission that there was very little chance of its becoming law this session—observes that whether the Bill is passed by the Upper House in May or June or July, its ultimate destiny is clearly marked out for it by the fact that in the House of Commons it must come after the Rating Bill, the Education Bill, and the Irish Land Bill, besides other Ministerial measures that excite much interest. It is also pointed out that it is certain the Bill cannot escape criticism in the House of Commons, from the point of view of those who object to it on the ground that it does too little, as well as from that of those who consider it goes too far.

WORKHOUSE DRUG CONTRACTS.—Speaking last week in London at a conference on the subject of Irish workhouse reform, Dr. Jacob, who represented the Irish Medical Association at the conference, condemned in strong language the system of contracting for the supply of drugs to workhouses. An exhaustive inquiry into workhouse administration was suggested.

BACTERIA IN OYSTERS.—On outbreak of typhoid fever amongst those who attended the Stirling County Ball in October, 1895, gave rise to the suspicion that the oysters supplied on that occasion were the carriers of infection, but Dr. Chalmers, one of the Glasgow medical officers of health, investigated the matter and concluded that the cause of the enteric fever infection was not conveyed in the oysters. A bacteriological examination of oysters from the same oyster-bed was undertaken later by Mr. D. M'Crorie, lecturer on bacteriology at St. Mungo's College, and he was able to isolate from them six distinct germs, of which four, including *Bacillus fluorescens liquefaciens* and a vibrio, liquefied gelatin. The fifth was a typhoid-like bacillus and the sixth a torula. The typhoid-like bacillus was found to differ considerably from the *Bacillus typhosus* of Eberth, Drs. Kanthack and V. D. Harris agreeing with Mr. M'Crorie on this point, and it was therefore assumed to be one of the pseudo-typhoids. It was found to differ from Eberth's bacillus in being virtually non-pathogenic to animals, and having a different optimum temperature, besides which it did not seem to possess so many flagella. The vibrio isolated was larger than Koch's cholera vibrio, but closely resembled the Finkler-Prior bacillus, and there was no reason to suspect that it played any part in the causation of the fever.

PARLIAMENTARY INTELLIGENCE.

THE COMPANIES BILL.—The House of Lords was occupied for an unusual time on Monday in discussing the fate of this Bill. Objection having been taken to the motion to go into committee, Lord Melville (who is connected with the firm of Melville, Fickus, and Co., Limited, bankers) moved that the Bill be referred to a Select Committee, and the Earl of Dudley not resisting, the Bill was so referred. From a pharmaceutical point of view the chief interest in the debate preceding the committal is contained in Lord Herschell's speech. His lordship, probably having fresh in his mind the cases submitted to the Board of Trade by the Pharmaceutical Society, declared that it was the bounden duty of Parliament, when grave evils had been manifested, as they had been in regard to some companies, to pass some measure which would in the highest degree possible minimise those defects. He suggested that as reference to a Select Committee would probably involve the delay of much-needed legislation on the subject for a whole year, it might be convenient to divide the Bill into two parts, one to embody the more urgent and less controversial provisions, which might then stand a chance of passing this session. The suggestion was not, however, accepted by the House, and with the relegation of the Bill to a Select Committee (which, by the way, has not yet been constituted) the expectation of repressing one-man bogus companies this year may be sorrowfully dismissed. There is a remnant of hope, however, in the view that the delay may make it possible for the Pharmaceutical Society, with the help of chemists and druggists throughout Great Britain, to strengthen its position and become next session a more powerful factor in parliamentary matters.

THE SHOP ASSISTANTS BILL, in so far as it affects chemists, does not materially differ from the Shops (Early Closing) Bill, but the principles of the two measures are widely dissimilar. The local option, which many think the best thing about Sir John Lubbock's Bill, is absent in its rival for parliamentary favours, and is replaced by compulsion. It is proposed, in fact, that every shop in the United Kingdom shall be closed, willy-nilly, one afternoon a week. The shopkeepers and inhabitants of each district are, however, to have the privilege of deciding which afternoon it shall be, for the local authority is charged with the duty of taking a plebiscite (after the manner prescribed by the Public Libraries Act, 1892) on the subject, and will defray the expense of the same out of the local rates. With regard to the supply of medicines to the public, the promoters of the Assistants Bill have been guilty of plagiarism in taking Sir John's saving clause for use in their own Bill; but, like most stolen literature, it has been marred in the stealing, in other words, the clause has been extended to embrace the sale of medicines and medical appliances by herbalists. The only businesses absolutely exempted from the operation of the Bill are those of licensed victuallers, refreshment and eating house keepers, confectioners, barbers, tobacconists, and newsagents. The police are charged with the administration of the law relating to half-holiday closing, and a first offence under the act will carry liability to a maximum fine of 20s. A second offence is regarded as sufficiently serious to call for a maximum penalty of £5, and a third of £25.

HOPE FOR BELATED BILLS.—If Sir Edward Clarke can get his motion accepted there will be joy in the hearts of honourable members in charge of delayed measures. Sir Edward desires the amendment of the practice of the House, so that Bills which have passed the second reading in one session, but, owing to pressure of public business, obstruction, or other unforeseen circumstances, have not become law, shall be resumed in the succeeding session at the stage of Committee. But, alas, the member for Plymouth has not yet had a day fixed for his motion, and the hope of private members is again deferred.

PARLIAMENTARY GRANTS FOR SCIENCE AND ART.—Her Majesty's opposition, or at any rate that portion of it representing Mansfield and S.W. Bethnal Green, does not look with favour upon the provision made in the Civil Service estimates for universities and colleges. Mr. Carvell Williams and Mr. Pickersgill have both given notice of their intention to move the reduction of the vote by £1700—the grant to King's College, London. Mr. Hobhouse (E. Somerset), who has temporarily joined the opposition, is also anxious to distinguish himself by moving the reduction of the vote in respect of science and art by £100.

PROCEEDINGS OF SOCIETIES.

Plymouth, Devonport, Stonehouse and District Chemists' Association, April 30.—Mr. F. W. Hunt in the chair.—Mr. J. D. Turney read an able paper on the "Cell Structure of Plants." Mr. Turney exhibited twenty-six lantern slides prepared by himself, and pointed out the various characteristics of the slides. On the motion of Mr. Hunt, seconded by Mr. Roper, the lecturer was accorded a hearty vote of thanks.

Commencing on May 6, the members of the Association will hold botanical rambles, weather permitting, on every Wednesday throughout the summer season. Mr. O. A. Reade, of the Royal Naval Hospital, Stonehouse, has very generously placed his services at the disposal of the Association, and will conduct the rambles. With the exception of May 20, when no ramble will take place, members are asked to assemble at the headquarters of the Association, Foresters' Hall, Plymouth Octagon, at 2.30 p.m. The Junior Section is taking a lively interest in the series of rambles, and Plymbridge and Bickleigh Vale were down on the list to be visited last Wednesday.

Midland Chemists' Assistants' Association, May 2.—The last social evening of the session was held at Exchange Rooms, Birmingham. It proved a great success, and Mr. Meggeson, who had charge of the arrangements, is to be highly congratulated. The instrumental portion of the programme was provided by Messrs. Woodward (piano) and Duncuff ('cello). Recitations were given by Mr. H. Martin, and songs were rendered by Messrs. Lidbury, Lloyd, Osborne, Walton, Jones, Cornish, and others. There was an attendance of between forty and fifty.

Linnean Society of London, April 16.—Mr. W. Percy Sladen, Vice-President in the Chair.—Mr. George Massee read a paper on the types of Fungi in the collection of the late Rev. M. J. Berkeley, which was presented to Kew in 1879, and contains rather more than 11,000 species. Many of the species were described more than fifty years ago; hence the diagnoses are in some cases too brief, and do not embody points which at the present day are considered to be of importance. In many instances this has led to the same species being re-described by others as new. Mr. Massee now supplied careful descriptions of the types, with a view to obviate future confusion, and to secure for Berkeley as the original describer the priority in nomenclature which is justly his.

Mr. A. D. Michael read a paper upon the internal anatomy of *Bdella* (the Red-snouted Mite), giving the results of three years work and of many hundreds of dissections and serial sections. The material was furnished chiefly from the Zoological Station at Port Erin, and the subject is practically new, only one paper (describing a few parts of the female) having been hitherto published. The male organs of *Bdella* are extraordinarily complicated: a pair of testes on each side of the body are joined by a tubular bridge to those on the other side. In *Bdella basteri* these testes are sunk in the thick walls of great "embedding sacs," which are glandular, but are absent from other species. The vasa deferentia are transformed into immense mucous glands, which communicate by "antechambers" with the penial canal, into which a great azygous accessory gland and another divided by a number of fine lamellæ discharge. Two chitinised air-sacs, spiked inside, are sunk in the genital organs and communicate with the outer part of the penial canal. The female organs are very simple. There is a large stalked organ, resembling the so-called "sucking-stomach" of Diptera, arising from the œsophagus; no such organ has hitherto been known among the Acarina. It is proposed to call it the "receptaculum cibi." The pharynx is exceptional in having a wholly flexible roof, instead of the chitinised one found in allied Acari. This involves numerous other modifications. The brain and nervous system are fully described. The respiratory organs consist of a long tubular air-sac on each side of the body, which gives off a multitude of fine unbranched tracheæ and communicates by a single tracheal trunk running along its exterior with the stigma by the mandibles. The salivary glands are very large and elaborate, but allied to the *Trombidium* type. The epipharynx is a highly specialised organ.

Chemists' Assistants' Association, April 30.—During the first half of the session an innovation was introduced by devoting one of the evenings to an inspection of the St. Pancras Electric Light Power Works. This was so much appreciated by the members and their friends that the Council arranged for a visit to

Messrs. Idris and Co.'s mineral water factories and laboratories in Pratt Street, Camden Town. About 160 availed themselves of the opportunity, among those present being Messrs. J. Moss, J. Ince, and several other well-known pharmacists. Readers of the Journal will doubtless be familiar with the exceptional manner in which every preparation is manufactured at these works, since an account of a visit of inspection was published in the *Ph. J.* Supplement for February 29 last. It may, however, be mentioned that, commencing at eight o'clock, the company were conducted in parties, each numbering about a score, through the various departments, the details being explained by members of the firm or by some prominent official. The ginger-beer brewery first claimed attention, after which those present wended their way through the water-tank gallery to the cordial and syrup departments, and thence to the analytical laboratories, where Dr. W. H. Symons, the chemical adviser to the firm, and Mr. F. R. Stephens, his assistant, did the honours. On leaving the laboratories the bottling and aerating departments were next shown, the different types of machinery being inspected with great interest. The section devoted to the preparation of show tablets and sand-glass blasting also received a visit, and much interest was shown in the various stages of these operations. Passing thence through the bottling room, the engine room with its extensive plant was seen, whilst last of all the buildings on the other side of the yard were visited in order to see the various stages necessitated in the fitting up of syphons, including the casting, finishing, and electroplating of the tops. After a glance at the stables, the whole party adjourned to the large warehouse, where Mr. T. H. W. Idris, J.P., L.C.C., the founder of the firm, gave a short but interesting account of its history. At the conclusion of this address, refreshments were served, which Messrs. Idris and Co. had been good enough to supply. This terminated an extremely pleasant evening, and the opportunity of inspecting a unique mineral water factory was much appreciated by every one present.

Royal Institution.—The annual meeting of the members of the Royal Institution of Great Britain was held on the 1st inst., Sir James Crichton-Browne presiding. The annual report of the committee of visitors for the year 1895, testifying to the continued prosperity and efficient management of the Institution, was read and adopted. The real and funded property now amounts to above 100,000*l.*, entirely derived from the contributions and donations of the members and of others appreciating the value of the work of the Institution. Seventy-two new members were elected in 1895. Sixty-three lectures and nineteen evening discourses were delivered in 1895. The books and pamphlets presented in 1895 amounted to about 260 volumes, making, with 594 volumes (including periodicals bound) purchased by the managers, a total of 854 volumes added to the library in the year. Thanks were voted to the President, Treasurer, and the Honorary Secretary, to the committees of managers and visitors, and to the professors, for their valuable services to the Institution during the past year.

The following gentlemen were unanimously elected as officers for the ensuing year:—President, The Duke of Northumberland, K.G.; Treasurer, Sir James Crichton-Browne, M.D., F.R.S.; Secretary, Sir Frederick Bramwell, Bart., D.C.L., F.R.S. Managers, Sir Frederick Abel Bart. K.C.B.; Sir Benjamin Baker, K.C.M.G.; Mr. John Wolfe Barry, C.B.; The Right Hon. Lord Halsbury; Mr. Charles Hawksley, M.Inst.C.E.; John Hopkinson, F.R.S.; Mr. Victor Horsley, F.R.S.; Mr. William Huggins, F.R.S.; The Right Hon. Lord Kelvin, F.R.S.; Mr. Alfred B. Kempe, F.R.S.; Mr. George Mathev, F.R.S.; Mr. Ludwig Mond, F.R.S.; Sir Andrew Noble, K.C.B., F.R.S.; The Right Hon. Earl Percy; Mr. Basil Woodd Smith, F.R.A.S. Visitors, Mr. Gerrard Ansdell, F.C.S.; Sir James Blyth, Bart.; Mr. Arthur Caromael, Sir William James Farrer, M.A., F.S.A.; Mr. Carl Haag, R.W.S.; Sir Francis Laking, M.D.; Mr. Hugh Leonard, M.Inst.C.E.; Mr. James Mansergh, M.Inst.C.E.; Mr. Lachlan Mackintosh Rate, M.A.; Mr. Felix Semon, M.D., F.R.C.P.; Mr. Henry Virtue Tebbs; Mr. John Isaac Thornycroft, F.R.S., M.Inst.C.E.; Mr. Thomas Tyrer, F.C.S., F.I.C.; Mr. John Westlake, Q.C., LL.D.; Mr. James Wimshurst.

A general monthly meeting of the members was held on the 4th inst., Sir James Crichton-Browne, M.D., F.R.S., Treasurer and Vice-President, presiding. The following were elected members:—Mr. J. H. Badcock, M.R.C.S., Mr. F. J. Bennett, Mr. Dugald Clerk, F.C.S., Dr. W. J. Gow, M.R.C.S., Mr. J. C. Graham, Mrs. E. Patten Jackson, Sir John Jackson, Lady Jackson, Mr. W. L. Jordan, Mr. J. W. Mackean, F.C.S., Mr. J. S. Mackintosh, Mr. J. Moeller, Dr.

Thomas Oliver, F.R.C.P., Sir Frederick Pollock, Bart., LL.D., Mr. Harry F. Pollock, M.P., Colonel Sir Charles Euan-Smith, K.C.B., Mr. James Swinburne, M.Inst.C.E., Mr. Arthur J. Walter, LL.B., and Mr. E. Weldon.

Midland Chemists' Assistants' Association.—The first annual meeting of the Midland Chemists' Assistants' Association was held on Wednesday evening, at the Exchange Rooms, Birmingham, Mr. T. C. Clarke, President in the chair. Mr. W. Bindloss (Hon. Sec.) read the annual report, which stated that notwithstanding that the Association was formed late in the past year, sixty-two members had been enrolled, including nine honorary members. In all twenty-one meetings had been held during the session, and considering that the Association was so young, the results had been satisfactory. The President moved the adoption of the report, and said that, considering all things, it was eminently satisfactory, and gave them encouragement to continue the work they had taken in hand. The report was adopted. The result of the scrutiny for the election of the Committee having been reported by Mr. Bland, the President delivered a valedictory address, and said that he vacated the chair with mingled feelings of reluctance and satisfaction. The most satisfactory feature they had before them was the fact that they had established themselves among the substantial and well-organised pharmacists of the country. He called their attention to the various valuable papers that had been read to the members during the session, and said that on the social side they had been most successful in establishing good-fellowship among the members. Although the finances were not as flourishing as they might wish, they were in a good position in view of the fact that that was the first year of their existence. He was strongly of opinion that if they had established such an association years ago they would not now be struggling with hardships they were battling with. In conclusion, he expressed his thanks to the officers and Committee for the cordial and liberal support they had accorded him during his term of office, and hoped his successor would be equally well supported. Mr. Casson, in moving a vote of thanks to the President, bore testimony to the excellent services he had rendered to the Association. Mr. Selby seconded the motion, which was carried with acclamation. The President said that what he had done had been to him a pleasure, and he was gratified to know that his services had been appreciated. On the proposition of the President, seconded by Mr. Lawton, a hearty vote of thanks was passed to the Honorary Secretaries (Messrs. Bindloss and Selby) for their valuable and devoted services. This was also carried with unanimity. Mr. Bindloss, in reply, said that the knowledge that their work had borne fruit was in itself a reward for anything they had done. The members of the new Committee are as follows:—Messrs. Clarke, Bindloss, Selby, Lawton, Jessop, Williams, Meggison, Boucher, Foster, Bland, Shorthouse, Osborne, Casson, and Featherstone.

SCOTTISH NEWS.

EDINBURGH DISTRICT CHEMISTS' TRADE ASSOCIATION—ANNUAL EXCURSION.—At the close of the meeting in connection with the Proprietary Articles Trade Association, held in 36, York Place, Edinburgh, on Friday, 1st inst. (see page 375), Mr. McLaren intimated that it was proposed this year to hold the annual excursion in the west. The proposal was to take the train to Cra'gendorran, boat to Arrochar, walk or coach to Tarbet, dine and tea there, then take steamer over Loch Lomond to Balloch, and return by way of Stirling and Forth Bridge. After Mr. Boa had asked what would be the most suitable date it was agreed to report to the Association that Wednesday, June 17, would be suitable.

PRESCRIBING PROPRIETARY MEDICINES.—At a meeting of the Glasgow Parish Council on Tuesday, the inspector, Mr. Dempster, reported that, as instructed at last meeting, he had written to Dr. Fortune for an explanation as to prescribing proprietary medicines, and a reply had been received to the effect that he had been under the impression that the recommendation was not intended to be absolute, or most certainly he would not have prescribed it. The members of the Medical Committee expressed themselves as satisfied with the explanation, and as the doctor appeared now to understand the position, the inspector was instructed to write to him intimating the Committee's acceptance of his explanation.

PROPRIETARY ARTICLES TRADE ASSOCIATION

MEETING AT EDINBURGH.

A meeting of chemists and druggists in Edinburgh and district was held on Friday, May 1, in the Pharmaceutical Society's house, 36, York Place, Edinburgh, to hear the statements of a deputation from the Proprietary Articles Association, with the view of securing an increased membership. The deputation consisted of Mr. G. R. Barclay, London; Mr. Glyn-Jones, Secretary; Mr. J. Norris (Condal Water Company); Mr. C. H. Corbett (Stephen Smith and Co.); Mr. J. Cameron (Liebig's Extract of Meat Company), and Mr. J. R. Robertson (Bovril, Limited). There was a large attendance of chemists and others.

Mr. Peter Boa, Chairman of the Edinburgh and District Chemists' Trade Association, explained the origin of the meeting. He said they were all aware that an association had been started in London called the Proprietary Articles Trade Association, the object of which was to prevent extreme cutting of prices. The Secretary of that Association, Mr. Glyn-Jones, had entered into communication with Mr. C. F. Henry, their Secretary, as to calling a meeting of their Association to consider the matter. While their Committee thought they might reasonably have a meeting to hear what Mr. Glyn-Jones and his colleagues had to say, they felt that as the regulation of prices was a matter which their Association had agreed not to take up, it was a question with which they could not directly associate themselves. But many of them thought it was a matter of some interest to the trade, and that it might be well to afford Mr. Glyn-Jones an opportunity of explaining the objects of his Association to the members of the trade as such and outside the Association, and therefore this meeting had been convened. He had pleasure in proposing that Mr. Barclay should take the chair.

Mr. Barclay, on taking the chair, said he felt certain that if he chanced to ask any one who was in business touch with the great bulk of the trade in this country whether chemists on the average were advancing financially in the same ratio as they were educationally, he would be told that they were not. The reason of that was the insane cutting of prices that was going on. He did not think any one would dispute the use of the adjective "insane" because the cutting of prices benefited no one except the public. The trader who began cutting did not benefit very long, because in a very short time other traders adopted the same prices. This meeting had been convened to give the Proprietary Articles Trade Association an opportunity of laying its views before them. It had been urged in some quarters, and he had seen it in the trade papers, that it was ridiculous for them to go about the country holding these trade meetings, and that if chemists did not see it to be to their advantage and interest to support this Association they should leave the matter alone. He felt sure that was a mistake. There was an enemy at their gates in the shape of the drug stores which were spread all over the country, and unless they combined together to fight shoulder to shoulder against them they could not do anything. Here was an organisation already formed. They asked them to enrol themselves under its banner, and if they did not achieve success they would not have themselves to blame.

Mr. C. F. Henry stated that he had received a large number of apologies from chemists and druggists in Edinburgh and the surrounding district. They said they would have liked to hear Mr. Glyn-Jones explain the aims and objects of the Association. Eighteen expressed their approval of it, one or two said they would abide by the result of the meeting, and two did not express any decided opinion on the matter.

Mr. Glyn-Jones, having thanked the Edinburgh and District Chemists' Trade Association and Mr. Henry, their Secretary, for the very valuable help they had given in arranging for that meeting, stated that the new association was made up of business men engaged in the manufacture and distribution of proprietary articles. It arose, and he wanted specially to enforce this point, in the retail trade. A few retail chemists who met together were agreed that there was a grievance, and thought there was a way out of it, or, at any rate, a way of minimising it to a very large extent. He described the steps they had taken in approaching the wholesale houses and manufacturers in London, the result of which was that an association had been formed which included all the wholesale houses in London but two. He had no doubt, when they had an opportunity of laying the thing before the other well-known houses in the country that they would have no difficulty in getting their co-operation. He further explained the constitution of the Council of the Association, and with regard to its objects he said the chief was the

prevention of cutting and of what they knew to be a result of cutting, namely substitution. That was an object with which he believed every pharmacist was in sympathy, but as business men they wanted to know what chance there was of success. Mr. Barclay had said they had got an enemy at their gate—he was going to say that they as retailers had the enemy almost in their bedrooms—and they had got to deal with him. Their main ground-work was based on this, that manufacturers might put a good or bad proprietary article in the market, and by advertising create a demand for it, but they could not distribute it, and they could not expect any one else to distribute it for nothing. As a matter of fact there were people who were distributing these goods if not for nothing at any rate for an absurdly inadequate profit. A man ought to have something else to do than keep open shop for the sale of proprietary articles at 5 per cent. or less profit. And that was the crux of the whole business. When the drug stores were first started the manufacturers thought they could turn their backs on the ordinary chemists. But they were finding out that they were suffering from substitution, for the drug store made a business on the reputation of these proprietary articles, and then became manufacturers on their own account. Mr. Glyn-Jones then explained how it was proposed to attempt to put a stop to the cutting of prices, by the manufacturer or wholesale trader getting the retailer's signature binding him not to sell the article below a certain price, the penalty of infringement being that the supplies would be stopped. They had got the opinion of counsel that such an agreement could be enforced, and he was satisfied that it would be effectual. This was a question that affected every pharmacist. There could be no doubt about the proprietary medicine trade being their trade in a moral, if not in a legal, sense, and he warned them that if they did not take action the stores would not stop at cutting prices there, but would cut prices in the dispensing department also. Personally, as a pharmacist, he would be very glad if there were no proprietary medicines, but he recognised the fact, much as he disliked it, that so long as they were advertised, so long would there be a demand for them, and he wished to make money by meeting that demand if he could. He concluded by urging those present to support the movement by becoming members of the Association.

The Chairman stated that in order to put any discussion which might follow in order, he would ask them to move and second the following resolution:—

"That this meeting of chemists in Edinburgh and District pledges itself to support the Proprietary Articles Trade Association, and urges upon all manufacturers of proprietary articles the importance of co-operating in the movement."

Mr. David McLaren, Edinburgh, said he would move the adoption of the resolution, and would only say he thought it was a step in the right direction.

Mr. McDougal, Leith, seconded, and

Mr. Norris (Condal Water Company) spoke in support of the proposed resolution, urging the necessity for co-operation between traders and manufacturers. He said Pears' Soap Company had written to him saying they had no sympathy with this movement, and they seemed to have an idea that the cheaper their soap was sold the better it would be for them, because their profit was not interfered with. As at present situated, their Association had not power to go to Pears' Soap and use persuasive or coercive measures, because they were not strong enough. It was only by the support of local chemists that in due time they would be able to exercise an influence over such firms.

Mr. Morison, Edinburgh, asked how the proposed scheme would work with reference to co-operative stores.

Mr. C. F. Henry said that under their present agreements the manufacturers gave too little profit to the retailers, and he wished to know what profit the Association proposed to give them, would they guarantee a profit of 20 or 25 per cent.? How was the Association to trace an article sold, say, at Manchester, by a professional and civil service store or any drug store in order to stop the supply? And was there any idea of putting a price on the article other than the face price, and maintaining it as the price which should be charged to the public by all parties.

Mr. McGlashan, Edinburgh, asked what the Association would do in the case of a man selling an article under price, and increasing his business very much by advertising to the public that his neighbours had boycotted him and got his supplies stopped for selling at a fair profit?

Mr. Wylie, Edinburgh, expressed the opinion that the only scheme

that would be satisfactory was to keep to the face price of the article.

Mr. Mackenzie asked if it was proposed to work this Association alongside the Grocers' Federation.

Mr. Glyn-Jones, in answering the questions, said—with reference to co-operative stores—that there was a serious difficulty with them, and it wanted looking at from different standpoints. They said that to sell an article at a shilling, and afterwards to give a dividend or bonus back, was really cutting. They would ask manufacturers to make the stores understand that upon protected articles they would not be able to give a dividend, or that in the first instance such a price would be charged for the article that when the dividend was taken off it would bring it down to the same value. The manufacturer had to decide between the legitimate trade and the cutters. They recognised the importance of not tying the individual trader's hands and allowing the co-operative stores to go unfettered. If the fox-terrier was to be muzzled, the collie would have to be the same. The next question was in regard to the amount of profit. He was very glad Mr. Henry had mentioned it. They, as an Association, were not responsible in any way for the amount of profit guaranteed in the past by the firms connected with their Association. But there would have to be a division of proprietary articles, if he might so put it. They had articles of a medicinal character—goods upon which they should get a larger profit than goods which had a very much more considerable demand. They recognised, too, that there were luxuries, and the question of the selling price of such articles might be matter for serious consideration. But, in his opinion, a fair profit upon proprietary medicines should be not less than 20 or, if possible, 25 per cent. There were proprietors who had told him they did not care a snap of the finger for the retail trade, or in other words, that retailers were so many automatic slot machines into which people put their money and got out what they wanted. But they had their rents to pay and their premises to keep up, and they did not intend to get their linoleum wasted if they could not make a profit off these articles. With regard to the tracing of those who might sell an article under the regular price, that was a more simple matter than might be supposed, and he described the method of numbering adopted by Elliman's embrocation. As to the question of face prices, he said he had, up till now, been speaking as the Secretary of the Association, and he could not pledge it to this matter, but speaking as a retail chemist, he would say that the price was going to be what retailers made it. If the bulk of the retailers combined, they could enforce almost any commission they liked. That was a broad statement, but he made it advisedly. Whatever they did, they should not have two prices to the public. With regard to the point raised by Mr. McGlashan, he said the public was not unreasonable, and he did not think that in these days it would do any trader good if the manufacturers decided to do this and refused to supply them. The Association, he said, was prepared to work with the Grocers' Federation in this matter, and chemists might very well take an example from that Federation.

In answer to Mr. McLaren, Mr. Glyn-Jones said they had had a conference with a committee of the Grocers' Federation, which was appointed to meet them. The grocers had full sympathy with the chemists and stated that they would report to their annual conference at Cardiff.

The resolution was unanimously agreed to.

Mr. Peter Boa then moved—

"That a trade committee of Edinburgh and District chemists be appointed to act with the Proprietary Articles Trade Association."

Mr. C. F. Henry seconded, and said it was not for want of sympathy that the committee of their Association could not see their way to act. They did sympathise, but by their rules they were so far limited in their operations. They were a committee interesting themselves in trade matters, but they were scarcely a trading committee, and they had not as yet touched the question of trade prices.

The resolution was adopted.

Mr. Barclay moved a vote of thanks to the Pharmaceutical Society and Mr. Hall for the facilities they had granted for holding that meeting there.

Mr. C. H. Corbett seconded, and this resolution was also agreed to.

Mr. McLaren said he was in hearty sympathy with this movement, but there was just a danger of overstepping the bounds of discretion with regard to the question of co-operative stores, and he mentioned an instance where a manufacturer stopped supplies to a grocer who advertised 2½ per cent. discount for cash accounts

of 5s. and upwards, while he continued the supplies to the co-operative store, who gave a 15 to 20 per cent. dividend. He thought both should have been supplied on the same terms.

Mr. Glyn-Jones said it was recognised that this matter was one which it would have been impossible for the Pharmaceutical Society to take up; but they were exceedingly obliged to them for the support that had been given them. He stated that there were two new members of the Council of the Pharmaceutical Society to be elected, and as no Scotchman had been nominated he asked the meeting to support the nomination of Mr. Park, Plymouth, and Mr. Campkin, Cambridge, both of whom were members of the Proprietary Articles Trade Association.

MEETING AT BRADFORD.

A meeting of the chemists of Bradford and the neighbourhood, promoted by the council of the Bradford Chemists' Association, at the request of the Proprietary Articles Trade Association, was held in the saloon of the Mechanics' Institute, Bradford, on Wednesday evening last. There was a capital attendance. Mr. E. Mackay officiated as Chairman, and he was supported by Mr. Geo. Rimmington and County Alderman H. Dunn (vice-presidents), R. W. Silson (treasurer), S. Norman Pickard (hon. sec.), and Messrs. A. Knight, J. M. Newbould, T. Stead, F. K. Taylor, and A. H. Waddington, members of the council; Messrs. W. Simpson (Liebig's Extract of Meat Company), W. S. Norris (Condal Waters Co., Ltd.), J. F. Garratt (Frog in your Throat), F. Hoy (Bovril, Ltd.), and W. S. Glyn-Jones (secretary of the Proprietary Articles Trade Association); and Messrs. Pollard (vice-president), H. W. Seeley (sec.), Geo. Cobb (treasurer), and Councillor J. H. Wilson, of the Halifax Association; Messrs. Chaplin, Green, Duffin, and Pollard, Wakefield; Mr. Hirst (Hirst, Brook, and Hirst), Leeds; and others.

The Chairman said that with respect to anti-cutting he would just like to say he thought they were all at one in regard to that object. That was something. It was time something was done for the benefit of the trade all round. He did not suppose they would agree on other points. There was a time for everything, and he was of opinion that the time was now ripe for them to take this movement in hand. No doubt there were many of them who would say this ought to have been done before. Well, they all knew it ought to have been done before, but it had not been done, and there were perhaps reasons for the delay. They did not all understand why it was that the proprietor had kept aloof from the chemists. The chemists had followed the lines they had done because they thought they had been forced to do it. He referred to the power of the proprietor, and went on to commend this movement and the ability of Mr. Jones as Secretary. The chemists, he said, felt that they had not been treated for the last twenty years as they ought to have been. They must all pull together in effecting an improvement. They ought to be in a position to take a happy middle course, neither prescribing proprietary medicines, as was the practice of his old master, nor pushing anything rather than proprietary medicines.

A number of letters of apology were read by the Secretary, one of them from Mr. Geo. Walker, Dewsbury, being as follows:—"I am quite in sympathy with the object in trying to put a stop to the extreme cutting, and I think chemists have been backward so far in supporting you because you have only just now put forward a practical scheme."

Mr. Glyn-Jones then proceeded to explain the object of the Association and its series of meetings, and his remarks were very heartily appreciated. He read a list of proprietors who were prepared to fall in with the proposals of the Association.

Mr. Silson moved: "That this meeting of chemists residing in Bradford and district, having heard the report of the Proprietary Articles Trade Association, pledges itself to support that organisation, and urges upon all manufacturers the importance of at once assisting in the movement." He said that in coming to the meeting he had been cheered or consoled with the thought that whatever happened to the trade they could not possibly get any worse.

Mr. Wilson (Harrogate) seconded the motion, and after a brief discussion the motion was adopted with enthusiasm.

County Alderman Dunn (Shipley), moved that the members of the Bradford Association should act as a local executive in conjunction with the P.A.T.A.

Mr. Herbert Rogerson seconded the motion, which was carried.

Votes of thanks concluded the proceedings.

MEETING AT LEEDS.

On Tuesday evening a meeting of the registered chemists and druggists of Leeds and District was held at the Law Institute to receive a deputation from the Proprietary Articles Trade Association.

Apologies for non-attendance and expressing sympathy were received from Messrs. S. Taylor, E. Yewdall, W. Johnson, R. H. Smith, N. Armstrong, W. N. Armstrong, and W. Jones, Chairman of the Birmingham Trades Committee. Amongst those present were Councillor Hebden, Chairman, and Mr. Seeley, Secretary, of the Halifax Association, and Mr. Mackey, President, Mr. Pickard, Secretary, and Mr. Dunn, Vice-President of the Bradford Association; Mr. Frank Floy (Bovril, Ltd.), Mr. Simpson (Liebig's Extract of Meat Co.), Mr. Corbett (Hall's Coca Wine), Mr. H. S. Norris (Condal Water Co.), Mr. Hirst (member of Council), Mr. Norris (Bovril, Ltd.), Messrs. G. W. Worford, R. Reynolds, G. Ward, B. Hirst, F. W. Branson, James Fawthrop, R. Furniss, T. W. Fawcett, — Reindhardt, — Metcalfe, — Hardman, — Crosby etc., Leeds; — Maud, Pontefract; — Wilson, Harrogate; — Hebden, Halifax; — Dunn, Shipley, etc. Altogether, there were about forty present.

Mr. G. Ward (Hirst, Brook, and Hirst, Leeds) was, on the motion of Mr. Reynolds, voted to the chair, and in opening the proceedings said the object of meeting together was to hear what the representatives of the Association had to lay before them with regard to its objects. He hardly thought there would be amongst chemists two opinions as to the desirability of bringing about a modification of the present system. The state of things was now such that proprietary articles were scarcely worth handling from a commercial point of view. During 25 years there had been a very large reduction in the retail prices at which these articles were sold. Prices were being cut in a manner which was simply suicidal. Unfortunately this state of things was maintained not only amongst retail chemists, but it existed to some extent in wholesale houses. In some cases, far from there being a profit there was an actual loss. Under these circumstances it was considered that something should be done, if anything could be done, to put a stop to this condition of business. Manufacturers were beginning to feel that it was imperative they should take action in the matter; in fact, he believed the first initiative in this movement came from the manufacturers. It was the first time the matter had been approached from this aspect, and if any practical method could be devised to combat the evil, it would be greatly to the benefit of everyone, and the retailers, the wholesale houses, and the manufacturers should combine to bring it about.

Mr. Glyn-Jones (Secretary of the Proprietary Articles Trade Association) explained the constitution of the Association, which he said comprised retailers, wholesalers, and proprietors, and said there was now quite a formidable array of wholesalers who had promised to join; in fact, so far only two wholesale houses had not gone in with the movement in London, and they were only playing a waiting game. He then proceeded to explain the constitution of the governing body of the Society, and also its objects, the latter chiefly relating to the prevention of "cutting."

Mr. Reynolds thought if the retail trade had tried to carry out this scheme alone, the case would have been perfectly hopeless. It would have been impossible for retailers to carry it through unaided, but when he found the head men in the business taking it up, he felt there was something in the prospect of such Associations existing successfully. From the list of names of those who had joined the scheme, they would see that a large body of influential men favoured the scheme, and were convinced they were not wasting their time, and that the thing deserved to be tried. He moved "That this meeting of registered chemists residing in Leeds and neighbourhood, having heard the objects and proposals of the Proprietary Articles Trade Association, considers they are worthy of support by chemists generally, and would urge upon all manufacturers and wholesale distributors the importance of assisting the movement in bringing about some modification in the present system."

Mr. Well (Ilkley) seconded this, and after some discussion, the resolution was put and carried unanimously.

Votes of thanks to the Chairman and the members of the deputation closed the proceedings.

PROCEEDINGS UNDER THE PHARMACY ACT.

SALE OF LAUDANUM BY AN UNREGISTERED PERSON.

At the Clerkenwell County Court, on the 6th inst., before His Honour Judge Meadows White, the Council of the Pharmaceutical Society of Great Britain sued James Thomas Thorne, of 117, Lever Street, St. Luke's, E.C., for two penalties of £5 each, for selling, or keeping open shop for the retailing, dispensing, or compounding of, poison on December 5 and 14, 1895.

Mr. T. R. Grey, instructed by Flux, Thompson and Flux, appeared for the Council. Mr. Yelverton, instructed by Mr. E. F. Weldon, defended.

Mr. Grey stated that defendant carried on a business at 117, Lever Street, where a witness, instructed on behalf of the Society did, on the 5th and 14th days of December, purchase laudanum, one of the poisons included in the Schedule to the Pharmacy Act, 1868. Defendant did not possess the qualification requisite to entitle him to carry on the business of a chemist and druggist, and was consequently an offender against the Statute. Not only had the purchases been made at defendant's shop, but the defendant, who was a man of colour, had himself sold the poison. He referred to the section of the Act by which the selling and keeping open shop for the retailing of poison by an unregistered person were made offences, and quoted decisions of the superior courts in support of his contention that defendant had rendered himself liable under each class of offence.

John Partridge, examined by Mr. Grey, proved that on December 5, 1895, he went to 117, Lever Street and purchased twopennyworth of laudanum and twopennyworth of soap liniment, and was served by defendant. He visited the shop again on December 14 and made a similar purchase, defendant serving him. He identified defendant, a black man, as the person who served him on each occasion. He purchased some other articles, upon the wrappers of which the premises were described as "The Surgery, 117, Lever Street, E.C."

Cross-examined by Mr. Yelverton: I asked defendant for laudanum and soap liniment mixed. He took them from two bottles in my presence and mixed them before giving them to me. In the window there were some bottles and a number of articles exposed for sale. On both days I went about the same time in the afternoon. I swear that I kept the bottles locked up until I handed them to Mr. Eastes. I made an entry of the purchases in my book.

Mr. E. J. Eastes, F.I.C., examined by Mr. Grey: I received the bottles from Mr. Partridge; they were sealed up. Bottle No. 1 contained 1 oz. 7 drachms of fluid. Upon analysis, I found, among other ingredients, a preparation of opium; it contained 1.1 grain of morphine, or 11 grains of opium. Bottle No. 2 contained 1 oz. and 3 drachms of fluid. Upon analysis, I found it to contain 1.9 grain of morphine, or 19 grains of opium, Pharmacopœia strength.

Mr. Yelverton, for the defendant, admitted that defendant resided at 117, Lever Street, and that his name was not on the Register of Chemists and Druggists, and he was only a medical student. He contended that the plaintiffs had not attempted to show that there had been a general sale by defendant at his premises, and that defendant's premises were a private house and not a shop, and plaintiffs had failed to prove that he kept an open shop within the meaning of the Act. He could not contend that the evidence of the analyst did not show a sufficient quantity of poison to bring the mixture within the Act, but defendant denied either selling or keeping a shop wherein he sold laudanum, and he should prove that Dr. Thorne, defendant's brother, served the witness on December 5, and that on the other date defendant was away, and could not have served the witness.

James Thomas Thorne, examined by Mr. Yelverton: I am a medical student of the Aberdeen University. I reside at 117, Lever Street, St. Luke's. I have passed first and second examinations for M.D. I do not keep an open shop. I was out on December 14. My sister-in-law was in charge. My brother is M.D. of Edinburgh. I was at the British Museum on the 14th. I am certain I did not serve Partridge on that day with anything. On December 5, might have been in house. I did not sell any laudanum. I do not remember Partridge coming on December 5. I do not sell scheduled poisons.

Cross-examined by Mr. Grey: I am not a legally qualified medical practitioner. I have not passed any examination under the Pharmacy Act. The shop or surgery belongs to me. There is a glass tablet in the window bearing the words "prescriptions dispensed." I make up eye-washes, etc. I keep laudanum in the shop in case of emergency. If any one comes to me in extreme

pain and I cannot relieve them by any other means, I use the laudanum. I make a charge if the person can afford to pay it. I bought labels similar to those on bottles from a traveller. I should say the liquorice powder and jalap came from my shop. If I am out my sister-in-law looks after the place. In the window are exhibited glycerin and cucumber and other articles for sale. If I am not in my sister-in-law sells.

Florence M. Thorne, examined by Mr. Yelverton: I am the wife of Dr. Albert Thorne, M.B., of Edinburgh. He is a coloured gentleman; he is practising in Edinburgh. I arrived at 117, Lever Street with my husband on November 24 last. Never saw Partridge before to-day. Had recollection of a woman asking for laudanum on December 14. She was not supplied. On December 14 defendant gave me directions not to sell laudanum. My husband is in Edinburgh. He is so much like his brother that it is difficult to tell one from the other.

Cross-examined by Mr. Grey: Never went into the surgery until December 14.

Mr. Grey submitted that there was abundant evidence that defendant kept open shop, and that he had sold the poison himself.

His Honour, after reviewing the evidence, said: Nothing can be clearer than that this is a shop where anything is sold to persons who choose to buy them; the evidence of defendant and Mrs. Thorne is conclusive that it is a place where drugs are sold—that there was a sale of poison on two occasions is absolutely clear, if I believe Partridge. Partridge has his memorandum book in which he made an entry of what he bought. He says he locked up the purchases, and reported, as was his duty, to the Society. I accept his evidence. It is quite clear to me that defendant is the person who keeps the shop. The whole question is reduced to one of fact, and I am of opinion that defendant himself sold, and I am sure if it had been otherwise his brother would have been here. I am sorry to say it, I do not believe all that Mrs. Thorne has said. In my opinion the case is so clear that I feel no hesitation whatever, and am of opinion that both the penalties claimed have been incurred, and there must be judgment for the plaintiffs for the two penalties and costs.

Mr. Yelverton applied for leave to appeal.

His Honour: It is a question of fact. I have found the facts against you, and I must decline to give you leave to appeal.

LEGAL REPORT.

SALE OF A CHEMIST'S BUSINESS.

The action of Green v. Williams, which was tried on Monday, the 4th inst., before Mr. Justice Lawrance and a Common Jury, was brought to recover damages for breach of agreement to purchase a chemist's business carried on at 38, Heath Street, Hampstead, for £375. The defendant admitted that he entered into the agreement, but said he was induced to do so by the fraudulent misrepresentations of the plaintiff, and by way of counter-claim he sought to recover damages for the loss he had sustained. The plaintiff denied the fraudulent representations. Mr. McIntyre said the plaintiff, Mr. John Henry Green, who had for some years carried on the business in question, being desirous of parting with it, put it in the hands of Messrs. Judd and Manners, and gave them certain information which they wrote down. The business remained on their books till October or November, 1895, when Mr. Williams made inquiries about it. The takings were represented as being £706 in 1894, £759 in 1893, and £705 in 1892, but he was advised to make his own inquiries. The price asked was £500. Mr. Williams after making inquiries wrote to Judd and Manners that the house and shop were in a bad way, that the shop was lightly stocked, that the takings were only £10 a week, and concluded by making an offer of £350 for the business. This offer was declined, and, after some negotiation, an offer of £375 was accepted, and a deposit paid. The defendant also ordered and paid for stock, and had new labels printed, but ultimately declined to complete, alleging that the takings had been misrepresented, though, according to letters written at the time, it appeared that he was unable to find the money. Ultimately the business was sold by tender for £120. Evidence having been given in support of the plaintiff's case, the defendant, Mr. Stephen Williams, deposed that he entered into the contract relying on the statement that the takings were over £700 a year, which was not true.—Mr. Abel Thomas, Q.C., and Mr. Bowen appeared for the defendant.—In the result the Jury found for the plaintiff for £229 18s., less £64 0s. 11d., the amount paid by way of deposit and for goods supplied.—His Lordship entered judgment for the plaintiff for £165 17s. 1d.

CORRESPONDENCE.

SYRUP OF CAMPHOR.

Sir,—In reply to your request in the Journal of last week, I wish to state that from 1863 to February, 1875, the Bristol Royal Infirmary syrupus camphoræ compositus was prepared according to the following formula, which was published in the 'Infirmary Pharmacopœia' in 1871:—

Syr. Camphoræ Co.

℞ Syrupi Opii	ʒi.
Træ. Camphoræ Co.....	ʒii.
Oxymellis Scillæ	ʒvi.

M. Dose: One teaspoonful occasionally.

Syr. Opii.

℞ Opii	ʒv.
Sacchari non-purificati	lbs. 112.
Aquæ	ad Cong. xii.

Dissolve the opium in one gallon of boiling water, and mix with the remainder when cold.

This is the preparation sold by most chemists as the Bristol Royal Infirmary syrup of camphor.

The following is the correct formula of the syrup of camphor we now prepare and supply to our patients, and with the exception of a slight alteration in the form published in 1882, by which we save a quantity of spirit of wine in the course of a year, the recipe has been the same since the change was made in 1875:—

Syrupus Camphoræ Compositus.

℞ Acidi Benzoici	ʒiiij.
Acidi Acetici Glacialis	ʒiiij. ʒv. ℥xx.
Aceti Scillæ B.P.	ʒxl.
Aceti Ipecacuanha (B.P. Additions)	ʒxl.
Olei Anisi	ʒij.
Camphoræ.....	ʒij.
Tincturæ Opii. B.P.	ʒx. ʒv. ℥xx.
Sacchari Albi (cryst.)	lb. 28.
*Sacchari Usti.	ʒs.
Aquæ Destillatæ	ad Cong. iv.

Misce.

ʒj. fl. contains one minim of Træ. Opii.

Dose:—One teaspoonful occasionally.

* Sufficient to give the mixture the colour of Træ. Camphoræ Co. B.P.

Some chemists colour it pale-straw, others dark brown, and I have seen it exposed for sale in chemists' windows as black as tra. catechu.

Bristol, May 4, 1896.

F. J. KILNER, F.C.S.,
21 years Dispenser to the Bristol
Royal Infirmary.

Mr. GEORGE STEVENS, of Liverpool, sent the following variant on the formula for syrupus camphoræ compositus last week, but pressure of matter prevented its immediate publication:—

Syrup Camph. Co.—(Bristol Royal Infirmary).

℞ Tinct. Camph. Co.	ʒv.
Oxymel. Scillæ	ʒxxv.
*Syrup Opii	ʒxxx.

M.

*Syrup Opii.

℞ Tinct. Opii	℥xv.
Syrupi	ʒi.

M.

* * The marked differences in the formulæ sent clearly indicated the advisability of publishing an authoritative expression of opinion on the subject, and thanks are due to Mr. Kilner for the information so promptly and fully given in his letter. [Ed. Pharm. Journ.]

ILLEGIBLE HANDWRITING.

Sir,—After pondering over the order sent you by "X" my rendering is "Please let George have fol. boldo ʒss." I received the following order the other day, written in a very plain hand, "1 oz. epileptic wine." This was a poser; I asked the lady who brought it in to read it over, when the sound she gave it immediately suggested eucalyptus oil, and this I found on further inquiry to be correct. Can any of your readers hit the mark? "BOLDO."

Aberdeen, April 27, 1896.

THE TESTING OF LEMON OIL.

Sir,—The letter from Mr. Umney with reference to the determination of citral in lemon oil calls for some reply from me, although as yet my experiments have not enabled me to clear up all the points raised. The real questions at issue appear to be the following:—First, does lemon oil contain bodies of an "alcoholiform" character, *i.e.*, capable of fixing the acetyl group when acetylated in the usual way (before reduction)? And, secondly, is citral capable of reduction to its corresponding alcohol (geraniol) and determination by conversion of that alcohol into its acetic ester? If the first were true it would necessitate some such correction as Mr. Umney suggests, though I know of no evidence of the existence of such bodies in the work already done on lemon oil. In some preliminary experiments made with a view to answering this question, I have been able to confirm Mr. Umney's statement that a certain amount of alkali-absorbing bodies is formed on acetylation only of lemon oil, and further experiments made with a solution of pure citral in limonene led to the interesting observation that on acetylating such a solution and well washing the resulting oil, a saponification with standard alkali showed an absorption of alkali (approximately) equal to one molecular equivalent of acetic acid for each molecule of citral taken.

In order to ascertain if a new acid or anhydride were formed, as in Perkin's synthesis (although this seemed on the face of it improbable on account of the perfect neutrality of the oil before saponification), the potassium salt formed was examined as follows:—Sulphuric acid was added in excess with some silver sulphate to get rid of chloride, and the volatile acid distilled with steam till the distillate was no longer acid. The distillate was converted into the sodium salt, which gave all the reactions of acetate, though a small quantity of an oily acid appeared to be present. To make certain it was converted into the silver salt, and the latter analysed. It contained 62.57 per cent. of silver. Silver acetate contains 64.67 per cent. It would appear, then, that in some way or other, possibly by first undergoing some isomeric change, citral has the property of combining with the acetyl group. I hope, however, to ascertain the exact nature of the change which occurs, as well as the behaviour of the aldehyde citronellal under similar conditions. I am much indebted to Mr. Umney for his kindness and courtesy in placing at my disposal the facts and figures he has already obtained.

As to the second point, there is no doubt that geraniol can be quantitatively determined by means of its acetic ester, and as to whether it is formed quantitatively on reduction of citral with sodium I had relied on published statements (see references in my paper), merely endeavouring to check results by quantitative experiments with known amounts of citral, the amount of alcohol formed on reduction being determined as stated. Even if the figures I have obtained are not absolutely true, there seems no reason to doubt that the process gives useful and at least comparative results. It is greatly to be regretted if, as Mr. Umney suspects, recent chemical discoveries have in this case only been the means of enabling unscrupulous dealers to sophisticate inferior oils so as to bring them up to a high "citral value." If true, it only emphasises the necessity of a complete physical, as well as chemical, examination of the oil.

London, May 5, 1896.

H. GARNETT.

CO-OPERATION—A REMEDY FOR LOW PRICES.

Sir,—In fulfilment of my promise in my letter of April (*ante*, p. 299) to report on the replies received, I beg to state that out of correspondence emanating from all parts of the country the following plan has been selected as being the most workable:—

Name.—Chemists' Direct Supply Co., Ltd.

Working Capital.—Not less than £10,000 in shares of £5 each, saleable to chemists in business only. One-third part of the nett profits to go as dividend on the original shares and the remainder as bonus to customers in proportion to their purchases in drugs and sundries.

Manufactory in London, with distributing centres in Manchester and Edinburgh.

Objects.—To supply to registered chemists in business only drugs, druggists' sundries, and proprietary medicines for cash or very short credit at manufacturers' cost prices, plus the expenses of their efficient and prompt distribution, thereby ensuring the following advantages:—

(1). This company's drugs would be guaranteed strictly B.P. when so denoted, and if otherwise than B.P. their composition would be stated on the label, so that chemists would know exactly what they

were buying, which is not always the case at present (*e.g.*, mag. cit. eff., and tr. rhei co.).

(2). It is thought that the busy chemist will have less necessity to make his own preparations, knowing full well that his own company is producing them of undoubted quality at the lowest possible prices.

(3). Wholesale houses are not always manufacturers of articles they might make with advantage, and thus the chemist may have to pay several profits before his goods reach him, which would be greatly diminished under this company.

(4). If a large number of chemists combine the company would be larger, and therefore a more economical buyer than private firms.

(5). Proprietary medicines would be supplied to subscribers dealing with the company for drugs and druggists' sundries at manufacturers' lowest prices.

(6). Copyrighted proprietary articles, well put up, and when necessary put up in two styles, to suit rich and poor neighbourhoods, would be brought out by the company and be rigidly protected from cutting. It is thought that these proprietaries, bearing a large profit and being judiciously pushed by means of handbills supplied with them, will in time command a good sale and come into general use, and so largely replace the flood of profitless "patents" now in the market. A chemist would thus have a better selection of profitable proprietaries, augmenting rather than replacing his own, without the risk of the initial expense.

(7). Free delivery of goods.

(8). If this company was successful it would make clear to chemists what could be gained by combination and united effort, and might induce them to support the Pharmaceutical Society better than at present with a view to the improvement of pharmacy by legislation.

From reliable sources it is estimated that if 1000 chemists in business join this company and give it their entire support, their saving in the purchase of drugs and sundries will be about thirty per cent. off what they now pay, and they will also be able to procure their patents at bottom prices. The prices charged by the company, as set forth in their published list, would be those of an average wholesale house, and the usual discounts would be allowed, making a total discount of thirty to forty per cent. I should be glad to see the above scheme criticised, and perhaps some of the chemists' local associations may think it worth discussion.

95, Waller Road, New Cross Gate, S.E.

G. T. COOPER.

May 7, 1896.

ANSWERS.

"LUPULUS."—No harm is likely to be caused by taking it regularly for a few weeks, but, as in the case of other tonics, its beneficial effects will tend to diminish if its use be continued too long, and there would also be risk of gastric derangement.

"NUX VOM."—There is no pharmacy law in the Isle of Man, and anyone may open a shop there as a chemist and druggist.

"ASSOCIATE."—No. 1. *Carex sylvatica*; No. 2. *C. vulgaris*. Please note that specimens of this genus should always be sent in fruit, when identification is required.

OBITUARY.

GREAVES.—On April 20, F. W. Greaves, Chemist and Druggist, late of Ashbourne, (Aged 64)

LINNELL.—On April 6, T. J. Linnell, Chemist and Druggist, Southwark. (Aged 63.)

UPJOHN.—On April 10, F. W. Upjohn, Chemist and Druggist, late Bathurst Street, W. (Aged 53.)

TERRY.—On April 13, Thomas Terry, Chemist and Druggist, Withington. (Aged 58.)

HUTTON.—On April 27, William Hutton, Chemist and Druggist, Portobello. (Aged 41.)

HART.—On April 30, James Hart, Pharmaceutical Chemist, Manchester. (Aged 48.)

YORATH.—On May 3, Thomas Vaughan Yorath, Chemist and Druggist, Cardiff. (Aged 60.) Mr. Yorath was in business before August 1, 1868, and retired about two years ago. He was an Alderman of the Cardiff County Council.

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs. Bindloss, Callis, Heathcote, Henry, Hill, Hudson, Reynolds, Stevens, Stewart.

ALCHEMY AND PHARMACY. THEIR MYSTERY AND ROMANCE.

BY C. J. S. THOMPSON.

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(Continued from page 264.)

CHAPTER VIII.

Superstition and its Influence on Medicine.—Love Philtres.

Superstition is a belief in what is wholly opposite to the laws of the physical and moral world and yet supposed to be attainable by supernatural agency.

The words Incantation and Charm seem to have been derived from the ancient practice of curing diseases by poetry and music. Democritus says that many diseases are capable of being cured by the sound of a flute when properly played. Marianus Capellus assures us also that fevers may be cured by suitable songs. Asclepiades actually employed the trumpet for the relief of sciatica, and tells us it is to be continued until the fibres of the part begin to palpitate, when the pain will vanish. What terrible visions might be conjured up if such remedies were used to-day.

The influence of superstition on medicine may be accounted for by the fact, that from the very first, ideas with regard to the action of drugs must have been combined with those concerning supernatural agencies, for the phenomena of Nature in very early times were attributed to spirits. Diseases were supposed to be due to an evil spirit, therefore to cast the disease out was equivalent to curing it, and the means used for this purpose were by no means always ineffective in curing disease.

Incantations and spells were generally used as an addition to a real remedial agent, but the incantations usually got the credit for effecting the cure.

In early times superstition played an important part in the cure of disease, and it prevails to a certain extent to-day. "In the opinion of the ignorant multitude," says Lord Bacon, "witches and impostors have always held a competition with physicians."

There has ever been a peculiar propensity in the human mind to foster a belief in the supernatural, and perhaps more especially in respect to medicine, on account of the obscurity and ignorance with which it was once surrounded. In early times almost every disease was attributed to punishment for evil doing, the working of some demon, or the influence of the stars; hence the use of any article that was strange or rare as a remedy.

"The employment of precious stones for medicinal purposes," writes De Boot, "arises from an Arab superstition which supposed them to be the residence of spirits." They were first used as amulets, and then gradually came to be administered inwardly for various ailments.

"Mystery is the very soul of empiricism," says Paris, "withdraw the veil and the confidence of the patient instantly languishes." A propensity to attribute every ordinary and natural effect to extraordinary and unnatural causes is one of the striking characteristics of medical superstition.

The properties that herbs possessed were attributed by the old physicians to the planets, which were supposed to influence them, and our medical men to this day head their prescriptions with a sign that originally meant an invocation to Jupiter, which is a surviving relic of the old superstitious practice. Another very curious fact with respect to medical superstition is that many of the greatest philosophers were firm believers in it. Lord Bacon is said to have believed in the existence of a panacea that would prolong life beyond its natural term. He considered that the principal cause of death was the action of the external air in drying

and exhausting the body, which he thought might be prevented by nitre; but although he took three grains of his favourite salt every morning for the last thirty years of his life, he died at the age of sixty-six. We have many customs at the present day which are a survival of those days of superstition, and few have any idea of their origin. The mother when she hangs round the neck of her child the plaything known as a coral and bells, little imagines she is perpetuating an ancient superstitious practice. The soothsayers attributed many mystic properties to coral, and it was believed to ward off the evil eye and drive away devils and evil spirits. For this purpose it was suspended from a child's neck as an amulet. Pliny and Dioscorides greatly esteemed the medicinal properties of coral, and Paracelsus recommends that it should be worn around the necks of infants to keep away fits, sorcery, charms, and to serve as an antidote to poisons. The bells usually suspended to it were originally intended to frighten away evil spirits and not to amuse the child alone.

Paris mentions a curious circumstance, that the same superstitious belief should exist among the negroes of the West Indies, who affirm that the colour of coral is always affected by the state of health of the wearer, it becoming paler in disease.

But all the remedies that originated in superstition were not entirely useless. Some, whether by accident or not, had a natural power of efficacy, and led to discoveries of importance. In the time of James I., a powder known as the sympathetic powder of Sir Kenelm Digby had a great reputation for healing wounds. Whenever a wound had been inflicted, this powder was applied to the weapon which had caused it, which was also smeared with ointment and dressed two or three times a day. The wound itself was directed to be brought together and carefully bound up with clean linen rags, but above all to be let alone for seven days, at the end of which time it was generally found to be healed. This was, of course, said to be due to the wonderful properties of the sympathetic powder, instead of the fact of excluding the air from the part and not interfering with nature's own healing powers. The mysterious sympathetic healing powder was afterwards said to be simply calcined green vitriol. The rust of the spear of Telephus, alluded to by Homer as a cure for the wounds which that weapon inflicted, was probably verdigris, and led to the discovery of its use as a surgical dressing.

The cures performed by Royal touch are some of the instances which show the power of faith over desire, or mind over matter. The royal surgeons who introduced the patients to be touched for scrofula, doubtless took care to choose those who had a tendency to recover, and who, if left to nature, would probably have gradually recovered. Boswell says Dr. Johnson, when thirty months old, was taken by his mother to London to be touched by Queen Anne, on the advice of Sir John Floyer, a physician of Litchfield.

From time immemorial the ignorant have had the most unbounded confidence in nauseous remedies, and it would seem as if the nastier and more disgusting the medicines, the greater faith they had in them. The larger the price asked, the more implicit the faith seemed to be. The Collyrium of Danares, a famous quack eye lotion, was sold at Constantinople for £9 a bottle, and the elixirs sold by Paracelsus and Van Helmont brought extortionate prices. The doctrine of Signatories, as it was called, is of very great antiquity. It implied that every natural substance which possesses any medicinal virtues, indicates by an obvious and well-marked external character, the disease for which it is a remedy. Thus the bloodstone was used to stop bleeding, on account of its marks resembling drops of blood. The root of the mandrake, on account of its resemblance to the human form, was used as a remedy for sterility. Turmeric was administered for jaundice, and poppies for diseases of the head. Another belief of the ancients was that all

poisonous bodies possess a powerful attraction for one another, and thus the hair of a mad dog was worn as a charm to prevent hydrophobia, and the foot of the ape was used as a remedy for its bite. On the same principle we are solemnly assured that three scruples of the ashes of a witch, after she has been well and carefully burnt at the stake, is a sure protection against the evil effects of witchcraft.

Many ancient superstitions are so deeply rooted that they find believers among the educated at the present day. Take, for instance, the belief that many people have in the efficacy of red flannel. For sore throat, rheumatism, or swelling, they believe it will cure, when flannel of no other colour will. This belief may be traced to the colour of the cloth often used in incantations, which was always red.

In some parts of the country a wedding ring is still believed to be a universal cure for sore eyes.

A curious superstition is still practised in some parts of Wales for the cure of the complaint called shingles. The term for shingles in Welsh means "The Eagle." It was supposed in ancient times that if a person ate of the flesh of the eagle he would never suffer from shingles, and his direct descendants down to the ninth generation could not contract it, and furthermore had the power transmitted to them of curing others so afflicted by blowing on them.

Love Philtres.

Love philtres were administered for the purpose of inspiring affection or hatred. In very early times they were frequently used, concocted, and sold by the magicians or sorcerers, who often obtained large sums of money in exchange, from amorously inclined gallants or maidens. They were composed of various extraordinary ingredients used in medicine at the time, and were either in the form of a powder, which was to be surreptitiously slipped into an article of food to be swallowed, or in liquid form.

It is recorded that some sorcerers even used the Host, upon which they traced letters of blood. The following it is said were also used in the preparation of philtres:—The entrails of animals, feathers of birds, scales of fishes, parings of nails, powdered loadstones and human blood.

It is little wonder they excited hatred. The *poculum amatorium*, the love philtre of the Romans, and the *philtro* of the Greeks, were venerated with superstitious awe in early times. They became used to such an extent by the former nation under the first Emperors that a degree was promulgated under the Roman criminal law whereby love philtres were deemed as poison, and the punishment inflicted on those using them was very severe. Hairs from a wolf's tail, the bones of the left side of a toad which had been eaten by ants (those of the right side were used to cause hatred), the blood of pigeons, skeletons of snakes, the entrails of animals, and other equally disgusting things were included as ingredients in Roman love philtres.

Pliny states that there were also philtres for quenching love. Thus, if a nest of young swallows is placed in a box and buried, on being dug up after a few days it will be found that some of the birds have died with their beaks closed, while others die as if gasping for breath. The latter were used for exciting love, and the former for producing the opposite effect.

Horace recommends a bone torn from a hungry and voracious dog, and Virgil describes a complete apparatus wherewith a maiden seeks to recover the affections of a faithless lover.

The early Greek and Roman magicians used "hippomanes," which was the lump of flesh found in the head of a colt newly foaled, as an ingredient in their philtres.

About the sixteenth century philtres came to be compounded and sold by the apothecaries, who doubtless derived from them a

lucrative profit. Favourite ingredients with these later practitioners were madragora, cantharides, and vervain, which were supposed to have Satanic properties. They were mixed with other herbs, said to have an aphrodisiac effect.

In Gay's 'Shepherds' Week' reference is thus made to love-philtres:—

"Strait to th' apothecary's shop I went,
And in love powder all my money spent;
Behap what will next Sunday after prayers
When to the ale house Lubberkin repairs,
These flies into his mug I'll throw,
And soon the swain with fervent love shall glow."

"Botanomancy," Ferrand states, "which is done by the noise or crackling that kneeholme, box, or bay leaves make when they are crushed betwixt one's hands or cast into the fire, was of old in use among the Pagans, who were wont to bruise poppy flowers betwixt their hands and by this means thinking to know their loves."

A Charme or an Allay for Love.

If so be a toad be laid
In a sheep-skin newly flaid,
And that ty'd to man 'twill sever
Him and his affections ever.—Herrick's "Hesperides."

The winged ant was another favourite ingredient in love philtres, and was first used by Rhazes, who prepared the winged ant in the form of tincture by maceration in alcohol. This tincture, dropped in the homœopathic manner into wine or mixed with food, was supposed to have a wonderful action in producing symptoms of the tender passion in the coldest hearts. The winged ants alone were used in this preparation, which enjoyed a long reputation, and was subsequently known as "Hoffmann's Water of Magnanimity," and largely used in the seventeenth century as an aphrodisiac.

LESSONS IN PHYSICO-CHEMISTRY.

(Continued from page 305.)

MELTING POINTS AND BOILING POINTS.

Passing on now to other matters, we may next deal with the subject of melting and boiling points. In general, if a solid substance is continuously heated, a point is at length reached at which a change in its state occurs and it becomes liquid. Heat is used up in effecting this change, and consequently the temperature of the substance does not further rise until it has all assumed the liquid state. If the heating is further continued, the temperature of the liquid gradually rises until another definite point is reached, when it assumes the state of vapour. Whenever the substance is thus heated, as long as certain conditions remain the same, these two changes of state occur always at the same two temperatures, and the exact determination of these temperatures is a matter of much importance. Among other purposes served by such a determination, it furnishes a very useful test of the purity of the substance in hand, since the presence of another substance even in very small quantity causes a considerable alteration of the temperatures at which these changes of state occur.

Among the conditions affecting the temperature of melting, or "melting point," of a solid, the pressure upon it at the time of melting exercises a certain influence. As a rule, the liquid that is formed occupies more space than the solid yielding it; in this case, if the pressure on the solid is increased, a higher temperature is required to melt it, and a reduction of pressure leads to melting at a lower temperature. With some substances, notably water, the liquid occupies less space than the solid from which it is formed, and the melting then occurs at a lower temperature when the pressure is increased, and *vice versa*. But in any case,

the influence of pressure on melting point is extremely small, and the alterations due to the ordinary changes of atmospheric pressure are almost infinitesimal and entirely negligible. The conditions that in practice affect the melting point of a solid are its state of aggregation and the rate at which heat is supplied; if the substance is in large pieces and the heat increased rapidly, the temperature may rise considerably above the true melting point before sufficient is melted to be observed. The solid should be finely powdered, and a very little put into a capillary tube which is closed at the lower end, and the powder shaken to the bottom. This tube is then attached to the stem of a thermometer in such a position that the part containing the powder is just level with the middle of the mercury bulb, and the whole is placed in a bath of suitable liquid. The latter may be water, melted paraffin, sulphuric or phosphoric acid, etc., according to the temperature that may be required; sulphuric acid is very generally useful. The vessel for the bath may be a beaker, or large test-tube, etc. It is very convenient to use a double bath consisting of a test-tube fitting loosely

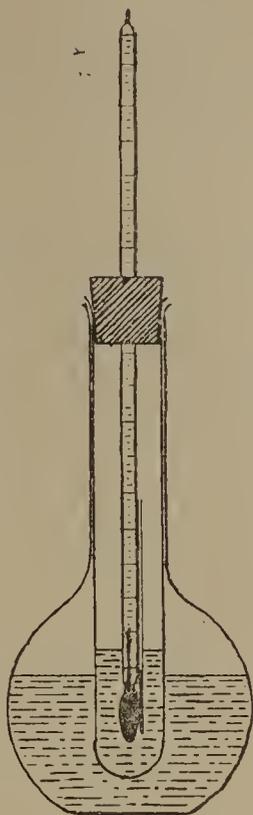


Fig. 8.

in the neck of a flask and not reaching to the bottom, both containing the liquid, as represented in Fig. 8. In the latter case no stirring-rod is necessary, but if a test-tube alone or a beaker is employed, a stirrer should be made by bending a piece of glass rod into a circle, which is turned at right angles to the remaining length (Fig. 9); this fits into the vessel, and is used with an up-and-down motion. The capillary tube containing the substance is easily attached to the thermometer by dipping it into the liquid of the bath and

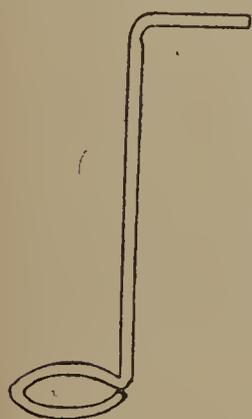


Fig. 9.

laying it against the stem in the right position, or it may be fastened by a rubber or cotton band near its upper end. Whenever practicable the thermometer must be sunk in the liquid to such an extent that the top of the column of mercury when the temperature is at its highest is about a quarter of an inch above the surface of the liquid. The thermometer may be gradually lowered as the temperature rises, since if the top of the mercury is below the surface of the hot liquid some of the mercury will probably distil to a cooler part of the tube. If, on the other hand, much of the mercury column is out of

the liquid, the temperature indicated will be a little too low; the temperature at the middle of the exposed part is then ascertained by a second thermometer, and a correction applied, the amount of which is found from the published tables. The bath is heated very slowly and a constant watch kept on the substance in the capillary tube until it is seen to be melting, when the temperature is accurately read. Whenever possible three determinations with one substance should be made, and if they differ slightly, their mean value taken.

It is often difficult or impossible to fix exact melting points for amorphous substances, as they soften and pass into a semi-fluid and then a fluid state without any sharp point of change. Some other substances are rather apt to sublime without melting; in such cases they can often be melted by heating rather more quickly.

For the determination of the boiling point of a liquid a larger quantity of material is required. To prove the purity of a liquid it is not only necessary that it should boil at a certain temperature, but also that the whole of it should distil without variation of the temperature. The most satisfactory way of determining the boiling point is, therefore, to distil a certain quantity of the liquid; this is best done in an ordinary distilling flask with a side-arm in the neck. The bulb of the thermometer reaches almost to the surface of the liquid, but must not dip below it, and the neck of the flask should be of such a length that the top of the mercury column is only just visible above the cork; if much of the mercury is in that part of the stem above the cork the reading will be too low, and a correction must be applied as mentioned above. The flask should rest on wire gauze, and over the latter is placed a fairly large sheet of asbestos millboard, with a circular piece cut out to allow heating of the bottom of the flask. The object of this is to screen the upper part of the flask from the heat, and so prevent the vapour being heated above the temperature at which it is formed, as would otherwise be the case; neglect of this precaution often causes a considerable error.

THE MAKING OF TABLETS.*

BY FRANK EDEL.

For many years compressed tablets have grown in popularity until they have become an important item in the sales of every pharmacy. They have recommended themselves to the physician because of their accuracy of dosage and convenience, and these are probably the main reasons for their popularity.

The increasing sale of these goods tends, however, to make the pharmacist more and more dependent on the manufacturer, for but few pharmacists make the tablets they sell.

Why is this so? Is there no money in making compressed tablets? Is the preparation of compressed tablets so difficult as to deter any intelligent pharmacist from making them?

The reason why so few pharmacists prepare their tablets is due probably more largely to a lack of information concerning their mode of preparation than to any other cause, for there is nothing about the preparation of compressed tablets which should deter any pharmacist from preparing his own tablets.

As to the question of profit in making them, does any one suppose for an instant that so much capital would be invested in plants devoted to their manufacture if it was not profitable to make them? The writer can say from experience that any intelligent pharmacist can prepare these goods in a first-class manner and as he may need them, and not be compelled to carry in stock the many different kinds now in demand. I have never felt kindly towards the idea of a pharmacist buying supplies that he can make himself. This tendency of modern pharmacists to depend on others for laboratory products that they can make themselves is one of the main reasons for the decreased profits we hear so much about.

If the pharmacist will prepare himself to produce his own tablets and give the physician to understand that he will make any combination that the physician may desire, he will find that the sale of tablets will become a source of more profit than if he lent himself to the sale of the ready-made tablets of the market.

In order to make nice tablets, the substances to be compressed must be carefully prepared. Not only is this necessary, but the machine used to compress them must be kept scrupulously clean, the dies must be smooth and polished and free from rust. With a rough die it is utterly impossible to make smooth tablets, and not

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only is this so, but the material will stick to the dies. The dies should never be cleaned with any hard instrument, but with a damp cloth, and then carefully dried and rubbed with cloth slightly greased with petrolatum. If the machine is to be laid aside, the moulds and die and nickel-plated parts should be covered with petrolatum; this is absolutely necessary in order to prevent rusting.

When the dies become roughened, as they will from constant use, they should be carefully polished and made smooth by means of emery flour and oil. This can best be done in a lathe, but can be done by hand. If done by hand, a piece of wood should be made of such shape as to fit the face of die, and this used to polish with in using the emery flour. It takes more time than working with a lathe, but the work can be nicely done in this manner. The smoother and more perfect the surface of the dies, the less trouble will be had with material adhering to dies and the smoother and more perfect the tablet. It will then be readily seen that too much care cannot be given to the care of the moulds and dies.

While some materials compress readily without any special treatment, this is far from the rule. Some chemicals already in granular form are readily made into tablets; by far the greater number, however, must be specially prepared before they can be successfully compressed. It is necessary to add some adhesive to many substances and combinations before they can be successfully compressed.

The adhesives usually used are powdered acacia, powdered sugar, starch, and glucose. Glucose is only used where it is desired to prepare hard tablets for slow solution in the mouth. Professor Coblenz, in his 'Handbook of Pharmacy,' says that there are few substances which cannot be successfully compressed after being mixed with 5 per cent. powdered acacia and 10 per cent. powdered sugar. My own experience has fully demonstrated to my mind the utility of this as a general formula.

It should be the aim in preparing tablets to make them as soluble as possible. Tablets made with sugar as an adhesive are more soluble than those made with acacia, or even acacia and sugar. Starch is also used to make tablets soluble, but is hardly as advisable as sugar. It has the advantage of taking up a considerable quantity of liquids, and on this account is very useful in such tablets as contain these in such quantities as to be objectionable if made with sugar alone. Powdered acacia should be used in all combinations of a hygroscopic nature.

Some have recommended, in order to ensure more ready disintegration of the tablet, that small quantities of sodium bicarbonate and either tartaric acid or citric acid be worked into the tablet.

While this would increase the solubility of the tablet and be very desirable in some instances, it has the disadvantage that in order to incorporate it the material must have different treatment from regular tablet material in order to prevent the action of the acid and soda before the tablet is made, and then defeat the purpose for which it is added. Again, tablets thus made if not carefully kept from the air do not keep. However, the writer believes that in some tablets which are naturally slow of solution it has much in its favour. It is only intended to use these in very small quantities, not to produce effervescence, but to make the tablet disintegrate by the action of the acid on the soda when taken into the stomach.

It has been found that a fine powder does not compress as nicely nor feed as evenly as a coarse one, and on this account it is necessary to carefully granulate the material to be compressed. This is done by carefully mixing the powder and moistening, then passing through a No. 20 sieve and drying, then passing through a sieve again. Water is generally used to moisten, although alcohol and solution of glucose are sometimes used. The powder must not be moist enough to stick to the sieve. A tinned iron sieve is recommended, but

if it were possible to get a tinned brass sieve it would be much better.

It is necessary to have the granulated material thoroughly dry before compressing. If the granulating has been carefully done and the material well dried, it will often be found unnecessary to add any substance to keep the material from sticking to the dies.

LUBRICANTS.

In the great majority of instances, however, it is necessary to add some substance to the granulated material to prevent the powder from adhering to dies. White vaseline, powdered talcum, and powdered boric acid are the substances usually used. The vaseline is best used as a 2 per cent. solution in ether with an atomiser. The material is granulated and dried, then sprayed with the solution of vaseline and mixed on a paper or stirred with a spatula and dried. It is then passed through the sieve. If powdered talcum is used it should be added to the dry granulated material and stirred with a spatula or mixed on paper, or it can be added to the dried granulated material in a wide-mouthed bottle and mixed by agitation. Not more than three per cent. (of the weight of the granulated material) of powdered talcum should be used.

Boric acid is used in the same manner as talcum, but not more than two per cent. should be used. It is only used in making tablets when a perfect solution in water is desired, as in the case of hypdermic tablets.

Sometimes it is necessary to use both vaseline and talcum, the talcum is then added after the vaseline and not until the powder is dry, when it is mixed as directed above.

In preparing tablets it is a mistake to apply too much pressure, only as much pressure as is absolutely needed should be used. Never try to compress a moist powder, for it will stick to the dies and not be satisfactory. Do not use any more lubricant than is absolutely necessary.

In preparing tablets the materials should be reduced to a very fine powder before mixing. The following formula is representative of a large class of substances and combinations that can be granulated by the addition of sugar as an adhesive:—

Tablets Salol and Phenacetine with Quinine Salicylate.

Salol	250 grs.
Phenacetine.....	250 grs.
Quinine Salicylate	100 grs.

Reduce to a fine powder, add 60 grs. powdered sugar and mix thoroughly; moisten with water, pass through a No. 20 sieve and dry. When dry, lubricate with solution of vaseline and dry; pass through the sieve again. Make 100 tablets. The following tablets are made in the same manner:—

Tablets of Sulphonal.

„ „	Chloralamid.
„ „	Trional.
„ „	Bismuth Salicylate.
„ „	„ Subnitrate.
„ „	„ Subgallate.
„ „	Acetanilide.
„ „	Salicin.
„ „	Salol.
„ „	Quinine Sulphate.
„ „	„ Muriate.
„ „	„ Salicylate, etc.

They may be lubricated with vaseline, but if any trouble is caused by this adhering to dies, a little talcum can be added just before compressing.

(To be continued.)

A DANGEROUS IMPURITY IN HYDROBROMIC ACID.

BY R. C. COWLEY, LIVERPOOL.

A sample of hydrobromic acid was sent to me for examination a few days ago with the information that a clear solution could not be obtained by dissolving quinine sulphate in it.

An examination soon showed the presence of a barium salt. This obviously accounted for the formation of the precipitate with the quinine sulphate. The barium was precipitated as sulphate, and the quantity present was found to correspond to 4.598 grains of barium in the pint.

Compounds of barium are not now often found in hydrobromic acid, but their presence is a source of great danger, even in the small proportion present in the above sample, and they should be rigorously guarded against.

CHROMATIC PHOTOGRAPHY AND RADIOGRAPHY.

BY E. J. WALL.

(Concluded from page 366.)

It has been stated that the bones are opaque to the x -rays, but it must be distinctly understood that this is purely a relative term. There is no proof that any substance is absolutely opaque, and the question of transparency and opacity is to a great extent purely a question of exposure.

The precise action of the x -rays on a photographic plate is not known. That other forces beside visible light can produce a developable image is well known. As early as 1840, Robert Hunt discovered that a coin moderately heated and placed in contact with a film gave a developable image, and the so-called "inductograms" are caused by induced electrical action in the film. Pressure too will act in the same way, and it is only necessary to write in the dark on a film of silver bromide with a round pointed stylus to obtain on development distinct black letters. Many years ago Abney obtained a photograph from the invisible dark radiations of a kettle of boiling water. Röntgen himself is in doubt whether the x -rays actually reduce the silver bromide to the subhaloid or whether they only cause fluorescence in the glass or film itself. In support of the first hypothesis it may be stated that the cathode rays will convert the haloids, not only of silver, but of the alkalies too, to the subhaloid; but in support of the latter hypothesis Dewar's experiments may be quoted to prove that silver bromide itself is capable of fluorescing, and that fluorescence if set up would reduce the haloid to the subhaloid. On the other hand, it seems feasible to suppose that the x -rays might be converted into photo-chemical energy, just as in the same way it is stated, though without proof, that they can be converted into thermic energy.

The practical applications of radiography at present are limited to obtaining images of bones, either healthy, diseased or fractured, *in situ*, and to the detection of abnormal growths, malformations, etc., of the human body.

MM. Girard and Bordas have utilised the x -rays to discover the contents of suspected infernal machines. Buguet and Gascard have applied them to the detection of false gems, for as these are all made of "paste," which on account of its whiteness, hardness, and high index of refraction—being made of lead-glass and lead, either metallic or in the form of salts or compounds—seems to be comparatively opaque to these rays, whilst carbon and most of its compounds are fairly transparent. The suggestion that the x -rays could be used to detect flaws in metal castings, etc., may of course in the future be of value, though at present there are some difficulties in the way.

The latest and one of the most valuable suggestions was that

made by Dr. C. S. Patterson at the recent Camera Club Conference, when he said the rays would be of immense assistance in determining the species of unknown fish and so prevent the wholesale slaughter of young fry which are sometimes extremely difficult to distinguish. Another suggestion—due to Professor Puluj—is the obtaining of casts of the internal structure of dead or living organisms by using the radiograph negatives to print on bichromated gelatin, and in this to cast liquid plaster of Paris.

It is extremely doubtful whether the future of radiography lies in the use of photography, most likely it does not, for presumably a surgeon or physiologist will not trouble to obtain photographs of the internal structures when he can actually see them. The x rays are absolutely invisible to the human eye, and to MM. Rochas and Dariex we are indebted for the reason, which is that the structures of the eye are extremely opaque to them. But whilst we cannot see the x -rays themselves, we can observe their results, as was first done by Professor Röntgen, by using platino-cyanide of barium mixed with gum-water and coated on a screen. Such a screen, with a surrounding tube to keep off side light, and an eyepiece, is the cryptoscope of Professor Salvioni, of Pisa, about which so much fuss was made. Edison uses native calcium tungstate instead of the dearer barium salt. It is obvious that if the x -rays excite fluorescence in any substance we have merely to spread the latter on a flat surface and screen off the x -rays to produce a shadow or absence of fluorescence. By the aid of a fluorescent screen the writer has been able to see distinctly through the body of a child nine years old, and to locate in a girl's foot the presence of a needle which had previously baffled all attempts at finding. In the future the cryptoscope, or fluoroscope as Edison calls it, promises to be most valuable, even if it does not entirely replace for surgical work the use of a photographic plate.

Röntgen has stated within the last few days that all solid bodies can generate x -rays, which only differ in intensity. One of the most striking of all discoveries, which was curiously enough published after Röntgen's first paper, though it had been utilised for some months prior to this, is that of Mr. David E. Packer, of the Astrophysical Station, Birmingham. He attached to the end of a telescope a small camera which had no lens but merely a pin hole of one-twentieth of an inch diameter, and an extension of five inches; at the back of the camera was placed a photographic plate covered with lead foil, absolutely free from holes, and quite light tight. This lead foil is utterly impervious to the ultra violet rays, as well as ordinary light, yet on development magnificent pictures of the solar corona were obtained. In some of these, the originals of which the writer has had an opportunity of examining, the corona is seen to extend to a distance from the sun's edge at least equal in diameter to the sun—that is 860,000 miles, and to be connected with enormous streams of cosmical matter extending right into space. Whether these pictures are due to x -rays or not cannot at present be stated, but the energy, whatever it is, which produces them would seem to have something in common with the x -rays.

In compiling these notes the principle kept in view has been to eliminate all theory and speculation, and when this is done there is very little that is known. There are, however, some experiments which are interesting. Messrs. Atkinson, Pook, and Williams have found that cardboard sometimes retains for from two to eight days the power of giving images when exposed to the x -rays. A plate was placed in a cardboard box, and exposed to the action of the cathode rays, with no result, but the same box used with different objects from two to eight days after gave images of the first set of objects.

Nicola Tesla, one of the most expert and eminent of electricians, has expressed an opinion that in the x -rays we have a stream of material particles—and he also states that under the influence of

the x -rays time seems to pass very quickly, and a feeling of drowsiness is induced.

Professor Batelli is stated to have been able to reflect the x -rays from polished metal parabolas, such as copper and platinum. This, however, is contrary to the experience of others, except that of Jecla, who claims to have succeeded in reflecting the rays.

Professors Rowland and Elihu Thompson, of the United States, contend that the x -rays are anodic rather than cathodic.

There is a big field in connection with the new subject for experimental research, and it is to be hoped that shortly some satisfactory data will be forthcoming, but at present we are in the unfortunate position of being swamped by theory based upon incomplete experiments made by incompetent observers, for everyone in possession of a coil and tube rushes into print and lays down the law and theories, most of which are drawn from ignorant reading of the results. A little patience is probably the best thing at the present moment, but that the discovery of x -rays by Professor Röntgen is, in the language of his fatherland, "epochmachenden," cannot be denied, and is likely to lead to results which are at present unforeseen, and which, as suggested by Lord Kelvin, may entail the complete revision of our theories as regards the closely allied energies of heat, light, and electricity.

PROCEEDINGS UNDER THE PHARMACY ACT.

THE SALE OF KAY'S ESSENCE OF LINSEED.

The Pharmaceutical Society of Great Britain v. Fox.

In this case, which came before His Honour, Mr. Lumley Smith Q.C., at the Westminster County Court on Wednesday last, the Pharmaceutical Society sought to recover a penalty of £5 from the defendant, Charles James Fox, grocer, Warwick Street, Pimlico, S.W., for having sold a compound containing poison, viz., "Kay's Compound Essence," he not being a duly registered chemist and druggist.

Mr. Grey appeared for the Pharmaceutical Society, and Mr. Bonsey appeared on behalf of the defendant.

Case for the Plaintiff.

Mr. Grey, in opening the case, said the action was brought to recover a penalty for the sale of poison contrary to the Pharmacy Act, 1868. All the facts were admitted, and the sole point to be determined was a point of law, viz., whether what the defendant had done came within the exception contained in Section 16 of the Pharmacy Act, 1868. The admitted facts were that the defendant was a grocer living in Warwick Street, Pimlico, that he kept an open shop for retailing, dispensing, and compounding poisons in Warwick Street, and sold on February 13 this year a bottle of Kay's Compound Essence of Linseed, which contains morphine; further, that the defendant is not registered or qualified under the Pharmacy Act, and that he would have to submit to judgment for a penalty under this Act unless he comes within the exceptions of Section 16. On one side of the bottle sold were the words:—

"The success of this remedy has produced many imitations. To prevent disappointment, please note that 'linseed compound' is the trade mark of Kay's compound essence of linseed, aniseed, senega, squill, tolu, etc. It contains a preparation of chloroform and morphine, and is therefore labelled poison."

It was also admitted that Kay's compound essence was patented on May 31, 1873, but owing to the non-payment of fees the patent expired, and became void on May 31, 1876.

Mr. Bonsey: I do not admit the expression "void." I admit that it lapsed.

Mr. Grey said he was giving the words of the Act of Parliament. The following also appeared on the bottle:—

"Kay's Compound Essence follows the Patent No. 1975, and being within the exception contained in Section 16 of the Pharmacy Act, 1868, its sale is free from restriction, but the name and address of the seller must appear hereon."

Then there were other labels, "Kay's Compound Essence" and so on. He did not mean in this case to raise the point whether the preparation followed the specification or not, and for the purpose of this case it might be assumed that it did. He then referred to the provisions of the Act, the object of which had been clearly laid down by many judges to the effect that it forbade the sale of poisons by anyone who has not passed the examinations which he is bound to

do under this Act, and become qualified. It was passed to regulate the sale of poisons, and to amend the Pharmacy Act of 1852. After quoting the preamble, and Sections 1 and 2, Mr. Grey said that the schedule was divided into two parts; one part dealing with those poisons which are most virulent and require special restrictions, and part two dealing with those which are less virulent, such as morphine, and so on. Section 3 of the Act defines "Chemists and Druggists," and Section 10 deals with the registration. But Section 15 was the important one. It says that:—

"Any person who shall sell or keep an open shop for the retailing, dispensing, or compounding poisons . . . shall for every such offence be liable to pay a penalty or sum of five pounds, and the same may be sued for, recovered, and dealt with in the manner provided by the Pharmacy Act."

Then Section 16 says:—

"Nothing hereinbefore contained shall extend to or interfere with the business of any legally qualified apothecary or of any member of the Royal College of Veterinary Surgeons of Great Britain, nor with the making or dealing in patent medicines."

Those were the important words. There was not any definition of patent medicines in the Act.

Mr. Bonsey: I say simply this, that it is a patent medicine within the meaning of the Act, although the patent lapsed by non-payment of fees in 1876.

The Judge: You say once a patent always a patent.

Mr. Bonsey: Yes, that is my point; there is nothing else. This point has never arisen in any of the previous cases.

Mr. Grey agreed that this point had never arisen. In the case of the Pharmaceutical Society v. Piper and Co. the point was whether a proprietary medicine or a secret nostrum, for which Letters Patent have not been taken out, comes within the words: "Nor with the making or dealing in patent medicines."

At this point a prolonged argument took place with regard to the Judge's statement of admission of facts, after which

Mr. Grey proceeded to quote from Mr. Justice Lawrance's judgment in the Piper case, to the effect that he had come to the conclusion that the expression "Patent Medicine" in Section 16 means a medicine protected by Letters Patent under the Great Seal, and, therefore, that the rights reserved under Section 16 did not apply in the case of chlorodyne. Mr. Justice Collins, again, defined what a patent medicine is. He observed that it had been argued that the expression "patent medicine" was a rough way of describing medicines that are dealt with in the same way as patent medicines under the legislation relating to stamps, and that there was evidence before the learned County Court Judge that, at the time of the passing of the Act of 1868, the term "patent medicine" was not confined to what can be technically so described—that is, medicines in respect of which Letters Patent have been granted; but that it meant, broadly speaking, proprietary medicines; and it was contended that the same meaning should be given to it in Section 16. He had come, however, to the conclusion, having regard to the object of the Pharmacy Act and to the provisions of 52 George III., chap. 150, that the expression "patent medicines" in the Act of 1868 should not be made to bear a meaning which would so very greatly enlarge its *primd-facie* meaning—that is, a medicine which is the subject of Letters Patent. Mr. Justice Collins then went on to say that the object of the Act was to deal with the sale of poisons; to regulate their sale and to alter and amend the Pharmacy Act, 1852.

The Judge: The mischief aimed at by that Section does not exist in the case of patent medicines. Anyone can find out the exact ingredients by referring to the specification.

Mr. Grey: That point is dealt with by the Court of Appeal. You will find it referred to in Lord Justice Kay's judgment in the case of the Pharmaceutical Society v. Armstrong in 1894, Queen's Bench Division, page 720. There the subject of the action was Powell's Balsam of Aniseed. The head-note is:—

"The prohibition in Section 15 of the Pharmacy Act, 1868, against the sale of poisons by other than registered chemists is not confined to the sale of the scheduled poisons in their simple state, or of preparations of such poisons, but extends to the sale of a compound containing a scheduled poison as one of its ingredients."

Then on page 726 Lord Justice Kay deals with the same point, and he says:—

"The other argument was that this article was excepted by Section 16, because it was a patent medicine. It was said that in ordinary parlance all proprietary medicines are classed under the head 'patent medicines.' Is that the meaning in this Act of Parliament? In order to construe this Act of Parliament it is material to see how the Legislature has dealt with medicines in other Acts of Parliament, and when we look through the other Acts of Parliament we find a most clear distinction always maintained. Although proprietary and patent medicines are classed together for certain purposes, the language of various Acts of Parliament which impose a stamp duty on medicines mentioned in the schedules shows them to be dealt with as a separate class. On this point I accept what Justice Collins said in the Piper case. The reasons for the exemption seem to me very clear indeed. Where the medicine is, properly speaking, a patent medicine, that is to say, where the exclusive right to make or sell it has been granted to somebody by Letters Patent under the Great Seal—the condition of the patent always is that a specification should be lodged in the Patent Office describing the whole of the ingredients, and the process of manufacture. Therefore, when people buy a patent medicine, they have the means of ascertaining what ingredients are contained in it, and that is one reason, no doubt, for the exemption. Another is this: If a patent of that had been granted, it would have been rather hard to take away from the patentee that which he had been exercising as a right under the authority of the Great Seal, and prevent him from further making and selling, if he were not an authorised person under the Act. For these reasons, I think it is plain that in Section 16 the words 'patent medicine' mean that which they express *prima facie*—medicine the maker or owner of which has obtained Letters Patent for it; the term does not extend, and is not intended to extend, to mere proprietary medicines, or to include a medicine like this, for which the owner or maker has not obtained any patent whatever."

The Judge: The first reason that he gives—about people finding out what was in it—would apply in the present case, as anybody has only got to look at the specification.

Mr. Grey: I rather doubt that would give it if you looked at the specification.

The Judge: The next reason, that it is rather hard to take away from the patentee a right which he has got under the Great Seal, would not apply to this case, because you say he has no right.

Mr. Grey: I say he has no right.

The Judge: What do the other judges say?

Mr. Grey: Lord Justice Smith on page 728 says:—

"But then it is said he is out of the meshes by reason of Section 16 of the Act, which provides that none of the prior Sections shall extend to the case of 'making or dealing in patent medicines,' and it is said that Powell's Balsam of Aniseed is a patent medicine within the meaning of the Act. The first thing one asks is, Where is the patent? And the only answer is, There is no patent. How, then, can it be a patent medicine? It is said it is a proprietary medicine, and that we ought to read Section 16, which exempts patent medicines, and patent medicines only, as exempting patent medicines and proprietary medicines. I certainly should not read the Section in that way myself. The exemption must be read in the manner which the Queen's English dictates, and when the legislation which has taken place before and since this Act of 1868 is looked at, it is abundantly clear that the exception was of patent medicines only, and not of proprietary medicines. Looking at the Statute of 25 George III., chapter 79, section 4, and the next Act of 52 George III., chapter 150, section 2, both prior to this Act of 1868, there is a marked distinction between a patented medicine and a proprietary medicine, which is compounded of secret nostrums. When we come to the Act of 1868, the sole exception made relates to patent medicines, and a few years afterwards another Act, relating to the sale of food and drugs, was passed, in which an exception is made where the food or drug is a proprietary medicine, or one which is the subject of a patent in force."

The Judge: Where does he get those two words "in force"?

Mr. Grey: From the 38 and 39 Victoria, Chapter 63, the Sale of Food and Drugs Act, Section 6—

"A doubt was raised whether there was such a thing as a 'patent medicine,' but the answer was speedily given; a specification was handed up in which it was shown that a patent was taken out for a medicine as late as 1892. In my judgment this case has been brought within the Act."

The Judge: Those words "in force" are important. Section 6 is

"No person shall sell to the prejudice of the purchaser," etc., "where the drug or food is a proprietary medicine, or is the subject of a patent in force."

That is to be used against you to a certain extent, that where it meant to say a patent was in force it would say so.

Mr. Grey: First one must consider, with regard to this Act, there is no doubt that in construing an Act of Parliament the paramount rule is that every statute is to be expounded according to its intent, if you bring all cases within the mischief of the Act. And Lord Coke said that this Act should be dealt with so as to suppress the mischief and advance the remedy.

The Judge: The contrary maxim has been enunciated—that everything imposing a penalty ought to be construed strictly. But Baron Bramwell has said both of them are nonsense.

Mr. Grey said he was quoting from 'Maxwell on Statutes.' He then proceeded to say that Letters Patent are writings of the Queen, sealed by the Great Seal, whereby a person is enabled to do acts and to enjoy privileges which he could not do or enjoy without such authority. That right is a privilege granted by the Crown to the first inventor of any new contrivance, so that he alone should be entitled during a limited period to make those articles according to his own invention. He had also to send in a specification, and it was clear that the object of the specification was to put the public in full possession of the inventor's secret, that is to say, it remained no longer a proprietary article, so that any person might be in a position to avail himself of it when the period had expired.

The Judge: What would the period have been in the ordinary course?

Mr. Grey: If he had kept up his payments it would have been fourteen years from May 31, 1873.

The Judge: You have to consider this: Suppose a man for fourteen years prepared and sold this thing, when the patent expires does the power to sell go back to the people who are qualified to sell it?

Mr. Grey said anybody could sell it. After the fourteen years any person could go and make it according to the specification and sell it. It was open to the public, and after the fourteen years, unless the Pharmacy Act interfered, anybody could sell it. During that fourteen years the patentee could give a licence, and no one could sell the article unless they had a special licence from the patentee. If the latter did not comply with the specification the substance which he sold was not a patent medicine.

The Judge: The theory of this thing is that this matter has been inquired into by the people who have the granting of patents; they have satisfied themselves that it is useful and presumably innocuous; if it were likely to poison the public they would not grant a patent.

Mr. Grey said he was not at all sure about that, as the authorities seemed to accept any patent.

The Judge: We need not trouble about the man not having kept up his payments. Your case broadly is, that when a patent has expired then it ceases to come within Section 16.

Mr. Grey said he did not make any point with regard to the non-payment of fees. His case was that there was no existing patent. Under the Act of 1853, 16 and 17 Victoria, chapter 5, the Messrs. Kay took out their patent and obtained a grant that they should have the exclusive right to sell it. After that Act came the Act of 1868, and if the article in question came within the province of the Pharmacy Act all the liberties and privileges which were given to the patentee would have been derogated, that is to say, he would have been limited in his sale. He could not have sold himself unless he had been qualified, and he could not have sold through anybody else unless he had been qualified. That, Lord Justice Kay said, was one of the reasons why that was put in the Act of Parliament. The reserving words did not extend to a patentee's privileges for any period longer than that limited by the Patent Act, that is to say, after the fourteen years.

The Judge: Have you any more cases to cite?

Mr. Grey: No, sir.

The Judge: Then I understand your point.

Case for the Defence.

Mr. Bonsey said there was just one point on the facts on which Mr. Grey was not quite clear, and that was that the admitted quantity of morphine was one-seventh of a grain. It was said against him that it is a poison, but what was admitted was that the preparation contained one-seventh of a grain, and that but for the exception in Clause 16 the defence must fail. He submitted that this was a patent medicine within the meaning of that Section. He did not know that he need address himself to the point about the patent having lapsed, except to say that the condition imposed by the grant of Letters Patent is merely expressing in language what really happens when the patent expires in the ordinary course of things. The words were these:—

"And in any of the said cases, these our Letters Patent and all liberties and advantages whatsoever hereby granted, shall cease and determine and be void."

That was exactly what happened on the expiration of a patent in the ordinary course of things. The length of time that the protection was given to a person was fixed by the Statute of Monopolies in the reign of James the First, and by that Statute all monopolies were abolished. Then there was a provision in Section 6 which said that to the extent of fourteen years all grants should stand in the position as if the Act had not passed. There was a misconception in Mr. Grey's argument as to what the real nature of a patent is. For a period of fourteen years the grantee of the patent has the exclusive right of making a certain article, and he has the right during that time of preventing other people, by proper legal means, infringing that right to manufacture, but at the expiration of fourteen years he is still the patentee, he has still the right to manufacture under his patent, he does still do so, and sells under his patent, but the only disadvantage or disability under which he is is that he has no longer the exclusive right to do so, and that other people can compete with him. It was a fallacy to say that at the expiration of the fourteen years the patent did not exist.

The Judge: Yon, say a man is alive after he is dead? You, say the patent is alive although it is exhausted?

Mr. Bonsey said the man was still the patentee, and he still manufactured under that patent. It was illustrated in this way; there were cases where injunctions had been applied for to restrain a person from infringing a trade mark which had the word "patent" upon it, and it had been held that it was not a misrepresentation to describe a thing as a patent although the patent has expired, unless you were to go so far as to represent that it was an existing patent and that it was in force, drawing a distinction between the two, and a distinction which has been drawn by the Legislature in subsequent cases. As an illustration he referred to the prior Act of 5 and 6 William IV., cap. 83, an Act to amend the law relating to patents for inventions. There by Section 7 penalties were imposed upon persons who should write or paint or mark upon anything made or sold by them the word "patent." They were restrained by a penalty from putting on any goods the word "patent." Then there was a proviso which says:—

"Provided always that nothing herein contained shall be construed to extend to subject any person to any penalty in respect to stamping or in any way marking the word 'patent' upon anything made for the sole making or vending of which a patent before obtained shall have expired."

The Judge: It says that after the expiration you might, nevertheless, mark it "patent."

Mr. Bonsey said that was so. If a patent was once held, although it had expired, the article might still be marked "patent," showing that the Legislature clearly recognised the distinction between the case of a man never having taken out a patent and the case where a man has a patent which has expired in the ordinary course. That Act was repealed by the Act of 1883. The provision now with regard to that is to be found in Section 105 of the Act of 1883. There it says:—

"Any person who represents that any article sold by him is a patented article when no patent has been granted for the same."

It did not say where no patent is in force at the time.

The Judge: All that comes to is that in those particular cases there has been no penalty on a man who calls a thing a patent when it is not patent. Having been once a patent it says we shall not punish you for calling that a patent still, which otherwise than that clause we should punish you for.

Mr. Bonsey said the inference was that it is still a patent, for that purpose at any rate. Therefore this gentleman would not be liable under that Section for calling it a patent medicine. He thought that was perfectly clear. The real object of the Pharmacy Act was to insure the safety of the public, and prevent their being injured by the sale of poisons by unqualified people. It was argued for the plaintiff that the only reason for excepting a patent is that it would be hard upon a person who takes out a patent to restrict him to the sale of that particular thing by chemists and druggists, and not allow it to be sold by other people. That is to say the Legislature says as long as you like to pay certain fees then you may poison people as much as you like. You may poison them under Letters Patent, if you pay the fees, but if you do not pay those fees you shall not do it.

The Judge: There is that saving clause in the patent that if they find they are poisoning too many people then the patent can be

revoked, and they may be punished because it would be prejudicial to people.

Mr. Bonsey said that was rather an argument in his favour, for they might revoke the patent, and no steps had been taken to revoke this patent. But it was contended that Section 16 was inserted in the Act for the protection of the patentee, because he had paid certain fees and gone to the expense of getting this monopoly. Now that was contrary to the object of the Act, which was the protection of the public, and, therefore, the other reason was the real reason for the exception, namely, that when the article is patented it is made public. Anybody can go and see what it is made of; it is not a secret drug or a secret nostrum, and, therefore, the public is not injured in any way whatever. That was the view, he should submit, taken most distinctly in the cases of the *Pharmaceutical Society v. Piper* and the *Pharmaceutical Society v. Armson*.

The Judge: Let us go by steps as to that, and see how Mr. Justice Lawrance puts it.

Mr. Bonsey said that in both those cases, in arriving at a definition or in attempting to give a definition to the word "patent," the Court laid great stress upon the Stamp Act of the 52nd George III., cap. 150, which was referred to in both those cases, and very fully discussed. In that Stamp Act there is a distinction drawn between a proprietary and patent medicine, and a patent medicine is there given a very wide meaning or wide definition for the purposes for which it was introduced into that Act. Now that Act imposes a stamp duty upon certain things which are specified, a large number being set out in the Schedule; but then it goes on to say:—

"And also all other pills, powders, medicines, etc., wherein the person making or uttering or exposing for sale the same, has, or claims to have, any occult secret of making or preparing the same."

That was one thing—

"or has or claims to have any exclusive right or title for making or preparing the same"—

That was another thing. Then came the important part—

"or which had at any time heretofore been, and now are or shall hereafter be prepared, uttered, vended, or exposed for sale under the authority of any Letters Patent under the Great Seal."

Therefore they imposed the stamp duty upon medicines which were prepared according to a patent that had long expired—

"And which had been or were at that time the subject matter of a patent, or which may hereafter be the subject matter of a patent."

The Judge: It is not quite that; it is "shall have been prepared."

Mr. Bonsey read from the Schedule as follows:—

"Or which had at any time heretofore been and now are or shall hereafter be prepared, uttered, vended, or exposed for sale under the authority of any Letters Patent under the Great Seal."

Somerset House, he said, imposed a duty upon these patent medicines, and the duty once chargeable is always chargeable, even though the patent has expired. If the contention was right that the patent at the expiration of fourteen years absolutely becomes null and void and is no patent at all, he could not understand on what principle they should charge duty as on a patent medicine; but that Act and the description of the patent in the schedule to that Act were very much discussed by the judges in both those cases of the *Pharmaceutical Society v. Piper* and *Armson's* case. Mr. Justice Lawrance spoke of it in the first part of his judgment, where he said the only exception to the prohibition of a person retailing poison is contained in Section 16. And, again, he pointed out that it was argued that whatever chlorodyne might be, whether it was a poison or not, it was at any rate a patent medicine, and therefore the requirements of the Act have no reference to it. The Judge then said, that at first he was impressed with the view that the term "patent medicines" included all the medicines dealt with in the Schedule, but seeing that the distinction was clearly taken in that Statute between proprietary medicines and medicines protected by Letters Patent, he had come to the conclusion on this part of the case that the expression "patent medicine" in Section 16 means a medicine protected by Letters Patent under the Great Seal, and, therefore, that the rights reserved under Section 16 do not apply in the case of chlorodyne. Of course, continued Mr. Bonsey, that was *prima facie* the definition of a patent.

The Judge: Let us stop there for a moment, "patent" means protected by Letters Patent under the Great Seal.

Mr. Bonsey: I suppose that is the *prima-facie* definition of a patent, but they go on further to discuss it.

The Judge: He does put it on the ground that anybody can find out by inquiry.

Mr. Bonsey then quoted Mr. Justice Collins, who said he had come to the conclusion, having regard to the object of the Pharmacy Act, and to the provisions of 52, George III., chapter 150, that the judges ought not to put on the expression "patent medicines" in the Act of 1868 a meaning which would so very greatly enlarge its *prima-facie* meaning, that is a medicine that is the subject of Letters Patent. The Act was intended to regulate the sale of poisons, and to alter and amend the Pharmacy Act of 1852. Broadly speaking, therefore, it dealt with the sale of poisonous drugs, and Mr. Justice Collins asked if there could be anything more dangerous than to allow a medicine which was called a proprietary medicine, but which may contain poison to any amount, to be sold by unqualified persons.

The Judge: Both of those gentlemen treat it as merely a question of publicity. What did the Court of Appeal say?

Mr. Bonsey said the case did not go to the Court of Appeal, but Armson's case did, and the same point was raised. The Master of the Rolls said it was clear to his mind that, construing the exemption according to the ordinary canons of construction, it must be said that the Act applies only to patent medicines, using that term in the sense of medicines for which a patent has been procured under the Great Seal. He did not say there that the patent must be in force or in existence. Then Lord Justice Kay said the reasons for the exemption seemed to him very clear indeed. The same Judge, continuing, said where the medicine was, properly speaking, a patent medicine—that is to say where the exclusive right to make or sell it has been granted to somebody by Letters Patent under the Great Seal—the condition of the patent always is that a specification should be lodged in the Patent Office describing the whole of the ingredients and the process of manufacture. Therefore, when people bought a patent medicine they had the means of ascertaining what ingredients were contained in it, and that was one of the reasons, no doubt, for the exemption. Another reason, according to Lord Justice Kay, was that if a patent of that kind had been granted, it would have been rather hard to take away from the patentee that which he had been exercising as a right under the authority of the Great Seal, and prevent him from further making or selling, if he were not an authorised person under the Act. For those reasons he said he thought it was plain that in Section 16 the words "patent medicine" meant that which they expressed—*prima facie*, medicine, the maker or owner of which had obtained Letters Patent for it.

The Judge: Now the present maker had not Letters Patent, nor the present owner. He had at one time. At the time when this was sold, in February, there was no patent.

Mr. Bonsey said the makers had obtained Letters Patent in 1873. The medicine was made by the same persons who obtained that patent in 1873—by the two Kays. The Lords Justices had pointed out that one strong reason for the exception was that where you have a specification and the thing is once patented, you can go and see what it is made of.

The Judge: Supposing the patent had been revoked under that clause because it was prejudicial, would you nevertheless say it would be a patent medicine?

Mr. Bonsey said revocation would be a different thing. The patent could only be revoked by taking certain proceedings. It used to be done by proceedings by *scire facias*, now it is done by petition. But the Court of Appeal meant that those proceedings might absolutely destroy the patent altogether. The present question, however, was simply as to the patent lapsing in point of time. Then Lord Justice Smith made an observation which he thought was in his favour. He said the exemption must be read in the manner which the Queen's English dictates, and when the legislation, which has taken place before and since this Act of 1868 was looked at, it was abundantly clear that the exception was of patent medicines only and not of proprietary medicines. There was a marked distinction between a patented medicine and a proprietary medicine, and in the Act of 1868 the sole exception made related to patent medicines. In those words a patent was defined for the purposes of this Act, and later, in the Sale of Food and Drugs Act, there was a distinction drawn between proprietary medicines and patent medicines in words which were not found in Section 16 of the Pharmacy Act. It seemed rather an extraordinary proposition that for fourteen

years a man might go on selling a preparation which was prepared according to the Letters Patent, and obtained during that time a large trade all over the country, and the very day after the patent expired anybody who sold one of the articles was liable to a penalty and the man's patent destroyed. The public was not injured a bit more in the fifteenth year than in the fourteen years, because the medicine was prepared under the specification in the same way, and therefore the public was no more in danger at the expiration of the fourteen years than during the existence of the patent.

The Judge: Is there not this reason, that after the patent has expired you have no guarantee that it will be properly concocted? If anybody can make and sell it you run a great risk in putting the ingredients together, whereas so long as it is a patent there is some guarantee that it will be properly done.

Mr. Bonsey: If it is not prepared according to the specification then it is not protected by Letters Patent at all. It is not prepared under the patent.

The Judge: There is much less risk if the patentee prepares it than there is if anybody else prepares it.

Mr. Bonsey: I do not know how that would be.

The Judge: You have "Kay's Compound Essence, manufacturers, Kay Brothers, Limited, Stockport, Great Britain." After the patent expires that might be manufactured by any other Brothers, Limited, and there is no guarantee that the thing is properly made. So long as it is all in one patent there is no legal guarantee, but there is a practical guarantee that the specification will be properly followed.

Mr. Bonsey: I do not know how that may be. Suppose a person after the expiration of a patent were to say he was selling Kay's Compound Essence he would be restrained from doing that. He could not sell it under the same term or the same name.

The Judge: Suppose Kay's name was not on it. Suppose it was "Linseed Compound"?

Mr. Bonsey: Then it would not be under the patent at all.

The Judge: You might have a man up for fraud for obtaining money by false pretences.

Mr. Bonsey: He could not manufacture it as "Kay's Compound Essence" under the patent; he could manufacture something and say that something else was made of the same ingredients, which he could not have done during the fourteen years. You can restrain him from doing that, but after the expiration of fourteen years he could not have sold Kay's Compound Essence, he could have been restrained from doing that. Therefore I do not think the danger is at all increased. If the real reason of the exemption was not that the public had the means of ascertaining what this is composed of, then the only reason is that the Legislature sanctioned the sale of a poison as long as a man took out a patent for it. It is really a short point, though it is an important one, and I do not think I can usefully add anything more upon it.

Judgment.

The Judge: This case, I suppose, will go further. I think the plaintiffs are right. The exception is in favour of the making or dealing in patent medicines. Now this medicine, it is said, is a patented medicine; but then, as Lord Justice Smith said, where is the patent? There was no patent existing at the time when this was sold. I think, with Lord Justice Kay, that a man who gets a patent has certain privileges given him. It would be very hard to say that Letters Patent under the Great Seal give him the exclusive right of making and vending it, and that some other Act of Parliament took it away from him. I think there are many reasons—I need not go through them all—why it should be read as dealing with patents, which in the latter Act would be called the subject of patents in force. There will be judgment for the plaintiffs with costs. I suppose you want leave to appeal?

Mr. Bonsey: Yes, sir.

Mr. Grey: As this is an important case I will ask for a certificate for counsel.

The Judge: Yes.

Mr. Bonsey: Will your Honour give a stay of execution pending appeal.

The Judge: Yes, if there is no undue delay.

NOTES AND QUERIES.

[The information given in this column includes both notes of practical interest to pharmacists, and replies to queries which seem to possess sufficient interest to readers generally. Readers requiring working formulæ for special preparations should intimate their wants to the Editor, who will be pleased to assist them to the best of his ability. The word "parts" invariably indicates parts by weight.]

URANIUM INTENSIFIER.

The best formula for uranium negative intensifier is the following:—

Uranium Nitrate,	
Potassium Ferricyanide, of each	100 grs.
Glacial Acetic Acid	½ oz.
Water, to	10 ozs.

The negative must be absolutely free from hypo. before being soaked in the above. When sufficiently intensified rinse slightly and dry. [Answer to A. E. Hobbes.]

NEGATIVE REDUCER.

The best is Belitzski's:—

Potassium Ferric Oxalate	200 grs.
Sodium Sulphite	200 ,,
Distilled Water	5 ozs.

Dissolve the iron salt, add the sulphite, when dissolved add—

Oxalic Acid (crystals)	75 grs.
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Shake well till the solution turns green, decant from any undissolved acid, and add—

Hyposulphite of Soda	2½ ozs.
Distilled Water, to make	10 ozs. in all.

This can be applied to the negative immediately it comes from the fixing bath, and may be used over and over again. [Answer to A. E. Hobbes.]

POTASSIUM CHLOROPLATINITE.

This is rather a troublesome salt to make. Dissolve 50 grammes of platonic chloride in 100 C.c. of distilled water, heat to 100° C. and pass a stream of washed sulphurous acid through it till it no longer gives a precipitate with ammonium chloride, allow to stand twenty-four hours and add hot a solution of 23 grammes in 50 C.c. of water, stir, allow to cool, wash and dry crystals. Or place in a glass 24 grammes potassium platonic chloride and 300 C.c. water, 12 grammes potassium acid sulphite and 12 grammes potassium chloride, bring to the boil and allow to boil twenty-five minutes, then allow to cool and pour out into flat dish to crystallise, which takes about two days. [Answer to K. F.]

STICKY FLY PAPER.

Take two parts of foots sugar and one part of beer and heat until dissolved, adding more beer to keep the weight at 3 parts. Heat together birdlime, 5 parts; sesame oil, 3 parts; resin, 5 parts, until a homogeneous mass results; then add the beer mixture while warm. If too thick, thin down with a little more beer. Spread while warm on parchment paper. [Reply to A. E. H.]

FLY GUM.

Bird lime, 5 parts; honey, 2 parts; glycerin, 1 part; warm together to make a uniform mass. [Reply to A. E. H.]

COLOUR FOR SHOW BOTTLES.

It is difficult to advise you unless we know exactly the tint you require. Acid solutions of cochineal are more stable than those containing ammonia. Try the following:—Cochineal, 10 parts; distilled water, 1000 parts; alum, 8 parts; cream of tartar, 8 parts. Boil the above solids well with two successive 500 parts of water and strain: when cold add 6 parts of sulphuric acid. Allow to stand twenty-four hours and filter. The following gives a bright, fast red:—Metallic cobalt, 4 parts; nitric acid, 16 parts; water, 50 parts: dilute the acid with the water and dissolve the cobalt in the mixture, further dilute to 100 parts with water, add 38 parts of strong solution of ammonia and 2 parts of alum, dissolved in 50 parts of water. Make up the whole to 500 parts with distilled water. Another good fast tint is obtained by dissolving a little endbear in water and making faintly acid with sulphuric acid. [Reply to W. L. B.]

PARLIAMENTARY INTELLIGENCE.

SHOPS (EARLY CLOSING) BILL.—The Hon. Lionel Holland (Bow) expresses his opinion of early closing in the following notice, to be moved when the above Bill comes before the House for reconsideration:—

"That this House, while recognising the desirability of shortening the hours of labour of shop assistants, is of opinion that this should be effected by an Act limiting the hours of employment of such assistants in each week."

The electorate of Bromley and Bow comprises a large number of small tradespeople who have a justifiable fear that early closing may mean an early permanent closing for them.

PATENTS AND NOVELTY.—No one perhaps views these two words as exactly synonyms, yet the general public has hitherto regarded the grant of Letters Patent as conveying some official assurance that the article they related to was worth the protection given it. But the general public is wrong, and must record another exploded fallacy. As a matter of fact the Patent Office would seal a patent in respect of a preparation of whisky and water, providing the applicant paid the proper fees and underwent the prescribed procedure. The actions for revocation brought by the Pharmaceutical Society sufficiently exemplify the position of non-intervention taken up by the Patent Office. This state of things recently led Lord Justice Kay to emphatically state as his conviction that there were frequently long and expensive contests about alleged inventions which no human being who was acquainted with the state of knowledge on the subject would think deserving of a patent. Hence he thought it desirable that a functionary should be charged with the duty of examining applications, and rejecting those without novelty. Sir J. Leng (Dundee), who has before interested himself in the business of the Patent Office, drew the attention of the President of the Board of Trade to Lord Kay's dicta, and asked if the suggestions contained therein could be adopted in British Patent Office practice. Mr. Ritchie's answer will be instructive to those who think it a light thing to introduce strict moral rectitude into the conduct of a revenue-producing Department. The right honorable gentleman pointed out that last year there were 25,053 applications for patents, and that an enormous staff would be necessary if the duty of deciding on the novelty of each application were imposed upon the Patent Office. Moreover, even the most eminent authorities differ occasionally as to what constitutes novelty. He was not, therefore, prepared to effect any alteration in the practice of the Patent Office. Of course not; only remember that each applicant pays at least £1 in fees, and the decision of Mr. Ritchie will cause no surprise.

THE COMPANIES BILL.—The Select Committee to which this Bill has been referred has now been constituted. It comprises the Lord Chancellor (Lord Halsbury), Earl of Leven and Melville, Earl of Dudley (Parliamentary Secretary, Board of Trade), Earl of Kimberley, Lord Belper, Lord Hillingdon, Lord Macnaghten, Lord Monckton (Viscount Galway), Lord Farrer, Lord Davey, Lord James, and Lord Aldenham. As before intimated (*ante* p. 374) the Earl of Melville is a member of Melville, Fickus and Company's Bank, and the interest he represents is further strengthened by the co-operation of Lord Hillingdon of Glyn, Mills, Currie and Company, and Lord Aldenham—more familiarly known under his old name of Henry Hucks Gibbs—who is a Director of the Bank of England. Lords Macnaghten and Davey are Lords of Appeal, and may, with Earl Dudley and Lord James, be regarded as official members of the Committee, and the same might be said of Lord Farrer, who formerly discharged important secretarial duties in the Department now presided over by Mr. Ritchie. The *raison d'être* of the Committee would thus seem to be the conservation of banking interests, and the subsequent addition of another banker to the Committee in the person of Lord Wolverton lends support to that view. But this should not discourage the Pharmaceutical Society, for it may be reasonably assumed that a committee so constituted will not find in the amendment proposed by Lord Herschell any principle antagonistic to the well-being of joint-stock banks.

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PHARMACEUTICAL REFORM IN GERMANY.

GERMANY has hitherto been regarded as one of the countries where the practice of pharmacy was carried on under peculiarly favourable conditions—the system of limiting the number of pharmacies in proportion to population has prevented competition, the dispensing of medicine has been entirely in the hands of qualified pharmacists and the education of those entering the business has been such as to ensure their occupying a position of social equality with members of the medical profession. But within recent years changes have taken place which have adversely influenced the position of German pharmacists. One result of the system of limitation has been to raise considerably the value of a pharmacist's business, and in some instances this has been done in such a manner as to be regarded by the Government authorities as a public scandal. In addition, there has been, under this system, much difficulty in obtaining a business, and as a result the younger members of the body have not been able to take an independent position so soon as they desired.

The regulation of the practice of pharmacy has consequently been for many years past a subject of anxious consideration by the German Government, and probably not less so by all connected with the business.

The substitution in 1811 of concessions in the place of privileges or charters granted by the State as the authority under which a business was carried on did not materially affect the proprietary interest of the individual to whom a business belonged, and in practice a concession has been as much a piece of saleable property as a privilege. But subsequently a third form of authorisation was introduced—the personal concession—by which individuals obtain from the Government permission to carry on business without having also the power of transferring the business, by sale or otherwise, to another individual. So that when the owner of a business carried on under a personal concession retires or dies, the continuance of the business is entirely subject to the control of the Government.

At the present time there are in Germany 5162 pharmaceutical establishments. Of these 1820 are conducted under the authority of State privileges, 2352 under concessions,

and 764 under personal concessions, only this last-named authority having been granted since 1894. The German Government is now contemplating the establishment of a system throughout the country by which authority to carry on business as a pharmacist or "apotheker" would be granted only by personal concession. By that means it is considered that the sometimes artificially increased prices of pharmacies would be prevented, greater opportunity afforded to the younger qualified men to go into business on their own account, and probably there may also be an expectation that under the new system a reduction in the cost of medicines might be effected.

In regard to this project the owners of pharmacies are naturally opposed to its introduction, and that is also the case with the greater number of those who are still in the position of assistants. One of the chief grounds of objection is that the pharmacist would be to a great extent only a Government official—he would not have power to dispose of his interest in a business and of retiring with advantage. But above all, those who are the possessors of establishments apprehend considerable depreciation of their value, since the Government has so far given no indication that, in abolishing the older systems, any but the holders of privileges would receive compensation. If the concessions were to be abolished without compensation of the present holders, the result would be practically one of confiscation. Even the projects by which it is proposed to provide against that contingency, by a process of redemption, are not altogether satisfactory, because the present owners would have to pay for the provision so made, although their disappropriation would not be so apparent.

Quite recently a commission has been appointed by the German Government to consider the whole subject of regulation of the practice of pharmacy, and it met in the early part of April last. The result of its deliberation does not appear to have been decisive in any direction, but rather to have shown that agreement between the different parties cannot be looked for without the intervention of the Government. Under these conditions the introduction of a legislative measure by the State is awaited with great interest.

THE EARLY LIQUEFACTION OF GASES.

IN view of recent developments, it was a happy thought that led the Alembic Club to re-publish MICHAEL FARADAY'S papers on the liquefaction of gases as an addition to its list of handy reprints. As is well known, the Royal Institution was in FARADAY'S time, as now, foremost in this particular branch of scientific work. Prior, however, to the liquefaction of chlorine by "the prince of experimental philosophers" in 1823, carbonic acid and other gases had probably been liquefied by Count RUMFORD, unknowingly, in 1797; sulphurous acid gas appears next to have been reduced to the liquid form by MONGE and CLOUET; chlorine and sulphurous acid gas were similarly reduced by NORTHMORE in 1805-6, whilst about 1813, BABBAGE seems to have obtained liquid carbon dioxide. It must be acknowledged that a considerable degree of uncertainty exists with regard to all the instances quoted, little or no evidence being available except the bare statements of the investigators. RUMFORD had conducted experiments to determine the force of fired gunpowder, exploding it in cylinders of known diameter and capacity, closed by a valve loaded with a

weight that could be varied at pleasure, and, commenting on his published statements regarding the phenomena he observed, FARADAY remarks that in many of the experiments some of the gases, and especially carbonic acid gas, were probably reduced to the liquid state. MONGE and CLOUET applied cold and pressure simultaneously in their experiments, and FARADAY thought there was no inherent improbability in the accounts that credited them with having succeeded in liquefying sulphurous acid gas. Similarly, he was convinced that NORTHMORE'S and BABBAGE'S results were genuine. In several other recorded cases, however, he showed conclusively either that the means available could not have sufficed to secure the results that were claimed, or that the conditions of the experiments were unquestionably fatal to success.

Chlorine was the first gas definitely liquefied by FARADAY, the desired result being attained by heating in a sealed glass tube crystals of hydrate of chlorine, obtained by exposing moist chlorine to low temperatures. When heated to 100° F. "the substance fused, the tube became filled with a bright yellow atmosphere, and on examination was found to contain two fluid substances." These two fluids were proved to be chlorine and water. Subsequently, DAVY and FARADAY liquefied hydrochloric acid gas, and a few weeks later FARADAY was able to announce the liquefaction of sulphurous acid, sulphuretted hydrogen, carbon dioxide, euchlorine, nitrous oxide, cyanogen, and ammonia. The specific gravities and other properties of the different liquids were ascertained, and definite information was at last placed upon record, such as would enable anyone to repeat the experiments, and so become convinced of the accuracy of the published results. Twenty-two years later, in 1845, further papers on the liquefaction and solidification of bodies generally existing as gases were published by FARADAY. Considerable additions had then been made to this branch of knowledge by THILORIER, who first obtained carbon dioxide in the solid form, and the hope of seeing nitrogen, oxygen, and hydrogen, either as liquid or solid bodies, induced the great English philosopher to renew his investigations on the subject. He did not, indeed, succeed in overcoming the elasticity of the three gases named, but as was generally the case in his researches, other results of the greatest importance were obtained, six substances, usually gaseous, being added to the list of those that could previously be shown in the liquid state, while seven were reduced to the solid form.

The condensing tubes employed by FARADAY were of green bottle glass, and the caps, stop-cocks, and connecting pieces employed were attached to the roughened ends of the tubes by means of a cement composed of resin, beeswax, and red ochre. The pressure in the tubes was often equal to fifty atmospheres, and yet the experimenter enjoyed practically complete immunity from accident or failure. The cooling mixture employed consisted of THILORIER'S mixture of solid carbon dioxide and ether, FARADAY remarking in connection with this that there are "some results producible by cold which no pressure may be able to effect," and that "solidification has not as yet been conferred on a fluid by any degree of pressure." To procure the necessary low temperature the bath of carbon dioxide and ether was put into an air-pump, and the air and gaseous carbon dioxide rapidly removed, a temperature being thus attained which was sixty degrees below that of the bath when in the air, and one hundred

and sixty-six degrees below 0° F. Olefiant gas was easily condensed into a clear, colourless, transparent fluid; hydriodic and hydrobromic acids were obtained both as liquids and solids; fluosilicon, phosphuretted hydrogen, and fluoboron were also liquefied. These were all new results of the liquefaction and solidification of gases, but in addition sulphurous acid, sulphuretted hydrogen, euchlorine, nitrous oxide, and ammonia were obtained as solids. The solidification of cyanogen by BUNSEN, and the liquefaction of arseniuretted hydrogen by DUMAS and SOUBEIRAN were also confirmed. Hydrogen, however, together with oxygen, nitrogen, nitric oxide, carbon monoxide, and coal gas, showed no signs of liquefaction with the pressures and low temperature available.

The last paper quoted contains a statement by FARADAY that so far as his observations justify any conclusion respecting a general law, it would appear that the more volatile a body is, the more rapidly does the force of its vapour increase by further addition of heat, commencing at a given point of pressure for all. Continuing, he says there seems every reason to expect, therefore, that the increasing elasticity is directly as the volatility of the substance, and that by further and more correct observation of the forces, a general law may be deduced, by the aid of which, and only a single observation of the force of any vapour in contact with its fluid, its elasticity at any other temperature may be obtained. Finally, it is observed that the law suggested gives great encouragement to the continuance of those efforts which are directed to the condensation of oxygen, hydrogen, and nitrogen, and that further diminution of temperature and improved apparatus for pressure may very well be expected to produce those bodies in the liquid or solid state. It is a matter of common knowledge how, just fifty years after this forecast was published, the anticipations of FARADAY have been fully realised.

INTERPRETATION OF THE PHARMACY ACT.

By the decision in the case reported on page 386 of this week's Journal another important step has been taken in the construction of the Pharmacy Act, with regard to the position of proprietary medicines containing poison, purporting to be protected under Letters Patent and therefore exempted under Section 16. The article in question is a well-known proprietary medicine, and the case which came before Mr. LUMLEY SMITH, Q.C., on Wednesday, was intended as a test case. As will be seen, the position taken up on behalf of the Pharmaceutical Society is that an article which has been protected under Letters Patent ceases to be exempt under Section 16 of the Pharmacy Act as soon as the patent has expired. No point was made with regard to the non-payment of fees by the patentee, in consequence of which the patent lapsed after being held for a comparatively short period, nor was the question of the validity of the patent raised. On the other side, it was argued that when once Letters Patent have been granted the exemption continues indefinitely, or, to put the matter briefly, "once a patent always a patent." Judgment was given for the Society with costs, but notice of appeal having been entered, comment upon the matter must be deferred for the present.

ANNOTATIONS.

THE SOCIETY'S ANNIVERSARY.—The Annual Dinner of the Members of the Pharmaceutical Society and their friends takes place on Tuesday next, May 19, the place of meeting this year being the handsome new King's Hall at the Holborn Restaurant, London. The President of the Society, Mr. Michael Carteghe, will take the chair at 7 p.m. precisely. On the following day, Wednesday, the 20th inst., the fifty-fifth Annual General Meeting of the Society will be held at 17, Bloomsbury Square, W.C., at twelve noon, to receive the report of the Council and elect the Council and auditors for the ensuing year. Voting papers for the Council Election must be handed in at the meeting by voters personally, if not previously in the Secretary's hands by Monday at latest.

CARELESS ADMINISTRATION OF CHLOROFORM.—In the *Ph. J. Supplement* for April 25, brief particulars were given of a case in which an herbalist, who practised dentistry at Idle, had improperly administered chloroform to a girl who desired to have a broken tooth extracted. He was subsequently arrested on a charge of manslaughter, and at the trial at Leeds on Saturday last, medical evidence was given to show that the necessary precautions had not been taken by defendant, the girl's death being due to asphyxia, caused by the chloroform administered. Mr. Justice Wright, in summing up, told the jury that whatever might be the result of the prosecution it was a perfectly proper one to institute. Supposing a lenient view were taken of the charge, the prosecution would yet have done good in calling attention to the very great danger which necessarily resulted from ignorant persons playing with dangerous medicines and operations. They must not condemn the prisoner because he was not qualified, but must bear in mind that if an unqualified person took upon himself to administer dangerous remedies in a case where qualified help might be had, that person was guilty of manslaughter. The whole question for the jury was—Should the prisoner have used chloroform without knowing more about it? He did not seem to have neglected any precaution he knew of, but should he not have known more? The jury, after finding some difficulty in agreeing, finally announced a verdict of not guilty, and the judge then said he hoped the case would be a warning to all who, without adequate knowledge, performed dangerous operations or administered dangerous drugs. The prisoner had had a very narrow escape, and he deserved punishment, but not so severe as he would have received had the jury convicted him.

THE TECHNICAL EDUCATION OF APPRENTICES.—The Honorary Secretary of the Plymouth, Devonport, Stonehouse and District Chemists' Association—Mr. James Cocks—is endeavouring to obtain a general expression of opinion on this subject, by sending a card to local chemists interested in educational matters, and to headmasters of technical schools, etc., asking for suggestions how an apprentice should take up the various subjects in the pharmaceutical curriculum. It is assumed that the apprentice is sixteen years of age, has passed the Preliminary examination, and is engaged for a term of four years. An attempt to solve the problem here set was made in the students' number of the *Pharmaceutical Journal*, published on September 15, 1894, and the articles that appeared then have since been reprinted in the form of a pamphlet—'Advice to Students'—copies of which can be had by applying to the Secretary of the Pharmaceutical Society, 17, Bloomsbury Square, W.C. Taking this pamphlet as a basis and working out the necessary details, Mr. Cocks and his friends ought to be able to devise a scheme specially applicable to their own particular district.

THE STELAR THEORY.—In *Science Progress*, A. G. Tansley explains that in the central cylinder of the axes of the great majority of the higher plants an anatomical region of the first rank is now recognised to be co-ordinated with the other great anatomical regions, the cortex and the epidermis. The central cylinder consists of vascular tissue (xylem and phloem) and conjunctive tissue (typically parenchyma), both being separable into distinct strands or regions in a typical case, whilst the innermost layer of cortex, abutting on the cylinder, is also distinguished by special characters. Reduced central cylinders occur in the thin stems of water plants and in other stem structures, the reduction being found to act first on the conjunctive, thus leading to the coalescence of the strands of vascular tissue into a more or less solid cylinder, which is always sharply marked off from the cortex. But there are also stems in which the conjunctive cannot be separated from the adjacent cortical tissue. The central cylinder being called a "stele," all stems with a single cylinder are said to be "monostelic." Most Ferns and Selaginellas, and two genera of Phanerogams, possess in their later formed stems more than one cylinder, each comparable in structure to the single stele of the hypocotyl in such plants. Such stems are known as "polystelic," and the steles in those stems may assume most varied forms, several sometimes even coalescing to form a structure indistinguishable from a single stele. The stele is nevertheless a real and relatively stable type in the arrangement of vascular tissue. In the leaf each strand of vascular tissue is called a "schistostele" or "meristele," as it represents a part only of the stem cylinder, but the meristele of a petiole may simulate a stele. The monostelic type may be assumed to be primitive in vascular plants, and the original stele was probably relatively simple, the primordial stele being represented at the present day by the single sharply defined stele of the embryo, which is maintained in the root and hypocotyl, and passes over in the stem to one of the modern types of structure.

'SCIENCE PROGRESS' for May contains other valuable and suggestive articles, the first being on the past, present, and future water supply of London, by E. Frankland, F.R.S., who considers that the quantity of water derivable from the Thames can be increased from 120 millions of gallons per day to 370 millions, thus providing for the wants of London for fifty or more years to come. Storage of flood water, utilisation of springs, the sinking of deep wells, and more careful filtration, are the means suggested for securing "an ample supply of water which for palatability, wholesomeness, and general excellence will not be surpassed by any supply in the world." Some notes on atomic weights are contributed by Alexander Scott, C. T. Druery mentions some curious facts with regard to aposporous and apogamous ferns, and G. C. Bourne concludes his article on the present position of the cell theory by describing cells as the ultimate vital units—the *Lebonsträger*, or biophors—though they are not the ultimate structural units.

LECTURE ON THE RÖNTGEN RAYS.—A popular lecture on the Röntgen rays will be delivered at New Cross Public Hall, on Thursday next, May 14, at 7.30 p.m., by Dr. Chisholm Williams, assisted by Mr. Leo Atkinson. Photographs will be taken in the Hall—through wood, aluminium, living flesh, etc., etc.—and exhibited during the lecture. By means also of cryptoscopes or fluorescent screens "opaque" bodies, such as purses, boxes, and books will be rendered transparent. It is intended to thoroughly demonstrate the whole subject, from the earliest experiments to the latest developments, including the actual exhaustion of the various forms of vacuum tubes. Tickets (2s. and 1s. each) may be obtained at the Hall on the evening of the lecture, and the proceeds will be devoted to the "Deptford Fund."

ANTITOXIN AND DIPHTHERIA.—In a letter to the *Daily News*, Mr. Lennox Browne refers to Mr. Demetrius C. Boulger's recent communication (see *Ph. J.*, April 25, p. 331) in which it was shown that whereas the mortality from diphtheria in cases treated by antitoxin in one of the Metropolitan Asylums Board's Hospitals, was about 27 per cent. during the first nine months of the year 1895, the death-rate for the last three months of the same year was more than double that figure, exceeding 58 per cent., and was also nearly double the whole mortality in the six hospitals reported upon for the year 1894. Whilst agreeing with Mr. Boulger's inference that the quarterly reports submitted to the Board would probably show a correspondingly increased mortality in all the other hospitals for the last three months of 1895, and consequently an even less satisfactory record for the serum treatment than has been announced, Mr. Lennox Browne is inclined to doubt that the increased mortality is due to a greater malignancy in the type of the disease for the period in which it occurred, and suggests that it is quite reasonable for those who do not admit the benefit of antitoxin to argue that the increased mortality is a direct result of the increased dosage that prevailed during the later months of the year.

THE ANTI-CUTTING MOVEMENT.—The ever active Western Chemists' Association of London will hold a meeting on Wednesday next, May 20, to discuss the anti-cutting movement. The meeting will be held at the Westbourne Restaurant, 1, Craven Road, Paddington, at 9 p.m. precisely, and any chemist in business who is interested in the matter, whether a member of the Association or not, is invited to attend on this occasion.

DRUGS IMPORTED AND EXPORTED IN 1896.—According to the monthly trade supplement in the *Economist*, both the imports and exports of drugs show a marked increase for the first four months of the present year. The gross value imported from January to the end of April was £291,961, against £276,723 during the corresponding period of 1895, and for the month of April alone the figures are £77,811 this year, against £69,869 in 1895. The exports of drugs and medicinal preparations are also satisfactory, as the gross value for the first four months this year amounted to £375,252, against £335,347 last year, and for April, 1896, £88,653, as against £83,815 in 1895. The total value of chemicals and chemical and medicinal preparations exported from January to April, 1896, was £3,062,076, and for the same period during 1895, £2,690,970.

PHILADELPHIA COLLEGE OF PHARMACY.—This College celebrated the seventy-fifth anniversary of its foundation on Wednesday, April 22 last, having been established early in the year 1821. The programme of the proceedings at the anniversary meeting is an exceptionally dainty souvenir of a most interesting occasion. Delicately printed views of the premises occupied at different periods of the existence of the College adorn the pages of the book, and there is also a detailed record of its progress and development. In the list of presidents of the College, by the way, the wicked printer has credited one esteemed individual with great length of years, the third president—Daniel B. Smith—being represented as holding office from 1229 to 1854. The College, it may be observed, last year adopted a three years' course of lectures, with the title of "Doctor in Pharmacy," and the graduating class for 1896 numbers two hundred and twenty-one students. More than fourteen thousand students have matriculated in the Philadelphia College since its foundation, and its continued and increasing success will commend itself to every English-speaking pharmacist who has the best interests of his craft at heart.

PROCEEDINGS OF SOCIETIES.

Chemical Society, May 7.—Mr. A. G. Vernon Harcourt, F.R.S., President, in the chair.—An ordinary meeting was held. A small attendance and a ballot night rarely happen together, but it was certainly so at the last meeting. The first paper selected by the President for reading was that by Dr. W. H. Symons and Mr. F. R. Stephens on "Carbon Dioxide—its Volumetric Determination." Mr. Stephens, who read it, said that the number of papers that had been written on this subject was enormous. The introductory part was devoted to the consideration of processes devised by various authors for the determination of carbon dioxide in the atmosphere, and they were more or less favourably discussed. Volhard's apparatus was useful for rough work. The authors recommend for the collection of samples of air two vacuous litre flasks. Ordinary flasks fitted with rubber-tubing would do. Steam at 20 pounds pressure was blown in for about two minutes until no steam remained on the sides. The tube was then closed and the flask cooled. The sample of air was then collected, the capacity of the flask being previously known. The process is as follows:—An alkaline solution of barium chloride, $\frac{N}{1}$, and sodium hydrate, $\frac{N}{10}$, is introduced into the flask and the rubber tube closed. Then the flask is thoroughly shaken at intervals for half an hour. If the alkaline solution has been in excess the CO_2 will be entirely removed from the sample of air, and the remaining alkali may be titrated directly in the flask with a dilute aqueous solution of acetic acid of known strength, phenol-phthalein being used as the indicator. Acetic acid has been found to give the best results, notwithstanding the fact that at least one worker, quoted by the authors, has condemned its use for this purpose, and an aqueous solution which keeps constant for weeks has been used in preference to an alcoholic solution, which is apparently not so good. Many indicators were tried, and phenol phthalein was selected.

A table of check experiments was drawn on the board, and it seems that the process is quite precise enough for all practical purposes. The following are a few of the figures obtained:—

Alkali.	CO_2 added.	Time.	CO_2 found.
20 C.c.....	18.8	1 hour	19.1
25 C.c.....	18.8	30 minutes	19.0
25 C.c.....	18.8	15 minutes	19.1
	7.5		7.6
	20.0		19.9

Samples of air for examination had been collected by the authors in one of the London police courts, a Salvation Army shelter, Drury Lane Theatre on a Saturday night, and other salubrious quarters, the amount of CO_2 found being stated. It has been said that two cubic feet of CO_2 is given off on burning one foot of gas, but the authors say that only 0.6 cubic foot is yielded.

For the determination of the number of micro-organisms in the air the authors first sterilise the flask by means of superheated steam, and then introduce 10 C.c. of a culture medium containing 15 per cent. of gelatin. Then steam under pressure is blown into the flask in order to displace air. Before the gelatin cools care is taken to have the solution evenly distributed over the lower surface of the flask.

Although several gentlemen spoke after the paper was read, none criticised the process. Professor Ramsay said that CO_2 was not so harmful as was generally supposed, and Mr. David Howard supported that statement, saying that the danger of close atmospheres was really due to foul exhalations. The President seemed to have his doubts about the vacuum being maintained for a month or longer in flasks furnished with indiarubber connections, but Dr. Symons, in his reply, assured him that such connections were absolutely reliable.

As there were no more authors present, the next three papers were read by Professor Dunstan. The first was by R. F. D'Arcy, M.A., "On Certain Views concerning the Condition of the Dissolved Substance in Solutions of Sodium Sulphate." This dealt with the determination of the variations of viscosity of solutions of different strength and temperature. The apparatus for this purpose was a modification of that used by Thorpe and Rodger. Mr. Pickering said that three different hydrates could be obtained from a solution

of one strength, a crystal of one or the other dropped in determining that which would be obtained.

Professor Dunstan then skimmed over the other two papers. "Luteolin" (Part II.), by A. G. Perkin. This colouring body has the composition $C_{15}H_{10}O_6$. Phloroglucin is produced on fusing with alkali. A yellow potassium salt may be obtained from the acetyl derivative. Fisetin, another yellow colouring matter, is a hydroxyluteolin.

"Morin," by Bablich Hermann, Ph.D., and A. G. Perkin. This yellow dye stuff exists in Jackwood. Its composition is $C_{15}H_{10}O_7$, and it bears a close resemblance to luteolin. Phloroglucin and resorcin result on fusion with alkali.

Professor Dunstan, after reading the last two papers, spoke in very complimentary terms of the valuable work done by Mr. Perkin on these yellow bodies. They were substances which, hitherto supposed to be different, were essentially the same.

The following papers were taken as read:—

"Synthesis of Pentacarbon Rings, Part I., Anhydracetone-benzil and its Homologues," by F. R. Japp, F.R.S., and G. D. Lauder, B.Sc.; "Synthesis of Pentacarbon Rings, Part II., Condensation of Benzil with Acetone Dicarboxylic Acid," by F. R. Japp, F.R.S., and G. D. Lauder, B.Sc.; "Reduction of Desyleneacetic Acid, and the Constitution of Zinni Pyroamaric Acid," by F. R. Japp, F.R.S., and G. D. Lauder, B.Sc.; "Electrolysis of Potassium Alloethylic Camphorate, Part II.," by J. Walker, D.Sc., and J. Henderson, B.Sc.

School of Pharmacy Students' Association, May 7.—

Professor Reynolds Green, F.R.S., in the chair.—After the minutes of the previous meeting had been read and confirmed, Mr. A. C. Seward, M.A., gave a most interesting account of "Fossil Plants," illustrating his subject by means of lantern slides. The various methods in which fossils have been produced were briefly described. Attention was drawn to some of the leading forms of fossil plants, and some of the difficulties which are met with in palæo-botanical research were pointed out. A vote of thanks to the lecturer was proposed by Mr. E. M. Holmes, seconded by Professor Greenish, supported by Professor Bretland Farmer, and carried with acclamation. Mr. Seward briefly replied, and the meeting then adjourned.

Society of Chemical Industry (LIVERPOOL SECTION),

May 6—Mr. Eustace Carey in the chair.—With respect to a statement recently published, to the effect that the British alkali trade had of late years decreased to a considerable extent, the Chairman pointed out that it was based on the money values of the products, which was quite misleading, by reason of the lowering of the price in late years. By taking the actual weight of production the figures showed an improvement instead of the reverse. Dr. G. C. Clayton read a paper "Chlorine as a Disinfectant." He detailed a series of experiments conducted on a bacteriological basis with a view to ascertaining the efficiency of chlorine, of bleaching powder, and of sodium hypochlorite. The experiments, carried out in conjunction with Professor Boyce, of University College, gave results distinctly in favour of the use of sodium hypochlorite as a germicide. A paper was also read by Mr. W. J. Orsman on "Colliery Explosions in Dusty Mines," the results of communicated experiments tending to show that carbon monoxide when mixed with coal dust formed a highly dangerous and destructive explosive. The inference to be drawn from this was, he said, that those blasting agents such as gunpowder which produced carbon monoxide on burning, were highly dangerous in their application to coal mining.

Chemists' Assistants' Association, May 7.—

The President, Mr. E. W. Hill, in the chair.—At the annual general meeting of this Association, after the minutes of the previous meeting had been read and confirmed, Messrs. Gilbert, Smith, and Pasco were appointed scrutineers of the voting papers for the election of the Council for 1896-1897, and Messrs. Bellamy and Cooper were selected to audit the balance sheet. The President said he had much pleasure in announcing that there had been a very good and keen competition for the prizes offered by the Association and Messrs. Burroughs, Wellcome and Company for practical work, and after careful deliberation they were awarded to Mr. H. Garnett for his paper, read before the Association on April 16, entitled "The Testing of Lemon Oil" (see *ante*, p. 323). In making this selection the Council wished to say that although they did not guarantee the accuracy of the process, yet the work embodied therein represented good and useful work of a

nature which should be encouraged, and it reflected credit upon the Association and the investigator. He was very glad to find that German chemists did not stand alone in the prosecution of original work on the nature and valuation of essential oils. The paper had already been productive of correspondence in the columns of the trade journals, and he hoped that although it had unfortunately been read at the end of the session, it would stand the test of criticism, and that the author would be encouraged to proceed in the work and endeavour to perfect the process. In the name of the Association he congratulated Mr. Garnett upon his success, his only regret being that owing to a slight delay he was unable to present the medal at that meeting. It would, however, be forwarded in a few days.

Mr. H. Garnett briefly responded, and the Secretary, Mr. R. Glode Guyer, then read the nineteenth

ANNUAL REPORT.

The Council of this Association has much pleasure in submitting to you this, its nineteenth annual report:—

"It regrets to record the loss by death of a staunch supporter and former President, Mr. H. H. Milhouse.

"The Association now numbers 144 members, of whom 41 have been enrolled this session. The vacancies which have been caused by death in the list of Patrons have been successfully filled, making a total of 48.

"The attendance at the ordinary meetings shows a considerable increase on former years, the average being 23, not including the attendance on the occasion of the inspection of Messrs. Idris and Co.'s factory, when 180 members and friends were present.

"As in former years, the papers read before this Association maintain their high standard. Twenty-one papers and notes have been read. The first short paper evening was chiefly devoted to the discussion of dispensing problems. A slight innovation has been made by the visits paid to the two factories. These were distinctly popular and well appreciated.

"The social side of the Association has been greatly developed. In addition to the annual conversazione and dinner, two smoking concerts and a series of three Cinderella dances have been held, which were eminently satisfactory. The annual dinner was held in the King's Hall, Holborn Restaurant, and for the first time in the history of this Association the President occupied the chair.

"The Council has awarded the Association's medal and Messrs. Burroughs and Wellcome's prize to Mr. H. Garnett for his monograph on 'The Testing of Lemon Oil.' It is gratifying to know that this prize was keenly competed for, but at the same time the Council regrets that it was unable to award the essay prize.

"The balance sheet indicates the continued satisfactory financial position of the Association."

In moving the adoption of the report, the President commented briefly upon its satisfactory nature. He remarked that although the statistics showed that there had been a decrease of four in the membership, yet this was not an adverse feature, if it were remembered how the number of assistants in London fluctuated. He was pleased to say that the Cinderellas had been inordinately successful in every way, which fact was greatly due to the energy displayed in their behalf by Mr. H. H. Robins, who had undertaken the management of them. Mr. G. Roe having briefly seconded the motion, it was carried unanimously. The balance sheet was then read by Mr. C. J. Strother, hon. treasurer. He expressed his great satisfaction in having to announce a balance of £83 8s. as against £67 9s. 5½d. last year, which latter was in turn larger than on any previous occasion. This fact showed the sound financial position occupied by the Association. The President moved the adoption of the report, and this was seconded by Mr. C. Morley, who in the course of his remarks advocated the extension of the scope of the Association by the establishment of a chemist's assistants' club, but the President was of opinion that the labour entailed in a scheme of this sort would be far too heavy to render it practicable. Before the motion was put to the meeting Mr. Strother remarked that it had been calculated that every member of the Association got value to the extent of 15s. 4d. in return for the subscription of 5s. Mr. H. H. Robins suggested that, in order to bring the advantages of the Association more prominently before the assistants living in the metropolis, a circular should be issued to everyone whose address could be ascertained, drawing attention to its claims. The President, in answer to this, remarked that at the commencement of the session a letter of this nature was sent to all the metropolitan and suburban chemists, with a request to hand it over to their assistants when read.

After a vote of thanks had been accorded to the auditors on the proposition of the President, seconded by Mr. Strother, Mr. Pasco,

one of the scrutineers, read the report of the Council voting papers. Seventeen members had offered themselves as candidates, fourteen of these being elected. Fifty-nine voting papers were received, one of which was invalid.

The candidates received the undermentioned number of votes:—
C. Morley, 57; R. Melhuish, 56; R. G. Guyer, 53; E. W. Hill, 53; G. Roe, 52; W. Moore, 51; W. G. Crouch, 50; C. J. Strother, 50; H. H. Robins, 49; A. Gunn, 44; Cooper, 36; A. T. Hill, 35; C. E. Robinson, 35; E. A. Umney, 33. The votes for the unsuccessful candidates were: F. R. Stephens, 28; Pearson, 28; W. H. Jones, 25.

The President then gave a brief valedictory address, in the course of which he remarked that he had no suggestions to offer as to new lines to be followed in the future. The sphere of the Association, in his opinion, was quite wide enough; the only thing necessary was that none of the members of the Association should relax their efforts on its behalf. He expressed his thanks to the officers and members for the cordial manner in which they had seconded his efforts.

Mr. R. Melhuish proposed a very hearty vote of thanks to Mr. Hill for the able manner in which he had presided over the business of the Association. In his opinion he had been an ideal President in every detail, and the welfare of the Association had always been his first consideration. Mr. Robins seconded this, and the motion, having been put to the meeting, was carried with acclamation.

Pharmaceutical Chemists' and Apothecaries' Assistants' Association of Ireland, May 8.—Mr. H. Hunt, L.P.S.I., in the chair.—The following paper was read:—

“OUR APPRENTICE,” BY JAMES B. ASHE.

Mr. Ashe said as he had within the last few months turned his back on the apprenticeship stage of pharmacy, he thought it would not be out of place to relate in a short paper his experience of things he had heard and seen during what he might call the budding season of pharmacy. He would divide his subject into three heads, namely, what “our apprentice” was, what he is, and what he ought to be.

In the first place, he would go back as far as the year 1618 and show the kind of work which the apprentice had then to do. Although not required to dip far down into the well of knowledge, yet his lot was far from being a happy one. The compounds then employed in medicine were often of a heterogeneous nature, the mixtures containing from twenty to seventy, or even more, ingredients, and such things were used as crabs' eyes, pearls, oyster shells, and amongst other disgusting preparations included in the formulæ were human skulls, the moss found growing thereon, blind puppies, earthworms, etc. Although the edition of the London Pharmacopœia, published under Sir Hans Sloane in the sixteenth century, had many important alterations, yet such things as earthworms and moss from the human skull still remained, the botanical names of herbal remedies were first added to the pharmaceutical curriculum, and then followed distilled waters, thus ensuring a uniform strength. It would, therefore, be seen that although the apprentice in the time of Queen Anne had very little brain work, yet he more than made up for the deficiency by the amount of mechanical labour called daily into requisition. At that time the apothecary was regarded with awe, and his “science” remained a profound mystery. The apprentice, however, was human enough in some respects. In a street brawl he was sure to be in the midst of it, where his skill in the healing art was a valuable help to those requiring his assistance. Such preparations as hyd. c. crete, pil. hydrarg., etc., always fell to the lot of the apprentice to make, so it might be concluded that his biceps were then more fully developed than in these days. The present-day chemist's apprentice was, he thought, in many cases a complete failure. How many young men were there who voluntarily entered pharmacy as a profession, and of those what induced them to enter the business? From observation and inquiry he found that the great bulk of the apprentices have been obtained through their parents and guardians having chosen pharmacy for them as a compromise between a college course and a profession. The boy on leaving school is “too good” for an office or a shop, and by putting him into a pharmaceutical establishment two birds are killed with the one stone, dignity is satisfied, and the chemist's shop—that half-way house between the college and the counter—recruited by yet another disciple of Galen. The apprentice on the other hand enjoys the novelty of his new calling, believing there is little to be done outside of the mere admixture of drugs and chemicals. From the outside, too, the pharmacy looks very pretty and inviting with its long rows of polished gilt-lettered bottles, while inside the perfume of scents and

aroma of drugs tickle his sensibilities and lead him to the belief that the pharmaceutical apprentice is indeed to be envied. But he is quickly disenchanted when on the first day of his servitude he has to put up seidlitz powders and feels the sting of the acid, and perhaps in the evening if there is a slackness in the compounding room he is initiated into the mysteries of pill making. Rapidly indeed does his ardour cool, and in a short time the gilt is considerably rubbed off the gingerbread. Another reason which often prompts parents to put “young hopeful” to pharmacy is his taste for chemicals, as too often evinced by hopeless attempts at photography with a half-crown camera. He also possesses a treatise known as “The Play Book of Chemistry,” and armed with this volume as a guide, and the backyard as a laboratory, he essays the manufacture of fearful and wonderously bad-smelling “chemicals.”

Of the present-day apprentice foremost may be placed the studious youth. Such a type, said Mr. Ashe, I am told, does exist, but as yet I have not met him. There are very few young men who can conscientiously do a good two hours' uninterrupted study. The studious apprentice is fully alive to the importance and usefulness of his chosen profession, his spare moments are spent to good advantage, and whilst putting up stock his book is open beside him, and chemical equations are his bosom friends. Then we have the easy-going apprentice, whose belief is that everything will work out to his satisfaction. Nothing disturbs his equanimity. Peck-sniff-like he is all peace, and a holy calm pervades him. Give him work and he will do it, as long as he is under observation, but remove the watch and mechanically he wanders to the window, therefrom to study art and nature, animate and otherwise. Draw attention to the neglected work and he attacks it with renewed vigour. This goes on until he is suddenly seized with unwonted energy. He becomes eager to do anything, but as the result of “more haste, less speed” he divides his mass for a dozen into twenty-four pills, makes his six-ounce mixtures wrongly and behaves generally in an extraordinary manner. The secret is out: our apprentice has got a young lady! He had been seen airing her on his evening off duty, and, when taxed with the discovery, acknowledges all, and solicits, in confidence of course, straight hints as to the best place to buy flowers, etc., and invites criticism on the damsel by remarking interrogatively—“Say, Johnny, isn't she a lovely girl?” At this point the crisis may be seen. Now, too, may be seen a remarkable change in his toilet. He leaves business as if he had just emerged from a band-box. He takes a lively interest in the newest styles of neckties and wearing apparel, while his washing bill for collars and cuffs advances by leaps and bounds. He is observed casting furtive glances in the mirror, critically examining the down on his upper lip, and sundry hair washes and moustache promoters found on his dressing-table tell their own tale. The next type is the good-natured, fat, idle apprentice, who harms none but himself. Work and he are sworn enemies, and he will resort to any subterfuge to avoid that enemy. Dickens' Artful Dodger is nothing to him in regard to finding out easy “jobs.” As a rule, however, he is the most obliging fellow in the world, and will go to endless trouble to do a good turn, but—he will not work. I would like to give my opinion as to what the apprentice ought to be. He should begin his pharmaceutical career thoroughly understanding that he is working for a profession, and properly realising what he has to go through before he attains the goal of his ambition. He should possess a good preliminary education, and the entrance examination of the Pharmaceutical Society should be passed before the period of apprenticeship commences, in order that he may have uninterrupted training for his Licence examination. Sufficient opportunities ought to be given for study, as it is not fair to expect a lad after a hard day's work of twelve hours' duration to sit down with a clear intellect and study. I would urge on him the necessity of learning during his apprenticeship not merely the practical, but also the theoretical work of his examination, not leaving it, as is done in many cases, until a few months before the test. Knowledge obtained by the *nulla dies sine versa* is far better and more lasting than the cramming which must of necessity take place if the real work is put off till the eleventh hour. In his private life the apprentice should endeavour to be in every respect the noblest of God's works, a man and a gentleman.

At the conclusion of the paper Mr. Walsh observed that the hours for study allowed by employers were capable of extension. A long day's work took away much of the desire for study from the apprentice. Mr. Hardy concurred, but thought Mr. Ashe's word picture of the apprentice was not lifelike. The types alluded to were such as could be met daily in every large city, but they referred more

directly to the quiet country boy. The city apprentice, as a rule, knew exactly what he was about. Shakespearean pharmacy was not likely to be revived, and the trade was more in touch nowadays with German synthetic remedies than powdered cockroaches or boiled heads. Mr. Hendrick humorously touched on the love-smitten apprentice, and said it was the experience of most of them; like the measles, however, it passed off more or less quickly, according to the severity of the attack. He thought the daily work of the apprentice should not exceed nine hours, and that the period of duty should be between 9 a.m. and 9 p.m., with three hours' interval during this period. There should be no Sunday work for the apprentice, and above all he should not be rushed into work immediately on the completion of his indentures. He deprecated the entrusting of pill-making to the pharmaceutical neophyte, who should get time to look around him. It was a great mistake to allow country apprentices to live outdoors, unless with some relative. The rustic, fresh from the country, and alone in lodgings in a large city, was to be pitied, at present and in the future. An apprentice in a country town was infinitely better off than his metropolitan colleague, unless he had some friends to keep an eye on him. Mr. Ewing disagreed with the writer that the apprentice was a complete failure. If so, why did not the blush arise to the reader's face when he made the statement? He agreed that no apprentice should go to business until the Preliminary examination had been passed. Fortunately for himself, he had undergone the test before he began his apprenticeship, but he had seen young lads reading at night for four hours at a stretch after a tiring day's work, robbing nature of its due, and suffering from want of sleep. It was a disgrace for employers to countenance such a thing, and the remedy was for them not to take apprentices who had not passed the Preliminary examination. No boy ought to be indentured younger than sixteen years of age. Before that period a young man's life was not properly formed, and he was to all purposes a child. He (Mr. Ewing) was in favour of the apprentice roughing it from the beginning; nothing knocked the "cheek" out of the bumptious youth more than a wholesome course of pill pounding or mortar mashing. The evolution of the chemist's apprentice should be gradual. He would divide the period into four years as follows:—The first year simply roughing it, and doing anything he was bidden; the second year he would put him at the counter; the third year advance him to the compounding room; and the fourth and last year might be spent with advantage at general counter and prescription work. The moral condition of the apprentice had not been touched upon at all, and yet this was perhaps the most important point in connection. He would ask, Did the assistant always set the apprentice a good example to follow in everyday life? If the youth were seen going to the dogs, did the assistant—himself a sometime apprentice—put out the saving hand and check the downward course of the boy? Admittedly, there were good, bad, and indifferent amongst all grades of pharmacy, but he feared "Am I my brother's keeper?" was responsible for not a few cases of bad endings to good beginnings. The apprentice imitated the assistant, and the latter should therefore be doubly careful in his acts and words. The moral responsibility was tremendous. With regard to the working hours of the apprentice, there were many masters unaware or forgetful that the Act of Parliament fixed a maximum of eighty-four hours' work, including meal hours, weekly, but what was the fact? The unfortunate apprentices—growing lads and not overstrong in many cases—were obliged to work from 100 to 110 hours weekly. Could it be wondered, then, that so many of these boys broke down not only in their examinations, but in their health? The system prevailing was an outrage on the morality of their profession, and a distinct breach of the law of the land. He trusted that the paper and the discussion arising from it would be fully reported in the trade press, and hoped that the light thus thrown upon the seamy side of the apprentice's life would be productive of good, and perhaps tend to the amelioration of the life of the future chemist's assistant. He had much pleasure in proposing a very hearty vote of thanks to Mr. Ashe, whose paper might be the means of stirring up the masters to a sense of what was due to others as well as to themselves. Mr. Hunt and others, having spoken on the general features of the paper, mentioned that as apprentices had to pay a fee, there were many who would not do porter's work, as included in the "roughing" process, although for their ultimate good, and employers could not insist on such being done. Mr. Hardy said the gradually increasing severity of the Minor examination was an evidence of short sight on the part of those at the head of the English Society, and it was not to be wondered at that

so many were "plucked" from time to time. It was simply putting the cart before the horse. The Society was concentrating its energies on the subjects of examination, and doing nothing to fit the candidates for them. In this respect they in Ireland were much more favourably situated, and with the present men at the helm they would be even more so in future. He failed, however, to see how it could be expected that an apprentice working twelve or thirteen hours per day could possibly prepare the subjects for examination. That they even attempted to do so was evidence not of failure but of success. He advocated a shorter term of apprenticeship and an interval at a college of pharmacy. Mr. Hegarty seconded the vote of thanks to Mr. Ashe, who suitably responded, and the proceedings terminated.

PROPRIETARY ARTICLES TRADE ASSOCIATION

MEETING AT HALIFAX.

At Halifax, on Thursday, May 7, a representative and well-attended meeting was held at the Old Cock Hotel for the advancement of the Proprietary Articles Trade Association. Councillor W. C. Hebden (President of the Halifax Chemists' Association) presided, and among the local members of the profession present were Messrs. James Farr, Jonathan Jessop, G. M. Cobb, J. H. Pilling, W. S. Thompson, J. Swire, H. Bell, H. W. Seely, J. Patchett, J. W. Tiffany, C. H. Fielding, J. R. Comyns (Luddenden Foot), Tom Briggs (Sowerby Bridge), Jos. Rholes (Mirfield), W. Toone (Hipperholme), and D. Hey (Hebden Bridge). The deputation attending included Messrs. W. S. Glyn-Jones (Secretary), W. Simpson (Liebig's Extract of Meat Co.), Frank I. Hoy (Bovril, Ltd.), H. S. Norris (Condal Water Co.), J. E. Garratt (Frog in Your Throat), and S. Norman Pickard and F. H. Taylor (Bradford Chemists' Association).

The Chairman, in his opening remarks, stated that every one of them had had a painful experience of the severity of the "cutting," which had taken place in the retailing of "patent" and proprietary articles. They were all, therefore, interested in any practical remedy that could be found for the solution of the difficulty. He thought that the scheme of Mr. Glyn-Jones was the most feasible that had yet been propounded.

Mr. H. W. Seely read letters regretting inability to attend from Messrs. C. A. Higgins, J. Day (Dewsbury), L. A. Cocker (Ripponden), Smith Ward (Dewsbury), J. Bancroft, Cardwell, and Son (Brighouse), W. Stead (Heckmondwike), W. J. Ward (Conisbro'), J. White (Rotherham), and J. A. Sutcliffe. In his communication, Mr. Higgins wrote that chemists everywhere who were not satisfied with the present state of things ought to support the Association. He could not, he said, understand any one hanging back.

Mr. W. S. Glyn-Jones then, in a concise statement, explained the constitution of the Proprietary Articles Trade Association, and the proposals by which it was intended to achieve the objects in view.

Mr. G. M. Cobb afterwards moved:

"That we, the chemists of Halifax and district, hereby declare our approval of the anti-cutting movement, which we regard as beneficial to the interests of both owners and distributors of proprietary articles. Believing that 'union is strength,' we respectfully advise those proprietors who have not yet joined the defensive combination now being formed in connection with the Proprietary Articles Trade Association, 2, Stonecutter Street, E.C., to lose no time in doing so; and we pledge ourselves to use all honourable means in our power to further the progress of that Association."

Mr. James Farr, in seconding the resolution, maintained that a manufacturer in putting an article on the market was not justified in saying that it was a 1s. 1½d. article if he intended that the retail price should be 1s. He thought that if makers of proprietary medicines were to state distinctly the price they intended their articles to be sold at there would be some hope of the "cutting" system being put an end to. This practice of "cutting" was having a most serious effect on the trade. For some years before he gave up business he was making £120 a year by the sale of proprietary medicines, whilst at the time of his retirement he was not making more than £5. He should be glad to do all he could in order to bring about the accomplishment of the scheme which Mr. Glyn-Jones had placed before them.

Mr. Jonathan Jessop mentioned that he had been retired from business for a number of years. When, however, he was in business, the "cutting" system had to be contended with, and he knew that the evil had been growing stronger and stronger since. It had now been in existence so long that there would be a difficulty, he

feared, in eradicating it. Still, there was no doubt that, by combination, this was possible of accomplishment. He should be pleased to do whatever he could to strengthen the hands of the trade.

Mr. Pickard (Bradford) welcomed the scheme propounded by Mr. Glyn-Jones, not only because of the benefit which he believed it was destined to secure for the trade, but because of the fact that it would enable chemists of different towns to form an acquaintance with one another. He claimed that they should be allowed by the wholesale dealers a margin of profit of at least 20 per cent. It stood to reason that the stores could not afford to keep their establishments open for the sale of proprietary medicines at cost price. What they did was to urge to the customer "So-and-so is a great deal better," and very often they succeeded in substituting something on which they had a good profit. He believed that if the stores were compelled by the manufacturers to sell the articles they supplied at a given price, the public would again give their patronage to the chemists.

The Chairman regarded it as strange that chemists, who prided themselves on being partly professional and partly commercial, but who were distinctly respectable and intellectual, had been almost the last to take up the question of organisation. He believed that if they loyally combined together they could carry the scheme which Mr. Glyn-Jones had placed before them. The benefits derived, moreover, would not stop there, but would go further and further. They now found tailors, drapers, hatters, and all sorts of people engaged in selling these proprietary medicines. But why was it they sold them at cost price? Their object was to gull the public into the belief that because they sold such medicines cheap, therefore everything else in the shop was sold at the same ratio. It was the smartest piece of gulling he knew of, because their only intention was, like the spider and the fly, to get the people into their web, and their loss of profit on the medicines was made up by the extra profits they obtained on other goods. Those people, more than any other class of people, were doing the chemists harm, and it was those people that the combination proposed would most seriously affect. With regard to the question of substitution, he must say that whilst the drug stores were guilty of this practice chemists were equally guilty of the same sin. They endeavoured, to the best of their ability, to induce customers to purchase a preparation of their own in preference to that of the "patent" medicine vendor. It was time, however, that this sort of thing was ended. The interests of the wholesale vendors and themselves, as retail traders were mutual, and that being so, they should do the right thing one to another. What they asked was that the proprietors should allow them to make a profit on the articles they supplied of from 20 to 25 per cent. Of course, they would prefer the 25 per cent., because a fourth was so much easier to reckon. If, however, an arrangement of this kind was come to, it must be on the strict understanding that they would never attempt to substitute for a protected article one of their own. Where a customer came to them for advice, without asking for any of these articles, they would still have a perfect right to endeavour to sell their own goods.

Mr. H. Bell, who looked upon the scheme proposed as a feasible and practicable one, agreed with Mr. Farr that the manufacturer should fix the "face value" of the article he dealt in.

Mr. H. W. Seely observed that the "patent" medicine proprietors had been nursing the stores in the past. They were, however, finding out that, instead of being their greatest friend, they had proved their greatest enemy, in that they put up everything in opposition to the article they supplied. Thus the proprietors were now desirous of again taking up with the chemists. The latter were nevertheless willing, so long as they made amends, to forgive them for the past.

Mr. W. S. Thompson considered that, to prevent "cutting," wholesale dealers should give a guarantee that all retailers selling under full price would be required to forfeit a given sum. They should either do this or consent to allow them 4s. on the turn-over of every dozen 1s. 1½d. articles they sold. The present agitation, he feared, was being a little bit got up by the manufacturers.

Mr. Tom Briggs (Sowerby Bridge): Have you calculated what the profit works out at at 4s. per dozen 1s. 1½d. articles?

Mr. H. Bell pointed out that these were days of education, and said that chemists would have to be content with 15 or 20 per cent. profit, if they wished the manufacturers to support them.

Mr. C. H. Fielding mentioned that the system he had adopted had been that of "cutting the cutters." His object had been to get together a dispensing business, and the trade in proprietary medicines he had allowed to "go hang," as far as he was concerned. There

was a lot of "bunkum" about these proprietary manufacturers. The way they gulled medical men was, to him, really marvellous. Some of the articles advertised he had found in dispensing were not what they were represented to be, and medical men he had communicated with had since refused to use them. The scheme propounded to them that evening had his support.

Mr. J. Swire urged that the agitation would be more likely to be successful if chemists could get the grocers to join with them.

Mr. Glyn-Jones replied on the discussion, pointing out that if chemists were granted 25 per cent. profit on an article they would be much more likely to push it than if they were allowed only 5 per cent. The profit, he maintained, should be regulated a great deal by the question of consumption. Articles of a medicinal character, for example, should bear a greater profit than articles of food, for which there might be twenty times the demand. The suggestion that he was "a dummy" acting the part of the manufacturers in this agitation he emphatically denied. No one who knew the difficulty he had experienced in inducing manufacturers to join would, he knew, make such a suggestion. The fact was that both retailers and manufacturers had something to get by joining the Association. He might say that, as regarded the grocers, they were as anxious for an alteration of the present system as chemists were.

The resolution was then put to the vote, and agreed to unanimously.

On the motion of Mr. W. S. Thompson, seconded by Mr. Brerley, the Executive of the Halifax Chemists' Association was appointed to act as the local executive in connection with the Proprietary Articles Trade Association.

Mr. H. S. Norris moved, and Mr. Frank I. Hoy seconded, a vote of thanks to the Chairman, whose reply brought an encouraging and pleasant meeting to a close.

MEETING AT SHEFFIELD.

A meeting convened by the Proprietary Articles Trade Association was held on Friday, May 8, in the Montgomery Hall, Sheffield. The attendance was fairly numerous. The Association was represented by Messrs. J. E. Garratt (Frog in Your Throat), W. Simpson (Liebig's Extract Company), B. Hirst (Hirst, Brooke and Hirst, Limited), H. S. Norris (Condal Water Company, Limited), C. H. Corbet (Stephen, Smith and Company), and W. S. Glyn-Jones (Secretary). The local pharmacists and dealers were Messrs. S. Cheeves and Son (local agent for Bovril), Greaves and Son (Chesterfield), J. T. Dobb, J. Preston, W. Ward, A. Russell Fox, J. P. Hewitt, C. O. Morrison, T. Dobb, G. Forrest, G. Holmes, C. H. Twelves, J. W. G. Turner, G. Squire, T. Waterhouse, F. Jepson, J. A. Gibson, J. J. Riding (all of Sheffield), and J. Taylor (Woodhouse). Among those who were unable to attend, but who wrote expressing sympathy with the objects of the meeting, were Mr. J. S. Burnell (Sheffield), Mr. G. G. McGibson (Wath), R. Brook (Halifax), Hollingworth Bros. (Barnsley), G. Hodgson (Hemsworth), A. Simpson (Stalybridge), Greaves and Son (Chesterfield), etc.

Mr. A. Russell Fox was elected to the chair, and in his remarks said that, as chemists, all present were naturally interested in this question of cutting prices, and had been for many years. They also naturally desired that something should be done whereby the retailers might secure legitimate profits upon the articles in which they of necessity had to deal. He had come to learn what the Association had to suggest that the trade should do.

Mr. Glyn-Jones then described the aim and objects of the Association which he represented, and its scheme for remedying the cutting evil. At the outset, however, he explained that previous meetings of this character had been held under the auspices of the local associations, and he regretted it was not the case in this instance. The Sheffield Association however, in reply to his communication, stated that as this was a question of prices and their regulation it was not able to take any action in regard to it as a body. Consequently he (Mr. Jones), had been compelled to convene the meeting independently of the Sheffield Association. Mr. Middleton, representing Greaves and Son, moved—

"That this meeting of chemists residing in Sheffield and district, having heard the objects and proposals of the Proprietary Articles Trade Association, considers them worthy of support by chemists generally, and would urge upon all manufacturers and wholesale traders the importance of assisting the movement."

Mr. W. Ward, in seconding, remarked that the proposals of the Association were certainly calculated, if carried out, to benefit all those present, and if anything of the kind suggested could be accom-

plished, he should feel very grateful. He confessed, however, that he could not see the silver lining to the cloud. It seemed to him that the remedy for the grievance lay with the manufacturers, and that retailers could exercise but little influence to coerce or induce them to conform to the scheme which had been laid before them. He was sorry that Mr. Jones had not been able to show that the wholesale houses had made a greater advance in this direction than seemed to be the case. At the present time, when a customer applied for a proprietary medicine and asked the price he was inclined to ask in reply what the customer was prepared to give, or what he had been giving elsewhere.

Mr. J. T. Dobb expressed himself as being in complete accord with the objects of the Association, but saw no hope of their policy being carried out. The wholesale houses were masters of the Association, and he wished the retailers would force them to combine so that they might refuse to supply stores and deal only with the legitimate dealers in proprietary articles.

Mr. J. Preston could not support the resolution because the chemists were being asked to join a nebulous body, which as yet had no mind. No rules had been laid before the meeting, and Yorkshiremen liked to look before they leaped. He also deplored the lack of unity and cohesion among local chemists, as evidenced by the small attendance at the meetings of the local association. He held that the new Association was not true to the principles it advocated, because Mr. Elliman, who had been held up by it as a model, was permitting the sale of his preparation at a shilling per bottle, while the advertised price was 1s. 1½d. His opinion was that in every case proprietary articles should be sold at the advertised price, and no less. He always obtained full prices himself. He claimed that the chemists were an important factor in helping to popularise proprietary medicines, because the public took their opinion upon the medicinal merits of the preparations.

Mr. Morrison expressed a sense of the indebtedness of all the chemists to the deputation, but could not support the resolution until the officials were able to show a better prospect of carrying their objects, and further, if those objects were attained, that the trade would be any better off. He was inclined to predict that if the stores were stopped from selling proprietary medicines they would simply compete with the pharmacists in an equally severe manner in drugs. He looked upon the attempt to put a stop to cutting as merely another species of protection, and in his opinion a man who paid for what he had bought had a perfect right to sell at any price he thought fit. If he saw any prospect of the scheme of the Association being carried out he would heartily support it, but he regarded it as hopeless, and feared that the last state of the chemists would be worse than the first. Competition would be simply transferred to drugs, on which chemists were getting a fair profit, and perhaps they would lose their trade both in drugs and proprietary medicines.

Mr. Twelves heartily supported the resolution.

Mr. Riding took the same side, and urged more combination among chemists.

Mr. Glyn-Jones replied to the speeches in vigorous style. He contended that the objects of the Association were possible if only the retail chemists would unite, and he called upon every person present to help in the work. The smallness of the meeting he regarded as a disgrace to the chemists of Sheffield; many of those who were absent would not even take the trouble to send a post-card expressing sympathy with the movement.

The resolution was carried with only one dissident.

FOREIGN NEWS.

MEDICINE IN SOUTH AFRICA.—A recent issue of the *Cape Times* says that medical men throughout the British South Africa Company's territory are unanimous in their desire to establish a Rhodesian Medical Council, and all that is now wanted to bring about such a desirable result is the sanction of the authorities.

PROPOSED RESTRICTION OF PHARMACIENS IN FRANCE.—The constantly-increasing number of pharmacies in France, and the keen competition to which it has given rise, have rendered pharmacists alive to the fact that protective measures should be adopted tending to restrict their number. With this object a committee was appointed in February last by the "Syndicat Général des Pharmaciens" to study the question, and especially to find some method for the limitation of the number of apprentices. According to the report now published it appears that whereas in 1874, when the profession was lucrative, there were in France 6170 "officines" to a population of 36 millions, *i.e.*, 1 for every 5851 inhabitants, in

1894 for 38 millions there were 8442, or 1 for 4552 inhabitants, and signs were then obvious of declining prosperity. One of the measures suggested by the committee in order to arrest the growing number of new establishments consists in instituting competitive examinations, when a limited number only of pharmaceutical diplomas would be awarded annually, but serious objections would arise in carrying out this project. It was proposed, as a more ready means, and one that would be in the hands of pharmacists themselves, thereby obviating the hazardous process of an appeal to legislation, that local pharmacists should combine and elect a Central Committee in Paris who would be exclusively empowered to authorise the engagement of apprentices. This Central Committee having in its possession the necessary data, supplied by the syndicates in each town, would be able to regulate the number of apprentices according to requirement, taking as basis the official statistics. These show that during the last ten years the Faculties and Schools have qualified an average of 600 pharmaciens, which has been computed to represent 1080 apprentices of one year's standing. It is this number that the Central Committee would endeavour to maintain or diminish, according to expediency. In the event of this proposition being entertained, members of the local syndicates would be requested to bind themselves not to take an apprentice without the sanction of the Central Committee, and not to give certificates of the three years' pupillage unless the whole of that period had been devoted exclusively to the profession.

NEW AMBULANCE STATIONS FOR PARIS.—In accordance with the recommendation contained in a report presented by M. Strauss the Municipal Council has decided to institute four new ambulance stations in Paris. The Director of Municipal Affairs has been charged to present a project for establishing a system of alarms in order to give instant notice of accidents, so that medical assistance may be obtained as speedily as possible. The Council has also requested the Director of the "Assistance Publique" to arrange for the installation of "prompt aid" hospitals, one on each bank of the Seine, or otherwise for the provision of a constant service of surgical aid for these cases in the existing hospitals.

OBITUARY.

SPRINGETT.—On May 5, B. C. W. Springett, Chemist and Druggist, late of Aldeburgh. (Aged 25.)

SYMINGTON.—On May 6, Thomas Symington (of Messrs. T. Symington and Co., Beaverhall Chemical Works) died at his residence, Wardie House, Boswall Road, Trinity, Edinburgh, aged 45 years. Mr. Symington was widely known in connection with the manufacture of essence of coffee (Pyramid brand), in which he had gradually built up a very extensive business. He served his apprenticeship with Messrs. Gardner and Ainslie, of George Street, and about twenty-two years ago purchased the business of Messrs. Scott and Orr, Dundas Street, from Dr. John Nicol. Some years before this the old firm of Pugh and Plew had been amalgamated with that of Scott and Orr. The former seem to have been the first in Scotland to manufacture a coffee essence. In England it seems to have been made by Lea and Perrins as early as 1840. The formula of Pugh and Plew was improved by Dr. John Nicol, and it was brought to its present more perfected state by Mr. Symington, who in 1888 retired altogether from the retail drug business, which became the sole property of his former partner, Mr. J. Innes Fraser. Henceforth Mr. Symington devoted his whole time and energies to his wholesale and manufacturing business at Beaverhall works. About six years ago he had a serious attack of influenza, from which he never wholly recovered. A voyage to Australia in 1890 had a temporary good effect which was short-lived, and for many months he has been almost entirely disabled, and ultimately succumbed to an internal abscess. He leaves a widow but no family. The wholesale business will be continued as before by the remaining partner, who has had entire charge for several years. Mr. Symington became an Associate of the Pharmaceutical Society in 1868, and has been a subscriber to the Benevolent Fund since 1876.

HUGHES.—On May 7, John Hughes, one of the directors of Idris and Co., Limited, died after a brief illness, aged 69 years. He was born at Mold, in Flintshire, and for many years was connected with the York Glass Co., entering the firm of Idris and Co. in the year 1885. Mr. Hughes was a member of the Court of Common Council—where he was very much respected—for about twenty-five years.

CORRESPONDENCE.

THE APPROACHING COUNCIL ELECTION.

Sir,—Can anything be done to arouse a little interest in the election of members to the Council? Continuous grumbling is heard on all sides, and yet when a chance is offered for making a change, if desirable, in the *personnel* of the Council, about one-third or even less of the electorate take the fearful trouble to vote! Are not this eternal apathy, indifference, and want of union amongst us quite sufficient to account for the things which cause the grumbling?

Lowestoft, May 9, 1896.

A. H. HINDE.

Re ILLEGIBLE HANDWRITING.

Sir,—What the doctor meant in the order of which you reproduced facsimile in the *Pharmaceutical Journal* for April 25 (p. 340) was: "Please let bearer have pulv. acid. boracis, ʒss."

Bognor, May 8, 1896.

X.

Sir,—"X's" specimen of "illegible" handwriting (see *Ph. J.*, April 25) I thought fairly easy, and until I saw the attempt of "Boldo" I did not think it needed a reply. I therefore now send my reading:—"Please let groom have pulv. acid. boracis, ʒss."

Plymouth, May 9, 1896.

R. S. LUKE.

Sir,—The order sent you by "X," which appeared in your issue of 25th ult., apparently reads: "Please let groom have pulv. acid. boracis, ʒss."

May 9, 1896.

W. M. S.

Sir,—The order received by your correspondent "X" on April 18 last, and published in the *Journal* of April 25, I read:—"Please let groom have p. ac. borac, ʒss."

Sandown, May 11, 1896.

"YELDEM."

COCAINE IN OINTMENTS.

Sir,—Your correspondent's reply to my queries on above has interested me much, and I feel greatly obliged that, in spite of forebodings, and heedless of my love of badinage—always an unseemly thing in a pharmacist—he has endeavoured to quench my thirst for knowledge, which thirst, however, is not yet slaked. Before passing from the subject, there are one or two points I should like to notice. It is remarkable how much at one I find myself with Mr. Johnston regarding the probable explanation of the decomposition of the alkaloid, as he gives it in his letter of the 13th inst.; but is that gentleman quite at one with himself therein? In his original communication he gave the reason as clear that the alkaloid had been decomposed by the "hot fat," and my query was based thereon. In his reply he has religiously avoided any reference to his former reason, and distorting my question to one disputing the ability of heated lanolin to effect the decomposition, invites me to tilt—Don Quixote-like—against quite revered and reverend authorities. Might I point out to him that they do not support the assertion that the alkaloid was decomposed by the "hot fat," and also that lanolin is not described as a "fat," but as "hydrous" wool fat, and thereby hangs the difference. Such, indeed, must have been apparent to your contributor when he replied to my queries, for he gravely explained his first reason of the decomposition, namely, by the "fat," by showing how it must have been caused by the "water" contained in the "hydrous lanolin." Perhaps he has mistaken my hue and over-estimated the amount of chlorophyll I contain. I am only—

London, April 27, 1896.

P. GREEN.

THE PRELIMINARY EXAMINATION.

Sir,—The cry with us anent the insufficiency of the pharmaceutical Preliminary examination is loud and increasing, and, like the query, "What shall we do with our sons?" getting as familiar. Yet, after all that has been said and written, do you not think, Mr. Editor, that the discussion has been needily restricted to pharmaceutical circles? Why should we not have a conference with some of our leading educationalists in London or in Edinburgh to begin with? We have now got the accommodation, and could easily obtain evidence—yes, and if need be, professorial evidence to certify that scarcely 50 per cent. of the raw material, in the shape of apprentices, supplied from our public schools to pharmacists, will stand the character and tests of the Minor examination owing to lack of elementary education. When we see the *Educational News* and the

Schoolmaster opening up their columns and discussing what to us is an old story, then may we hope that public attention has been drawn to the matter.

Inverness, April 27, 1896.

A. P. S.

APPRENTICES' GRIEVANCES.

Sir,—I would like to call your attention to a pet grievance of mine, and one which I would very much like to see put right. I am at present serving my time in a large retail shop where there are several apprentices. We have to serve an apprenticeship of five years. Now, on several occasions, when an unqualified assistant was wanted for the shop, my master, instead of putting forward one of his apprentices who had been about four years with him, got an outsider, who, in many cases, had only served three years' apprenticeship. These three-year apprenticeships are generally served in small shops and in small towns or villages where little or no real dispensing is done. The putting of these men over us, who have had more experience and who have served a longer time, is manifestly unfair, but, of course, it cannot be helped whilst the terms of apprenticeship are unequal. Cannot a law be made or something done to make it compulsory for all chemists to keep their apprentices at least, say, four years? This would give all an equal chance, and I think it would benefit the apprentices in many ways. Hoping this may catch the eye of someone in a position to set the ball a-rolling,

Glasgow, April 28, 1896.

DRUGGIST.

THE PROPRIETARY ARTICLES TRADE ASSOCIATION.

Sir,—As one of the audience at the recent meeting in Bradford to hear Mr. Glyn-Jones and others on the Proprietary Articles Trade Association and anti-cutting, I should be pleased if you would give space to the following:—

If the co-operation of the retail drug trade is accorded this Association, what length of time will the Association guarantee to support us? Till we create a new and better market for their wares? And will they then, having got another fast hold, turn round and allow us to be in the same position, if not in a worse, than we are now? For my part, I eye the movement as above, and shall not support it; but instead of (as one gentleman said he would do) withdrawing my subscription from the Pharmaceutical Society and giving it to the Association, I shall strengthen it by 5s. to the Benevolent Fund (enclosed herewith, Mr. Editor, which please hand over). If we review the proprietary medicine trade we find that at first these wares were sold through the chemist and druggist, and he foolishly created a market for them instead of exhibiting his skill as a pharmacist in preparing and vending his own specialties. And now we have this burden to bear. A lot was said about substitution, but who commenced it? Why, the cutters, as sharp business men, enticed people into their shop by reduced prices of proprietaries and then substituted their own articles. Again, I do not agree that we substitute. What avail is our training and qualification to practise pharmacy if we are only going to be automatons in buying and vending wares such as proprietaries? And I maintain that we are only upholding our qualification by preparing and selling our own pharmaceutical cod-liver oil or other emulsions in place of Brown's, Smith's or Jones', etc., etc.

Bradford, May 7, 1896.

E. G. ALEXANDER, A.P.S.

ANSWERS.

"H. R."—Probably Schützenberger's book in the International Scientific Series (Kegan Paul) will serve your purpose. The published price is five shillings.

"K. F."—The "lead-pencil-colored" prints are platinotype prints, obtained by printing and development, not by printing out.

A CORRECTION.

CHROMATIC PHOTOGRAPHY AND RADIOGRAPHY.—By the misplacement of an asterisk in last week's *Journal*, it was made to appear that a specially contributed article on "Radiography" was part of a lecture delivered before the Society of Chemical Industry. The foot-note on page 364 referred to the first paragraph only, and the asterisk should therefore have followed the sub-heading "Chromatic Photography," instead of the main heading.

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs. Atkinson, Barrett, Bennett, Clarke, Cocks, Cracknell, Fraser, Griffin, Hinde, Hudson, Jarvis, Kermath, Luke, Roberts, Symons, Thomson.

DETECTION OF THE DIGITALIS GLUCOSIDES AND THEIR PRODUCTS.*

BY H. KILIANI.

The production of colour reactions when some of the digitalis glucosides are dissolved in concentrated sulphuric acid and some oxidising agent, such as bromine, nitric acid, or ferric chloride, is added, has long been known, and statements to that effect are to be found in the papers published by Schmiedeberg. All the references to these reactions agree in recommending the addition of a single drop of a dilute solution of ferric chloride, and they fail to indicate that the intensity—as well as the duration—of the colour produced is very much determined by the proportion of oxidising agent employed.

In a previous communication relating to digitalin, the author pointed out that when this glucoside or digitaligenin is dissolved in ordinary sulphuric acid, a very fine and durable coloration is produced without any further addition, and at that time he was under the impression that this effect might be due to the presence of nitrous compounds in the acid. Subsequently, however, he observed that sulphuric acid did not always have the same effect, and some months ago, having a sample of acid which was particularly suited for producing the colour reaction, he induced one of his assistants to examine it in order to ascertain whether it contained nitrous compounds. The amount was found to be very small, but the acid contained a considerable proportion of ferric salt, and eventually it was found that sulphuric acid mixed with one per cent. of a solution of ferric sulphate† formed an excellent test for identifying the various constituents of digitalis.

By means of this test liquid, digitalin, digitoxin, and digitonin can be very sharply distinguished when in a state of approximative purity, and only minute quantities require to be operated upon. A few fragments of the substance are introduced into a test tube, covered with 4-5 C.c. of the test acid, and stirred with a glass rod until dissolved, when the characteristic reactions described below are produced.

Digitalin becomes immediately coloured intense golden-yellow, and as it dissolves a red colour is developed, which rapidly acquires a violet tint, remaining permanent for several days. With too large a quantity of the glucoside the solution remains red, but on shaking the reddish-violet colour resembling that of the digitalis flower may be seen in a thin layer of the liquid.

Digitaligenin gives a similar colour reaction of greater intensity, that is to say, it can be produced with a much smaller quantity of material.

Digitoxin becomes quite dark coloured on contact with the acid, almost as if carbonised, and then the solution becomes clear, but of a dirty brownish-red colour.

Digitoxigenin does not become dark coloured on contact with the acid, but gradually communicates to it a peculiar red colour, and a very marked fluorescence.

Digitonin and digitogenin do not give any coloration when similar small quantities are operated upon, and even with much larger quantities the acid only acquires a faint yellowish tint.

Although the reaction with digitoxin is the least characteristic of those above described—since many other substances may give a

dirty brownish-red colour when mixed with concentrated sulphuric acid—this deficiency can be made up for by combining with this test that suggested by Keller of dissolving the glucosides in glacial acetic acid, adding one drop of ferric chloride, and then carefully pouring in concentrated sulphuric acid so that it forms a layer underneath the solution. If digitoxin be present, a dark coloration will be produced at the line of contact, and above it a deep blue band in the acetic acid solution. That result, however, is not always very distinct when the directions given by Keller are followed exactly, and the reaction is very much more marked when the acetic acid contains a ferric salt,* and the sulphuric acid containing ferric sulphate is used.

In carrying out the combined test rather larger quantities of the substance must be taken, but three or four-tenths of a milligramme will suffice. When digitoxin is dissolved in 3 or 4 C.c. of the ferruginous acetic acid, and a layer of ferruginous sulphuric acid run below it, there is an immediate production of a dark zone at the line of contact; after about two minutes a blue streak appears above it, gradually expanding until, after thirty minutes, the whole of the acetic solution will have acquired a deep indigo blue colour. Some hours afterwards this colour will have changed to a blue-green, but the sulphuric acid does not become much coloured.

Digitoxigenin does not give this striking reaction, which is referable much more to the saccharine product of the breaking up of digitoxin—digitoxose.†

Under the conditions above described digitalin and digitaligenin only colour the sulphuric acid in the same manner that they do when tested without the use of acetic acid. Consequently it is possible to detect those substances and digitoxin when they are mixed together, for a mixture of the two glucosides will colour the sulphuric acid reddish-violet, and at the same time colour the acetic acid solution indigo blue.

Neither digitonin nor digitogenin give any coloration when submitted to this combined test.

The remarkable delicacy of this test for digitoxin has been the means of enabling the author to modify his former statement as to the absence of digitoxin in the glucoside prepared in the usual manner from digitalis seed. The preparation known as Digitalinum pur. pulv. Germanic did indeed give a negative result when tested with ferruginous acetic acid. If the material from which it was prepared contained digitoxin this substance would be separated in the course of the treatment by Kiliani's method, but the dried residue of the mother liquors did not give any digitoxin reaction. On one occasion some crude digitalin gave a very feeble and uncertain indication of a blue colour when tested by the acetic acid method, so that it may be inferred digitoxin can only be present in very small proportion in the glucoside prepared in the usual manner from digitalis seed.

A glucoside obtainable from the leaves behaves towards ferruginous sulphuric acid exactly as digitalin does, though other circumstances appear to show that they are not identical, and this as well as other points relating to the glucosides of the leaves is now under examination.

In regard to digitoxin there is every reason for the opinion that the substances prepared by Schmiedeberg and by Merck are identical with that to which Kiliani provisionally gave the name of β -digitoxin, and that in future the prefixes α and β may be dispensed with.

* 1 C.c. of the above-mentioned solution of ferric sulphate to 100 C.c. acetic acid.

† A water solution of digitoxose gives no colour with ferric chloride.

* Translated from the *Archiv der Pharmacie*, 234, 273.

† Made by dissolving 5 grammes of ferric sulphate in 100 C.c. water.

PHARMACEUTICAL SOCIETY

MEETING OF THE COUNCIL.

WEDNESDAY, MAY 20, 1896.

Present:

MR. MICHAEL CARTEIGHE, PRESIDENT.

MR. JOHN HARRISON, VICE-PRESIDENT.

Messrs. Allen, Atkins, Bottle, Corder, Cross, Gostling, Hampson, Hills, Martindale, Newsholme, Savory, Southall and Warren.

Several members were restored to their former status in the Society on payment of the current year's subscription and a nominal fine.

The President announced the receipt from the Board of Examiners in Scotland of a photograph of the Board, and proposed that the thanks of the Council be accorded for it. This was at once agreed to.

The Council arranged the order of business at the Annual Meeting, and then adjourned.

FORTY-FIFTH ANNUAL MEETING.

The President, Mr. Michael Carteighe, took the chair at 12 o'clock, when there was hardly the average attendance.

The Secretary read the notice convening the meeting, and the annual report, which was published in the *Pharmaceutical Journal* for May 9, was taken as read.

The PRESIDENT, in moving the adoption of the report, said, I have no doubt that many of our friends, in looking at the financial statement, may think that we have spent a good deal of money—perhaps even too much, especially during the last year or two. Now I may say, with regard to the last two years, that we have had some expenses in the north connected with the alteration of the premises in Edinburgh, and the construction of the very excellent examination hall and laboratories there. We have had of course to spend a good deal of money and have had to spend all of it, with the exception of £1000, out of the revenue or the balance from previous years. In our financial statement we never take credit for what is owing to us at the end of the year, all that we present is a statement of the money received up to the end of the year, and a statement of what has been expended. If you look critically at the financial statement I think you will find that, substantially, our income was less by about £1100 last year from examination fees, we spent £1150 on the new building in Scotland, in addition to £300 or £400, in the nature of capital expenditure, in keeping laboratories supplied with the necessary scientific apparatus for the proper carrying on of the examinations. There has also been an increased expenditure on account of the Journal, which I will refer to in a few moments, of £1300. This extra expenditure has really been met by the sale of stock, by an advance from the bankers, and by the balance at the end of the previous year. There were a number of things last year on which we spent a good deal of money. We have finished the decoration of No. 16, Bloomsbury Square, and I think I may say we have finished the greater part of what we were called upon to do in Edinburgh. Later on we may have to spend more money on the fittings of the Museum, but with regard to capital expenditure, I think I may say there will be no reason to spend much in the future. Without raising the cry of wolf, or going into too much detail, I think I may say on behalf of my colleagues and myself that we see no reason why, with proper management, we shall not be able to do all we want, conduct our law prosecutions wherever necessary, and carry out all our work without outrunning the constable in future years.

THE 'PHARMACEUTICAL JOURNAL.'

The chief reason of the adverse balance has been the decision of the Council, in the middle of 1895, to increase the size of the *Pharmaceutical Journal*, and to re-model it. That decision was arrived at after the most careful consideration—not, perhaps, without a certain amount of regret on the part of some members of the Society who remembered the Journal in its earliest days,

when it was regarded as a purely scientific journal of Pharmacy. But the view of the Council has been practically the view which was held something like thirty years ago, when I had something to do with it, that it is only fit and right that the Council of this Society should make its official organ acceptable to as large a body of our subscribers as possible. We are endeavouring, I hope successfully, to retain all that is scientific and thoroughly pharmaceutical in the Journal, whilst adding to it other matter, which I know is very much appreciated. It is perfectly well known that members of this Society, and chemists and druggists generally, are not wont to praise. I never heard in this room, after an experience of some thirty years, anyone say anything complimentary about any of the property of this Society—never. Although in a sense we are masonic, that is, we represent a craft, our usage has usually been to damage our own property. In what I am going to say I am not going to make that mistake. I hope you will recognise that your President as Chairman of the Council knows the details of all the business of the Society, knows the value of its respective properties. I am sure that none of you who follow me will say anything which will tend to damage the value of our property—the Journal—a thing given to us in the kindest way by Jacob Bell, made into a weekly journal at the instigation of H. B. Brady and your President thirty years ago, when it was supposed there would not be enough matter to fill a weekly journal, and now made into a journal as large as the medical journals, and capable of affording a mass of information every week. We have sunk, like men of business, a portion of our income for the year—knowing we had not much to spare—in order to make the Journal fulfil the conditions I have named; to make it larger, to keep it the first pharmaceutical journal in the world, and in order that we may have the same claim to the business of advertisements as other journals which have been run on purely trade lines. I may say without fear of contradiction, and without desiring to compliment anybody connected with the Journal, that as at present sent out it is a credit to our body. If the Journal is not useful now, I am afraid it is impossible for us to go very much further. But I may say that, as a matter of business, the expenditure upon the Journal has been wise. As I mentioned just now, the credit for what is due to us never appears in our financial statement; but on the six months' trading under the new régime, from July 1 to December 31, there has been an increase in our income from advertisements which is both interesting and encouraging. It does not come into this account, but will come in this year. I will, therefore, say nothing further on that point than that I, as an individual, have found the Journal to be a good advertising medium. I am now going to give a gratuitous advertisement to the Journal. I know something about advertising: I have been at it for a great many years; and I have tested this Journal in various ways—not by advertising a thing which is universally advertised, where you cannot judge—but I have tested it with special things, and I am perfectly satisfied with the results,—so that if any of you want to make your fortunes, gentlemen, I say advertise in the *Pharmaceutical Journal*. I hope you will accept these remarks; and will recognise that it is not to our interest as members of the Society to have all the details of our work placed before the eyes of everybody else, including our competitors. We are not going to show our hand, we are going to do our best to get some of the business of the country in the *Pharmaceutical Journal*; and if you will leave us alone and trust us, I believe we shall succeed. Speaking generally, I admit we are open to criticism in many ways in regard to the appearance of the accounts; but do not run away with the notion that we had not something in our favour at the end of the year which does not appear on this balance-sheet. The accounts of this Society have been kept on the basis originally devised by Mr. Elias Bremridge, and he was always very fond, as far as possible, of paying everybody to the end of the year, so as to leave no liabilities, an extremely good thing to do; the only thing is that with regard to various forms of business you may be conducting, you pay your money beforehand, and do not get the receipts brought in at the same time. Some of you say, and I have heard it said out of doors, that there is no profit upon the Journal. But you must remember that this Journal is not worked on ordinary business lines. If we were to set against the cost of the Journal some charge for it, as a trading concern would do, you would have to admit that there has been a very distinct profit, and I should be very sorry to have to face an income

tax inspector if he were very troublesome and insisted on going into our accounts, on this particular subject. As a matter of fact, we carry on the Journal for our own purposes—it is sent post free to every person who is entitled to it; therefore when you talk of loss you can only speak of the difference between one side of the account and the other, and you will see an observation to that effect is made in the report. We do not say whether it is loss or gain. The fact is, that the balance, whatever it may be, will and can be reduced probably in future years by increased income from sales and advertisements. I am sure you would be the last persons in the world to say we are not to spend money in giving to those who subscribe to the Society the best kind of journal possible. It is part of our business to do so; added to that the value of the Journal as a means of calling you to arms and getting you to come up to London, support your members, and assist us in getting something through the House of Commons or in stopping something, is very important. You will remember a little encounter we had with the Chancellor of the Exchequer about methylated spirit, how promptly you all responded to my request. We literally deluged the House of Commons with reasons for altering the Chancellor's Budget within something like forty-eight hours—the matter having been initiated in the Journal. Its value, therefore, must be measured in several ways; but in whatever way you measure it I beg to say that the money spent upon it over and above previous years has been spent deliberately. It is a process of sinking of money for future benefit; and the results which I have on the table at the present moment show, on the six months' trading, that the confidence of the Council in making that change has been practically justified.

THE SOCIETY'S HOUSE IN EDINBURGH.

Then with regard to the house in Edinburgh, and the carrying on of the examinations on which we have been spending money, it seems to me we have no right to starve our system of examination. It is our duty under the Statute to examine properly. We charge examination fees, and of course we are bound to have the premises properly equipped with proper apparatus, and all the rest of it.

LAW COSTS.

Now with regard to the law costs. Some of my friends seem to think we are getting extravagant in law. That is about the last charge I should ever have expected to be made against us, because if there is one thing more than another that I understood the members of this Society desired, it was that we should protect the public by efficiently carrying out our Act of Parliament. During the long period I have been your President I think we have developed that process so far that we are, I think, effectually carrying it out. But lest any of you should be unhappy with regard to it, I may say that so long as I am a member of the Council, and assuming the majority of the present members retain that office, I can assure you they will not raise the question of how much money they have got before they go to law. Anybody who breaks the law will be prosecuted, and the provisions of our Act of Parliament will be carried out strictly to the letter. We do not want more money, but if we did I know where to go for it for that particular purpose, and I know there would be no difficulty in getting it. But you must remember that this item of law costs is the balance of a large sum of money. It is not desirable in a public institution like ours to publish details about law costs. It is very undesirable for us to appear before the public in any sense as persecutors of individuals. We are not so. We are a body constituted by an Act of Parliament to see that the law is obeyed, and the question whether we get a penalty without any expense or whether we have to go into court to get that penalty never enters into our minds. If by accident we get penalties without having to go into court, so much the better for us. It gives us a little more money on that side, but even if we have to fight every single case in court, and ordinarily speaking a case in the court in the South will probably cost us from £20 to £30, including getting evidence and things of that sort, the Council will certainly do that. It is possible the time is coming when that may have to be done, because it is obvious that as the Pharmacy Act is better known to other traders there are less infractions than in former years, and therefore we have more difficulty in getting evidence, and there is a disposition perhaps to contest it more freely than formerly. But be that as it may, it will always be the duty of the Council to see that the Act is obeyed at whatever cost. We have, as you know, had some law proceedings with regard to

patents, and this process of revoking a patent is a very expensive one. Some may say, perhaps, "Is the game worth the candle?" We think it is. The effect of our proceedings is to discourage and practically to prevent a number of patents being actually taken out. This Society can never allow patents to be taken out for preparations containing poison without contesting them in a court of law if necessary; it would fail in its duty if it did. You may have seen a report within the last fortnight of a case which may be called, in a sense, a pity, because we have had to go to law, and here we must be prepared, if need be, to spend money. We are going for a very important principle. I do not refer to the proprietors of that preparation. I do not even refer to the preparation—you all know it. It is claimed that it may be sold by anybody, and still worse, that it may be labelled "poison." Here you have therefore a preparation labelled poison thrown broadcast about for dealers to put in their windows, actually making the public believe that poison can be sold by anybody and everybody. That being so, it seemed necessary for the Council to take the opinion of a superior court on the point as to what a patent medicine really is, and we shall have to carry this case, whatever the result may be, to a point where it shall be judicially settled whether, when a substance has been patented and the patent lapses, the rights given to the individual by letters patent shall be practically put into the preparation. The real contention on the other side—once a patent medicine always a patent medicine—means broadly that the Crown having given an individual a certain privilege, he could, after that privilege has lapsed and become void, literally go on claiming the rights of the patentee for the preparation itself. That is a position of things which we feel must be contested, and I am sure you will feel in this case, as in all others, that there is no vindictive action. We have constantly to take legal proceedings against our own members; we may have to do that at any time. I have found it necessary to say in Council—and take this opportunity of repeating it—that the President whoever it is, and the Registrar must do their duty whether the person breaking the law be a member of the Society or not. The safety of the public is the prime object on which we proceed. Consequently if our brethren, members of the Society, will keep branch shops with no registered person in charge they must not be surprised if we have to take proceedings against them. I am sure you will agree with us that it is the right thing to do. There is only one course in fact to take and that is the straight course. I am quite sure that my successor in the presidential chair, whoever he may be, will have the same views on that point as I have myself. Now I want to say a word about title. You will remember most of you that we carried to the Superior Court in Scotland two rather important cases on title. I dare say many of you know that a number of manufacturing chemists, scientific chemists, and what are called professional chemists and analysts, have often complained that we claim an exclusive right to the title of chemist. It has often been said that we have not one. At all events whether we have or have not, we have succeeded in convincing even the Scotch Superior Court, and they have not been disposed to take a very favourable view of the Pharmacy Act, that we have some rights in the matter. We instituted proceedings against two gentlemen in Edinburgh, who carry on very important businesses there as scientific instrument makers and dealers in chemicals, both poisonous and non-poisonous, for scientific purposes. You all know the class of business, and those two gentlemen were men of the highest respectability, we have not a word to say against them; but they protested that they were entitled to use the title of chemist if it were preceded by an adjective, and we have been told that the prosecution of those two gentlemen in Edinburgh was vindictive, that it was a process of persecution, and so on. Now, I want you to understand on what principle we proceed. It is quite certain that no one of us would wish to say to a better educated man than himself who called himself a chemist that he had no right to put that on his card. We do nothing of the sort. We simply take the title of the Act of Parliament; we do not raise the question as to who is a chemist, we never take proceedings against a man for the use of the title unless he keeps an open shop and sells poisons. Now if a man keeps an open shop and sells poisons, and uses the title of chemist with or without an adjective, he is certainly giving the impression to the public that he is registered under this Act, and every reasonable man who calls himself a chemist who is not a pharmacist when that position is put before him accepts it as perfectly equitable. We

have, I admit, in one or two cases, chosen to put the law in motion at the suggestion of public authorities where certain quacks who are professors of certain obnoxious practices do occasionally call themselves chemists, and mix up their preparations in a back room or in a parlour, and in a sense so keep an open shop, but such cases are rare, and practically we have no desire to interfere with the use of the title chemist by the person who uses it in its legitimate sense if he is a professor or practitioner of chemistry. But if he keeps an open shop and sells poisons then we think he ought to be restrained.

THE COMPANIES' BILL.

The last note I have here is with reference to the Companies Bill. I quite feel that some of you may say there was a blue book last year, and we saw, as someone wrote to me, a rattling statement signed Michael Carteighe, which gratified you all, and you may say—what is going to follow? Well, to take the actual blue book itself first. You, gentlemen, have no conception of the tenacity with which the Government Department, in whose house the Committee which was to draft this Bill met from time to time, tried to keep us outside. They tried to prevent our communications actually being considered by the Committee. They suggested that they were irrelevant, and for months it was a species of official hand-to-hand combat with the secretary of that Committee and the officers of the Board of Trade before we could get them to consider our position. We have, I am happy to say succeeded, whatever the results may be, whether they be immediate or remote, at all events we have now in a Government Department a statement of our case by which it has been made intelligible to lawyers and other men of intelligence, as well as pharmacists. It is admitted on all sides that legislation is necessary. But the position taken by those members of the Government who represent Parliament is that an amendment of that Bill is not the right course to adopt for changing the law with regard to such a subject as we and the veterinary surgeons and others wish to have it amended. We say that it is. It is a question of principle whether a mere money payment should convert seven men into a corporate body, and besides allowing them to do certain things positively allow them to use a name which the law says can only be acquired by examination and registration. That affects not only pharmacists but a large number of other people. Our contention is that the Companies Bill is the fitting place to make such a change, because it affects the very form of registrable qualification. You will have noticed that the Bill has been introduced into the House of Lords and referred to a Select Committee. We have as you know had an amendment on the paper. I and others on the joint committee representing the Veterinary Surgeons, the Apothecaries Company, the Dentists, and so on, have all been at work, and we have every hope that we shall be allowed to give personal evidence and explanation before the Select Committee of the House of Lords. If we can get an opportunity of explaining our case we at least are gaining something, for every process of this kind tends to educate people other than pharmacists. That reminds me that in regard to the interpretation of the Pharmacy Act as regards the sale of poisons, the whole of our work for the last few years has been a process of educating the judges. We have been obliged to go on step by step. With regard to many cases as to which some of you said—Why do you not touch them? we did not touch them simply because the President knew what he was about. The judges have to be educated by degrees. There is something almost comical in the way lawyers look on precedents, they are only too happy to find some observation by some other judge or lawyer which relieves them from the necessity of coming to a conclusion themselves. I say it in no boastful spirit, but it is a fact that we have educated the judges, the judges are beginning to understand the Pharmacy Act, and those cases we have not thought fit to bring into court in earlier times were deliberately kept back in order that we might approach the judges under the most favourable conditions. Whether that is a truly moral thing or not I do not know. Before I was President I thought I had some morals, but since I have been President so many of these cases have been left in the hands of the solicitor and the President that I am afraid I have come like a professional lawyer to feel a strong inclination to win my cases. As we suffer many disadvantages I think it is perfectly fair we should take what advantage can be got by the way in which we present our case. I do not think I need detain you further, or I should not allow sufficient time for that amount of heckling which no doubt you desire. I am glad that we have

three or four members of the Society from the other side of the Tweed, who, perhaps, have come to give me the last parting kick. Whether they have or not, I, on behalf of the Council, am very glad to see them. It is desirable that they should come down as much as possible and associate with us and take part in our proceedings. I am sure we have shown to our brethren in Scotland the utmost loyalty and good nature, and all we ask in return from them is that in carrying out their duties there they will not forget the fact that the Society is the Pharmaceutical Society of Great Britain, and that occasionally a meeting has to take place in London.

A GOOD EXAMPLE.

I will conclude by reading something I saw the other day, with regard to an institution not unlike our own, the Institution of Civil Engineers. I do not know any body of men who are so loyal to each other as the Engineers. They have no compulsory powers—they have a charter only; but they are very loyal to each other, and they are very generous—those who make money, to the rest of the body and to their institution; and while it is a fact that if the Government wants an engineer for any particular department it is not bound, and does not consider itself bound, to take a member of that body; still, by promoting education and spending money upon it, the Institution has produced such an effect that to all intents and purposes the members of it have the field to themselves. I have sometimes thought whether we—as a voluntary society—might not have done that. Certainly no Act of Parliament can do so much for any body of men as the individual loyalty of the men themselves, and I feel sorry that in my official capacity it has been my experience to find how ready many of us are to be disloyal to each other. In that process of being disloyal they damage themselves and they damage the body politic. Believe me, gentlemen, that, notwithstanding companies and company trading, the position of the individual is the thing which must be looked to in the future, the mere examination and registration will not be everything for us. The cultivation of all those qualities, including manliness as well as other virtues, is a factor upon which the success of the chemists and druggists depends. In spite of all the opposition that has come, I notice that in large towns and cities where I have been, and in London—there is a healthier tone amongst men, notwithstanding the fact that they have to fight hard—and I am glad to see it. We do not mind fighting hard, but what we object to is fighting unfairly. But it is quite certain, gentlemen, that the cultivation of these attributes must and will produce an effect on the public at large—it is already doing so—even on that class of the community who happen to be in many cases our best customers, but who do not always think too carefully about rights and wrongs—I mean women. They are beginning to understand that a person who is properly qualified is a safer person to dispense their child's medicine than A, B, or C in a store; and I think we shall be able to make them understand by degrees that it is worth a little more to have that security. Who among us, knowing what we do of the expenditure upon our calling, would not, if we were lying sick, rather go to the nearest pharmaceutical chemist for a bottle of physic than to the largest store that ever was? The quotation with which I will conclude, recently appeared in the *Times* as follows:—“The Council's report is of a highly encouraging kind, showing an excellent financial position, with a membership which has increased to a total of nearly 6000, with 816 students. The new buildings are now very nearly complete, and the institution will at length be housed in a manner worthy of its magnificent traditions and growing power. We shall then look for advancement in directions which have been too long neglected. The accumulation of funds can ultimately only promote the decay of an institution of this kind. To apply a portion of those funds to the widening and deepening of experimental knowledge and the prosecution of research, though ending in no technical benefit, will strengthen the scientific sinews of the profession, while adding to its greatness.” I beg to move “That the annual report and statement of accounts as published be received and adopted.”

The VICE-PRESIDENT seconded the resolution, and said he would reserve any remarks he had to make till a later stage, if it were necessary to offer any.

Mr. ATKINSON said: I should like to congratulate the Council on the admirable way in which it has upheld and vindicated the

authority of the Pharmaceutical Society during the past year. It was perhaps more fitting that such an observation should fall from me, because on some former occasions I have felt it my duty to be not quite so complimentary. I know quite well the amount of work that always must be necessitated, and as far as I can gather the legal cases appear on the average to be more than one for each working day; and when we come to consider the amount of evidence that has to be examined and sifted in many cases which have simply not gone beyond the premonitory stage it is a good testimony in itself to the admirable judgment and tact of the Council, and I think it reflects equal honour on the efficiency of the Society. I am very pleased to have an assurance from our President that there will be no relaxation in the vigilance of the Council with regard to these legal proceedings. I say so because I think there has been in certain quarters some apprehension that either such might be the case or that there would be some additional charge made on members of the Society. Of course, this is public work: it is a duty imposed upon the Council for the protection of the public; and there are many who, perhaps, might think that the national exchequer might bear a portion of the cost of a public duty well performed. However, this is a matter, I think, we may safely leave the Council to deal with. But highly as we may estimate the admirable work that has been done, there are, nevertheless, a great many irregularities and illegal practices with which I am afraid the Council is not competent to grapple. I am not going to suggest even that it should do so, because I think there are other methods of dealing with this sort of thing. I am referring now to dispensing as it is done by local practitioners. Who does this dispensing, and how is it done? We know perfectly well; but the public know nothing whatever about it. I heard a gentleman not very long ago lamenting that he had lost the services of his errand boy—who was just sixteen years of age, I think—who had been with him about four years; he said that for the last three years that boy had done the whole of his dispensing, and that was a gentleman who did a very good practice indeed. At an inquest not long ago in the south-eastern district the evidence proved most conclusively that the whole dispensing for the last eight years in one establishment had been done by the cook. One could multiply instances of this kind *ad infinitum*, and if I were asked what was the greatest public danger at the present time, I should have no hesitation in saying that it was the way in which dispensing is carried out by a great many local practitioners. It is an insidious danger; the public know nothing whatever about it, and I say that if you want the dispensing of medicines to go in the proper channel you must make this matter public. You must not be squeamish about it. Pamphlets are cheap, and if you want you can have a sort of pharmaceutical Mr. Jorkins, but you want the thing to be known, and if once the public appreciated their danger, and you arouse a feeling of insecurity, the dispensing of medicines will drift into the hands of those who are competent and qualified to deal with it. We have had a great deal of activity with regard to legal matters, and there has been a good amount of activity in other directions also. Every post seems to bring one circulars connected with anti-cutting chemists, or agreements to be signed that you reserve to yourself 10 per cent. profit or maximum and minimum profits, and all that kind of thing. I do not question the advantage of a certain amount of missionary effort. I do not suppose there is any class of society in England amongst whom missionary effort is perhaps more needed than amongst our own body, but I should like to know that they are preaching the right gospel, and of that I am not quite certain. It is a very significant fact that after allowing the poor chemist to stew in his own juice for ten or twelve years, you now find the manufacturers of proprietary medicines beginning to coquette with him. What does it mean? That they want some more cheap advertisements? Every man must act on his own judgment, but in my opinion the minimum of 10 per cent. is not quite good enough. I think the chemist had better make his own preparations and advertise them accordingly. We are having, and are probably likely to have, a few more doctors to deal with our multiplicity of ailments. If there is any relation between the number of them and the number of physicians, I think the chemist is in rather a bad way. Perhaps he is in a bad way; the chemist and druggist as we knew him twenty-five years ago is gradually becoming a thing of the past. The drug trade, as far as I can judge, seems to be passing into the hands of quite a different class. The new man, who just manages to squeeze through the examination room, must, either on his own account, or

for the benefit of seven or eight other evil spirits, consolidate into a general store business, where he will sell you anything you like, from a mustard leaf to a mousetrap, for 33 per cent. less than any neighbouring chemist. It is very difficult to compete against this kind of thing.

The non-obtrusive, quiet, conscientious chemist is scarcely able to do it, especially when there is absolutely no limit as to veracity or vulgarity on the part of his opponent. I notice that those gentlemen who perhaps are going to do something for the re-habilitation of pharmacy if possible, still appear to harp on a little course of parliamentary treatment. Our record in the past does not seem to me particularly happy so far as legislative tinkering is concerned. Many of our attempts seem to me very much like that leg of mutton which Dr. Johnson described as being ill-bred, ill-fed, and absolutely spoiled in the cooking. I am afraid there is not much likely to accrue to us from any Parliamentary interference. I hold rather strong opinions with regard to Acts of Parliament. I am very much disposed to look upon an Act of Parliament as one of the wiles of Satan. You no sooner get it than you have to begin hunting for some little obscure Section, some nebulous phrase, and whilst spending your time and your money in endeavouring to construe an English sentence, the whole substance falls into the grocery boy's basket. It is not from Parliamentary interference that the greatest results have accrued. Social conditions and commercial conditions arise from other causes, very slight, imperceptible almost, but, nevertheless, you may call it chance, you may call it evolution, or natural causation or what you will, but you cannot stem the current of events. It is by no means improbable that some of these days by a new discovery or a new application of molecular physics the whole thing may be swept into limbo as far as drugs are concerned for the treatment of disease. Who could possibly have foreseen within some thirty-five or forty years ago that when half a dozen men agreed to purchase and divide up a chest of tea that simple action would have revolutionised the whole retail trade throughout the United Kingdom. I am not claiming too much when I say that the effect of that transaction has been felt throughout the habitable globe, and although we, as chemists, were at the time not able to see it would affect us, it would have been something short of miraculous if we had not felt the effect of that kind of thing. We cannot foresee, gentlemen, what there is in the future, but it is to be hoped that your scheme of expansive education will enable the coming man—the pharmacist of the future—to appropriate all the advantages of modern science.

Mr. CAMPKIN: I should like to express my thanks to you, Mr. President, for the admirable address you have just delivered, and I think if our friends in various parts of the country will take the trouble to read it they will see there very much to satisfy them, not only as to the past working of the Society, but the portents, so to speak, for the future. I was rather struck with the remark you made, that it was very unusual to find anyone speaking in complimentary terms of any part of our property or anything connected with the Society, but whatever may have happened in that direction in the past I think the remark will not apply to the work of this year, to the improvement in the Journal, or to the work which you have foreshadowed. I have heard nothing but praise in my travels during the past year with regard to the enlargement of the Journal and the utility likely to arise from it, not only in its scientific aspects, but its commercial aspects also, and certainly, with regard to the Society, I think it never stood higher in the estimate of chemists generally than it does at the present time. There are, perhaps, those who still disagree with that view, and I have occasionally found grumblers amongst my colleagues in the business, but, at the same time many of us think the work has been very considerable in the right direction.

“ No earth-born will
 Could ever trace a faultless line.
 Our truest steps are human still—
 To walk unswerving were divine.”

It is not to be expected that the Council of the Pharmaceutical Society will do quite all that everyone could wish it to do. It cannot probably even guarantee us a good return upon our business, nor could it tell us how to secure it, as you have justly put it, that lies with us individually. But reviewing the work of the Society for the past year, I think it would be difficult for anyone to criticise in an unkindly manner any part of it, because although much has not been published that has been done, no doubt a great deal of work has been done with regard to law

cases and the application of the law for the protection of the public generally, and the chemist generally, which is not apparent on the surface, the results of which only will be proved in years to come. Still a great work has been done in that direction. I will not trouble you on the financial details because they speak for themselves, but one remark was made by Mr. Atkinson with reference to the favourite panacea for all our troubles, namely, Parliamentary action. We are none of us led away with the idea that legislation is in itself a benefit to us; it is only a means to an end. We must have the law on all subjects, but the great secret of success lies in the administration of the law, and in the appreciation of the law by members, and surely there can be no harm in utilising Parliament as a means to such ends as we desire. The result of any Act of Parliament is not apparent until perhaps half a generation has elapsed, and we are now perhaps just feeling some of the deficiencies as well as some of the advantages of the Act of 1868. It may be so, but at the same time that should be no reason for relaxing our efforts in the direction of legislation. I do hope that something will come of the action that has been taken by yourself and the Council as to the amendment of the Companies Act. Who could have predicted that the Limited Liability Act would have had that destructive effect on retail trade that it has? I believe when the Act was passed the idea was that it was only for the purpose of developing great works that could not possibly have been accomplished by private enterprise. Our railways, our shipping, docks, and many other such things, would probably never have been secured except by the operation of the Companies Act, and after that of the Limited Liability Act. But if many of those who promoted it had thought it would eventually be extended to the creation of a number of petty shops, perhaps we might have had the Act amended even before it was too late.

I hope your efforts will be continued in that direction. I noticed in the Journal some time ago that an important amendment had been brought forward by Lord Herschell, and the spirit of that amendment is undoubtedly one that it would be well for us to follow. There are many other points which I hope will be discussed to-day, but I rose mainly for the purpose of expressing the opinion of myself and a number of my friends in various parts of the country, as to the continued usefulness of the Society. There should be one word with us—unity. If we can make the Society united, whether it be by missionary effort or otherwise—and with regard to missionary effort we must not be too particular whether the right creed is preached so long as we are united—we shall become a force, a vital force, a moral force, which even the Legislature will listen to, and then I am sure that as men of experience, like yourself and those by whom you are surrounded at the head of affairs, we shall evolve something that will be to the benefit of pharmacy in the future.

Mr. BARNARD said: I think the report is one of the most satisfactory I have ever seen. When you say that 350 cases of infringement of the Act have been reported to the Council, and in every case dealt with we must feel that the Council is doing some good in the direction of protecting us, the registered men. I should very much like to know how many of those 350 cases led to fines, or promises at least, not to break the Act in future. With regard to the scientific side of the question there is no doubt from the speeches we heard from the presidents of various scientific bodies last night that the Pharmaceutical Society is not only making much progress but is becoming very much recognised and appreciated. But I cannot forget the fact that at the present moment, from the trade side of the question, the chemist and druggist stands in a worse position than he ever did. It cannot be denied that on the one side we have a large number of limited or unlimited companies trading in opposition to us, the registered and recognised, or should be recognised chemists of the country. Then, again, we have another body of men springing up in the East-end of London, men who have not even the capital to form a limited liability company, but who call their shop a drug store. Again, there is another class of men who call themselves a medicine company, dealing as herbalists. All these men oppose and take from us registered men so much of our business that the legitimate chemist and druggist can hardly exist. As for the dispensing of prescriptions, I have been in business in the East-end nearly thirty years, and I can assure you that though they use things we often read about, we very seldom see them. I do hope something will be put in the Companies Bill which will prevent this kind of opposition. I do think that when we read that very broad Section of the Pharmacy Act which says that no man shall call himself a chemist, etc., except he is on the Register, it was never intended that a man should sail as

near the wind as he possibly could, by putting carboys in his window and "drug store" over his house. That is a question which I think the Council should seriously consider, and see if it cannot devise some means to prevent this kind of imitation whereby the public are misled and made to believe that the offender is really a registered chemist and druggist.

Mr. BARRETT (Leamington): Although I have not had the pleasure of hearing your address, the time will doubtless come, judging from the remarks of previous speakers, when I shall learn a great many things from the observations which you, sir, have been good enough to make to the meeting. But we have been learning for some years many things from your mouth; many things you have told us over and over again which I have heard said throughout the country were contemplated to do the chemists of the country good, and not only to do them good, but to teach them the way to get a living. We are told by speakers to-day that by the chemists of the country the Pharmaceutical Society is perhaps looked up to with more respect than it has been in times gone by. I doubt it very much. Perhaps the Pharmaceutical Society may be looked upon with more respect in London. Speaking as a local secretary I find very great difficulty in getting the chemists of the town of Leamington, where you would expect every man to be a member of the Society—and even in Birmingham as well as in the midland counties—I say there is very great difficulty to get the majority of chemists to belong to this Society. They say: "Show us what the Society has done"—they say, "Show us what the Society is going to do for us; and if you can convince us that it will do anything which is likely to help us to get a living, we will join the Society." It might be said without unity—and that is the tale I have to preach—it is impossible to dictate to the Pharmaceutical Society as regards what its policy shall be. The policy, undoubtedly of the Council is the policy of those few that send their subscription and members to represent them. But I sometimes think that even the Council does not always, perhaps, keep in touch with those who are members of the Society in the way that it should do. We have read of the recent attempt—I say, attempt, because everyone must know that the committal of the Companies Bill to the Grand Committee means, at least, for the session at any rate, that there is no passing it. We have read of the attempt to so alter the Bill as to make it illegal for a company to have greater rights than a person. That is the one thing we have been striving for in years past, a step that the Council and the Society have been working for. But how have they been working for it? Do they use all the influence that they can use to bring it about? We see in the Journal that the Parliamentary and Law Committee has reported this and that, but is that using all the influence which the Pharmaceutical Society can use to bring this about? Certainly not. You want greater touch between the Council and your local secretaries all through the country. You want some means of advising the local secretaries as regards the aims you have in view, and the work you are contemplating. You want to go beyond that and to demand that the local secretaries should interview candidates for Parliamentary honours, and obtain from them a promise in favour of altering the Bill. If they will not do that so as to make the Bill just to us—and I have never found a member of Parliament yet who has not said it was unjust—use your influence against him. Place your Council in closer touch with the local secretaries. Let your local secretaries be instructed to see the Parliamentary candidates, and to see whether they are in favour of this alteration. If you do that you will come within measurable distance of getting this alteration. It has been said that some attempt has been made to start a trade association. Do not throw cold water upon it, but come inside and join it. If it does not do what is right come in and alter its policy. I am not a member of the Council of that Society, but I think the policy which it is adopting is one which I have taught for many years in Birmingham. The Council has told you that it can only interfere in matters legal and educational, that it cannot interfere in matters of trade. If so, we must have a trade society like the licensed victuallers and others. Do not grumble at the policy of the society. Come inside, alter the policy if you want it altered, and urge the Society to do for you in matters of trade what the Council of the Society will do for you on the scientific side. It can do science for you, but it want to be in touch with the trade. What is wanted is unity. Let us learn unity from the Grocers' Federation, the Licensed Victuallers' Federation, and from every other federation. The only man you cannot federate is the chemist. If you

will put your shoulders to the wheel in the same way that other traders do we shall soon see a different state of things. A grocer in Leamington, who has been the greatest cutter, is now so sick of cutting that he has joined the Society. Now if they are sick let us come in and join the Society too.

Mr. HYSLOP: There is one paragraph in front of the report that is of so much importance that I feared it would be overlooked, and that is why I rise to have my little say, which will not occupy long. You have spoken in your address of the fact that one wants a "man" in business. One member on my right has referred to the abuse of dispensing by boys and unqualified persons. The only remedy for this, as it seems to me, is that the forthcoming Council should take into their respectful consideration and earnest thought the recommendation from the Scotch Executive—that the Preliminary examination should be increased in "standard and scope." There is much in that which is at the very foundation and root of our future establishment as pharmacists. Allow me to say that I am one of those who believe that the Society has done immense good to chemists. Somebody has just said that his constituents say "Show us the good that the Society has done." My constituents say the same to me, but I can show them the good plainly enough. I have been a member of the Society nearly forty years, and they recognise that I am qualified to speak to them about the work of the Pharmaceutical Society. It is easy to show them the good that has been done, indeed it would be very difficult not to show them. I belong to the grateful ones, whatever else I may or may not be. I believe in two other classes that I have seen, the Amœbæ—they have no backbone, of course—and the sturdy grumblers, who have a backbone with no joint in it. They know not how "to stoop to conquer," and it is these that stand up for things—I will not name them now—things which are being introduced from time to time which lie at the childhood of our Association as chemists, and have nothing to do with the grown-up stature of the pharmacy man. Those that bring novel doctrines forward and quack remedies to heal disorders are, in my opinion, twenty years too late with their remedies, and we as a Pharmaceutical Society must avoid this by paying more respect to the future. If men in business were to stick to their own business and not to go about spreading dissension and tares among the wheat, they would soon find reason to be satisfied with their business, and many would rise to be that sort of man spoken of by Solomon, "Stand before kings, not before mean men." It is easy to attain this good position in the ranks of pharmacy; and having regard to the love of liberty that presides in English breasts, and thanks to the Pharmaceutical Society, which has been the exponent of liberty for so many years, and the sturdy champion that we should gain the rights which belong to us—thanks to them, the advantages can be claimed by us most fully. There are three particulars in which I do trust the Council will before we meet again endeavour, and perhaps succeed, in remodelling the educational list for the Preliminary examination. In my opinion it is deficient in mathematics. A young man will go forth into the world knowing nothing of this but what he calls arithmetic, but it will be found in the course of a very few years that his arithmetic is a burden to him, and at last he throws it off his shoulders, except the little odds and ends which he is obliged to keep about him for trade purposes. The examination should also include algebra and geometry, without which arithmetic is a mere slippery attainment. It is always the same when I get a new assistant. I say to him what is the difference between plus 1 and minus 1? Upon asking the question I find he is minus altogether, and more than that he thinks it does not matter. Then I think that Latin should be supplemented by French so as to make it go down agreeably. With respect to Latin, pronunciation should be insisted upon, and if this were done we should not find young men looking scared when we talk to them about *Pil. aloes sine calomel.* If you say *sine* they are all right, but you say *sine* they do not know where they are. The great thing to teach a young man is to maintain respect among his neighbours, that being the only stable ground on which he can afterwards exercise his profession. I have no doubt whatever of the efficacy of pegging away on the right lines. The issue will be that the cowards—I mean moral cowards—will be squeezed out of the profession, and brave men will be found to take their places, men who can give a reason for their position, and for the stand they make before the public as well as the price they charge for their goods.

Mr. WHITFIELD: It seems to me this meeting is assuming the

character of a missionary meeting. I have a gospel to teach which is of a different character. It is thirty-four years since I was in the torture chamber upstairs, since which time I have not been a very active member of the Society—I have been, I may say, a quiet one, but I have come to-day to this meeting from a sense of duty. I have something to say, and I have been trying to put it into shape. The doctrine I want to teach to-day is just this, we want to have connected with this Society a body of loyal men. Our Chairman has used the term which expressed the matter exactly—we want individual loyalty. How that individual loyalty is to be secured, or rather how it has not been secured in the past, is just what I want to point out. When I was a student some thirty-four years ago I had the pleasure of spending two years in the school, and I left the premises an enthusiastic pharmacist. I was in love with the place and all its associations, and I went from here as I should like men always to go, but I find now the men who go through your School are not enthusiastic, and they are not loyal. There is just one cause to which I largely attribute it. For the last day or two I have been thinking the matter over to see whether I could try and sugar-coat the pill. I want to administer a dose of physic, and I have been trying to see how I could do it nicely. In Yorkshire we are blunt and rude, and I am afraid I must give up the task. I want to put my finger on the blot. In my remarks I do not wish, in criticising the School, to say one word about the lecturers or the professors, but there is one fact to which I would draw attention. Thirty or forty years ago I remember the condition of the Laboratory. At that time the examinations were not compulsory; it was a voluntary matter. Since that time the Society has increased in riches, position, and influence. The School has been increased, but the Laboratory to-day is no better than it was thirty or forty years ago. We, as old students, cannot keep up our enthusiasm; we are not proud of the thing. I have not been up here for a year or two, but when I came up and went in I felt a sense of shame for its out-of-elbow sort of look. Some of its friends may say it is very good; but it is no better than it was thirty-four years ago, and I maintain that it should be. May I go into detail? We have a professor, and we give him a certain sum per annum by way of honorarium. We give him a laboratory rent free, and we allow him to have a private shop there as a laboratory of his own, where space is of value; and not only that, but he is allowed to take all the fees. I do not blame Professor Attfield at all. Personally he is a man who has many friends, and rightly so, but I think we must all agree that he has very commercial instincts, and if the Society put a valuable property in his hand he would have been foolish if he had not made use of it. The men who come up to this School pay their fees, but they get no better instruction here than they get elsewhere—perhaps not so good—and when they leave the School they feel they have paid for all they have got, and they do not go away grateful. They do not feel loyal. Now, do you not feel that as a body of traders you ought to feel ashamed of yourselves in making a bargain of that sort. Is it right that you, as a body of business-men, should put a property of that sort into the hands of a man under that condition? I say it is not. If the money which students pay as fees had been used to extend the laboratory, we should now have a laboratory of which we might be proud. Why should we not go round to other countries and see what can be done in this respect? We have not done that. The men who have passed through the School in the last twenty years have gone away and been lost. If these men had been rightly served in this School—because you get the best men here—they would have gone to all parts of the country, and would have backed you up and benefited you to an immense extent. You have lost the chance; and how the ground lost is to be regained is a problem which I feel is most difficult to solve. I may have been indiscreet in touching upon this matter; but still the fact remains. I cannot go into politics, because I know nothing of pharmaceutical politics, but as a pharmacist who tries to keep up a respectable position, I feel we have lost a chance of making many members of the Society. If we are to have the responsibility, let us send out from this establishment men equipped and trained not merely so as to enable them to get a living, but equipped as thorough pharmacists so that they will be a credit to us. If I have been personal in my remarks in any way I regret it. It has been a matter of pain to me to have touched upon it, but I have brought it up as a matter of duty. I know Professor Attfield has an immense body of friends; but I really think that something ought to be done in the way I have suggested.

Mr. SAVAGE (Brighton): As one who has not attended many of your meetings I may be forgiven for speaking, but I feel to-day we are "A Happy Family," but that we are only representing a very small section of our trade. We are in the happy position of being between the profession generally and traders. We get the kicks on the one hand, and frequently we get a few half-pence on the other. I hope that our new Council will take the matter in hand, and be able to incorporate not only the 3000 or 4000 that are now represented, but the 8000 or 10,000 "Utlanders"—if I may so term them—who are standing aloof. They have no affair with the direction, and they take no active part in the management of the Society. In my own town the most popular chemist—a man whose hand is always in his pocket in case of need—is debarred from taking a place in the Council Chamber, because he was only the managing assistant to one of the leading firms in England in 1868. Is that fair? I say we should only be too happy to return that gentleman to the Council, and he would be an ornament to it. My town is not the only one in this respect. There are many similarly placed. Let the Council be the Upper Chamber, let us have a territorial representation of the chemists throughout the kingdom, and let there also be an Under Chamber. We can then bring such influence to bear that you, sir, will be President, not of a small section, but of one of the best organised societies in the kingdom.

Mr. LOMAS: The few words which I have to say refer to the first paragraph of the report. The President has said that the Council intends to go on prosecuting, and that we are doing good work in this direction; but I do find fault in one respect, and that is that the funds of the Society are being used for the prosecutions. Gentlemen, what are these prosecutions for? Are they for the purpose of obtaining a monopoly for you? Nothing of the kind. They are for the protection of the general public. You have just been called a missionary Society. I say it is no part of your duty to be missionaries and protect the public at large, but that it is the duty of the Government to make good to the Society that loss which the Society incurs in conducting these prosecutions. There is no monopoly in the matter. The Act under which you are prosecutors is passed for the protection of the public, and not for your protection. I have no doubt that if the Treasury was approached in a proper manner the money which you are out of pocket would be returned to you. Let us take it in this way. Suppose the order of things were reversed, and that instead of being out of pocket you were in pocket by the proceedings you would soon have the Exchequer or another department ordering you to pay the balance into such and such a department. You would not be allowed to enrich yourselves at the expense of the prosecutions. If you did you would have the general public down on you. If it cuts that way you have no right to be out of pocket. This Society is not called upon to protect the public, its duty is to protect the members, and to see that no man, unless he is qualified, carries on business as a chemist and druggist. In doing that it does all that is necessary. Outsiders say they will not pay their guinea to the Society for the protection of the public, and I say that they have no right to do it. I contend that we ought to get the money expended on prosecutions refunded. Then it is said that we do not do enough. I agree that we should spend all we can for the good of the Society. I find no fault with that, but I do find fault with it spending money on prosecutions. I will now touch on the one-man company question. I think that the Council deserves the thanks of the Society for the action it has taken. It will be successful in the near future, for the idea that a one-man company should protect five or six persons is so monstrous and contrary to what it should be that I feel certain the Council must in the end be successful.

Mr. CURRIE (Glasgow): Mr. President and gentlemen. In the first place I have to thank you for the very kind reception which we met with on the occasion of the dinner last night, and also at the meeting to-day. This is the first occasion on which I have been present at the Annual Meeting. I made up my mind that I would come this time, not, as you have hinted, to give you a parting kick, or to jump on you, but to let you know that the feeling of Scottish pharmacists towards the Society has undergone a great revolution. The annual report is a very elaborate one, and I have no intention of criticising, but I would draw your attention to one little remark which Mr. Hampson, the Treasurer, made at the meeting of your Council when he referred to Scotland getting so much. I hope, gentlemen, you do not grudge the money which

you have expended. The rooms have been practically completed; they are second to none—they are certainly not second to Bloomsbury Square—and the attendance for educational purposes has increased. I am glad to know that there is a prospect of a larger access of members and associates from Scotland than there has been in the past. For that we have to thank our President, Mr. Carteighe, who on the occasion of his last visit to Scotland was received sometimes very well and sometimes very ill. Be that as it may, after he had been heard speaking everything was in his favour, and those who were against him at the beginning of the meeting have quite gone to the other side at the end of it. I am convinced as years go on that at no very distant date we shall have nearly every chemist in business associated with the Pharmaceutical Society of Great Britain. A great many questions have been mentioned and discussed here referring to prosecutions. Unfortunately in Scotland the prosecutions have not been very gratifying to the Pharmaceutical Society, and still more unfortunately our Scottish judges do not favour our work. I am surprised beyond measure that the remarks which have fallen from the lips of Scottish judges and sheriffs should be allowed to pass without comment. We, in Glasgow, sent a notice to the Council that something should be done to get this matter put right, and I hope that it will receive attention. Another matter is the disposing of unqualified men in surgeries—I refer to keeping open shop business. If you come north you will find in this respect a very serious state of affairs, particularly in Glasgow. No later than last week I had a list of sixty doctors who keep open shop for the sale of drugs and poisons, and in not one of those shops is there a qualified individual—and that only in a very small section of our city. I could give you 300 cases to work upon, in not one of which is there a qualified man. The question of prosecutions in Scotland must be carried on if you are to gain members. We have had the matter discussed over and over again, and we maintain, no matter what may be said to the contrary, that a medical man has no right to have an open shop for sale to the public unless he employs a qualified person. As the question of education has been referred to, I may say that the percentage of failures for a long time has been simply astounding. It is not creditable to the Pharmaceutical Society that it should allow simple examinations like the Preliminary to be gone into time after time so that a man should be able to come up from three to six times to get through such a simple matter, and even then not get through. I say it is not creditable; I go further, and I say this—that if a man fails to pass his examination at the third attempt he should be debarred from passing at all. I would go a step further still, and say that it would be to the interest of the Pharmaceutical Society of Great Britain and to the interests of chemists themselves if it could be made compulsory that the Preliminary examination should be passed before the period of apprenticeship commences. I am delighted to have come to this meeting, and on behalf of my Scottish friends I tender you my hearty thanks for the reception accorded to us.

The PRESIDENT: If no other member has any observation to make I will reply to the gentlemen who have spoken. I may be pardoned if I say that I think the majority of this meeting agree in the main with many of the criticisms that have been made on the report and the condition of pharmacy. It is the duty of the incoming Council to do what it can in the directions indicated. I think the neatest way in which I can deal with your criticism would be this—if you would allow me to say, that all your suggestions shall be considered by the General Purposes Committee, and have the attention they deserve. There is one special thing Mr. Currie referred to, which, perhaps, I may allude to specially. He knows quite well that we have given a great deal of attention to so-called doctors' shops in Glasgow. He also knows quite well that for some time it was held that the doctor was exempt from the provisions of the Act altogether—that is to say, his assistant and his ox and his ass and everything else; and in the early days of my presidential office I had some difficulty in getting my colleagues upon the Council to believe that the exception which applied to medical men only applied to the individuals. It would be a great anomaly if the law had been otherwise. We have to thank some of the Scotch doctors for having carried the case up to the Superior Court in Edinburgh, where we obtained a decision in our favour. Mr. Currie must, I think, point out to his Scottish friends that the difficulties which we have to deal with are considerable in undertaking prosecutions in Glasgow. He knows that the sympathies of the Sheriff appear to go with the boy or girl or woman who is left in charge; and because we cannot hit the medical man he seems to think that it is not a serious offence at all. We do not begrudge the ex-

penditure of money — that question does not enter into consideration at all. Every case is proceeded with on a defined principle, with the amount of seriousness which might involve it being carried to the House of Lords. But the difficulty is this, that if the Sheriff imposes a penalty of a shilling the moral effect on the doctor is almost *nil*. We have received a memorandum on the subject from Mr. Currie, which is under the consideration of the General Purposes Committee; but it is not so easy to move as is suggested, the fact being that the real delinquents are the doctors themselves. I do not hesitate to say that if any member of the colleges in London carried on this business, and attention was called to it, they would be struck off the roll. I did notice that some attempt was made by the medical authorities of Glasgow in that direction, but I do not think they went far enough. If Mr. Currie could manage to influence some of the leading physicians in Glasgow, and temperately put this disgraceful state of things before them in order to see whether they could not help to stop the practice, he would be doing great good. It is perfectly obvious that if we bring the people, half of whom may be boys, before the Sheriff, and the Sheriff practically whitewashes them, the coercive action of the law does nothing to stop the doctor. I am not sure that Mr. Currie could not write a very good article for the Glasgow papers. I commend that form of calling public attention to some of my brethren. Mr. Atkinson referred to the danger of dispensing in close surgeries as distinct from open shops, and that to my mind is a very serious danger. I feel certain that if some of my learned brethren would get an article in the *Nineteenth Century* pointing out the danger, and followed it up by a paper read elsewhere, the moral effect would be extremely great, and it would lead to the subject being considered. The public imagine that the doctor professes to supply medicine. As a matter of fact the doctor wants a fee, and the public think they are getting a visit for 3s. 6d. with the medicine thrown in, but that is not the case. If they knew the danger of having poison dispensed in a close place without the supervision of a medical man, they would be almost as glad as the people in the middle ages to have something between the doctor who wrote potent things for the king and the king who swallowed it. I should not like to be disrespectful to Mr. Lomas, but I really think he was not quite as illogical as some of you thought in his references, though I am afraid we cannot do anything in the direction he says. To quote from a case before us in Scotland, the Procurator-Fiscal actually brought before us officially a serious case of negligence, not only on the part of the person not being registered, but a gross case ending in death, and he asked us whether we ought not to take proceedings against this person under Section 17. Our reply was that the Procurator-Fiscal could do it himself, as we were not the prosecutors. He replied most politely that he could do it, but the money would not be allowed out of the Scottish Exchequer, and that if we undertook to pay the expenses he would undertake the prosecution. I am afraid there is no opportunity at present of getting any Government to give us what is lost out of the public funds. The fines go to the county in many prosecutions we undertake. I prefer in all these cases of carrying out an Act of Parliament to rest our action upon the carrying out the law irrespective of the money. If we carry on this policy we earn the confidence of the public and the respect of the Government department which has to do with us.

The resolution for the adoption of the report was then put, and carried unanimously.

APPOINTMENT OF SCRUTINEERS.

The PRESIDENT then read a list of names of gentlemen who had been nominated to act as scrutineers, and their appointment was unanimously agreed to.

APPOINTMENT OF AUDITORS.

The following gentlemen were appointed to act as auditors:

- BUTT, EDWARD NORTHWAY, 77, Hamilton Terrace, N.W.
- LESCHER, FRANK HARWOOD, 60, Bartholomew Close, E.C.
- STACEY, SAMUEL LLOYD, 22, Great St. Helen's, E.C.
- UMNEY, CHARLES, 50, Southwark Street, S.E.
- YATES, FRANCIS, 64, Park Street, Southwark, S.E.

The PRESIDENT then called attention to the fact that the following registers had been laid upon the table in compliance with the provisions of the Act:—

- Register of Members, Associates, and Students of the Society.
- Register of Pharmaceutical Chemists.
- Register of Apprentices and Students under the Act of 1852.
- Register of Chemists and Druggists under the Act of 1868.

Mr. EWING: Gentlemen, the motion which I rise to move is one which I am sure you will receive with cordiality. It is a vote of thanks to our worthy President and to the members of the Council. I am sure we are all indebted to them for the great attention they have given to their duties, and to the services they have rendered to every person in the trade in this kingdom. In spite of the President's hoarseness I am glad he has been able to discharge his duty to-day with his accustomed vigour and ability. We all hope that he will soon recover his voice to the full. You will cordially endorse what I have further to say—namely, that of all the men who have filled his position, few have equalled and none have excelled him in the devotion he has displayed to the best interests of the Society.

Mr. BARRETT: Gentlemen, I have very great pleasure in seconding the vote of thanks. Although one feels, of course, that you may always possibly find points of difference with the Council, at the same time one is always ready to admit that if we were placed in their position doubtless others would find the same fault with us. It is the duty of everyone to find fault with those in office. Notwithstanding that when gentlemen give up their time to preside over the important duties, such as our President presides over, as well as the members of the Council, I am sure we must all feel that they deserve our best thanks. In the President we have certainly one of those men who are the leading lights not only of pharmacy, but a man who might be a leading light in any position of life which he chose to occupy. The one thing more than another which grieves me is that he has not seen his way to offer himself as a member of the Parliament. Although he does good work in presiding over this Society, I feel that he could do better work for us if he would only grace the House of Commons by his genial presence. I have great pleasure in seconding the vote of thanks.

The resolution was put, and carried unanimously.

The PRESIDENT: Gentlemen, on behalf of the Council, the Vice-President, and myself, I tender you our hearty thanks. I have now to declare this meeting adjourned until 3 o'clock to-morrow, Thursday, to receive the report of the scrutineers.

ADJOURNED GENERAL MEETING.

Thursday, May 21.

MR. MICHAEL CARTEIGHE, PRESIDENT, IN THE CHAIR.

The adjourned meeting for receiving the report of the Scrutineers was held on Thursday, May 21.

The Chairman of the Scrutineers, Mr. E. N. Butt, read the following report:—

SCRUTINEERS' REPORT.

We, the undersigned Scrutineers, appointed at the Fifty-fifth Annual General Meeting of the Pharmaceutical Society of Great Britain, do hereby certify that we have examined the voting papers committed to us, and report the following:—

Voting papers reported by the Secretary to have been issued	3762
Voting papers received	2173
Voting papers issued, but not returned	1589
Voting papers received	2173
Voting papers disallowed:—	
Informal	6
Received by post too late	85
	91
Voting papers registered	2082

CARTE GHE	1725	PARK	1463
STORRAR	1698	GOSTLING	1459
MARTINDALE	1664	SAVORY	1220
JOHNSTON	1622	BATESON	1171
NEWSHOLME	1608		
CROSS	1594		
SYMES	1586	WARREN	1159
HARRISON	1537	CAMPKIN	1084
HILLS	1520	ARMITAGE	832
CORDER	1514	WILLS	747

EDWARD N. BUTT, *Chairman.*

R. FISHER YOUNG.	P. J. ROBBINS.
HERBERT CRACKNELL.	J. T. SANDELL.
S. A. STURTON.	LEO ATKINSON.
W. PRIOR ROBINSON.	W. L. CURRIE.
J. C. HYSLOP.	WALTER T. COOPER.
HENRY C. BIRCH.	H. N. B. SPINK.
J. H. SHACKLOCK.	T. W. HORSLEY.
A. E. TANNER.	W. H. STICKLAND.
EDWARD B. STAMP.	R. G. GUYER.
D. R. JACKS.	R. FEAYER CLARKE.
R. W. GILES.	

THE NEW COUNCIL.

The PRESIDENT, as Chairman, then declared that the following gentlemen would constitute the Council for the ensuing year:—

ALLEN, CHARLES BOWEN, 20, High Road, Kilburn, London, N.W.
ATKINS, SAMUEL RALPH, Market Place, Salisbury.
BATESON, THOMAS, 23, Stricklandgate, Kendal.
BOTTLE, ALEXANDER, 37, Townwall Street, Dover.
CARTEIGHE, MICHAEL, 180, New Bond Street, London, W.
CORDER, OCTAVIUS, 31, London Street, Norwich.
CROSS, WILLIAM GOWEN, Mardol, Shrewsbury.
GOSTLING, THOMAS PRESTON, Diss, Norfolk.
GROSE, NICHOLAS MALE, 8, Temple Street, Swansea.
HAMPSON, ROBERT, Norland House, Sevenoaks.
HARRISON, JOHN, 33, Bridge Street, Sunderland.
HILLS, WALTER, 225, Oxford Street, London, W.
JOHNSTON, JOHN, 45, Union Street, Aberdeen.
MARTINDALE, WILLIAM, 10, New Cavendish Street, London, W.
NEWSHOLME, G. T. WILKINSON, 27, High Street, Sheffield.
PARK, CHARLES JAMES, 1, Mutley Plain, Plymouth.
SAVORY, ARTHUR LEDSHAM, 143, New Bond Street, London, N.W.
SOUTHALL, ALFRED, 17, Bull Street, Birmingham.
STORRAR, DAVID, 228, High Street, Kirkealdy.
SYMES, CHARLES, 14, Hardman Street, Liverpool.
YOUNG, JOHN RYMER, 42, Sankey Street, Warrington.

After the report of the Scrutineers had been received, the President moved, and Mr. Martindale seconded, a vote of thanks to the Scrutineers for their labours. This was suitably replied to by Mr. E. N. Butt on behalf of the Scrutineers.

DONATIONS TO THE LIBRARY AND MUSEUM.

At a meeting of the Library, Museum, School, and House Committee, held on Thursday, the 14th inst., the Librarian presented the following report of donations:—

To the Library (London).

University College, Liverpool: Calendar, 1895.
King's College Hospital, London Reports, vol. 2, 1894-95.
Mr. Walter Hills, London: Berichte der deutschen chemischen Gesellschaft, 1895.
University of London: Calendar 1896.
Dr. E. Bretschneider, St. Petersburg: Botanicon Sinicum, part 3, 1895.
H.M. Secretary of State for India: Flora of British India, part 21.
Imperial Botanic Garden, St. Petersburg: Acta Horti Petropolitani, tom. 14, fasc. 1.
Radcliffe Library, Oxford: Catalogue of Books added during 1895.

Smithsonian Institution, Washington:

Bolton, Bibliography of Chemistry, 1893.

Mr. E. Andom:

Industrial Explorings In and Around London, 1896.

École supérieure de pharmacie de Paris:

Roques, Recherches sur la cinchonine, 1896.

To the Library (Edinburgh).

Messrs. E. R. Squibb and Sons, Brooklyn, New York:

Ephemeris of Materia Medica, vol. 4, No. 4.

Pharmacy Board of Victoria:

Victoria, Pharmaceutical Register for 1895.

Victoria, Report of the Pharmacy Board for 1895.

Mr. Bertram Prentice, B.Sc., Edinburgh:

On Dimethylacrylic Acid and Antipyrine, 1895.

The following report of donations was presented by the Curator:—

To the Herbarium.

Mr. H. W. Ridley, M.A., Singapore:

Fifty-three specimens of medicinal plants.

PARLIAMENTARY INTELLIGENCE.

THE COMMONS AND RESEARCH.—Mr. Robert Cox (S. Edinburgh) will at the proper time move that the Civil Service estimates be reduced by £100, in respect of scientific investigations. The honourable member is understood to be a member of the firm of J. and G. Cox, gelatin manufacturers, Gorgie Mills.

THE COMPANIES BILL.—No day has yet been fixed for the meeting of the House of Lords Select Committee, to which this Bill has been referred. The House has now risen for the Whitsun recess, and will not again assemble till June 8.

SIR ALBERT ROLLIT, who is fast acquiring a high reputation as an "all-round man," has now turned his attention to educational matters, and has been inquiring whether the Government intends to act upon the report of the Gresham Commission. The Vice-President of the Committee of Council on Education, in reply, has officially announced that a Bill for the re-organisation of the London University on the lines recommended by the Commission is lying in the Privy Council office awaiting the sanction of the Government, and that when that sanction is obtained the Bill will probably be introduced into the House of Lords.

THE SECOND ROYAL COMMISSION ON TUBERCULOSIS, to which reference was made in the Journal for February 29 at the beginning of the Session, has not yet been appointed, and Dr. R. Farquharson, alarmed lest in the nightly parliamentary strife of tongues the subject should meet the fate of the good seed which fell among thorns, is urging the President of the Local Government Board to announce the names of the Commissioners and the terms of the reference.

PUBLICATIONS RECEIVED.

SOUTHALL'S ORGANIC MATERIA MEDICA. Fifth and enlarged edition. By JOHN BARCLAY, B.Sc. Pp. 306. Price 6s. (London: J. and A. Churchill, 7, Great Marlborough Street, W. 1896.) From the Publishers.

LECTURES ON PHARMACOLOGY FOR PRACTITIONERS AND STUDENTS. By Dr. C. BINZ. Translated from the second German edition by ARTHUR C. LATHAM, M.A., M.B. Oxon., M.A. Cantab. Volume I. Pp. 389. (London: The New Sydenham Society. 1895.) From the Council.

LIEBIG AND KOPP'S JAHRESBERICHT FOR 1890. Part 6. Edited by F. FITTICA. (Brunswick: Friedrich Vieweg und Sohn. 1896.) From the Publishers.

CHARCOAL AS A THERAPEUTIC AGENT. By ROBERT B. WILD, M.Sc., M.D. Being the Parkin Prize Essay of the Royal College of Physicians of Edinburgh. Pp. 17. (Manchester: John Heywood. 1896.) From the Author.

PHARMACEUTICAL JOURNAL.

A Weekly Record of Pharmacy and Allied Sciences.

ESTABLISHED 1841.

Circulating in the United Kingdom, France, Germany, Austria, Italy, Russia, Switzerland, Canada, the United States, South America, India, Australasia, South Africa, etc.

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LONDON: SATURDAY, MAY 23, 1896.

THE SOCIETY'S ANNIVERSARY MEETING.

THE proceedings at the annual meeting of members of the Pharmaceutical Society are always interesting, for although their direct influence upon the conduct of affairs may be comparatively slight, they may be regarded as giving expression to opinions prevalent among the community of which the Society is the recognised representative. On some occasions disapproval of the action of the Society's Executive has formed the leading characteristic of the addresses delivered at these meetings, either in discussing the report of the Council or in connection with particular motions brought forward by members. Not unfrequently very unexpected results have taken place, and year by year the advent of the annual meeting is accompanied by a feeling of curiosity and sometimes of anxiety as to what may happen. The meeting this year has not been exceptional in that respect, nor perhaps wanting in the surprise to which it may have given rise. It would be affectation to ignore the circumstance that since the publication of the Council report and the financial statement for the past year, apprehensions have been entertained in some quarters that certain of their details might form the subject of more than ordinary severe criticism. A vague suspicion that there was "something rotten in the state" of the Pharmaceutical Society, appeared to have been conjured up as a warning to Members and Associates of the Society, who were supposed to have placed too implicit confidence in the ability of their elected representatives to conduct affairs and their desire to do so with due regard to the interests of chemists and druggists; probably there were also some who anticipated entertainment from the "heckling" of the Council and the President. The number present at the opening of the meeting was not so large as to afford much indication that such a result might be looked for, but before the termination of the proceedings, the place of meeting was fairly filled.

In moving the adoption of the report, the PRESIDENT, as usual, recapitulated some of the most salient points of the past year's work, and he did so in a manner to leave little for discovery by critical acumen. The fact that the income accruing from the administration of the Pharmacy Act had been reduced while at the same time the prosecution of offenders under the Act has involved an expenditure of a very considerable sum, leaving a balance of several hundreds against the Society, was very plainly pointed out. There was no more reticence in regard to the fact that there has been un-

diminished activity in the steps taken for rendering the Society's premises in London and Edinburgh thoroughly efficient and well adapted to the work of examination with corresponding outlay of money. In matters more immediately connected with the work of the Society as a voluntary body, there has been equal liberality in maintaining the Libraries, Museums, and other educational arrangements, while the outlay on the Society's School has not been much less than a thousand pounds. Then in regard to the Journal—a part of the Society's property which has recently undergone modification in response to a very general desire of the subscribers—the additional expenditure of several hundreds of pounds during the past year was mentioned—not as a circumstance requiring excuse, but as an indication of the thoroughness with which effect has been given to the desires of Members and Associates of the Society.

But this particularisation of the ways in which the Council has deliberately spent more money than has been received as income, did not give rise to any such expressions of disapproval or lamentation as might have been expected if the above-mentioned prognostications had been well founded. On the contrary, the prominent characteristic of this year's meeting has been the unusual complimentary tone adopted by all the speakers in expressing their approval of the work done by the Council, and their sense of the general indebtedness of the trade to those who undertake the laborious work to be conducted in that capacity. The audacious candour with which the PRESIDENT had pointed out all the details of financial deficit and shown that—instead of being portents of impending bankruptcy—they were rather signs of activity which would bear good fruit in the future, met with its due reward in the appreciative response of all the speakers, so that this meeting may be regarded as having reversed the record as to complimentary incapacity to which the PRESIDENT alluded as having been hitherto the habitual attitude of members of the pharmaceutical body. The reports of the proceedings at the Annual Meeting and of the speeches at the Dinner are in themselves so complete that we may dispense with further mention of them in this place. The increased convenience of the fine hall in which the Dinner was held gave general satisfaction, and although the Dinner was comparatively less hilarious than on previous occasions, and perhaps more entitled to be distinguished as what Belgians term a "séance solennelle," it was in every respect a success, and a source of satisfaction to those present. One very pleasing incident of the evening was the receipt of a congratulatory telegram from Mr. DARTON GIBBS, the President of the Midland Pharmaceutical Association, who was at the time presiding over a similar festive meeting at Birmingham (see page 414), where the health of the PRESIDENT and Members of the Pharmaceutical Society was drunk.

THE COUNCIL ELECTION.

THE result of the election for seats on the Pharmaceutical Council for the ensuing twelve months was declared on Thursday afternoon, and full particulars will be found at pages 409 and 410 of this week's Journal. All of the retiring members who offered themselves for re-election retain their seats, except Mr. WILLIAM WARREN, whose rejection implies the loss of a London member, since the three additions to the Council are all country pharmacists—Dr. SYMES, of Liverpool, a well-known former member of Council; Mr. C. J. PARK, of Plymouth; and Mr. THOMAS BATESON, of Kendal.

ANNOTATIONS.

ETHER AS AN ANÆSTHETIC.—Next October fifty years will have elapsed since the first application of ether in surgical operations took place, and in honour of this scientific jubilee, Professor C. Binz, of Bonn, has recently published in Richard Fleischer's *Deutsche Revue* a valuable historical sketch of the successive stages through which that beneficial discovery has gone in various countries.

RÖNTGEN RAYS IN SUNLIGHT.—Attention is recalled by Dr. Phipson to some experiments recorded by him in the *Chemical News* fifteen years ago, upon a white pigment containing zinc sulphide and barium sulphate. Sunlight darkened the compound except when it was covered by sheets of glass, in which case no darkening occurred. At that time Dr. Phipson was disposed to suspect the presence in the compound of a new element, which he provisionally named "Actinium," but he now suggests that the effects noted may have been due to the action of x -rays existing in ordinary sunlight.

THE NATURE OF SMOKELESS POWDER.—In the course of a lecture recently delivered before the Society of Arts, the inventor of the new Maxim powder described it as containing about 90 per cent. pyroxylin possessing a very high degree of nitration, with about 9 per cent. of nitro-glycerin, and from $\frac{1}{2}$ to 1 per cent. of urea. It is perfectly amorphous, and very hard and horn-like, the particles of which it consists being relatively long cylinders, perforated axially with numerous small holes, so that a minimum of burning surface is presented to the initial flame of combustion and a comparatively low initial pressure secured. In burning, the perforations increase in diameter, the combustion surface and consequent evolution of gases being thus greatly extended. The pressure is well maintained, therefore, throughout the bore of the gun, and a maximum of propulsive energy secured to accelerate the velocity of the projectile. The products of combustion of the Maxim powder contain but little carbon dioxide, the pyroxylin giving off carbon monoxide mainly. With a 5-inch breech-loading siege gun this new powder gave a velocity of 2403 foot-seconds, with a pressure of only 30,600 lbs. per square inch, thus improving greatly upon the U.S. Government requirements of a velocity of 1830 foot-seconds, with a maximum pressure of 31,360 lbs. Such high ballistic results have not formerly been obtainable, except with compounds containing from 50 to 70 per cent. of nitro-glycerin.

THE SOURCE AND CONSTITUENTS OF OPOPONAX.—Baur has examined opoponax gum-resin, and concludes, from the plant fragments which it contains, that it is derived from some member of the genus *Balsamodendron*, probably *B. kafal*. The specimen examined and described in the *Archiv der Pharmacie* contained 19 per cent. of resin, 6.5 per cent. of ethereal oil, and 70 per cent. of gum, besides plant fragments. The resin consists of α -panax resin, $C_{32}H_{54}O_4$, soluble in light petroleum ether; β -panax resin, $C_{22}H_{52}O_5$, insoluble in light petroleum ether but soluble in ether; and panax-resinotannol, $C_{34}H_{50}O_8$, insoluble in light petroleum ether, slightly soluble in ether, but dissolving in alcohol, and also, unlike the preceding two, in alkalis. The ethereal oil possibly contained a terpene; the portion of higher boiling point yielded, when hydrolysed, an alcohol, $C_{56}H_{96}O$, boiling at 250° to 255° , and apparently a fatty acid (? butyric). The residue contained "chironol," $C_{28}H_{48}O$, a white crystalline substance, not present in the original substance. The gum-resin also contained an uncrystallisable alkaloid, but no umbelliferone or sulphur.

EUCAINE AS A SUBSTITUTE FOR COCAINE.—Dr. Kiesel, a dental surgeon of Berlin, writing in the *Therapist*, mentions a case in which he injected $\frac{3}{4}$ gr. of cocaine, with the result that the patient was between life and death for an hour and a half. Since that experience he has used eucaine—a substance similar in constitution to cocaine, and having the empirical formula, $C_{19}H_{27}NO_4HCl$ (see *ante*, p. 342). The advantages claimed for eucaine are that the heart is not influenced, that the anæsthesia lasts longer and is more widespread than with cocaine, that the patient can tolerate an injection of 30 grains, that eucaine is not decomposed by boiling, and, finally, that it is cheaper than cocaine.

ADMINISTRATION OF METHYL SALICYLATE BY THE SKIN.—The facility with which the skin can absorb guaiacol has been shown to be very considerable, so that after painting the surface with this substance no less than forty-five grains of it have been recovered from the urine, a much larger dose than could have been introduced into the system by means of the stomach. This fact has led MM. Linossier and Lannois, of Lyons, to try the effect of administering an anti-rheumatic drug—methyl salicylate—in a similar manner, and they have found that it becomes transformed into sodium salicylate in the blood, and is eliminated by the urine in the form of salicylic acid. It can also be detected in considerable quantity in the fæces. The daily elimination takes place in a regular manner during the course of treatment, and no effect is produced on the skin by the applications. The method of application is described in the *Lancet* as very simple, the liquid being spread on the limb by means of a brush, with or without the aid of a medicine dropper, and the part then covered with a layer of oiled silk or other impermeable tissue, over which cotton-wool is fastened, and the whole left undisturbed for four-and-twenty hours. The absorption appears to be retarded by mixing lard or vaselin with the methyl salicylate.

BRITISH MEDICINES USED IN ITALY.—According to Mr. J. Durst, of Naples, quinine is the principal drug ordered in medical prescriptions in Italy, the sulphate, bisulphate, hydrochlorate, and valerianate being the principal salts in general use, whilst of the many qualities in the market Howard's brands are chiefly in favour with medical practitioners, and command the best prices. Iodine is a product of which a large quantity is used, especially in the form of potassium and sodium iodides, of which the best are of British manufacture, and here again Howard's preparations take the first rank. Mercury and zinc compounds, morphine, potassium and sodium bromides, salicylic acid, sodium salicylate, caffeine, cocaine, and pepsin are largely employed. To these may be added boric acid, tannic acid, tartaric acid, alum, sodium bicarbonate, cream of tartar, camphor, gum acacia, potassium chlorate, precipitated chalk, starch powder, magnesium carbonate, and effervescing citrate of magnesia. The latter article is manufactured on a large scale in Italy, though Bishop's preparation is considered the best, and used by all who can afford to pay the higher price which it commands. Many, modern chemical preparations such as antipyrine, phenacetine, dermatol, diuretin, migrainine, sulphonal, and many others command a rapid sale in South Italy; while creosote, guaiacol, and terpin hydrate are in continuous command. Of aromatic essential oils, Mitcham peppermint and lavender occupy the first place, and together with British Indian sandal-wood oil have a large sale, as have also cod-liver oil and oil of turpentine. Since the publication of the first official Italian Pharmacopœia in 1892, extracts and tinctures of the British Pharmacopœia are no longer in demand by Italian chemists, but fluid extracts are still readily saleable. The drugs imported are chiefly calisaya bark, opium, nuxvomica, sarsaparilla, senega root, jalap, and senna leaves, all of these being imported on a large scale.

AUSTRALIAN TOBACCO.—The *Bombay Gazette* points out that Australia threatens to compete with India as a tobacco-producing country, active measures being taken in the island-continent at the present time with a view to the development of the industry. Experimental quantities of tobacco have been grown for a considerable period, and the Melbourne Agricultural Department is of opinion that a highly profitable trade may be built up. To this end the north-eastern districts of Victoria have been inspected by an American expert, who reports that greater care in growing, curing, and grading the tobacco will be necessary to make the plantations repay cultivation. Settlers have accordingly been instructed on those points, and good results may be anticipated. It has also been recommended that the suitability of soil and climate of particular districts for the different classes of tobacco should be carefully ascertained, and that small experimental stations should be established in different parts of the colony for the purpose of making tests with the different varieties of tobacco, and so ascertaining which will best enable growers to realise a profit. By erecting model curing sheds at these stations useful object-lessons could also be given to growers.

INDIAN VERSUS CHINESE OPIUM.—Indian opium costs thirteenpence per ounce at Wenchow, China, whereas the native product can be purchased for sixpence halfpenny per ounce. It is not surprising, therefore, that the import of the former is steadily declining, while the production of the native drug steadily increases. The area under poppy cultivation in the district has increased almost two-fold during the last five years. In spring the river banks are lined with fields of brightly coloured poppies, especially towards the sea coast, where the saline nature of the soil favours their growth. Opium does not interfere with the rice crop, as it is sown in autumn, and it is far more profitable to the farmer than wheat or rape, the usual alternatives of rice. A mou (1 acre equals $6\frac{2}{3}$ mou) of wheat will yield 2 dols., whereas a mou of opium may yield as much as 12 dols. profit to the producer. The output of native opium last year was only fair, owing to heavy rains in the early spring, and amounted to an approximate total of 3,208,266 lbs., valued at £59,583; the retail price has, therefore, slightly gone up. The best opium, according to Acting-Consul Fox, is produced in the districts of Yoching, Suian, and Pingyang, all adjoining the seaboard.

POTASSIUM PERMANGANATE AS AN ANTIDOTE FOR OPIUM.—Experiments conducted by Dr. A. P. Luff demonstrate the selective faculty of potassium permanganate for morphine in the stomach contents, and confirm the conclusions arrived at by Dr. William Moor, of New York, as to the value of the compound as an antidote for opium and morphine poisoning. When the quantity of poison taken is unknown, from eight to ten grains of the permanganate should be administered, dissolved in four to eight ounces of water, and the stomach must afterwards be washed out two or three times at intervals of half an hour, with a weak solution of permanganate. Details of the experiments are published in the *British Medical Journal* for May 16, where also appears a paper on the same subject by Surgeon-Captain F. P. Maynard, who regards the permanganate as being a strictly local antidote. As such it can only act upon opium or morphine with which it comes in contact in the stomach, and can have no effect upon what has already been absorbed. It is not to be expected, therefore, that it will save life where a lethal quantity of the poison has been absorbed, nor can it be regarded as a physiological antidote to opium such as eserine is to atropine.

APOSPOROUS AND APOGAMOUS FERNS.—Ferns usually produce on the back of their fronds multitudinous spores which are formed within minute capsules or sporangia. On germinating, these spores give rise to a leaf-like scale termed the prothallus, upon the lower surface of which sexual organs arise. Within these, in turn, sexual cells are differentiated, and as the result of the fertilisation of one of the female cells or oospheres by a male cell or antherozoid, a new fern plant arises. Thus in normal cases there is a regular alternation of a sexual with a sexless generation. As Mr. C. T. Druery points out in *Science Progress*, however, this is not the only course open to ferns. It has been found that *Aspidium filix mas* may reproduce itself both in the normal fashion and by an apogamous method, simple budding occurring as the result of over-crowding and consequent starvation, which check the formation of archegonia. The young plants are engendered upon precisely the same spots on the prothallus as the sexual ones would occupy. Similar instances have been noted in the case of *Athyrium filix femina*, small whitish bulbils developing on the prothalli, and giving off both fronds and roots when placed in contact with loam. A presumed barren variety of the same plant was found to produce apparent sori which contained no spores, but developed direct into ordinary prothalli when placed under suitable conditions. Further investigation showed that this condition of apospory might also exist in the case of varieties of *Polystichum angulare*, *Lastrea pseudo mas*, and *Scolopendrium vulgare*. It is evident, therefore, that the normal life cycles of certain ferns may be successively shortened, first by the elision of the spore, and then by that of the whole soral apparatus, while De Bary's observations tend to show that in the case of *L. pseudo mas cristata* it is shortened almost to the utmost, the chain being simply sporophore, prothallus, sporophore. But it seems that even the prothallus may be eliminated, as shown by a small plant of *Scolopendrium vulgare*, in which the frond itself acted as the oophore or egg-bearer, and the archegonia and antheridia were generated upon it without the formation of a prothallus proper.

"AN INSTITUT PASTEUR" AT ATHENS.—For the past eighteen months an "Institut Pasteur" for the treatment of hydrophobia by inoculation has been in existence at Athens. During that period more than two hundred cases have been treated, and there has been only one death, the patient in that case having delayed coming up for treatment till fifteen days after being bitten. The establishment consists of twenty-three rooms, and since its existence no person has left Greece for treatment at Paris. Dr. Pampoukis, the Director, was sent in 1886 to study under Dr. Pasteur at Paris, and on his return started a microbiological institute at his own expense, and conducted a series of valuable experiments for the Government. He obtained permission to open an "Institut Pasteur," and did so at his own expense, but he has since been granted an annual allowance by the Athenian municipality, and the Chamber subsequently granted him a yearly subvention, on condition that all persons sent by the authorities should be treated gratuitously.

THE YELLOW COLOURING MATTER OF AUTUMN LEAVES.—According to Staats, the yellow colouring matter extracted from autumnal leaves by boiling alcohol is not identical with phylloxanthin, and it is called by him "autumnixanthin." It gives a reddish-brown precipitate with potash, which dissolves in water or in acids. This potassium compound has been obtained in minute crystals, although autumnixanthin itself has not been obtained in a crystalline condition. When its alcoholic solution is slowly added to boiling hydrochloric acid a red solution is formed.

MIDLAND PHARMACEUTICAL ASSOCIATION.

ANNUAL MEETING.

The annual meeting of the Midland Pharmaceutical Association was held on Tuesday evening, at Mason College, Birmingham, Mr. R. Darton Gibbs presiding. There was only a small attendance of members.

The report of the Council dealt in detail with the work of the year, and stated that in addition to the usual scientific papers, arrangements had been carried out whereby papers on the trade side of their calling had been read. Details were also given of the work of the Trade Committee. The Council having been notified of the formation of the Midland Chemists' Assistants' Association, placed on record its approval of the efforts that the assistants were making to associate themselves for promoting and advancing their interests. The Council was of opinion that the true interests of pharmacists and their assistants were alike, and any results in raising the *esprit de corps* which that work might bring about, were calculated to add to the position and dignity of the future trading members of their body. The past year had brought no relief to the conditions of their calling; the growth of company trading was rapidly extending, owing to the abundance of unprofitably employed capital which was constantly seeking use, and the Council feared that the limits of that development had not yet been seen. General support had been given to the Shop Hours Bill, the Council feeling it desirable in the best interests of the trade that the present long hours of business should be curtailed. The financial statement showed a balance in hand on the year of eight pounds.

The Chairman said that in one of the trade papers, shortly after the last annual meeting, there appeared some disparaging remarks with regard to that Association and the work it did. He knew there was a great deal of work done, and therefore it was rather hard to be told that the work of the Association was of a meagre description. It might be that in his expressions he took rather a gloomy view of the work, but there was nothing to warrant the criticism he had referred to. A new departure had been taken in having the report printed in detail and circulated, so that all the members could see what had been going on during the twelve months. They had departed from the stereotyped forms of previous years, and not only had scientific papers been given, but there had been some interesting and practical discussions on the trade side of their calling. They knew that the chemist's business did not flourish in the same proportion as others, and therefore the Council hoped the work that had been done would assist in some way in finding out the reason why.

Mr. A. Southall moved the adoption of the report and statement of accounts. He did not take a gloomy view of things, and contended that the position of chemists now was better than it was ten years ago. There had been, no doubt, a good deal of unprofitable business done, but the Association was looking after that, and he thought would be able with the chemists in the country to do something to prevent traders selling things at a loss. He thought that local associations had done much to stimulate chemists about the country to give up that sort of bad trade. With regard to the scientific part of their calling, that had certainly improved. The Pharmaceutical Society had done a great deal in the last few years to put down illegal trading. It wanted putting down still more, but the law was rather against the action of the Society in some directions. The Companies Act had been a great drawback to the Pharmaceutical Society doing its proper work, but he imagined the present Government would do something for them in that way, and strengthen their hands so that they might be able to prevent the illegal trading that was going on at the present time.

Mr. Brown seconded the motion, and expressed the opinion that if the Pharmaceutical Society had been the means of compelling paregoric to be labelled "poison," he did not think much of the beneficial character of its action.

Mr. Wheeler (Wolverhampton) supported the motion, and said that it was a pity more support was not given to an association like that. The parent Society laboured under great disadvantages, because it had not the united support of the members of their calling throughout the country in carrying out measures for the welfare of all. If chemists united and gave determined support to the Pharmaceutical Society they would have little cause to complain of its action.

Mr. T. Wakefield also supported the motion, and said that during the last twelve months the Association had shown signs of new life, and if it proceeded on the lines it had followed of late he had no doubt advantages would accrue to them all. If they supported the Pharmaceutical Society as it deserved to be supported, they might urge it to push forward the reforms they desired. Strong action was necessary in the matter of company trading, and the question of doctors dispensing, but they could not expect the Society to move unless chemists gave it their united support.

The report was then approved.

On the motion of Mr. Wakefield a vote of thanks was passed to the Council and officers for their services.

The President, Mr. Jarvis (hon. sec.), and Mr. A. Southall replied.

Subsequently the annual supper was held at the Grand Hotel under the presidency of Mr. Gibbs. In the course of the evening the toast of "The Queen" was honoured, as was also that of "The Lord Mayor of Birmingham," this being the first occasion on which that toast had been submitted to a Birmingham audience, the official information that a Lord Mayoralty had been conferred upon the city having only reached Birmingham during the evening. The health of "The President" was proposed by Mr. C. Thompson, who said that Mr. Gibbs had done much to advance the interests of the Association. The toast was musically honoured, and Mr. Gibbs in responding said that it was gratifying to him to know that after occupying the presidency of the Association for two years they believed he had done something for the craft he loved. He had endeavoured to proceed on broad lines, and if they did not attain to the dignity he wished them they must attribute it to the apathy shown by many of their craft. If they were united and determined there was nothing they desired that they might not get.

The brief speeches were agreeably interspersed with musical and vocal items.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION.

SUMMER MEETING.

The first of three summer meetings of the Association, arranged by the Committee, was held in the Pharmaceutical Society's Hall, 36, York Place, on Friday, the 8th inst., from 8 to 10 p.m., Mr. J. McBain, President, in the chair. The idea of these meetings is to encourage the study of field botany. Members who have the opportunity are appointed to gather local plants and bring them to the meeting, where they can be practically studied by all the members. There was a good attendance, and, as showing the remarkable nature of the present season, it may be mentioned that specimens of the following plants in flower and several in fruit were shown:—Ranunculaceæ, *Anemone nemorosa*, *Ranunculus ficaria*, *R. acris*, *Caltha palustris*; Cruciferae, *Cardamine pratensis*, *Barbarea vulgaris*; Cistaceæ, *Helianthemum vulgare*; Violaceæ, *Viola canina*, *V. tricolor*, var. *arvensis*; Caryophyllaceæ, *Lychnis diurna*, *Arenaria trinervis*, *Stellaria holostea*; Acoraceæ, *Acer pseudo-platanus*; Geraniaceæ, *Geranium molle*, *G. robertianum*; Oxalidaceæ, *Oxalis acetosella*; Leguminosæ, *Cytisus scoparius*, *Vicia sepium*, *V. sativa*, *V. hirsuta*; Rosaceæ, *Prunus spinosa*, *P. padus*, *Geum rivale*, *Potentilla tormentilla*, *P. fragariastrum*, *Fragaria vesca*, *Alchemilla vulgaris*, *Crataegus oxyacantha*; Grossulariaceæ, *Ribes rubrum*, *R. grossularia*; Saxifragaceæ, *Saxifraga granulata*; Caprifoliaceæ, *Adoxa moschatellina*; Rubiaceæ, *Galium cruciatum*, *Asperula odorata*; Ericaceæ, *Vaccinium myrtillus*; Scrophulariaceæ, *Veronica chamaedrys*; Labiatae, *Lamium album*, *Nepeta glechoma*; Boraginaceæ, *Borago officinalis*, *Myosotis arvensis*; Primulaceæ, *Primula vulgaris*; Euphorbiaceæ, *Mercurialis perennis*; Ulmaceæ, *Ulmus montana*; Salicaceæ, *Salix phylicifolia*; Coniferæ, *Pinus sylvestris*; Liliaceæ, *Hyacinthus non-scriptus*. At 9.15 p.m. Mr. W. B. Cowie gave a demonstration, in which he dwelt more particularly on inflorescences, illustrating his remarks by living plants, and also by a series of diagrams. Mr. Rutherford Hill made some remarks dealing especially with plant names, the early flowering of spring plants owing to stores of nutriment, as seen in the tubercles of *Ranunculus ficaria* and the rhizome of *Anemone nemorosa*, and the structure of flowers in reference to cross-fertilisation and fertilisation by wind and insects. The meeting closed with votes of thanks to Messrs. Hay, Burns, Thompson, Cowie, and Hill for collecting and describing the plants, and to the Chairman.

ANNUAL DINNER OF THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

The annual dinner of the members and friends of the Pharmaceutical Society was held on Tuesday evening, May 19, in the King's Hall, Holborn Restaurant, London, Mr. Michael Carteighe, President of the Society, in the chair. Amongst those present were:—

Abel, Sir F. Bart., F.R.S. (Secretary and Director Imperial Institute).	Ringer, Professor S. (University College, London).
Bateman, Dr. A. G. (Medical Defence Union).	Roberts, Professor F. T. (University College, London).
Blackwell, S. J. (Master: Salters' Company).	Russell, Dr. W. J. (President: Institute of Chemistry).
Browne, Sir James Crichton, F.R.S. (Treasurer: Royal Institution).	Scott, E. Lionel (Clerk to the Salters' Company).
Currie, W. L. (Vice-Chairman of the Executive: North British Branch).	Simpson, J. F. (President: Royal College Veterinary Surgeons).
Ewing, J. L. (Chairman of the Executive: North British Branch).	Smale, Morton, M.R.C.S. (Dean: London Dental Hospital).
Foster, Professor Michael, F.R.S. (Secretary: Royal Society).	Stevenson, Thomas, M.D. (President: Society of Public Analysts).
Gibbes, F. R. (Master: Society of Apothecaries).	Trimmer, E., M.A. (Secretary: Royal College of Surgeons).
Heath, C. (President: Royal College of Surgeons).	Tyrer, T. (President: Society Chemical Industry).
Hicks, A. Braxton (Coroner for S.W. London).	Upton, J. R. (Clerk to the Society of Apothecaries).

The health of the Queen having been duly proposed and honoured,

"THE MEDICAL PROFESSION."

The VICE-PRESIDENT (Mr. J. Harrison) proposed the Medical Profession. From the earliest times there had always been a class of men who thought themselves qualified to cure disease, and though in early times no doubt medicine was a very rude art, closely allied to ignorance and superstition, still those who practised the art of medicine managed to make themselves of some importance in the communities in which they lived. Since then there had been immense advances made, and medicine was now established upon a scientific basis, and no one recognised that fact more fully than pharmacists, who might claim to have given some aid to the advances of medicine, a claim which medical men would readily admit. While medical men diagnosed disease and prescribed the medicine, the pharmacist prepared the remedy in the most potent and presentable form; and so long as those two functions existed side by side, there was a great future before them both. The time might possibly come when preventive medicine was so much developed, and when sanitary arrangements had become so perfect, that there would be no need of curative medicine, but even then they need not despair, for there would be a large field for their abilities in the preparation of preventive medicine. He would couple with the toast the name of Mr. Christopher Heath, President of the Royal College of Surgeons.

Mr. C. HEATH, in responding, said it seemed somewhat anomalous that the President of the College of Surgeons should be called upon to represent the medical profession, but nevertheless he had much pleasure in undertaking the duty. With regard to the relation of the medical profession to pharmacy, he could only say that he and his professional brethren were much indebted to the chemist, and did not know what they would do if they were left to their own devices. He remembered as a young man writing a prescription—copied, he believed, out of Druitt's 'Vade Mecum'—and forgetting to put in the water, and receiving a polite note from the chemist to whom it was taken pointing out that there was some little deficiency which perhaps he would supply. He was quite sure that they had to thank chemists for preventing them sometimes from committing manslaughter, and certainly from mixing incompatibles. He was sure Dr. Ringer and Dr. Roberts would bear him out in saying that the medical student of to-day knew very little of drugs, and he was sorry to say that such ignorance was in-

creasing. They did not learn, as in the old days of apprenticeship, what the action of drugs was, and sometimes they prescribed things which would turn to a solid mass in the bottle. In the practice of surgery, fortunately, he could corroborate the words of Sir Thomas Watson in an address to the Clinical Society, who said that as he got older he used fewer drugs, and certainly a surgeon did not require a large pharmacopœia. He was sometimes astonished when he met a gentleman in consultation to find the extraordinary drugs he was prescribing—things he had never heard of, though of course he never said so. Last year he ventured to express the hope, as a new pharmacopœia was under weigh, that the strength of laudanum would not be interfered with, and he was happy to say that he believed it would remain as it was, otherwise he had no doubt that the duties of coroners would have been largely increased. Apropos of the Pharmacopœia, he might say that he had that afternoon seen Sir Richard Quain, who asked him to say on his behalf how much he appreciated the labours of the Pharmacopœia Committee of the Pharmaceutical Society. He was sorry to hear from the President that the new pharmacopœia was still in embryo. Of course it was a difficult thing to get through a work of that kind; perhaps it would be better if it were very much curtailed, but in any case he supposed another nine months' gestation would be required, and then he hoped it would be brought forth and would be a credit to its parents. He always kept on his consulting table a little volume with red leaves, which looked like a prayer-book, and no doubt many of his patients thought he was a high churchman, but it was really Martindale's 'Extra Pharmacopœia,' and he must say that he found in that all that he wanted. In conclusion, he would only say that the appreciation of the medical profession by pharmacists was heartily reciprocated.

"SCIENCE."

The PRESIDENT next proposed "Science." He said they were formerly taught that pharmacy, like medicine and surgery, was an art, but by degrees it had been found that the art was based on certain definite principles of a more or less scientific basis. Technical education as applied to pharmacy, meant a study of chemistry, botany, and physics, and the more thorough the knowledge the chemist had of those sciences the more satisfactorily would he discharge his duties both to the medical man and the public. He coupled with the toast the name of Sir J. Crichton Browne, F.R.S., Treasurer of the Royal Institution, who, amongst his numerous other functions, was always engaged in collecting funds for the original scientific work which was carried on in that Institution, on such a grand scale and with such magnificent results.

Sir J. CRICHTON BROWNE said he rose to respond with great diffidence, seeing so many other gentlemen around him on whom the duty might more appropriately have fallen. It was quite right and proper that the Pharmaceutical Society should recognise the claims of science, since it was based upon it, and it had advanced in public estimation in proportion as it became more scientific and less empirical. Its future progress would depend on its keeping abreast of chemical and biological science. John Stuart Mill was once greatly distressed at the thought that a day must come when all the possible combinations of musical notes would be exhausted, and there would be no new music; and so in these lugubrious times they were sometimes told—and even Mr. A. Balfour gave countenance to the idea in his famous book—that science was nearly played out; that she had reached the limit of her possibilities, and that no more great discoveries must be expected. Such a melancholy notion was only one of the symptoms of that deadly pessimism which was creeping through the land; he was much more inclined to adopt quite the opposite and optimistic view, which seemed most reasonable and most in accord with the facts, viz., that science was still in her infancy, that her greatest achievements were yet to come, and that her most brilliant successes in the past were as nothing to the day which should be revealed hereafter. Though science was constantly pushing back the confines of ignorance and darkness there was an ever increasing circumference for further investigation. If there were no more continents or islands on the surface of the earth to discover, there was still the unseen universe, the subtle ether, the invisible rays, which science was concerned with, and in those directions there was a boundless expanse before her. It was only the other day that they had learned about liquid air, about argon, and about the Röntgen rays, with two of which discoveries the Royal Institution had been honourably associated

through the persons of Professor Dewar and Lord Rayleigh, and he thought, therefore, there was no reason to despair as to the future. As to the funds, he was glad to say there was no difficulty—the money simply flowed in. One morning, in Scotland, he opened a letter from America and found a draft for £20,000 from an old confectioner in New York State, who had once attended some lectures in the time of Faraday and was anxious to do something to promote the work; and he had scarcely returned to London when he had a still more munificent donation from Dr. Ludwig Mond, who, in establishing the Davy-Faraday Research Laboratory, which they hoped soon to see opened, had already expended at least £80,000. In practical pharmacy there had been enormous progress in the last quarter of a century, since it had been taken to a great extent out of the hands of the medical profession; the old-fashioned boluses and horrible conglomerations were in great part put aside, and there was a more rational use of the various substances derived from the animal, vegetable, and mineral kingdoms, together with the production of alkaloids, and more recently of animal extracts; in that way pharmacy had kept pace with the advance of medical science, and had given the practitioners of medicine weapons of ever increasing power and precision. Vast as had been the improvements in the armaments and weapons of warfare and destruction, they were able to report parallel improvements in the life-saving apparatus with which they were mainly concerned, and they had not finished yet. Tabloids was not the last word of pharmacy, and if he could believe the announcements which reached him by almost every post, he should conclude that new inventions were being made every ten minutes. But with all his admiration for progress he could not speak disrespectfully of the "old" Pharmacopœia; no doubt it required that revision which it was now undergoing, but he sometimes thought that the statements made as to the uselessness of some of the remedies in it was due to a neglect of those remedies. There was a great deal of good in the "old" Pharmacopœia still, and he trusted that every member of his own profession would always have a competent knowledge of pharmacy as well as of pharmacology, and that pharmacists would not relieve the physician of the art of prescribing. There was no doubt a tendency for prescriptions to run in certain grooves, as was illustrated by a story of the late Sir James Simpson. A lady had come to Edinburgh to consult him, and after returning to her hotel was seized with a misgiving that she might not properly have explained her symptoms, and that Sir James might have given her an unsuitable prescription. She accordingly returned to make sure, but found the great man had left for Inverness. Seeing her agitation, the butler judiciously elicited the cause thereof, and was even favoured with a sight of the prescription, when he at once reassured her, telling her she might take it with perfect safety, as Sir James had "been gie'ing them a' that the day." It was certainly an advantage for a doctor to know that his prescription would come under the eye of a skilled pharmacist, but there was one kind of criticism which he trusted they would not be subject to. He was reading lately that, in the Southern States of America, when the negroes had the misfortune to lose their children they placed on their graves the toys with which they had played during their last illness, and also the unfinished bottles of medicine and the names of the doctors who prescribed them. Whether that custom might be regarded as a touching indication of a belief that pharmacy might be useful even beyond the grave, or as a simple warning to others, he did not pretend to say, but he was quite sure that most medical men would object to that kind of gratuitous advertisement.

"THE PHARMACEUTICAL SOCIETY."

MR. R. A. ROBINSON, in proposing the "Pharmaceutical Society of Great Britain, and the Health of the President," remarked on the innovation introduced into the proceedings by entrusting this toast to a member of the Society rather than to one of the distinguished guests to whose charge it was usually committed. Perhaps it might have been done to save the infliction of a long speech, and at any rate it would have that effect. The Society was founded more than 50 years ago, with four principal objects—the advancement of chemistry and pharmacy, the promotion of a uniform system of education amongst those who practised it, the protection of chemists and druggists, and the practice of benevolence, and there could be no doubt that all those objects had been kept steadily in view, and to a very considerable extent accomplished. Some might perhaps suggest that, with regard to the third object—the

protection of chemists—there might be some doubt, but it was a curious fact that those who thought so were always those who stood outside the Society. There was a large body of men who loyally supported it, but he regretted to say there was an equal number who still held aloof. He ventured to say that if they would but join the Society it was impossible to say what might not be done, either in Parliament or out of it; the one great need was a united front and combined action whenever the occasion arose. Mr. Robinson concluded by a few appropriate observations on the personal appearance and character of the President, which he summed up by saying that he was a man of great energy and capacity, who combined science with commonsense.

The PRESIDENT, in responding, said he thought it was just as well that the toast of the Society should be proposed for once by some one who knew something about it. The Society's motto must necessarily be "Advancement." That was the tendency of the time in every direction, as had been already pointed out, and what the doctor was incapable of doing, not from want of capacity but from the number of other things he had to do, that the chemist had to undertake, and he ought to do it well and thus help in his particular sphere to promote the progress of medicine.

"THE GUESTS."

The PRESIDENT shortly rose again, and proposed "The Guests." After expressing the pleasure which it gave him to see around him so many members of the Society from Scotland and all parts of the kingdom, he coupled with the toast the names of Sir F. Abel, who for many years had been a teacher of chemistry, and was now at the head of the Imperial Institute, where he was establishing a Research Laboratory. This it was hoped would be of great use to all our dependencies and the whole Empire. It would be under the direction of Professor Dunstan and Dr. Russell, one of his old tutors and now the President of the Institute of Chemistry, an Institute which he hoped to see developed until it did for chemical science generally and the educated public at large what the Pharmaceutical Society did in a large measure for pharmacy and pharmacists.

Sir F. ABEL said it was not the first time by many that he had had the honour of responding to this toast, but he felt he was somewhat out of place in doing so, inasmuch as he was one of themselves, having been for some time now an hon. member of the Society. He sympathised heartily with its working, had realised its difficulties, and rejoiced in its success. Men of science were eager to apply their work to practical purposes, and chemists were pre-eminently successful in applying their knowledge for the benefit of mankind. Scientific chemists had always been in thorough sympathy with the Society, and had contributed in some degree to its success, and, he hoped, would continue to do so. His work at the Imperial Institute was closely analogous to that of the Pharmaceutical Society, and he felt himself especially fortunate in securing the assistance of Professor Dunstan. He had had the good fortune to be able to place at the disposal of the Research Laboratory of the Society a good deal of material connected with pharmacy, and their endeavour in the new Laboratory at the Imperial Institute would always be to work in conjunction with the Society for the benefit of the medical profession. In fact, the work of scientific men could never be isolated; every branch of science gradually became more and more intimately blended with other branches, and so he hoped would the work of the Imperial Institute and the Pharmaceutical Society.

Dr. RUSSELL also responded briefly. It was perfectly true, he said, that chemistry was the foundation of pharmacy; and the progress of the latter was due to its followers having known how to avail themselves of the progress of chemistry. With regard to the Institute of which he had the honour to be President, he believed it had a great future before it. Their great object was to increase an accurate knowledge of chemistry, and to spread it over the whole kingdom, and if they succeeded in doing this they would be helping pharmacists to a considerable extent. Whether they obtained Government recognition would depend mainly on themselves. In his opinion they were not in a position to claim it at present, but the work now going on was thoroughly good, and would lead to beneficial results. The class of chemists who did public work had within the last few years very much increased, and he believed the examinations the Institute carried on, and the curriculum insisted on, would result in the formation of a body of thoroughly qualified professional chemists.

NOTES AND FORMULÆ.

MEDICATED GELATIN PENCILS.

The following basis and method is recommended by Montier for the preparation of gelatin crayons:—60 grammes of water and 10 grammes of glycerin are placed in an enamelled dish, and the medicament dissolved in the liquid, which is heated to boiling; to the boiling solution 100 grammes of gelatin is added, with constant stirring to prevent its adhering to the bottom of the vessel. When the water is almost evaporated and the paste flows with difficulty in the capsule, it is run into suitable moulds of gun metal, or into glass tubes previously oiled. The author has devised an ingenious arrangement, in which the tubes are surrounded by a water bath, thus keeping the paste fluid until they are filled. The moulds are then cooled, and the mass withdrawn, trimmed, and exposed to the air to dry for twenty-four hours (*Répert.* [3], vii, 196).

FORMOPYRINE.

By allowing a mixture of aqueous solutions of formaldehyde and antipyrine in equal molecular proportions to stand in contact for eight to ten days, Marcourt has obtained a definite crystalline body, which, when drained on a porous tile and recrystallised from alcohol, is found to contain one molecule of antipyrine and one of formaldehyde. Formopyrine melts at 142° C., is insoluble in cold water, sparingly soluble in hot, insoluble in ether and benzol, soluble in alcohol, chloroform, and acetic acid. It forms stable combinations with acids (*Répert.* [3], vii., 210, after *Bull. de la Soc. Chim.*).

IODOGALLATE OF BISMUTH.

According to Frizzi, this salt may be prepared as follows:—Dissolve with heat 30.4 grammes of bismuth in 100 grammes of equal weight of strong nitric acid and water; add to the solution 500 C.c. of boiling water, and pour into the liquid with constant agitation the following mixture, made hot:—16.6 grammes potassium iodide, 18.8 grammes gallic acid, 300 C.c. distilled water. Collect the precipitate and wash with a cold saturated aqueous solution of gallic acid. Dry at a moderate temperature in dry air. Iodogallate of bismuth forms a greyish-green amorphous odourless powder insoluble in water, alcohol, and ether, soluble in dilute mineral acids and in fixed alkalies. It forms a good antiseptic (*Répert.* [3], vii., 221, after *Bolletino Chimic. Farmaceut.*).

ASSAY OF FILICIC ACID.

An ethereal solution of filicic acid gives on agitation with an aqueous solution of copper acetate a green precipitate of the composition $\text{Cu}_2(\text{C}_{14}\text{H}_{15}\text{O}_5)$. Daccomo and Scocianti suggest this method for the assay of the commercial ethereal extract of male fern, samples of which have given them from 11.8 to 42.5 per cent. of filicic acid. The assay of eight samples of male fern rhizome shows that the drug contains from 1.769 to 2.421 per cent. of this acid. The yield of extract being 10 per cent., a good article should give from 17 to 24 per cent. of filicic acid by this method (*Répert.* [3], vii., 221, after *Boll. Chim. Farm.*).

CRESOCHINE.

Under this name a non-alkaline cresol disinfectant is prepared which is stated to be a neutral combination of tricresyl sulphonate and quinoline with tricresol. It contains 33 per cent. of quinoline and 17 per cent. of tricresyl. It is not caustic and is soluble to the extent of 1 in 25 in water. It is specially indicated as a disinfectant, since, being free from alkali, it does not set free ammonia from nitrogenous organic matter (*Journ. de Pharm.* [6] iii., 497).

DIAPHTHERIN.

Diaphtherin is a new antiseptic in the form of a yellowish powder, which melts at 55° C. and is very soluble in water. It is formed by saturating one molecular equivalent of orthophenolsulphonic acid with two molecular equivalents of orthoxyquinoline. It is employed in surgical practice in aqueous solution, from one half to two per cent. (*Journ. de Pharm. et Chim.* [6], iii., 495).

PHARMACY OF GLYCEROPHOSPHATES.

Syrup of Glycerophosphate of Lime.—Glycerophosphate of lime, 10 grammes; citric acid, 1 gramme; loaf sugar, 610 grammes; distilled water, 340 grammes; dissolve without heat. *Pastilles.*—Glycerophosphate of lime, 15 to 30 centigrammes; cocoa paste, 1 centigramme; for one pastille. *Wine of Iron Glycerophosphate.*—Glycerophosphate of iron, 10 grammes; Madeira, 990 grammes; macerate for twenty-four hours and filter. *Pills.*—Glycerophosphate of iron, 1½ to 3 grammes; powdered rhubarb root, 1½ to 3 grammes; extract of cinchona, 4½ to 4 grammes; mass and divide into 60 pills (*Ann. de Pharm. de Lour.*).

SPRAY FOR APHIS.

Quassia chips, 2 ozs.; water, 1 gallon; boil for fifteen minutes, and then dissolve in the liquid 3 ozs. soft soap. To be used cold. Suitable for roses or apple trees (*Gard. Chron.* [3], xix., 589).

REMEDY FOR CODLIN MOTH ON APPLE TREES.

One lb. Paris green; 1 lb. lime; 250 gallons of water; or better still, equal parts of Bordeaux mixture and Paris green. Used as a spray (*Gard. Chron.* [3], xix., 589).

SPRAY FOR APHIS AND PEAR SUCKER.

Soft soap, 40 ozs.; petroleum, 1 pint; water, 2 to 3 gallons. The soap should be warmed with a little water until it liquefies, then stirred, away from the fire, and the petroleum added. The mixture is then well stirred or agitated with a powerful syringe until it becomes creamy, then dilute with water to 2 or 3 gallons. This is useful against any kind of aphis or suctorial insect (*Gard. Chron.* [3], xix., 589).

DINNER PILLS.

The following, says the *Practitioner*, are two good formulæ:—(No. 1) Extract. aloes aquos., gr. 24; ext. nucis vom., gr. 12; extract. belladonn., gr. 6; sapon. dur., gr. 24. Divide into 24 pills; one to be taken on alternate nights or before dinner. (No. 2) Extract. nucis vom., gr. 2; ext. aloes Barb., gr. 6; extract. rhei, gr. 20. Divide into six pills; one pill daily at dinner-time or directly after.

BISMAL.

Merck has prepared a combination of methylene-digallic acid with hydrated bismuth oxide, in the proportion of four molecules of the former to three of the latter; it forms a soluble bluish-grey powder, giving a reddish-yellow solution with alkalies. Von Oefele considers it a powerful astringent. It is likely to be serviceable in intractable diarrhoea, such as that of tuberculosis (*Journ. de Pharm.*, [6], iii., 297, after *Apoth. Zeit.*).

A PAINLESS VESICANT.

Menthol and chloral hydrate, of each 1 part cacao butter, 2 parts; spermaceti, 4 parts. Mix to form a paste. When spread on a cloth or upon adhesive plaster, and applied to the surface of the skin, this paste acts similarly to cantharides plaster (*Rev. Medico-Pharm.*, iii., 46).

NEW REMEDIES.

[The notes given under this heading embody recent suggestions in therapeutics. They cover both new drugs and preparations, and old ones under new aspects. The word "parts" is used to represent parts by weight, both for solids and liquids.]

THYROID GLAND EXTRACT IN UTERINE FIBROMA.—Tablets of thyroid extract containing 45 centigrammes each, have been given in daily doses of four to eight tablets by Jouin, in cases of uterine fibroma. In three cases so treated he has observed diminution of the hæmorrhage, and in two a partial disappearance of the tumour (*Rev. Gén. de Thérap.*, cxxix.).

SULPHONAL FOR CRAMP.—Fifteen grains of sulphonal taken at bedtime is stated by Andrew to be an excellent preventive of muscular cramp of the legs coming on at night. Seven and a half grains three times a day may be given instead of the larger dose at night if preferred (*Quart. Med. Journ.*, iv., 189).

SIMAROUBA IN DYSENTERY.—For dysentery and summer diarrhœa Ihle recommends the following:—Decoction of simarouba, 340 parts; cognac, 20 parts; mucilage of salep, 20 parts; tincture of opium, 1 part; syrup of orange, 50 parts. A tablespoonful every four hours; a dose of castor oil should precede this treatment (*Dub. Journ. Med. Sci.* [3], No. 289, 64, after *Nouv. Rem.*).

COLCHICUM IN FURUNCULOSIS.—Brocq states that in gouty subjects suffering from boils, but who are neither diabetic nor albuminuric, extract of colchicum in daily doses of three or four centigrammes gives good and sometimes surprising results. (*Brit. Journ. Dermat.*, viii., 35).

COPAIBA OIL IN PSORIASIS.—Abbott Cantrell states that he has obtained very good results from this remedy, which he exhibits in 5 minims doses, in capsules, three times a day. He quotes a case in which a patient was cured of a psoriasis of twelve years' standing in six weeks with this treatment (*Brit. Journ. Dermat.*, viii., 36).

NITRO-GLYCERIN IN SCIATICA.—Troussevitch has cured several obstinate cases of sciatica by giving the following "drops":—Solution of nitro-glycerin (1 per cent.), half a drachm; tincture of capsicum, 1½ drachm; peppermint water, 3 drachms. Five drops thrice daily in a tablespoonful of water for the first three days, then 10 drops thrice daily on the subsequent days (*Pract.*, lvi., 221).

ORPHOL.—β-naphthol bismuth is brought forward, under this not too euphonious name, as an intestinal antiseptic. It contains 26.5 per cent. of β-naphthol and 23.5 per cent. of bismuth. It is given to children in doses of from 2 to 5 grammes, whilst adults are given from 5 to 10 grammes (*Pharm. Post*).

PYROCATECHIN-MONO-ACETATE OF SODIUM IN CONSUMPTION.—A patent has been obtained in the United States for pyrocatechin mono-acetate of sodium, which is said to be a remedy for consumption and loss of appetite, stopping night perspiration, reducing the evening temperature, and in mild cases, destroying the bacillus of the disease. The acid is obtained, according to this invention, by subjecting one molecule of chloracetic acid to the action of one molecule of pyrocatechin in the presence of a carbonate of an alkali, in accordance with a novel process described in the patent.

COMBINATION OF ANTITHERMICS.—Berger and Vogt state that the following combination of synthetic antithermic analgesics is less toxic and more effective therapeutically than the separate ingredients given singly, or than any similar combination which they have tried; antipyrine, 5 grammes; phenacetine, 2 grammes; acetanilide, 1 gramme. Mix, and divide into 16 cachets, each containing 50 centigrammes (*Rev. de Thérap. Med. Chirurg.*, lxiii., 104).

VINEGAR AS AN ANTIDOTE FOR PHENOL.—According to Carleton, vinegar affords a useful palliative to the caustic action of phenol, either upon the skin or on the mucous membrane. External burns dressed with vinegar soon lose the characteristic bleached appearance, and pain is relieved. If the phenol has been swallowed, the patient should drink copious draughts of vinegar and water before the stomach pump is used (*Rev. Med. Pharm.*, iii., 9).

REVIEWS AND NOTICES OF BOOKS.

SOUTHALL'S ORGANIC MATERIA MEDICA. Fifth and Enlarged edition. By JOHN BARCLAY, B.Sc. Pp. 306. Price 6s. (London: J. and A. Churchill, 7, Great Marlborough Street, W. 1896.)

The publication in this country of any new work on materia medica, or new edition of a well-established old one, is a matter of such rare occurrence as to attract special attention. This is more particularly the case with the fifth edition of Southall's 'Materia Medica,' for the work has undergone material alterations that have considerably enhanced its value.

A cursory examination will show that the botanical system of classification has been abandoned, and the usual pharmacognostical arrangement introduced, an alteration that is undoubtedly a step in the right direction, though some pharmacognosists still advocate the former. The number of drugs included has been considerably extended, and with such extension the range of utility of the work has been correspondingly increased.

On reading the work more carefully it will be seen that to each group of drugs an introduction in the form of an outline of the physical and chemical characters common to the group has been prefixed, a welcome and useful addition, not yet general in works on this subject. In the descriptions of the drugs the use of different types has enabled the author to emphasise that which he considers important, and thus bring it more prominently before the reader. Numerous notes in small type appended to the descriptions convey much useful information, and information of a kind that is not generally found in the usual text-books. The matter, especially the chemistry, has been brought up to date, and is presented usually in an agreeable style, the statements being, as a rule, accurate and concise, two qualities the value of which can scarcely be over-estimated.

It may confidently be asserted that in all treatises on pharmacognosy the greatest stress should be laid upon accurate observation and description, as being the only means by which each drug may be recognised and distinguished from all others, like and unlike. This accuracy of observation and description is the foundation stone of true pharmacognosy. Without it no contribution will have the permanent value that is attached in so high a degree to the classical works of Pereira and Hanbury. Nor can any compilation lay claim to reliability unless the information so compiled has been critically examined and sifted in the same spirit. The author of the work now in question does not pretend it to be "anything other than a compilation," and admits that "in the case of those substances included in the British, United States, and Indian Pharmacopœias, the official descriptions found therein are quoted almost verbatim."

In this method of compilation the chief weakness of the work is to be discerned. It has led the author into several errors that a critical examination and comparison of the descriptions with the drugs they represent would have averted. Thus, for example, the margins of witch hazel leaves are not "serrate toothed," but sinuate; coca leaves are not "blunt and emarginate," but provided with a minute horny apiculus, which, however, in many leaves is broken off; nor are Truxillo leaves frequently three times as large as Brazilian (*sic*, ? Bolivian), but the reverse; chiretta does not branch in a "dichotomous," but decussate manner. In some cases the style, too, is far from clear, as, for instance, the introduction to the "barks," in which the botanical and pharmacognostical terms are hopelessly confused.

Notwithstanding these deficiencies, which can easily be remedied in a succeeding edition, the information conveyed is generally accurate, and is conveyed in a manner that will render the work very acceptable to students, to whom it will specially commend itself by the arrangement of the matter, by the concise but not too brief style, and by the systematic enumeration under each drug of the chief adulterations or substitutions and the means by which they may be distinguished.

CORRESPONDENCE.

All Articles, Letters, Notices, and Reports intended for publication in the Journal, Books for Review, and communications respecting Editorial matters generally must be Addressed "Editor, 17, Bloomsbury Square, London," and not in any case to individuals supposed to be connected with the Editorial Staff. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

ANY INSTRUCTIONS from Members, Associates, and Students of the Pharmaceutical Society, with reference to the transmission of the Journal should be sent to the Secretary.—Mr. Richard Bremridge,—17, Bloomsbury Square, London.

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

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

QUERIES addressed to the "Editor" will be replied to in the Journal as early as possible after receipt. The Editor cannot undertake to reply to queries through the post.

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THE SOCIETY AND ITS MEMBERS.

Sir,—One frequently hears of the apathy which characterises the members of the Society with regard to the management of its affairs and the election of its Council. This indifference is occasionally disturbed by some perfervid member's cry that more interest be taken in its affairs. It certainly is very depressing to know that only about one-third of the members register their votes. This means practically that the other two-third are quite content to let things move along as they hitherto have done. One reason for this is that it is quite the exception for our councillors and would-be councillors to state a policy, and consequently the electors have no means of knowing the difference (if any) between the new man and the old. It is satisfactory to note that the issue of an address has not been thought unnecessary by one who is already a member of Council. Another reason for the apathetic attitude adopted by the majority of us is, I think, the impression that prevails that the Annual Meeting of the Society is the only time that criticism may be offered.

For various reasons many of us cannot be present on that occasion, and hence have no opportunity of stating our views. Now, sir, you have said at different times that the *Pharmaceutical Journal* belongs to all those connected with the Society; each one of us has an interest in it. Therefore I think that when anything is done that displeases us or that we are not quite in agreement with, we ought to take advantage of our right and state our opinions in our own official organ. I shall certainly do so in the future when occasion arises to arouse the opinion of members on any matter that appears to me to be open to criticism. If all our members who have grievances would act in the same way we should have a keener interest taken in affairs, and a valuable expression of opinion.

My principal reasons for writing at this time is to take exception to a statement in the Annual Report (*ante*, p. 361). Under the subject of examinations, a quotation is given from the last report of the Government Visitor for England and Wales, in which he states that the examination is "a fair one, and the stringency of the prac-

tical examination in chemistry commendable." This clearly shows that the Visitor must have performed his duties in a very perfunctory manner, or is not conversant with the scope of the Minor syllabus. It is now known that Minor candidates in London have been getting work to do with other than the six pharmacopoeial volumetric solutions. I ask, Why have the syllabus (which was hailed with so much delight) unless it is to be adhered to? It may have been observed that I called attention to this matter at the last meeting of the N.B. Branch Executive, and was informed that we could not discuss it there, though it seemed at one time as if the chairman was not averse to talk the matter over. If we are not to discuss a subject of that kind at a meeting of the so-called governing body in Scotland, where on earth are we to discuss it? I trust in the interests of fair play and justice to the candidates that some attention will be given to this complaint by those in authority, whoever they may be.

Leith, May 16, 1896.

GEORGE COULL.

"AN AGREEMENT THAT LICKS CREATION."

Sir,—Doubtless many of your readers, as well as myself, have received a most extraordinary "Bonus Agreement Note" from Clarke's Night-light Co., and to those who have not I should suggest writing for one without delay. In it they ask you to sign an agreement not to retail their nine hours' pyramid night-lights at less than 7½d. per box, or six boxes for 3s. 7½d.; and on condition you sign this said agreement they will allow a bonus of 6d. per dozen on July 1, 1897, providing the prices have been adhered to. They further say they are doing this with a view to assure the retailer a reasonable profit.

Now, I have only recently received several new price-lists from Sanger's, Newbery's, etc., and from various provincial wholesale houses, and I find each of these quote above goods at 7s. 6d. per doz. net (Sanger's really 7s. 5¾d.) and carriage forward. So that outside London they would cost a retailer, say, at least 7s. 9d. per doz. net when carriage was paid, or, if he signs the agreement, he gets 6d. per dozen bonus, which reduces the cost to 7s. 3d. per doz. net. This firm suggests that he retails them at not less than 7½d., whereby he would get the "reasonable profit" (?) of ¼d. for his trouble. I should like to ask any of your readers, or the firm in question, to point out where the "reasonable profit" comes in?

I consider this remarkable agreement is only for the benefit of the cutter, as he alone can afford to sell at the price, being the only person who can buy direct, and so get a little extra profit. I thought the very object of these anti-cutting agreements was to fix the selling price so that the ordinary retailer (who can only buy from the wholesale houses) can sell at the same price as the cutter, and yet get a "living" and not a "workhouse" profit; but if the above is not a workhouse profit, what is it? This is the most mean and contemptible agreement I ever saw offered to the trader, in fact, "it licks all creation"! If manufacturers of proprietary articles wish to prevent substitution, and to recover the goodwill of the trade, they will only do so by giving a living profit to the retailer for handling their goods, such as Elliman's, Blondeau's, etc., have done, and with such signal success.

Kidderminster, May 11, 1896.

J. T. GRIFFIN.

LIMITED COMPANIES AND THE TITLE "CHEMIST."

Sir,—I think it quite time something is done to prevent limited companies calling themselves "cash chemists" without personal qualification? Why should it be lawful for them to use the title cash chemist any more than it is to use the title cash doctor, cash dentist, or cash lawyer? It seems to me a distinct infringement of the Pharmacy Act? If company pharmacy goes on as it does at present the individual chemist conducting his own business will in the future be a *rara avis*. The only thing is for chemists throughout Great Britain to unite and join the Pharmaceutical Society, thereby strengthening the hands of the Council, which will then be more representative of the whole body and able to approach Parliament for an amendment of the Pharmacy Act with some prospect of success. I think also if Minor men were eligible for membership many more would join the Society, whilst it would be a boon if every chemist and druggist on the Register were exempt from jury service as are dentists.

May 11, 1896.

COUNTRY CHEMIST.

CREAM OF TARTAR.

Sir,—In reply to Mr. M. Conroy's "Note on Cream of Tartar" in your issue of May 2, we must take serious exception to his experience "that cream of tartar containing the amount of calcium sulphate found by Mr. Hill, viz., 4.20 per cent., must have been wilfully adulterated." Mr. Conroy's experience is not wide enough, or he would know that by the precipitation process calcium sulphate is the natural impurity, just as in the crystallisation process, tartrate of lime is the natural impurity. Both are perfectly neutral, useless, and harmless, so far as the consumer is concerned, but both with a little trouble could be removed if our absurd B.P. test were raised to 99 to 100 per cent. as in other countries. What the consumer buys is bitartrate of potassium, and why he should be compelled to take an article containing 92.15 when he can get it 99 to 100 per cent., the editors of the British Pharmacopœia best know. We were the first to raise the trade test to 95 per cent. independent of the B.P., and we hope soon to see it fixed at 99 to 100 per cent.

London, May 12, 1896. KIRKPATRICK, BARR, AND GUTHRIE.

DISPENSERS AND BRICKLAYERS.

Sir,—In Monday's *Telegraph* you could have seen a paragraph stating that "The Secretary of the Bricklayers' Association notified the Works Committee of the County Council that the wages of operative bricklayers were now 10d. per hour, and requesting that the Council's workmen might be given the advance." 10d. per hour = £2 per week = £104 per year. On the same day, in the same paper, appeared an advertisement from the Asylums Committee of the County Council for a qualified dispenser, at the salary of £100 per year. Would it not be as well to advise all desirous of becoming "educated and skilled pharmacists," to join the Operative Bricklayers' Association?

May 13, 1896.

AN E. AND S. P.

DECOMPOSITION IN LITHIA WATER.

Sir,—I shall be glad to have the opinion of readers of the Journal on the decomposition which has taken place in several syphons of lithia water. On drawing a little off into a tumbler there is a very strong odour of sulphuretted hydrogen, and a black, gritty deposit has settled at the bottom of the syphons. Can this be due to the acid used in the formation of the water acting on a badly-made syphon?

Louth, May 16, 1896.

A. BELLAMY.

COCAINE IN OINTMENTS.

Sir,—It is pleasing to me to find that "Mr. P. Green" is in agreement with my proposition at last. If he had not had such a severely logical habit of thinking he need never have been in disagreement, for when I used the expression "hot fat" in that connection it seemed self-evident that the *tout ensemble* was referred to, rather than any one ingredient. However, I suppose we shall have to be more careful in future in the matter of phraseology with such a vigilant logician on the watch ready to give transgressors "beans" and other leguminous delicacies—such as "Green P's," etc..

Brixton, S. W., May 16, 1896.

W. JOHNSTON.

MORPHINE SOLUTIONS.

Sir,—I find the proportions of water and glycerin in the two formulæ, recently published by me (*Ph. J.*, ante, pp. 160 and 180), for ten per cent. solutions of morphine hydrochlorate and acetate are better 7 parts to 1 part (by measure) than 3 to 1. Further, in the case of the hydrochlorate solution, it appears better to substitute citric acid for tartaric acid, in sufficient quantity to keep the salt of morphine dissolved after the solution has been filtered and cooled.

Leicester, May 19, 1896.

G. W. BLYTHE.

ANSWERS TO QUERIES.

SUGAR FOR SYRUPS.—The bulk of the sugar of trade is beet sugar, and it is invariably "blued" and not suited for making medicinal syrups. Pure cane sucrose, "unblued," can be bought of certain manufacturers, and some of the wholesale druggists who take such sugar in quantities keep this pure sucrose in stock, and quote the same in their monthly prices current. [*Reply to W. S. B.*]

SALE OF FOOD AND DRUGS ACT.—Section 3 of the Act stipulates that no person shall sell any article of food mixed with any ingredient or material "so as to render the article injurious to health." In a case such as you mention it would therefore be necessary to

prove that the article treated was injurious to health, which has not yet been done. [*Reply to "LACTIS."*]

TEXT-BOOK OF MATERIA MEDICA.—You cannot do better than procure a copy of the new edition of Southall's 'Organic Materia Medica' (Churchill, 6s.). This is an excellently-arranged work, and well up to date. See review on page 418. [*Reply to "ARBEITER."*]

GILDING ON GLASS.—Use weak isinglass size or pale japanner's gold size thinned with turpentine. The latter is more permanent. [*Reply to A. H. OWEN.*]

WATER ANALYSIS.—Probably sufficient for your purpose may be found in Attfield's 'Chemistry' or Muter's 'Analytical Chemistry,' but a good standard work on the subject is Wanklyn's 'Water Analysis' (Trübner and Co.), the price of which is about five shillings. [*Reply to A. H. G. COGGIN.*]

RECOGNITION OF PLANT.—It is impossible to name the species with certainty in the condition sent. Probably some form of *Salix repens*. [*Reply to "HALDONIA."*]

WORK ON PRESCRIBING.—We are unable to recommend any work on this subject. [*Reply to G. H. W.*]

LIQUOR FERRI DIALYSATUS.—This is a ferric oxychloride, the composition of which varies somewhat according to the temperature, time, and other circumstances attending the saturation of the ferric chloride with the hydrated ferric oxide. Probably the formula $(\text{Fe}_2\text{O}_3)_{10}\text{Fe}_2\text{Cl}_6$ represents the average composition; oxychlorides of iron ranging from $(\text{Fe}_2\text{O}_3)_6\text{Fe}_2\text{Cl}_6$ up to $(\text{Fe}_2\text{O}_3)_{15}\text{Fe}_2\text{Cl}_6$ are stated to exist. The equation for their formation is very simple, each molecule of ferric hydrate combining with the ferric chloride merely gives up three molecules of water. [*Reply to QUÆSTO.*]

ABSORBENT COTTON-WOOL.—Take 100 parts of cotton-wool and boil it for half an hour in 400 parts of water containing $2\frac{1}{2}$ parts of caustic potash. Then wash thoroughly in successive lots of pure water until every trace of alkali is removed, squeeze as dry as possible, and immerse for fifteen or twenty minutes in a 5 per cent. solution of chlorinated lime; rinse once in plenty of clean water, and dip in 400 parts of water acidulated with 3 parts of dilute hydrochloric acid; wash perfectly free from acid and again boil in alkaline solution as above. Finally, rinse free from alkali and dry. [*Reply to C. T. D.*]

UTILISING SPOILED VINEGAR.—The best way to use up your vinegar contaminated with a trace of zinc would be to employ it for liquid blacking. Probably any of the wholesale blacking makers would buy it of you right off, and thus save you any trouble. If you prefer to use it up yourself, try the following recipes:—(a) Treacle, 4 ounces; ivory black, 4 ounces; rape oil, 1 ounce; vinegar, 24 ounces; oil of vitriol, 2 drachms. Mix in the above order. (b) Treacle, 4 ounces; ivory black, 4 ounces; rape oil, $\frac{1}{2}$ ounce; powdered gum arabic, $\frac{1}{4}$ ounce; vinegar, 24 ounces; oil of vitriol, 1 drachm. Mix in above order. [*Reply to W. S.*]

HOLES IN FURNITURE.—The "worm" that is making holes in your furniture is the larva of a small beetle, *Anobium tessellatum*, the perfect insect of which is the well-known "Death Watch," whose amorous ticking signals are the source of superstitious fears among the ignorant. There is only one way to get rid of it, that is to give the articles a good washing with a solution containing corrosive sublimate. The following will answer well:—Corrosive sublimate, 1 ounce; ammonium chloride, 1 ounce; water, 1 pint; glycerin, 1 ounce; methylated spirit, 1 pint. Use with caution and avoid getting any of the liquid upon the fingers. The best way to apply this is with a small "sash tool" or painter's brush; let the furniture be left in the open air, in the sun, after the application. These beetles "prefer darkness rather than light." [*Reply to W. S.*]

TO PREVENT PAINT STICKING TO GLASS.—Probably smearing over the surface of the glass with a little glycerin would prevent the paint from drying on hard. [*Reply to W. S.*]

A CORRECTION.

POTASSIUM CHLOROPLATINITE.—In the first formula for preparing this compound, on page 390 (*Ph. J.*, May 16), the words "of potassium chloride" should have followed the words "a solution of 23 grammes," in the fifth line of the note.

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs. Barker, Bayley, Bellamy, Blinkhorn, Blythe, Coggin, Coull, Cubley, Evans, Forret, Johnstone, Lunan, Mackenzie, Umney.

“THE MONTH.”

Reference was recently made to the fact that M. Ferrand had prepared a number of thiophosphates, corresponding to the general formula M_3PS_3 (*ante*, p. 241). He now describes another series of compounds, corresponding to the formula $M_4P_2S_7$. Copper thiopyrophosphate, $Cu_4P_2S_7$, occurs in violet crystals, which are red by transmitted light. Iron thiopyrophosphate, $Fe_2P_2S_7$, is in small crystalline lamellæ; silver forms a yellow crystalline mass ($Ag_4P_2S_7$); nickel, a dark brown crystalline powder ($Ni_2P_2S_7$); chromium, a black crystalline powder ($Cr_2P_2S_7$); zinc, small needles ($Zn_2P_2S_7$); cadmium, a white crystalline powder ($Cd_2P_2S_7$); mercury, a red crystalline powder ($Hg_4P_2S_7$); lead also forms a reddish crystalline powder ($Pb_2P_2S_7$); and aluminium, a mass of small white needles ($Al_2P_2S_7$). The compounds $Cu_2P_2S_7$ and $Hg_2P_2S_7$ have not so far been obtained. The nickel, chromium, zinc, mercury, and aluminium salts decompose readily in moist air or water; alkalis also attack some of the compounds, and acids practically all of them (*Comp. rend.*, cxxii., 886).

Under this name, diiodo methyl salicylate has been introduced by Dr. A. Arnheim, of Berlin, as a substitute for iodoform, and it is being manufactured by Messrs. Meister, Lucius, and Brüning. It is prepared by the action of iodine upon methyl salicylate, and contains 62.7 per cent. of iodine. It has the form of a white crystalline inodorous powder, melting at $110^\circ C.$, soluble in 10 parts of hot alcohol, readily in ether and in vaseline. Langaard has ascertained that sanoform is not poisonous and that it has other advantages over iodoform (*Pharm. Zeitung*, xli., 320).

This sugar was discovered by Pelouze, in 1852, in the juice of the berries of species of *Pyrus*, after keeping them for more than a year, but very contradictory results have been obtained by chemists who have repeated his experiments, and G. Bertrand has therefore devoted some attention to the subject. It was conclusively proved that the sugar did not exist originally in the juice from the berries of *Pyrus (Sorbus) aucuparia*, *P. intermedia*, and *P. latifolia*, and when the juice was allowed to ferment all the glucose present disappeared and a corresponding quantity of alcohol was formed, but no trace of sorbinose appeared. After the alcoholic fermentation was concluded, however, and the acetic fermentation had commenced, some reddish flies (*Drosophila funebris*, Fabricius, *D. cellaris*, Macquart) were observed to deposit their eggs upon the surface of the liquid, near the edges, and a gelatinous pellicle then formed, upon which numerous larvæ swarmed and subsequently developed into perfect insects. After the lapse of some time the pellicle became greenish in colour. This membrane was found to consist of microbes 2μ to 3μ in length, which appeared to be identical with *Bacterium xylinum*, Brown, and sorbinose was now present in the liquid, having apparently been produced from the sorbite in the juice by the action of the bacteria in the presence of oxygen, the reaction being expressed as follows:— $2C_6H_{14}O_6 + O_2 = 2C_6H_{12}O_6 + 2H_2O$. Once in possession of the special ferment, it is possible to cultivate it either upon the fermented juice of cherries or other fruits, or upon an artificial medium, such as a 1 per cent. peptone solution containing suitable salts and some sorbite (*Comp. rend.*, cxxii., 900).

E. Bourquelot has previously shown that methylsalicylic ether can be extracted from several species of *Polygala* and also from *Monotropa hypopithys*, but he was of opinion that the compound did not naturally exist in

the plants, and has now been able to prove that it is formed in the case of *Monotropa* from a glucoside existing in that plant. The glucoside is accompanied by a ferment capable of decomposing it, and the same ferment has been found in all the plants yielding methylsalicylic ether. After commenting upon the work of Procter, who found, in the bark of *Betula lenta*, a glucoside, gaultherin, and a soluble ferment capable of giving rise to methylsalicylic ether, and that of Schneegans and Gerock, who isolated the glucoside in crystalline form, the author sums up the facts as follows:—1. There is a soluble ferment capable of hydrolysing gaultherin in the roots of *Spiræa ulmaria*, *S. filipendula*, *S. salicifolia*, and *Polygala sp.*, in the bark of *Betula lenta*, the leaves and fruits of *Gaultheria procumbens*, and the petals of *Azalea sp.*; 2. In *Monotropa hypopithys* there exists a glucoside which can be hydrolysed by the same ferment, and is, therefore, probably identical with gaultherin; 3. Neither gaultherin nor the glucoside of *Monotropa* can be hydrolysed by any other known ferment. Schneegans has recently suggested the name “betulase” for the ferment discovered by Procter, but Bourquelot prefers “gaultherase,” as recalling that of the glucoside upon which it acts (*Comp. rend.*, cxxii., 1002).

According to researches carried on by Herr O. Loew (see *Bot. Centralblatt*, vol. lxv., 1896, p. 302), it would appear that asparagin is very often the result of the splitting up of proteids, carbon dioxide being given off at the same time. In many other cases, on the other hand, as in the sugar of the ripe beetroot, asparagin is a synthetic product; it may be formed out of ammonia or nitric acid, and this takes place in barley and maize. Sugar or some substitute for sugar is indispensable for the transformation of asparagin into proteids; this process may take place even in the dark. The sugar need not be formed in the same cells as the asparagin.

E. Gérard has been able to decompose uric acid into urea and ammonium carbonate by the action of micro-organisms. The acid was dissolved in a solution of sodium diphosphate, and the liquid exposed to the air. After four days exposure it was rendered turbid by micro-organisms that had been attracted, and the presence of free ammonia was indicated. Variations in the products of the biochemical action seemed to indicate that if the action were allowed to continue, the urea would in time probably be decomposed, and ammonium carbonate be the sole product (*Comp. rend.*, cxxii., 1019).

P. Cazeneuve finds that the guaiacol carbonate of Heyden, in contact with alcohol saturated with ammonia gas, is converted rapidly in the cold into ordinary urea and guaiacol. As the crystals gradually dissolve in the liquid, the latter assumes a yellowish tint, and then becomes greenish, the process being accelerated by heating to $50^\circ C.$ The urea is obtained in long needles on evaporating the solution, and can be purified by recrystallisation from alcohol (*Comp. rend.*, cxxii., 999).

By passing dry gaseous ammonia into a benzene solution of sulphur dichloride, R. Schenck has obtained a compound of sulphur and nitrogen, having the composition represented by the formula N_4S_4 , and he suggests that it has the constitution shown by the accompanying graphic formula. The characters of the product were found to agree with the statements of previous observers, with the exception of the melting point being $178^\circ C.$, instead of $160^\circ C.$ (*Annalen der Chemie*, 290, 174).



These preparations are recommended by F. Zanardi as useful in making suppositories, by reason of their solubility in fat or oil. The morphine salt is readily obtainable by mixing hot alcoholic solutions of stearic acid and morphine in suitable proportions. It crystallises in brilliant scales, melting at 84° to 86° C. Atropine stearate melts at 120° C., and cocaine stearate at 90° C. (*Bollet. Chim. Farm.*).

Solutions of sodium citro-phosphate are freely sold in the United States as hepatic stimulants and purgatives, and one such solution, known as Citro-Phosphate "Melachol," is claimed to contain 85 grains of the combined sodium phosphate, citric acid, and sodium nitrate in every fluid drachm. Other solutions are said to contain from 60 to 85 grains of sodium phosphate in each fluid drachm, but this is more of the salt than can be retained in solution at ordinary temperatures. W. C. Westcott has investigated the matter, and finds that the product of the following formula corresponds with Melachol in specific gravity, acidity, and amount of phosphoric anhydride:—

Sodium phosphate, cryst.	100 Gm.
Sodium nitrate	2 "
Citric acid	13 "

The substances are triturated together until they liquefy, then enough water is added to make 100 C.c. of solution. Small crystals separate when this solution is cooled to 10° C., but they re-dissolve at 20° (*Am. Journ. Pharm.*, lxxviii., 256).

The fragments of stems and fruits in this substance show that it is derived from a species of *Ferula*. Hohenadel found a sample to contain 56.8 per cent. of resin, 5.8 of ethereal oil, 3.5 of water, 23.3 of gum, and 10.6 per cent. of impurities. The purified resin was yellowish-white, brittle when cold, plastic on warming, and melted at 74.76°. It yielded a sublimate of umbelliferone when heated; and when hydrolysed by boiling with sulphuric acid was decomposed into umbelliferone and sagesinotannol, of which substance it is the ethereal salt. Sagesinotannol, $C_{24}H_{28}O_5$, is a brown body, soluble in alkalis, and yielding a precipitate with ferric chloride; it gives monacetyl and monobenzoyl derivatives, and is oxidised by nitric acid into styphnic acid (trinitroresorcinol). The 56.8 parts of purified resin contains 40 of sagesinotannol, 15.7 parts of combined umbelliferone, and 0.11-0.15 in the free state. The volatile oil contains 9.7 per cent. of sulphur, and probably contains an ester of valeric acid; the bluish fraction, boiling between 210-270, resembles in its absorption spectra the similar bluish or greenish fractions obtained from other umbelliferous gum resins and other sources. The substance contained in it, "azulene," is not, however, present in the original oil, but is formed during fractionation (*Archiv*, ccxxxii., 259).

Professor Pajot records an interesting case of sophistication of colza seeds, grains of a variety of mustard known as sauve, and also of *Brassica juncea* being present, both being artificially coloured with a coating of blue colouring matter, a kind of litmus. To detect the fraud, maceration in water is sufficient, a blue solution being thus afforded which gives with acids a rose coloration, the original tint being restored by alkali. This ingenious sophistication appears to have been carried out in Germany. The artificially coloured seeds are far below the market value of genuine colza seeds, and yield from 10 to 15 per cent. less oil; the oilcake, moreover, could not be honestly employed as a foodstuff for cattle, and is only fit for use as a manure (*Journ. de Pharm.* [6], iii., 434).

In a report on the sisal industry in the Bahamas, Dr. D. Morris, of Kew, states that the sisal fibre derived its commercial name from the Port of Sisal, from which it was originally shipped, though since the completion of the railway to Merida the fibre is now wholly shipped from Progreso. In Yucatan the plant is called "Henequen." There are two sorts, white and green. "Henequen blanco" is the plant known by the aboriginal name of Sacqui. It has a whitish bloom on the leaves, giving them a glaucous colour, and has teeth on the edge of the leaves, and is the product of *Agave rigida*, var. *elongata*. This is the chief plant cultivated in Yucatan. "Henequen verde" is the aboriginal Yaxqui. This has no teeth on the side of the leaves. The colour is a bright green, and the plant is botanically *Agave rigida*, var. *sisalana*. This is the sisal plant of the Bahamas. It yields a fibre which is of value in making ropes, and the sisal industry in the Bahamas is now in a fair way of being established. At present, however, the product does not come into serious competition with any other white-rope fibre, and Dr. Morris is of opinion that attention ought to be directed to the uniform production of a first-class fibre to meet the requirements of the best markets.

The great variation which exists in beechwood creosote from different sources must necessarily entail markedly divergent physiological action. Freyss states in the *Moniteur Scientifique* that in different samples the amount of guaiacol varies from 3 to 30 per cent., and the cresol from 10 to 40 per cent., accompanied by a very variable amount of monophenols. In order to obtain a definite physiological action it is therefore necessary to submit the creosote employed to a critical examination. The author suggests that creosote derived from beechwood should only be employed if it be visibly darkened on prolonged exposure to light, and possesses an agreeable aroma somewhat resembling vanilla. Fractional distillation of the sample should be conducted, treating 100 C.c. in a fractionating flask of 125 C.c. capacity, and the fractions being collected in a graduated receiver. This distillation should be very regular, drop by drop, and should take place between 200 and 220° C. The author finds that the specific gravity of the fraction distilling between 200 and 210°, which contains the greater part of the guaiacol, gives a reliable indication of the amount of that body contained in it. In the samples examined the guaiacol content rose from 10 to 36 per cent., as the specific gravity increased from 1.077 to 1.090. These figures confirm those previously obtained by observers in this country.

The Indian drug "charas" is regarded by the natives as the most potent substance obtainable from *Cannabis sativa*, and an ethereal extract from it has been found by Wood, Spivey, and Easterfield to yield four distinct chemical compounds—a terpene (1.5 per cent.) boiling at 160°-180°; a sesquiterpene (2 per cent.) boiling at 258°-259°; a paraffin (0.15 per cent.) having the formula $C_{29}H_{60}$, and m.p. 63°-64°; and a toxic red oil (33 per cent.) with the composition $C_{18}H_{24}O_2$. This oil has been named "cannabinol." It boils at 265° under a pressure of 20 Mm., and appears to be present in all pharmaceutical preparations of hemp that exert the characteristic effects of the plant. It is a hydroxyl derivative, and has been found by Dr. C. R. Marshall to be extremely active, doses of 0.05 Gm. inducing decided intoxication, followed by sleep. The symptoms produced by it are peculiar to *Cannabis sativa*, and as none of the products of the plant possess this action but cannabinol, he thinks that must be regarded as the active constituent of the plant (*Journ. Chem. Soc.*, lxxix., 529).

According to the latest *Consular Report* the amount of opium imported by steamer during 1895 is larger than in 1894, the values being at 1895 £23,702 for the latter year and £27,389 for 1895.

Opium Imports at Kiungehow. By far the largest quantity of the drug is, however, imported by junk in order to evade the heavy customs and "likin" levies. The value of the import by steamers in 1886, the year before the Opium Convention came into force, was £171,100, and it has diminished every year since then until the one under review, the value in 1894 being only £23,702. The rise in price of the Indian drug accounts partly for the small import in 1894, but practically the diminution is due to the success with which smuggling junks evade the cruisers sent to protect the revenue. It is calculated that about 1000 chests find their way to the island every year without paying the legal duty. Only two captures were made by the cruisers during the year, amounting together to some thirty-three chests. The importation of native opium is said to be on the increase in consequence of the rise in price of the Indian drug.

Tobacco Cultivation in Italy. A good deal of tobacco is grown in Southern Italy, but the growers are very much hampered in their operations by the excise officers, who count not only every plant, but every leaf, thus making their transactions with the growers exceedingly complicated. The present Minister of Finance has taken steps to extend the culture of tobacco in the Nocera district, and plants from Virginia, Kentucky, Sumatra, and other places have been introduced. A school to give theoretical as well as practical instruction in the cultivation and preparation of tobacco is shortly to be established at Nocera, and it is to be hoped, says the British Consul at Naples, that the instruction given there may enable Italy to provide her sons (and daughters) with a less evil-smelling weed than they are compelled by their paternal Government to consume at present. The request for the encouragement of tobacco-growing has long been urged from this province, and it is hoped that the response to it will in a measure relieve the grave agricultural depression from which this wonderfully productive country has been so long suffering.

Toxicity of Scrophularia Nodosa. It is found by Van der Moer (*Nederl. Tijdschr. v. Pharm.*) that aqueous and alcoholic extracts of *Scrophularia nodosa*, or of its seeds, are toxic. Injection of aqueous solutions of such extracts rapidly produces paralytic reaction in frogs, the special symptoms being preceded by a brief period of excitation. The author has obtained from the purified alcoholic extract a yellow amorphous toxic powder, the properties of which resemble the poisons obtained from digitalis.

Oil of Cicuta Maculata. This oil is found by F. P. Stroup to be composed mainly of two fractions, both terpenes, boiling respectively at 177°·5 C. and 179°·5. Two smaller fractions, also terpenes, boil at 181° and 185° respectively, and there are a number of still smaller fractions of undetermined chemical composition, having nearly all the physical characteristics of terpenes of the general formula C₁₀H₁₆. The oil and its fractions are readily soluble in alcohol, acetone, ether, benzol, chloroform, and carbon disulphide, but they are insoluble in water and in glycerin. They react violently with strong nitric acid and quietly with iodine, producing a colourless compound. The net result of the present investigation seems to indicate, therefore, that the oil is simply a mixture of terpenes, with possibly a small trace of an oxygenated compound (*Am. Journ. Pharm.*, lxxviii., 236).

P. Herzberg (*Zopf's Beiträge*, 1895, Heft 5) has studied the development of the seven species into which *Ustilago carbo* is now divided, and classifies them into two groups, according to whether they germinate from a mycele or from a pro-mycele, the latter being simply a form of mycele in which there is an early production of spores. To this latter group belong *Ustilago jensenii*, *U. avenæ*, and *U. perennans*; while *U. hordei* and *U. tritici*, which produce sterile myceles, are formed into a new genus, *Ustilagidium*. In nutrient solutions all the species produce chlamydospores, which again germinate into myceles. Herr O. Brefeld (*Bot. Centralblatt*, vol. lxx., 1896, p. 97) announces the interesting discovery that the parasitic rusts on rice and on *Setaria crus-ardæ*, hitherto known as *Ustilaginoidea oryza* and *U. setaria*, are in reality stages of development of an ascomycetous fungus allied to ergot. This was proved by the cultivation of the so-called uredospores in nutrient solutions, where they gave birth to an abundantly-septated mycele, like the higher fungi, bearing minute conids similar to those of *Pilacre*. The rust of *Setaria* produces true sclerotes. From these sclerotes were obtained peritheces containing true asci, each ascus enclosing eight ascospores. The genus *Ustilaginoidea* must be removed from the Hemibasidii, and must be regarded as a genus of Hypocreaceæ, near to *Tilletia*; the ustilagospores are simply a secondary form of reproductive organ. The small colourless conids which are first of all produced on the mycele are of transient duration, and are succeeded by black spores when the mycele has attained its full development; these the author regards as a kind of chlamydospore.

Crustaceous Lichens. G. Lindau has carried out a series of observations on the morphology and physiology of crustaceous lichens (see *Bot. Centralblatt*, vol. lxx., 1896, p. 60), the following being some of the more important results obtained:—In those forms which live on the bark of trees, there is a portion of the thallus—the basal layer—altogether destitute of gonids, which grows in the interior of the periderm between the layers of cells. In the Hypophloëodæ this layer extends rather deep; in the Epiphloëodæ it is limited to the uppermost strata. A similar structure occurs in the higher lichens, where the hyphæ of the basal layer, which is destitute of gonids, or of the rhizoids, may also penetrate between the cells of the periderm. This portion serves, in the first place, to fix the lichen, possibly also aiding in its nutrition. The growth of the hyphæ is entirely intercellular through the separation of the layers of the periderm; no perforation of the cell-walls ever takes place. There is no direct absorption of cellulose by the hyphæ, but it is possible that cell-walls which have already undergone a change by the action of atmospheric agents may be absorbed. As a lichen-gonid *Trentepohlia umbrina* does not possess, any more than the hyphæ, the power of perforating cell-walls and absorbing cellulose.

Galls. M. Molliard gives a very detailed account of the floral mycoecidia, the galls produced in flowers by the action of parasitic fungi belonging to the Peronosporæ, Uredinæ, and Ustilaginæ, especially in reference to the anatomical disturbances produced in the host-plant. When the same parasite attacks allied species, the results will often be different in the different species. In the vegetative organs of the flower (calyx and corolla), either the nature itself or the distribution of the tissues may be altered. In the sexual organs sterility is not an uncommon result, both in the pollen sacs and in the ovules. The author describes at length the modifications produced by parasitic fungi in a large number of different flowers (*Annales des Sciences Naturelles*, Botanique; new series, i., 67).

Extrafloral Nectaries of Ficus. M. A. Mirabella describes the nectaries found on the leaves of several species of *Ficus*. They agree with one another in their anatomical characters, in their origin which is always from the modification of epidermal cells, and in the nature of their contents. In addition to saccharine substances, which serve largely to attract insects, they contain proteid substances, but no starch. The glands or nectaries make their appearance as small areolæ with well-defined outlines, somewhat depressed, and sometimes covered by a white scurf. Their usual position is the under side of the leaf in the axil of a primary vein, but they also occur on the branches at the base of a leaf-stalk (*Nuovo Giornale Botanico Italiano*, 1895, p. 340).

Monascus purpureus, n.sp. F. Went describes under this name a fungus that produces the pigment known in Java as "ang-quac," which is largely used there for colouring various articles of food, especially a small fish (see *Ph. J.* [4], 1, 211). The pigment, which is imported from China, is of a deep purple colour, and is located in a portion of the thallus, other portions being colourless. It can be completely extracted by chloroform, and was found to be of a very stable character, melting at 50° C., but not being capable of sublimation. It contains carbon, hydrogen, and oxygen, but no nitrogen. The fungus was determined to belong to the *Hemiasci* of Brefeld; it has no true conidia, but produces chlamydospores, which are wanting in the allied genus *Thelelobus* (*Annales des Sciences Naturelles, Botanique*; new series, vol. i, p. 1).

Propagation of the Sugar Cane. Dr. J. H. Wakker points out (see *Bot. Centralblatt*, vol. lxx., 1896, p. 37), that the various cultivated varieties of the sugar cane exhibit gradual degeneration of the sexual organs. The pollen-grains display various degrees of sterility, until the stamens finally disappear altogether. In other varieties this degeneration extends also to the female organs, the ovary being in some cases entirely suppressed. Finally, the inflorescence itself is reduced to a very rudimentary condition. This appears to be the result of the selection by cultivators of those varieties in which the energy is thrown into the production of sugar-producing stems.

Poisonous Australian Plants. J. H. Maiden points out that the mortality of Australian stock is often increased by reason of the impossibility of isolating either the animals or suspected plants. He also refers to the popular notion that certain plants are poisonous to sheep and other animals. *Euphorbium drummondii* is firmly held to be poisonous, but the Government Veterinarian of New South Wales has experimented with it, and concludes that animals eating it are not poisoned but die from indigestion or diseases like anthrax. The plant has not been chemically investigated, nor have the following reputed poisonous Euphorbiaceans plants:—*Beyeria viscosa*, *Phyllanthus lacunarius*, F. v. M., and *Omalanthus* (*Carumbium*) *populifolius*, Grah. *Swainsona greyana*, *S. galegifolia*, *Nicotiana suaveolens*, Lehm., and *Bulbine bulbosa*, Haw., are also popularly known as stock poisons, but there is no satisfactory evidence upon the point. *Crotalaria mitchelli*, Benth., is accused of dangerous properties, and species of *Gastrolobium*, *Oxylobium*, and *Tephrosia* are also in bad repute. There is a great and pressing need for chemical investigation of all these plants. So far, a hygroscopic glucoside, gastrolobin, having a saffron odour, has been found in *G. bilobum*, R. Br., by Rummel, and Guthrie has extracted from *Swainsona galegifolia*, R. Br., an oily body which may or may not be poisonous. Plants of *Macro-*

zamia and *Xanthorrhæa* have been found to produce a disease known as "rickets," and other real or supposed stock-poisons worthy of investigation by chemists are *Stypandra glauca*, R. Br., *Pimelea hæmatostachya*, F. v. M., *P. trichostachya*, Lindl., several species of *Isotoma*, *Lobelia*, *Velleia*, and *Gratiola*. Again, species of *Boronia*, *Frenela* (*Callitris*), *Zygophyllum*, and the ripe fruits of *Petalostigma quadriloculare*, F. v. M., have been used as vermifuges, and chemists could decide whether they are of real use or not (*Agric. Gaz., of N.S. Wales*, vi., 57).

Influence of Condiments on Digestion. The action of condiments when taken with food is not definitely understood, though it is generally understood to be beneficial, as promoting digestion. An observer named Gottlieb has recently confirmed this view to some extent, as the result of experiments on rabbits. A cannula being introduced into the pancreatic duct, pepper or mustard was allowed to pass into the stomach, and the secretion of pancreatic juice was found to increase to three or four times the normal quantity. It appeared more watery than usual, but possessed the same digestive powers as ordinarily.

Composition of Microbes. E. A. de Schweinitz and M. Dorset find that the amount of crude fat in tubercle bacilli (see *Ph. J.* [4], 1, 179) is about 37 per cent. of the weight of the dried germs. The fat, about 3.5 Gm. of which was extracted from the microbes, yielded a hard soap on saponification with sodium hydroxide, and proved to be principally a glyceride of palmitic acid. In addition, it contains a minute amount of the glyceride of a volatile fatty acid, to which tuberculosis cultures owe their characteristic odour, and very small amounts of lauric acid (?) and an acid with an unusually high melting point, having apparently a larger carbon content than any acid previously noted in plants (*Journ. Am. Chem. Soc.*, xviii., 449).

Blood Coagulation. It has been known for some years that peptones, or, more exactly, propeptones, render blood incoagulable by causing the formation in the organism of a substance possessing anti-coagulant properties. C. Delezenne has lately investigated the matter, and finds that this substance is formed exclusively in the liver. It would appear to be either peptone modified by the liver, or a direct product of that organ, the secretion of which is provoked by peptone. The rapidity with which the anti-coagulant effect is produced on administering the peptone, and other facts, seem to indicate that the first hypothesis is more likely than the other. The substance preventing coagulation has not yet been isolated. In solution it resists a temperature of 100° C. for a prolonged period, though access of air causes the liquid to lose its properties rapidly. To preserve it, therefore, for any length of time it is necessary to add a few drops of chloroform, and prevent access of air (*Comp. rend.*, cxxii., 1072).

Rectal Injection of Toxines, etc. P. Gibier finds that in the case of rabbits, dogs, and guinea-pigs rectal injection of relatively large doses of diphtheria and tetanus toxines is not followed by any apparent effect, and does not confer immunity with regard to the effects of those toxines, however often the injection may be repeated. Rectal injection of diphtheria and tetanus antitoxines in very large quantities is likewise incapable of preventing death by minimum doses of the toxines of the two diseases. The rectal mucus appears in any case to retain, and perhaps destroy, the active principles of the toxines and antitoxines. When, by any chance, they are absorbed, they are probably conveyed to the liver and there destroyed (*Comp. rend.*, cxxii., 1075).

It is by no means easy to determine with any great degree of accuracy the temperature at which gelatin masses pass from the solid to the liquid condition, especially when a test-tube, thermometer, and water bath are the means employed, and much time is also occupied in making determinations by the usual method. R. C. Bayley has therefore devised a simple form of apparatus which consists of an oblong water bath holding a considerable quantity of water, and is so constructed that it can be heated by a spirit lamp or Bunsen burner without the hot air or products of combustion reaching the longest side in front. The bottom makes an angle of forty-five degrees with the front, so that the back is not quite half the depth of the front. In the section of the apparatus, as reduced in the illustration, the front is 45 Mm. deep, the back, 20 Mm.; the width of the bath is 25 Mm., and the sloping base measures 35 Mm. from back to front. The length of the bath as shown is apparently about 100 Mm., and a leg is attached at each end of the back, so as to support the sides in a vertical position. A straight line is ruled along the front of the bath an inch from the top, and one or more thermometers are supported inside the bath, with their bulbs parallel to this line. In use the apparatus is laid on its back, and small discs of the gelatin masses to be tested are cast on the front, with their lower edges just upon the line. The discs should be a quarter of an inch thick, and are moulded by pouring the melted gelatin into paper tubes half an inch in diameter, resting upon the front of the bath. When set, the paper is removed and the bath placed erect. Water is then poured in and heated from below, and directly the melting point of one of the discs is reached it begins to slide down the side of the bath. The melting point of one jelly, as ascertained by the usual means, was found to vary between 23° and 25°, the mean being 24°. Six discs of the same jelly were placed on the new apparatus, and all began to move when the nearest thermometer registered 26°. Other experiments gave similar results, the readings being uniformly two degrees higher than the mean of a number of determinations by the ordinary method (*Photographic Journal*, xx., 224).

According to G. le Bon, dark light (*la lumière noire*) possesses several properties resembling those of electricity (*ante*, p. 244). He assumed therefore, that it should be possible to condense the rays on the surface of metallic plates, which they would then traverse and act upon photographic plates placed behind in the dark. Experiments have shown that this hypothesis is based on fact. Thin sheets of copper and lead were placed in photographic printing frames, and one face of each exposed to the light of an electric arc for an hour. They were then placed in darkness for two hours, the sheets of metal removed and their non-exposed faces placed together, with a sensitive plate and the object to be copied between them. After leaving the whole apparatus in darkness for five or six hours, a perfect image of the object appeared on developing the plate, the light condensed upon the outer surface of the copper sheet having apparently traversed the metal and produced the impression on the sensitive film. Care was taken to prevent the effects of heat, contact, or pressure, and it was ascertained that no action took place if the sheets of metal were covered with black paper whilst exposed to light. It is considered that the rays of so-called "dark light" differ entirely from the Röntgen rays and others. The x -rays pass through black paper and organic bodies, but not through most metals, and they are neither reflected nor refracted. On the other hand, the author's experiments prove that radiations from luminous bodies falling upon metallic surfaces cannot traverse black paper nor most cr-

ganic substances, but they pass through many metals and, like electricity, are capable of being condensed and can diffuse themselves on metallic surface. Invisible radiations from fluorescent bodies also differ, having been shown by d'Arsonval and Becquerel to pass through metals and be capable of both refraction or reflection. The radiations given off by certain fishes and animals in the dark somewhat resemble the last-named, but are unable to penetrate metals, especially aluminium (*Comp. rend.*, cxxii., 1054).

W. N. Hartley has determined the composition of a coin by an ingenious adaptation of the methods of spectrographic analysis. The spectrum of the coin was photographed and the metals present first ascertained, after which their relative proportions were arrived at by comparing the photograph with a series of quantitative spectra, in which solutions of known strengths yielded spectra with a certain number of lines of definite length and strength. Alloys were then made to imitate the metal, and photographs of their spectra taken in the same way. The third trial produced an alloy, the spark spectrum of which yielded a photograph identical with that of the coin, a "white" sou of the French Revolution of 1798, the composition being found by the usual methods of analysis to be:—Lead, 13.93 per cent.; copper, 72.35; iron, 0.85; zinc, 12.70. By this novel method of analysis the composition of antique jewellery and coins may easily be determined without injuring them in any degree (*Proc. Chem. Soc.*, 164, 98).

Sicilian Sulphur Industry.

A Reuter's telegram from Rome says that one of the chief questions now engaging the attention of the Italian Cabinet is that of the amelioration of the sulphur industry of Sicily, which is at present in a very depressed condition, owing to the competition of pyrites for the production of sulphuric acid, and the fact of the supply now largely exceeding the demand, not to mention the threatened rivalry of Japanese sulphur. The price has fallen from 140 lire to 60 lire per ton. It is now proposed to abolish the export duty of 20 per cent., which formerly yielded an annual revenue of 3,400,000 lire. In order to make good the deficit thus caused to the revenue, it is proposed to levy a tax of 1 lira per ton on sulphur exported from Sicily, to increase the import duty on barley and white maize from 1.15 lira to 4 lire, and to introduce a statistical fee ranging from 10 centimes per quintal to 10 centimes per ton on imported goods not specified in the treaties of commerce.

C. H. LaWall has devised a simple stirring rod, which enables the operator to note the temperature of a liquid without using a thermometer. A glass tube, 5.5 Mm. in diameter, outside measurement, and 18 Cm. long, is sealed at one end, where it is also bent slightly. The tube is then three-quarters filled with small fragments of beeswax, paraffin, or other substance with the desired melting point, and is then heated until the substance melts and runs together at the bottom. Next fuse the open end of the tube almost entirely, leaving only a capillary orifice to allow of equalisation of pressure. Verify the registration point of the rod by placing it in a beaker of cold water with a thermometer, and gradually raising the temperature until the wax, etc., just melts, and the appliance is then ready for use. By using various kinds of paraffin and wax, singly or mixed, rods can be made, which will indicate a range in temperature from 40° C. to 90°, and they will be found to save much time in manufacturing scale preparations, extracts, and other preparations that require to be kept below a certain temperature during the process of evaporation (*Am. Journ. Pharm.*, lxxviii., 260).

CONSTITUENTS OF LEUCODENDRON CONCINNUM, ETC.

At the Indian and Colonial Exhibition in 1886 a substance was exhibited under the name of proteixine or proteacin, which Meiring Beck had extracted from *Leucodendron concinnum*, a proteaceous plant growing at the Cape (*Ph. J.* [3], xvii, 327, 408). It was a grey crystalline powder of bitter taste like salicin, and was stated to be a febrifuge. The substance was obtained in a pure state by Schuchardt, who presented a specimen to the Society's Museum in 1886 (*Ph. J.* [3], xvii, 755), and Hesse obtained from him a quantity of the leaves from which it was stated to have been extracted, but they proved to be the leaves of the sugar-bush, *Protea mellifera*, yielding a substance of entirely different chemical nature.

E. Merck has now obtained from the leaves of *L. concinnum* a glucoside for which he proposes the name leucoglycodrin, and a crystalline bitter substance (*Berichte uber das Jahr* 1895). The glucoside is obtained by precipitating an alcoholic extract of the leaves with ether after purification with lead acetate. It is a soluble amorphous powder of bitter taste, indefinite melting point, specific rotation of the alcohol solution $[\alpha]_D -40^\circ.25$. The substance dissolves in hot water and separates as a jelly on cooling. It dissolves in concentrated sulphuric acid, with yellow coloration, becoming reddish brown on heating. Analysis and molecular weight determinations led to the formulæ $C_{27}H_{42}O_{10}$ or $C_{27}H_{44}O_{10}$.

The bitter substance, named by Merck leucodrin, resembles salicin; its composition is represented by the formula $C_{15}H_{16}O_8$, and it appears to be identical with the substance to which the name of proteacin was given.

O. Hesse has also investigated this substance* and has adopted the name suggested by Merck in preference to that of proteacin.

By extracting the leaves with ether, treating the ether residue with hot water and lead acetate, separating lead from the clear liquid, evaporating and extracting with ether, leucodrin is obtained in solution, and can be purified by re-crystallisation from alcohol, glacial acetic acid or water. It forms colourless prisms, which melt at $212^\circ C.$, is intensely bitter, readily soluble in hot water, ether, or alcohol, slightly in chloroform or cold water. The water and alcohol solutions are neutral, and they are not coloured by ferric chloride, as has been stated incorrectly. The water solution does not give a precipitate with gold or platinum chlorides, silver nitrate, or lead acetate, but a solution mixed with basic lead acetate gives a copious flocculent precipitate on the addition of some ammonia. Leucodrin is dissolved with yellow coloration by caustic soda, and on the addition of hydrochloric acid it is again precipitated unaltered in a crystalline state. The water solution does not reduce Fehling's solution even after having been boiled with dilute sulphuric acid, but after boiling with the concentrated acid, in which leucodrin dissolves without colouring, there is a reduction.

Analysis gave results suggesting the formula $C_{2n}H_{2n+2n}O$, in which n might vary from 9 to 11. Merck's molecular weight determination pointed to $n=9$ and the formula $C_{18}H_{20}O_9$, which agrees with the analytical data.

By acetylation leucodrin yields a well-defined derivative, triacetyl-leucodrin, $C_{18}H_{17}(C_2H_3O)_3O_9$.

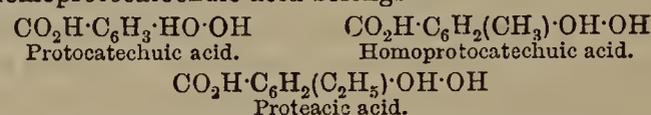
At the March meeting of the Stuttgart Branch of the Society of Applied Chemistry, Dr. Hesse gave an account of the results obtained in this investigation, and showed that *Protea lepidocarpon* contains only a green-coloured resin.

The sugar bush, *Protea mellifera*, is a common plant in South Africa. It blossoms in January and February, the flowers contain a sweet sap, which has suggested the popular name of the plant,

and it is utilised in the production of a kind of confection that is administered in cases of catarrh. This plant does not yield the substance obtained by Meiring Beck, but one that melts 40° below, and Hesse has recently ascertained that this product is hydroquinone, which exists in the leaves to the extent of from 2 to 5 per cent. Associated with it is an acid which has been isolated and studied by Hesse under the name of proteacic acid. It has the form of white granular crystals, which become yellow on exposure to the air, and melt at 187° with evolution of carbonic acid and formation of colourless oily distillate solidifying in crystals, which are not pyrocatechin. The acid dissolves readily in boiling water, is less soluble in cold water, insoluble in benzene or chloroform, but readily soluble in ether. The water solution has a strong acid reaction, decomposing potassium carbonate and neutralising the base. It is coloured greenish by ferric chloride, and the solution, on subsequent addition of potassium carbonate, becomes deep violet blue. Proteacic acid does not reduce Fehling's liquor, but when it is boiled with silver nitrate metallic silver is deposited. By treatment with hydriodic acid, according to Zeisel's method, no alkyl iodide is produced.

Analysis gave results suggesting the formula $C_9H_{10}O_4$. The alkaline compounds of proteacic acid become coloured by oxidation on exposure. The lead salt $(C_9H_8O_4Pb)_2 + PbH_2O_2$ is crystalline and sparingly soluble in acetic acid.

Proteacic acid is therefore the next higher member in the series to which homoprotocatechuic acid belongs—



THE CHEMICAL ANALYSIS OF WATER.*

BY HERBERT A. DAVIES, M.A., B.S.C., F.I.C.

Within the memory of people still living, water analysis was a thing unheard of. If a water supply were reasonably clear, sparkling, and free from bad taste, people asked for nothing more, and those who objected to a well sunk directly beneath a crowded churchyard or surrounded by cess-pools were regarded as eccentric faddists. Cholera and other epidemics which swept away thousands of victims were regarded as visitations of providence to be received in a spirit of humility, and it took a long time to persuade the conservative English mind that a bad water supply and various diseases are cause and effect. It was only after years of persistent teaching of the necessity for pure water that the lesson was learnt, and much of the credit for the vastly improved state of things is due to the many eminent chemists who have devoted their best energies to devising means for distinguishing between good waters and bad. Water analysis is a peculiarly English branch of science. All the standard methods have been devised by English chemists, such as Wanklyn, Frankland, Armstrong, Clark, Tidy, and others, and it is in the English-speaking countries that water analysis is chiefly practised. It is only necessary to consult a Continental work on hygiene to see how very much behind us they are in this respect, and how small a part water analysis plays; the result is seen in the cholera outbreaks at Hamburg, where the water supply was a disgrace to a civilised community.

In the early days of water analysis the examination was confined almost exclusively to the mineral constituents, and according to the amount of the various salts found some rough classification of waters could be made. And even now if we are making an analysis for manufacturers it is the mineral salts which determine the suitability of the water, because if a water is to be used, for example,

* *Annalen der Chemie*, 290, 214.

* Read before the Liverpool Chemists' Association.

in a boiler the presence of organic impurity does not matter, whereas an excess of lime salts will be very injurious.

The first great advance in water analysis occurred about 1867 when Wanklyn, on the one hand, and Frankland and Armstrong on the other, devised their respective processes for estimating the amount of organic matter in water. It is obvious that the suitability of a water from a hygienic point of view can only be decided by determining in some way the amount of organic matter in the water, because whether we regard zymotic diseases as caused by micro-organisms or by some poisonous product of living matter, the cause of the disease will be present in the water as organic matter.

A most deplorable quarrel arose between the originators of the two methods of determining organic matter, and even to this day it breaks out from time to time in the scientific journals. It did much to hinder the advance of the subject, because the abuse and scorn which each lavished on his rival's process caused outsiders to think that both must be worthless. A more serious injury was that in order to magnify the importance of his discovery each of the disputants held that it was only necessary to use his process to get all the information requisite to judge of a water, and that it was almost a waste of time to make any other determinations, and so it came about that relying simply on the one test chemists made very bad blunders, and to this is due much of the contemptuous reference which we hear in certain quarters to mere chemical analysis and its inability to detect pollution. The modern water analyst has been taught by long experience not to rely on any one test, or any half dozen for that matter, but to obtain all the analytical and other data possible, and considering it as a whole, form his decision. I admit that in the past good waters have been condemned and bad waters have been passed as good, but this was not the fault of chemistry, but of the too narrow view which was taken.

To see how far we have advanced from the day when a chemist would confidently pass judgment on a water after determining the free and albuminoid ammonia, I propose to point out the methods adopted by a competent chemist who is called upon to decide about the purity or otherwise of a water. I do not mean to say that the whole of the methods I am about to mention are employed in every case. People cannot expect to get more than they will pay for, but if a complete examination be made it would be on something like the following lines:—

In the first place it is an advantage to have the sample taken by a competent person, who knows what he is about. Every analyst has water sent to him at times in dirty wine bottles or stone jars, which may or may not be clean, sometimes closed with a rotten old cork or even with a plug of paper. If the cork be too small it is easy to remedy that in some people's opinion by wrapping a bit of rag around it, and so on. The first consideration should always be the scrupulous cleanliness of the vessel in which the water is to be carried, and, furthermore, there is generally a certain amount of judgment required to obtain a fair representative sample of the supply in question, avoiding accidental impurities. It is important also to notice the source of the water; if a well, whether it be shallow or deep, whether there be any possible source of pollution near at hand, and so on. It is curious to note how very, very reluctant people are, as a rule, to give any information at all about a sample. They seem to think that the analyst ought to find it out for himself, and that they are being in a manner defrauded if they give him any assistance.

When the sample is taken it is as well to proceed with the analysis without very much delay, because in warm weather especially the organic matter is liable to undergo alteration. Those who are interested in this question will find an interesting series of papers by Professor Liversidge which appeared in the *Chemical*

News not very long ago. The analysis of water may be divided into two parts, a general examination, and an estimation of special constituents. In the general examination we deal first with the colour. At first sight one is inclined to think that water has no colour, but if water be put in a two-foot tube and looked through against a white background, it is surprising to note how well marked a colour there is. Generally speaking, there is a distinct brown colour which to my eye has a decided green tinge. This is due to the vegetable matter dissolved in the water, and when the supply is from a peaty soil, what is known as upland surface water, the colour may be very deep indeed, as peat gives much soluble matter to the water. The London water examiners have a graduated scale of tints, but in an ordinary way it is sufficient to note that there is a light or deep tint as the case may be.

Clearness or turbidity is noted as determining the efficient filtration of the water. When water contains much sewage there is a peculiar opalescent appearance which is very characteristic. The taste and smell are noted, though this does not as a rule give much information, because a badly-polluted well-water is often very palatable. However, if there should be any unpleasant smell it may be taken as almost certain that the water is polluted. It is best to warm the water slightly in an open dish to detect any smell there may be.

The reaction should be noted, that is, whether the water be acid or alkaline. This is best observed with methyl orange. In the great majority of cases a water is alkaline owing to the dissolved carbonate of lime. An acid reaction generally points to pollution with manufacturing waste. In the general examination may be included the microscopical examination of the residue. This should never be rejected, because it often affords most valuable information. The water is allowed to settle for some hours, and then is carefully decanted or syphoned off until about 50 C.c. are left. This is then well shaken round in the bottle, and poured into a conical glass, and again allowed to settle. A drop is then taken with a pipette from the bottom and examined. As there may be anything from micrococci to small fishes, a wide experience in microscopical work is required to enable the observer to come to a right conclusion from what he sees. There are certain organisms which are peculiarly characteristic of sewage pollutions, and others, again, which are only found in pure spring waters. We now come to the special examination, the real chemical analysis of the water. It may be well to point out here the difficulty which sometimes arises owing to the different methods which are adopted to express the results of an analysis. In this country we still adhere, for the most part, to grains per gallon. The practice of using parts per 100,000 is spreading, however, and is, in some respects, preferable, but certain constituents again are expressed as parts per million, and, finally, we have degrees of hardness. It is to be regretted that a uniform system is not adopted, and, in my opinion, it would be better to express everything as parts per 100,000. Of course, any one system can be translated into any of the others, but I have known much confusion arise owing to people getting different sets of figures.

First, the total dissolved matter is estimated by evaporating a known quantity of the water to dryness and weighing the residue. At one time it was thought that the amount of organic matter could be determined by igniting this residue and finding how much weight was lost by the ignition. But if we consider for a moment we can see that, in addition to the organic matter, we also drive off some combined water, also nitrates, and nitrates and carbonates are decomposed, and some chlorides are volatilised, so that it is quite fallacious to consider the loss as organic matter, and this determination is now very rarely made.

The amount of dissolved matter varies enormously, and may commonly range between ten grains to the gallon, and one hundred and fifty. It is impossible to say that any particular number renders a water fit for use or the reverse, because a water may contain a large amount of dissolved salts and yet be very pure organically, and *vice versa*. This consideration applies to most of the constituents. In many popular books on water analysis we see tables divided in three columns giving the amount of the various constituents which render a water safe, usable, and dangerous. Such tables are both worthless and misleading. No particular amount of any constituent renders a water either good or bad. As I pointed out before, we consider the results of an analysis as a whole, and cannot form a proper decision on any one item. We have now to consider the determination of the organic matter, and this is the most discussed portion of water analysis. There are three methods in use, namely, Wanklyn's ammonia process, Frankland's combustion process, and Tidy's permanganate process. As the first mentioned is most generally employed we will consider it first. I may take it, I think, that you are all more or less familiar with the process; half a litre of the water is placed in a clean retort and distilled with carbonate of soda, and the ammonia in the distillate determined with Nessler's solution, alkaline permanganate is then added, and a further quantity of ammonia distils over. This is the albumin oil ammonia. The first lot of ammonia is called free or saline ammonia. It is derived from the ammonium salts in the water, and any urea there may be. The object of adding carbonate of soda is to liberate ammonia from the ammonium salts. It is a curious fact that many books on water analysis omit all mention of the sod. carb., and another mistake which one writer copies from another until it has become accepted as perfectly true is that if the first 50 C.c. of the distillate be tested the amount of ammonia found is two-thirds of the whole quantity of free ammonia. I saw this statement so often that I became suspicious about it, so I tried various samples of water and found it altogether untrue. Yet I have no doubt that many people still calculate in this way instead of determining directly, and I may tell them that their results will always be wrong. The free ammonia in a water is derived from organic matter and is a measure of the amount of organic matter which has undergone change. If sewage or other matter of a like kind gets into water the ordinary putrefactive bacteria decompose the organic matter with formation of ammonia, and the nitrifying organisms further carry on the change, giving rise to nitrous and nitric acid. Therefore, much free ammonia is very strong evidence of sewage contamination. The albuminoid ammonia is derived from the unchanged organic matter, because it has been found that if organic matter, such as white of egg, be boiled with a strongly alkaline solution of potass. permanganate, a great part of the nitrogen in the organic matter is converted into ammonia; therefore free ammonia is a measure of the decomposed organic matter in the water, and albuminoid ammonia is a measure of the unchanged organic matter. Two objections will be at once raised. First, how can you tell how the organic matter is harmless vegetable matter or dangerous animal matter? Well, it is a curious fact that vegetable matter gives rise to very little free ammonia, and a practised hand can also distinguish by the manner in which the albuminoid ammonia comes off. It comes off much more slowly and more regularly. But the most important means of distinguishing them is this: That animal matter is always accompanied by chlorides and nitrates, whereas vegetable matter is not.

The second objection is that although we can tell how much ammonia there is, we do not therefore know how much organic matter there is. The answer is that it does not matter in the least. Long experience has shown that, other things being equal, a certain

amount of free and albuminoid ammonia respectively denote a pure water, while beyond certain limits there has been pollution, and if a water has been polluted by sewage it really does not matter much whether there is an ounce of it or a pound of it in a gallon; the water is equally unfit for use in either case.

The second method of determining the organic matter is Frankland's combustion process. This method is supported by influential analysts, but all the same its days are numbered. It requires elaborate and delicate apparatus, much time, and great skill, but the fatal objection to it is that there are unavoidable sources of error in it which make it quite unreliable. Proof of this has been given lately. It has been shown that when the most eminent chemists analyse the same water their results may differ by more than 100 per cent., and quite a different decision be arrived at. As you are probably aware, the method stated briefly consists in evaporating a large volume of the water to dryness, and then making an organic combustion of the residue with copper oxide. From the amount of CO₂ and N found it is supposed that the amount of organic matter can be calculated, and from their relative amounts whether it is animal or vegetable. It would take too long to explain the various sources of error; it is sufficient to say that nothing but Frankland's great influence and official position keep the process alive. I have never heard of it being adopted outside England, whereas Wanklyn's process is used all over the world. The third method—Tidy's permanganate process—consists simply in measuring the amount of permanganate decomposed by the water. Unfortunately, other substances besides organic matter decompose permanganate, and therefore much reliance cannot be placed upon the results which are obtained by this method.

Closely related to organic matter are chlorides and nitrates. As I pointed out before, nitrates are derived from the oxidation of organic matter by means of the nitrifying organisms which swarm in the upper layers of the soil. Therefore if we find much nitrate in a water it is certain proof that it has been polluted with organic matter, and, moreover, with animal matter. Until recently, it was thought that if the organic matter had been converted into nitrates it was evidence that the water had become so completely oxidised as to be safe, but recent research has shown that under favourable conditions nitrification may go on so rapidly that while nearly all the organic matter is converted, disease germs still retain their vitality. The determination of the amount of chlorine in the form of chlorides is a most valuable guide. Urine and sewage generally contain a large quantity of sodium chloride, and no treatment to which the sewage can be submitted will remove it; therefore the presence of a large quantity of chloride in a water is a most decisive proof of sewage pollution. Of course it must be remembered that in certain cases, *e.g.*, near the sea shore or in places like the Cheshire salt district, there will naturally be a large quantity of chlorides in the water, and in these cases we must rely on the other constituents, but whenever we find more chlorides than the normal amounts, accompanied by nitrates, and high free and albuminoid ammonia, can say with certainty that the water has been polluted by sewage. I am sorry that I have not had time to discuss other points of analysis, such as the detection of poisonous metals, especially lead, hardness estimation, estimation of phosphates, and so on. What I want to do is to impress on you, as far as I can, the fact that water analysis is a difficult and delicate task, calling for trained judgment and long experience. I have been amazed to see the reckless way in which it has been undertaken, and I have known water supplies condemned by people whose training had not gone so far as to teach them how to use a chemical balance properly. Much discredit has been thrown on water analysis in consequence, so that

if I have done no more than led you to think that perhaps it is the chemist who is at fault and not the chemistry I shall be well satisfied.

THE INDIA-RUBBER INDUSTRY IN SOUTH AMERICA.

The world's consumption of india-rubber has been growing so enormously during the past few years that the time does not seem to be far distant when the demand will exceed the supply. Already the difficulty of getting a sufficient quantity of rubber to meet current needs has led consumers to fear that there will be an early famine. One of the chief causes of this heavy increase in consumption is, of course, the employment of the material in the bicycle trade, and long before the limit has been reached in that direction another scope, that may be quite as wide and general, will be opened up in the use of pneumatic tyres upon vehicles of all descriptions. The United States is the largest consumer of india-rubber at the present moment, but that country is run pretty close by Great Britain. The other markets follow a long way behind, but the amount imported by France and Germany is no mean proportion of the trade done in this material.

It is certain that the threatened famine in india-rubber, or, more properly speaking, caoutchouc, would not be so imminent as it now is if the owners of the plantations in West Africa and elsewhere had been a little less reckless in their method of tapping the trees. In order more easily to get at the milky juice it has long been the custom in West Africa, and in some of the South American States, to cut down the trees bodily, so that the collectors only secured one lot of caoutchouc from each tree instead of a large number of periodical yields. The prevalent idea that this policy was justified by the almost unlimited range of forests producing caoutchouc was very soon found to be groundless, and, now that it is too late to have any immediate effect upon the supply, stringent regulations have been made in many countries to prevent the cutting down of trees, and owners are going to a great deal of expense in laying out new plantations, which must, however, take several years before they come to maturity. In the meantime efforts are being made to compensate for these limited supplies by producing artificial india-rubber, and several new processes have lately been brought out in France and Germany, though without as yet producing india-rubber of a suitable quality upon a commercial scale.

The most obvious way of meeting the demand for this material is to give more attention to some of the other rubber-producing trees that are to be found in considerable quantities in South America and elsewhere. At the present moment French capitalists are trying to make profit out of the scarcity of india-rubber by utilising the balata, which for many years past has been employed upon a small scale for a variety of purposes. There are at least two descriptions of balata, the one white and the other red, the latter being known in the English colonies as the "bullet tree," a corruption, no doubt, of the native word "bolletrie." The species being exploited in French Guiana is the *Mimusops balata*, a magnificent tree which is peculiar to all the Guianas. It attains a height of from 90 to 100 feet. The wood is very much sought after for cabinet-making on account of its beautiful colour, while it has also the property of resisting the depredations of insects. These merits are almost fatal to the existence of the tree as a rubber-producer, and in some of the South American States forests are being cut down without any regard to the profit that can be secured by tapping them in an intelligent manner. In Venezuela the tree is also to be found in great abundance, and, in point of fact, it grows very freely in the mountainous districts of the northern States of South America,

Nevertheless, in British Guiana immense forests are found in the low-lying districts of swampy Canje. In a report on the balatas published a little while ago by M. Hayes, a colonising agent, it was said that there was a sufficient expanse of forest in the Guianas to allow of the exploitation of rubber being carried on for centuries. It was, however, necessary that something should be done to prevent the wholesale destruction of the *Mimusops balata*, which would very soon disappear if allowed to be cut down indiscriminately for its wood, and one of the richest and most prolific resources of South America would thus be destroyed. In fact, both in Venezuela and in Dutch Guiana the trees are cut down with a view of collecting as much of the juice as possible, and in French Guiana the same process was for a long time employed. When the trees are thus felled, circular cuts are made every 12 inches, and receptacles are placed underneath to catch the juice. The bark is also sometimes removed from the tree and the juice extracted from it by presses.

In British Guiana it is only allowed to tap the trees without felling them, and a similar restriction is now imposed in the neighbouring French colony. The English method of collecting the rubber is to make horizontal incisions half way round the tree and connect them with a vertical channel to allow of the fluid flowing down into the receptacle, but a better method is said to consist in cutting out rectangular pieces of bark from which the juice is extracted by presses. Alternate rectangles must of course be left on the trunk, and these can be removed at the next tapping, when the exposed parts of the tree are sufficiently healed. To secure perfect vitality in the tree it is preferable to tap it over a third only of its circumference every five years. If properly carried out the collection of balata rubber is a very profitable industry indeed. One traveller in French Guiana, who was accompanied by three men, collected 666 litres of juice in 119 days, which produced on coagulation 360 kilos of rubber. Had the men been able to give their time exclusively to the collection of rubber there is no doubt that the amount would have been doubled or trebled. It is, indeed, estimated that a single balata will supply a kilo. of rubber every year without suffering to any appreciable extent from the tapping. The system usually employed for securing coagulation is to pour the liquid into large shallow pans about four inches deep. A hard crust very soon forms at the surface, and this is removed to allow of another crust forming, and so on until the whole of the juice is solidified. The crusts are then hung on lines to dry. The balata rubber, though perhaps slightly inferior to caoutchouc for certain purposes, and notably as an insulating medium, is yet specially adapted for a great many uses, such as machinery belting, mackintoshes, surgical appliances, etc., and its merits are so far recognised that a considerable trade has grown up during the past two or three years in the Guianas. While the exports of balata rubber from British Guiana in 1881 were only 41,000 lbs., in 1889 they were no less than 363,480 lbs., and though the total fell in 1892-93 to 237,450 lbs., the value has been rapidly increasing, and for the two years named was £20,005. In Dutch Guiana the industry has not been carried on in such a systematic manner. Nevertheless, two American companies are exploiting the balata on a large scale, and are sending the product to the United States. That the industry can be made a very profitable one is seen in the price paid for the rubber, which varies, in Paris, from 3 francs to 8 francs a kilo., according to the quality. It is evident, therefore, that while industrial enterprise is under a cloud in South America, it may be to the interest of capitalists to turn these balata resources to account, the more so as rubber is one of those rare things that are not likely to suffer depreciation to such an extent as to make its production unremunerative.—*South American Journal*,

ORTHOCHROMATIC PHOTOGRAPHY.*

BY CAPT. W. DE W. ABNEY, C.B., F.R.S.

The meaning of orthochromatic photography is the correct rendering of colour on a print, in monochrome, taken from a photographic plate. To photograph pictures so that they are not obviously wrong in colour rendering is the use to which this branch of photography is usually put, and if we can render the colours in a picture properly, we can render any subject. We say that one colour is brighter than another, or more luminous, and we may generalise, and say that one colour has more luminosity than another. It has been said by Helmholtz that he could not picture a method by which a red and a green can be matched for brightness, and yet there is a sort of instinct by which the brightness is judged, and it is this instinct which enables us to get accurate measures of the luminosities of different colours. To judge, however, of the luminosity of colours, we must know the intensity of the light which calls them into being. Thus, a picture in which there was red and green might, under bright illumination, show a particular red, brighter than a particular green, whereas, in a sombre light, the reverse might be the case. Towards evening, the last colours which appear vivid to the eye in pictures in a picture gallery are the blues, the reds disappearing early.

A second difficulty crops up, which is also physiological. If we place a blue-green and a red in juxtaposition in large masses, the blue-green may appear much brighter than when the same colours are presented in small portions. The reason is that, in the centre of the eye we have a yellow dye staining a small central part of the retina, and that shuts off a large proportion of the blue, when the image happens to fall on it, as is the case when the masses are small. When the masses are large the image of the blue falls on the retina beyond this small stained portion, and the full effect of the colour is felt. In a picture, then, it is evident that the luminosity of a small patch of blue will not be the same as it would be if the patch were large. We can imitate what is seen by the retina beneath the yellow spot by using a pale yellow glass over half a patch of blue. Another difficulty is the kind of light used for viewing the colours. If we have blue sky to illuminate the picture, the preponderating blue of this light will show up the blue of a picture more than would be the case if the, comparatively speaking, yellow sunlight, or light from the clouds, were illuminating it. Artists are known to complain of coldness of a picture when viewed in the light from a cloudless sky.

One is often tempted to smile at some art criticisms of colour values in pictures, and it would puzzle a good many of the critics, for instance, to explain what is meant by painting in a high key or a low key, and the difference that exists in colour contrasts in the one kind of painting and in the other. If a few of the laws which underlie a knowledge of colour were more studied, criticism on pictures would be much more valuable than it often at present is. For instance, when a picture is seen through half or more than half closed eyes, the chromatic sense is entirely altered, and the relative values of the different tints are altered. The artist often uses this artifice when painting from nature, and rightly, for he has learnt from experience the kind of light in which his picture will be viewed. But there is no reason for the critic to adopt the same plan in the studio. It is evident, then, that the rendering of the colour in a picture in monochrome with exactness is by no means easy. In this country, at least, the light in which a picture is seen most commonly is sky light, with clouds in the sky. The electric light is a very fine imitation of bright sunlight, and it is quite fair to judge of the luminosity of colours in such a light.

To gain a real knowledge of the colour of pigments, or of light transmitted through transparent bodies, such as glass, we are forced to have recourse to the spectrum, and if we wish to know the orthochromatic value of a photographic plate we must do the same. On throwing the luminosity curve on the screen, it will be seen that in the yellow and yellow-green we have the maximum brightness, and by an artifice we can show how the spectrum in monochrome should be represented. On the screen we have a point from a negative of the spectrum, taken on an ordinary plate. It will be seen that by far the brightest part is that which represents the blue of the spectrum. The yellow has no luminosity to speak of, and the red does not show at all. Early in the seventies Dr. H. M. Vogel, of Berlin, showed that by the addition of certain dyes—fluoresceine principally—the same plate became sensitive to certain rays to which before it was insensitive. Later researches have shown that erythrosine or erzine are effective in rendering yellow green, and that the simple chemical compound cyanine renders a plate sensitive to the yellowish-red as well as to the yellow. How we are to account for this new sensitiveness has been much discussed. Probably the sensitiveness is due to the decomposition, by light, of the dye itself, and the intimate mixture of this product with the sensitive salt gives a mixture on which silver will deposit in exactly the same way as it will on a glass plate on portions which have not been properly cleansed. Dyes which are most effective are those which are most fugitive.

On the screen we have two samples of prints of the spectrum from plates rendered colour-sensitive by means of erythrosine and cyanine. In all these cases there are gaps of insensitiveness in the spectrum. We can reduce the sensitiveness in the blue by means of a coloured screen placed before the plate or in the beam of light falling on it, but you can never get over this difficulty of the gaps. So far there is no plate that I know of which will absolutely fulfil the conditions that have been laid down. But by modifying the screens we can make a compromise which will not be very far from the truth, when we are photographing colours of nature which are not pure colours like the spectrum colours, but which are mixtures from colours from large portions of the spectrum.

First of all we must have a plate which, while sensitive to blue, must also be sensitive to green, some pale yellow, and red, and if there are gaps we must do the best we can to eliminate their effect. If we can photograph correctly the light which is transmitted through a ruby glass, a yellow glass, a green glass, a blue glass, and a white glass, we may take it that any intermediate colours will not be very incorrectly rendered, because each of these coloured glasses transmits a considerable portion of the rays on each side of the colours of the spectrum which most nearly match mine. Thus the red will transmit red and yellow, the yellow-red, yellow and a little green, the green-yellow and blue as well as green, and the blue glass will allow some green, a little red, and a large proportion of blue to pass.

Mr. Ives has shown that an ordinary plate may be made orthochromatic by using coloured screens, but the example he gives of the time of exposure required is not of such a character as makes it appear desirable to use ordinary plates for such a purpose. He gave, I believe, five minutes' exposure with such a screen, when the ordinary exposure was only cap off and on, or say half a second. This would mean a prolongation of the exposure some 600 times. Any plate which, by any amount of exposure, will give a deposit by the red part of the spectrum, may be made orthochromatic, especially if the sensitiveness is gradual. If the sensitiveness to the red is, say, 1000 that of the blue, and the sensitiveness goes gradually down from blue to red, it is only necessary to cut off 999 parts of the blue, and so on for the intermediate colours.

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THE TOWN AND GOWN ASSOCIATION, LIMITED.

THE professions have suffered much, and may suffer more, from the working of the Companies Acts, but it is just possible that the development of a novel scheme with which Professor PATRICK GEDDES' name is associated may indicate ways in which the advantages accruing under the Acts may be utilised to the benefit of professional men as much as they have been by the commercial classes of the community. During the past nine years Professor GEDDES has organised and supervised undertakings initiated by him with a view to aiding in the improvement of Edinburgh, and supplying the material conditions of associated and collegiate life, with due regard to the actual conditions and requirements of the Scottish Universities. The beginnings of a University Hall were made by renting and furnishing three small flats, which were entered by seven students on May 1, 1887. Soon, however, it became necessary to take possession of the whole tenement to accommodate the continually increasing number of students, and many houses have been acquired since, but the accommodation at the present time, including twenty family houses or sets of private chambers, is described as being quite inadequate to supply the demand on the part of students and others.

With a view to extending the original scheme and putting it on a wider basis, the Companies Acts have been taken advantage of and the Town and Gown Association, Limited, has been formed to take over Professor Geddes' undertakings, its object being at the same time civic and academic, architectural and educational. On the one hand the Association will concern itself with buildings and sanitation, on the other, with the organisation of residential halls for students and others connected with the universities and with the liberal professions generally. Plans have been drawn for two masses of reconstruction, east and west of New College, thus essentially remodelling the panorama of the Old Town, Edinburgh, viewed from Princes Street. Other improvements have also been made or arranged, so as to throw narrow and noisome closes into spacious open courts, whilst large slum areas are being dealt with by the local authorities, who appear to be co-operating in the desirable object of improving the appearance and hygienic condition of the city, so that

a definite prospect is thus opened up of a cleansed and renewed Old Town. Within this district the work to be taken up by the Association will be seen as an active participation in a renaissance of the historic city, and as the domestic and residential aspect of a general movement.

Altogether one hundred and twenty graduates and undergraduates have been provided for by Professor GEDDES' unaided efforts, but the University numbers nearly three thousand undergraduates, and over a thousand more attend the various extra-mural schools. It is believed also that a large and increasing number of both Scottish and English students are annually lost to the Scottish Universities for lack of the residential conditions, which it is a main object of the Association to supply. It has been proved that the judicious management of a moderate circulating capital in Edinburgh is capable of bringing together undergraduates and graduates so as virtually to constitute a College such as could not be established in smaller university towns without sinking endowments approaching half-a-million sterling. The development of a simple boarding-house, therefore, into a school of "public spirit and individual character," is to supply the plan for the extension and further development of the principle upon a collegiate scale. There are to be both self-governing houses and tutorial houses, in addition to a central building arranged as a centre for the varied student societies and other activities of the University Hall. Professor GEDDES is to join the board of directors, after allotment, as Vice-President, and will also continue his services as manager for some time. It may reasonably be expected, therefore, that success in the past will be repeated in the future, and the enterprise of the Association should benefit its members, whilst improving the University and beautifying the ancient City of Edinburgh. When, it may be asked, will London and its University be similarly benefited?

WHAT IS A PROFESSION?

IN an address delivered at the first annual gathering of the Liverpool Odontological Society, Mr. W. H. WAITE, L.D.S.I., pointed out that several distinctions, having no foundation in reason, have been made between professions and trades—social distinctions, conferring privileges on the first which are denied to the second. The real difference is most simply expressed by observing that, in a trade transaction, the public seek an article, whereas in professional matters an individual is sought. In trade the public can examine the article offered and estimate its value; but in dealing with a profession it is necessary to confide in the individual, having only his reputation and experience for guidance. "In trade the individual is of small consequence, provided the article is genuine; but in a profession the individual is of the first importance—his knowledge, his skill, his character count for everything. In trade, finally, the public can be equally well served at any respectable establishment—the demand and the supply are for the most part uniform. In the professions there is infinite variety; identity is well-nigh impossible, either in the matter requiring attention or in the individuals whose services are sought." The reason the professional man is called professional is because he professes to understand, and to be able to perform, the duties pertaining to his specialty. He has no goods to exhibit for inspection

or competition, but needs to show that he possesses the knowledge, skill, and character he professes. Accordingly, he must be taken very largely on trust, but once his capability is demonstrated "his position is as well assured as anything mortal can be."

EXEMPTIONS FROM THE SHOPS (EARLY CLOSING) BILL.

MR. BANBURY, undismayed by the reception his proposals met with in Grand Committee, intends to make another effort to secure the addition of "pharmaceutical chemist or chemist and druggist or registered druggist" to the Schedule of exempted businesses within the meaning of this Bill. His South Hackney colleague in the House, Mr. T. HERBERT ROBERTSON, wants the exemptions to be made on more generous lines, for in addition to fruiterers, confectioners, and vendors of any article of food ready for consumption (a tremendously wide-reaching reference), he proposes to move that "a chemist or druggist or vendor of medical appliances" shall also have the privilege of figuring in the Schedule. The record of these notices relating to Sir JOHN LUBBOCK'S Bill is of little more than passing interest, for it will be surprising if the respective sponsors are ever called upon by Mr. Speaker this session. Presumably the hopelessness of anything further being done in the way of private members' business is also responsible for the absence of hostile notices against the Shop Assistants Bill.

THE LAW AS TO PROFESSIONAL QUALIFICATION.

THE recent prosecution for manslaughter at Leeds Assizes (see PH. J. Supplement, April 25, p. lxxxv.), and the suggestive remarks of Mr. Justice WRIGHT as to the dangerous results which may arise from allowing ignorant persons to use and practise a skilled profession, have very distinctly raised the question whether, under the present state of the law, the public is sufficiently protected from risk of that kind. In a leading article devoted to a consideration of this question, the *Times* of Thursday last points out that even in regard to the medical profession and the practice of dentistry, the statutory prohibition of the use of titles indicating special kinds of professional qualification is so easily evaded as to have little or no practical value. It is also shown that in addition to that defect, the legislative provision for limiting liability in commercial and industrial undertakings has been misapplied to enable unqualified persons to carry on occupations in which proof of technical qualification is required in the interests of the public. As an illustration of the absurd results that follow, a case is mentioned of a man who in 1879 presented himself for the Preliminary examination of the Pharmaceutical Society, was then rejected and has subsequently come up, on fifteen occasions, without being able to pass. Several penalties have been recovered against this individual for acting as a chemist and druggist and selling poison, but having now converted himself into a company, he is enabled to defy the law providing for the safety of the public and the equitable protection of those who comply with it. In conclusion, the hope is expressed that success will attend the attempt at present being made to remedy this defect by the insertion of a clause in the Companies Bill now before Parliament.

ANNOTATIONS.

CHEMISTS' ASSISTANTS' ASSOCIATION.—The following is the list of officers of the above Association for the session 1896-97:—President, Mr. C. Morley; Vice-Presidents, Mr. G. Roe and Mr. A. Ralph Melhuish; Hon. Vice-President, Mr. E. W. Hill; Hon. Treasurer, Mr. Strother; Hon. Secretaries, Mr. W. Moore (Literary), 17, Bloomsbury Square, W.C., and Mr. C. Robinson, 180, New Bond Street, W.

THE MONTREAL COLLEGE OF PHARMACY was established in 1867 became incorporated in 1879, and has lately been thoroughly remodelled and fitted up with all necessary requirements. The lecture rooms have seats for from 75 to 100 students, and the chemical laboratory has accommodation for more than 60. There are both junior and senior courses, consisting of fifty lectures each, in materia medica, pharmacy, and toxicology, theoretical and practical chemistry, and structural, physiological and systematic botany. Last session 93 students matriculated at the college. The legal examinations for Minor and Major candidates are held twice a year only, a plan that might usefully be adopted in Great Britain; in April they are held at Montreal, after the close of the lecture session, and in October at Quebec. Success at the Minor examination qualifies the candidate as a "certified clerk," and after passing the Major he becomes a "licentiate in pharmacy."

PATENTS.—The thirteenth annual report of the Comptroller General of Patents, Designs, and Trade Marks, besides affording a rich field for the energies of the conscientious statistician, presents features that are of general interest. The Patent Office made a profit during 1895 of nearly £87,000, in spite of heavy expenditure in respect of new buildings. The Chancellor of the Exchequer is doubtless duly grateful for this little addition to the public purse, and would not be disposed to agree to any amendment in patent practice, such as Sir J. Leng advocated a short time ago (see *ante*, p. 390). The applications in respect of patents showed a slight decrease, in respect of designs a marked decrease, and in respect of trade marks an encouraging increase. England and Wales naturally supply the major portion of the applications, then come the United States, with Germany a very close third. Sir Reader Lack gives some interesting tables showing the number of applications for patents during a series of years compared with the number of patents sealed, and those remaining in force during the whole term of fourteen years. As an instance we may take the year 1876. There were in that year 5069 applications, but only 3435 went to the sealing stage, 3367 survived to the third year, 947 to the seventh year, and only 341 to the fourteenth. In 1894 there were 25,386 applications, but only 47.3 per cent. ever proceeded as far as sealing. One gathers from the Comptroller's figures that, as a rule, barely 6 per cent. of sealed patents remain in force for the full term of fourteen years. In fact, the tendency seems to be towards making the procedure of application (which carries provisional protection for nine months) fulfil all the purposes of Letters Patent. The former costs £1, whilst sealing means the expenditure of £3 additional at least, and this may be a potent factor with the commercial man who has "notions."

THE ALUMNI REPORT, published by the Alumni Association of the Philadelphia College of Pharmacy, commemorates the seventy-fifth anniversary of the College by publishing a full report of the proceedings on the occasion of the recent celebration of the anniversary. This, with other matters, renders the May number of the *Report* of exceptional interest.

NOVEL USE FOR OLD FILTERS.—A correspondent of the *Amateur Photographer* suggests the use of a disused filter for keeping a stock solution of sodium hyposulphite ready for use. The crystals are placed in the upper chamber of the filter, which is then filled with water. The solution filters through into the lower compartment gradually, is kept free from dust, and can be drawn off by the tap as required. The same idea will suggest itself to pharmacists as being capable of application in the preparation of other stock solutions, such as certain syraps, mucilages, etc., etc.

THE RÖNTGEN RAYS IN PHARMACY.—Dr. Ferdinand Ranwez has made use of the x -rays to detect mineral substances added to saffron as adulterants. Out of four specimens so examined, only one was found to be pure; another contained 62.13 per cent. of barium sulphate, and a third 11.75 per cent. of that compound, together with a certain proportion of potassium nitrate. The fourth specimen contained 50 per cent. of pure saffron, and the rest consisted of some substitute for that drug, faced with barium sulphate to the extent of 28.6 per cent. The plan adopted was to wrap a gelatino-bromide plate in black paper, place the saffron upon this on the same side as the sensitive film, then allow the rays to act for four minutes, afterwards developing and fixing in the usual manner. The foreign matter is very sharply indicated in the print illustrating the paper, which appears in the *Annales de Pharmacie* for May.

ELECTRICITY AS A REMEDY IN INFECTIOUS DISEASES.—The recent discovery of D'Arsonval and Charrin, that alternating currents of electricity attenuate the poisonous toxins produced during the course of such diseases as diphtheria, causes the Editor of *El Memorandum* to remind his readers of a pamphlet he reviewed some four years since, entitled, "La electricidad y el cólera," written by Señor Rodriguez Merino, an electrician in the posts and telegraphs at Torrelavega. The object of the pamphlet was to air Señor Merino's theory that, electricity being a powerful disinfectant and destroyer of micro-organisms, strong electric currents passed through the bodies of cholera patients might so act on the cholera microbes as to cut short the course of the disease. Though Señor Merino was ridiculed at the time, D'Arsonval's experiments seem to point to there being something in the idea, providing success attends the trials that are being made of attenuating the toxins of diphtheria, as they are produced in the sick person's body.

SOME FINE RADIOGRAPHS.—Mr. Leo Atkinson, who has devoted considerable attention to the "new photography" and recently performed a series of successful experiments to illustrate a lecture on the subject by Dr. Chisholm Williams, has been good enough to send a few examples of his work. These include pictures of human hands, obtained after exposures of three minutes, which show the whole of the bones as clearly as would be possible in a direct photograph of a skeleton. There is also a fine representation of a grass snake under chloroform, showing most clearly the whole of the bony system, besides fine pictures of a mouse and a baby's foot, and two remarkably clear prints of Hippocampus.

APPRECIATION!—The Dublin *Daily Express* of Tuesday last gives several quotations from Chapter VIII. of Mr. Thompson's "Alchemy and Pharmacy," with a pleasant reference to "the attractive series of articles in the *Pharmaceutical Journal*." The articles have also been widely quoted by the *Globe* and other papers.

BORIC ACID POISONING.—From observations of the toxic effect of boric acid, which followed its use as a surgical dressing, as well as for internal administration, in two cases of anthrax, Branthomme (*Répertoire*) concludes that the compound is far from being innocuous. In both cases a marked effect was produced on the skin, red patches of an erysipelatous appearance, or an eczematous aspect, being produced, accompanied by swellings and great thirst. One case recovered rapidly after suspending the boric acid treatment, but the other ultimately succumbed, with every symptom of poisoning.

SALT AS A LUXURY.—The Italian salt monopoly is very injurious in its effects according to Consul Neville-Rolfe. It was proposed recently to increase this tax, but the medical profession rose in rebellion, saying that the tax as it stood was highly detrimental to the public health, and that any increase of it would be unjustifiable, so the project was abandoned. The retail price of the commonest salt is 40 c. per kilo; of kitchen salt, 60 c.; and of table salt, 80 c.; and when its abundance in Italy is considered, it will be seen that the monopoly must necessarily be a very lucrative one. Table salt is very nearly 4*d.* per English lb., a price which would startle our British housekeepers who are accustomed to pay (quality for quality) about 8*d.* a stone for this necessary of human life. So strict is the law of this salt monopoly that one may not take a bucketful of water out of the sea for a bath without an official permit, for fear one should extract salt from it, and although the peasants use seawater to make their bread, they may not take it without paying a tax.

THE CONFERENCE "BLUE LIST" is now being issued to the members, and suggests seventy-two subjects for investigation. Fifty-two of these appeared in the "Blue List" for 1894, published in the *Pharmaceutical Journal* for June 2 and 9 of that year. The additional suggestions refer to the alkaloids of cod-liver oil, kinos, distilled spirit of witch hazel, coca wine, creosote, guaiacol, guncotton, albuminate of iron, aluminium pharmaceutical apparatus, copaiva oleoresin, *Fucus vesiculosus*, digitalis juice, quinine, bismuth subnitrate, the alkaloids of *Lobelia inflata*, jaborandi leaves, the facing of saffron, wool fat, and proximate analyses of *Cactus grandiflora*, *Salix nigra*, *Citrullus colocynthis*, *Catha edulis*, *Ailanthus excelsa*, and *Hemidesmus indicus*.

CRIMINAL POISONING IN HONG KONG.—A lecture on this subject was given at Hong Kong last month before the "Odd Volumes," by Mr. W. E. Crow, Pharmaceutical Chemist and Government Analyst. He confined his remarks for the most part to poisonous agents concerning the use of which, in the colony of Hong Kong, authentic records are in existence. So far as the Chinese are concerned opium in the form of aqueous extract is the only poison used by suicides. Other poisons used for grave offences are but few in number, the chief being aconite, arsenic, *Datura alba*, Nees, and *Gelsemium elegans*. The Chinese know white arsenic as "Pak-Sun-Shek," realgar is Hung-Wong, orpiment is "Tsz-Wong," and a mineral containing arsenic oxide and sulphides is known as "Hung-Sun." Aconite root from various species is indifferently termed "Ts'ó ù," the root of *Gelsemium elegans* is sold under the name of "ú mun kéung," whilst in South China the plant is commonly termed "tün ch'eung ts'ó," and the datura plant is known as "Nun Yeung Fa." Fish have been poisoned by the seeds, freed from oil, of *Camellia oleifera*, "Ch'à tsai ping," or "Ch'à fu." With regard to the importation of morphine into China, Mr. Crow expressed the opinion that China, through her foreign Customs, can effectually stop the traffic if she wills it,

CHEMICAL SOCIETY.

An ordinary meeting was held on May 21, Mr. A. G. Vernon Harcourt, President, in the chair.

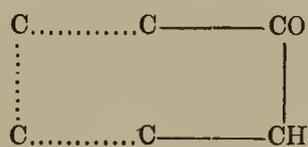
Although the meeting held on this occasion was absolutely devoid of subjects immediately allied to pharmacy, some of the papers were of very great interest indeed, and could not but afford much mental pabulum to the student of organic chemistry. The meeting was a small one, owing, probably, to the unattractiveness of the programme, and by the time the last paper had been read it was still smaller, the audience having diminished almost to the vanishing point.

Dr. F. D. Chattaway, M.A., and Mr. R. C. T. Evans contributed the first paper entitled "The Diphenylbenzenes—I. Metadiphenylbenzene." This is the first paper of a research the authors have undertaken on the products obtained on heating benzene very strongly. It seems that at least two distinct bodies are produced, viz.: metadiphenylbenzene, the subject of the present paper, and paradiphenylbenzene. The former is a colourless body—a hydrocarbon soluble in many of the usual solvents. It melts at 84° C. and boils at 369° C., under a pressure of 766 millimetres.

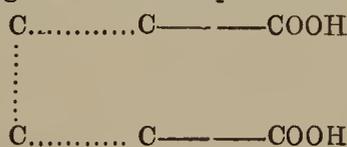
In the discussion there was some controversy as to the action of aluminium chloride on benzene and benzene chloride, Dr. Chattaway saying that no hydrochloric acid is given off with freshly prepared aluminium chloride, whilst Dr. Kipping affirmed that the action was very pronounced.

"Derivatives of Camphoric Acid" was the title of the second paper, which was read by the author, Dr. F. S. Kipping. Before reading it Dr. Kipping was somewhat profuse in his apologies for the absence of experiments. Experiments, he said, he had none, but formulæ he had in abundance, and the black-board fully bore evidence of the truth of this statement.

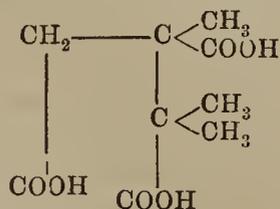
The camphor formulæ are very various, and it is quite clear that no two chemists are in agreement on the question of the constitution of camphor derivatives. Dr. Kipping placed the following upon the board as expressing the constitution of camphor:—



This, on oxidation, gives rise to camphoric acid:—



On further oxidising camphoric acid, camphoronic acid results— $\text{C}_9\text{H}_{14}\text{O}_6$. This is a fatty compound, and that is probably all we know about it. Still further oxidation gives rise to a variety of products—trimethylsuccinic acid, dimethylsuccinic acid, and isobutylsuccinic acid. Dr. Kipping gives the following as the constitution of camphoronic acid:—



The constitution of camphoric acid is very obscure, and no derivatives are known. It appears that the crux of the whole thing lies here, and that if proper derivatives of this body could be obtained, organic chemists will have disposed of a very troublesome problem. Dr. Kipping is endeavouring to obtain halogen derivatives of camphoric acid in order to elucidate the subject if possible.

Some ten or a dozen specimens of products were shown to the Fellows, the most striking being trans-camphotricarboxylic acid, which is in very beautiful hexagonal crystals.

In concluding his paper, Dr. Kipping said that Dr. Collie had a very interesting slide to show. This slide was thrown on the screen, and was, Dr. Collie said, a photograph of two pages of Tiemann's paper on camphor derivatives, published in the *Berichte*, and was really nothing but formulæ. As a slide it was not a success, on

account of its being too small. Dr. Collie said that the experiments which would lead to the composition of camphoric acid were not so successful as one could wish for, and Dr. Kipping, indulging in a little mild invective on the German workers, said that Brett simply turned Tiemann's formula for camphoric acid the wrong way up and called it by his own name.

The third paper was really a sequel to that read by Dr. Kipping, and was entitled, "Some Substances exhibiting Rotatory Power both in the Liquid and Crystalline States," by W. J. Pope. Cis π -camphanic acid is optically active both in solution and in the crystalline state. Matico camphor is laevorotatory in crystalline and amorphous conditions. Trans-camphotricarboxylic acid (the peculiar hexagonal crystals previously referred to) by polarised light does not show true circular polarisation, and this fact Mr. Pope endeavoured at considerable length to explain. Strychnine sulphate resembles this peculiar body in its behaviour to polarised light, and this is due to the overlapping of a number of thin plates.

A whole batch of Fellows filed out of the room as the President was pronouncing the title of the last paper—one of those names which only organic chemistry can boast of—"Dimethoxy-diphenylmethane and some of its Homologues," by J. E. Mackenzie, Ph.D., B.Sc. Dr. Kipping read it in abstract, but the first part was entirely lost in the din of retreating footsteps.

The President, in closing the meeting, congratulated the Society on getting through the whole of the papers submitted for reading.

WESTERN CHEMISTS' ASSOCIATION
(OF LONDON).

THE ANTI-CUTTING MOVEMENT.

A largely attended meeting of this Association was held at the Westbourne Restaurant, Craven Road, on the 20th inst., when Mr. J. C. Hyslop occupied the chair. As it was intended to discuss the anti-cutting movement, any chemist in business interested in the subject—though not a member of the Association—was at liberty to attend on this occasion, and that fact accounted for several strange faces, amongst them being Messrs. C. J. Park (Plymouth), Barrett (Leamington), and W. S. Glyn-Jones (Secretary of the Proprietary Articles Trade Association), etc. At the outset, the President ruled that though outsiders were welcome to speak, it was not reasonable to expect that they should be allowed to vote on a motion.

Mr. Andrews opened the discussion by remarking that the present state of things in regard to the sale of proprietary articles is unsatisfactory—in fact, almost demoralising. As matters now stand, the price printed on the package is almost a danger signal, and the preparations are usually sold at whatever price the public is prepared to pay. The consequences of this state of things are serious, not only to retailers but also to manufacturers, who have at last recognised the demoralising nature of the present state of affairs. The anti-cutting question is therefore one in which every chemist is bound to feel interested. According to the proposals of the Proprietary Articles Trade Association, he understood it was intended that in all cases the price marked on the article by the manufacturer was to be the real selling price. This was a very important point, and he was of opinion that the scheme promulgated deserved earnest consideration, for although not sanguine as to its success, it seemed that, one proprietary article manufacturer having formulated a scheme which worked successfully, there was no reason why a combination should not do so likewise.

Mr. W. S. Glyn-Jones having been invited to speak, said he spoke as a chemist, and not as the Secretary of the Proprietary Articles Trade Association. He proceeded to remark that he was convinced his hearers did not need to be instructed in the workings of the Association of which he was Secretary. It was well, however, to remember that the term "proprietary article" does not necessarily mean "patent medicine" or nostrum, and however much a chemist might be opposed to the schemes of the Association, he would hardly be so hardy as to be willing to give up the sale of such preparations entirely, for they were bound to come into his province in his capacity as a dispenser of prescriptions, and it was advisable that the whole question should be looked at from the point of view of business men. It was absurd to say, as some few did: "Let the whole trade in proprietary articles go, and let us try and keep going on pure dispensing." It was obvious that such a course of action was only possible to a select few among chemists

and it meant starvation to the rank and file. Another point to be remembered was that if chemists do not supply proprietaries, the trade in pure drugs will be damaged, in fact, it has already been damaged by this factor, and the more chemists refuse to look at this important question from a business point of view, so much the more will the drug trade slip away. Chemists cannot afford to despise the questions raised by the Proprietary Articles Trade Association, and he asked those present to give the movement their sympathy and, if possible, support.

The President said it seemed rather ironical that at the last meeting Mr. Parker should have brought forward a motion calling on medical men to desist from prescribing proprietary articles, whilst they were now considering a system which was designed to facilitate the sale of those very articles. It was remarkable that men who came forward to air their fads and hobbies were always twenty years behind the times, and it seemed to him that the proposals of the Proprietary Articles Trade Association were quite impracticable, inasmuch as they were too late in the field. If they had been brought forward twenty years ago there would have been some sense in doing it, but as matters stand, the mischief is done, and the action of the promoters of the Association seemed to greatly resemble sending a fire engine to put out a fire when the house is burnt down. With regard to those who are members of the provisional Council of the Association, Mr. Hyslop remarked that they are nearly all unqualified men. He did not think that it was compatible with a chemist's position that he should interest himself in the proposed schemes of the Association. It was a grocer's question pure and simple, and he was of opinion that the sale of proprietaries had passed out of the hands of chemists, and would never be regained, except those articles which contained scheduled poisons. He concluded by moving:—

"That this Association, in view of the intimate relation subsisting between its members and those of the medical profession—based as that relation is upon a due regard for the public safety—declares it to be inexpedient to facilitate by any means the traffic in proprietary or quack medicines, and that any agreement with grocers, proprietors, or wholesale dealers as to the prices to be charged for the same is out of the question, as being derogatory to the calling and inimical to the welfare of the craft."

Mr. Barrett, in putting forward the other side of the question, said that for many years he had been endeavouring to get together a federation of chemists, which condition was essential to successful reform. The Pharmaceutical Society is debarred by reason of its constitution from taking a part in trade matters, and it behoves chemists to bestir themselves on their own behalf, for it was absurd to expect that Parliament would ever give the sole right of selling drugs to registered chemists. He was of opinion that the resolution which had been proposed by the President was quite out of the question. It was all very well for the select few amongst chemists, who derived the bulk of their income from pure dispensing, to say, "Let the proprietaries go," but what was going to become of the rest of the craft? It seemed to him a hopeful sign that those men who had been first and foremost in acting in a manner conducive to extreme cutting were now most acutely sensible to the advantages of the new movement. The cultivation of the professional side of the pharmacist's calling had been advocated by the Pharmaceutical Society for years, but in his opinion they were worse off to-day than they had ever been before. He hoped that those present would see their way clear to become members of the new Association, so that some satisfactory plan might be arrived at of selling proprietary preparations at a reasonable remuneration to the retailer.

Mr. Hyman said that an important point to be considered was that uniformity of prices would undoubtedly be conducive to a better status for the pharmacist. At present the difference in prices led to comparisons which were very disparaging to the pharmacist.

Mr. W. Johnston said that the President should not have stopped at the names of the manufacturers connected with the Association. All the men engaged in the retail trade who were connected with the movement, were duly qualified, and although perhaps not men of eminence they were men who did their best on behalf of the Association, and that was what was required. It was worth remembering that some time ago a canvass was undertaken of the retail trade, with the result that six per cent. declared themselves in favour of anti-cutting, and he must emphasise the point of previous speakers that it was not fair for the fortunate few who were in a position to be independent of the sale of proprietaries to expect that their views alone of the matter should be considered.

Mr. Cracknell (hon. sec.) next read a letter from Mr. C. B. Allen, in which he particularly regretted his inability to attend the meeting on account of the importance of the question at issue. He would not favour any scheme advanced by the Association which did not secure the full value of articles to the retailer.

Mr. R. H. Parker said that it was impossible to discuss what percentage of profit should be charged on proprietary articles, as what was readily paid in one district could not be obtained in another. No doubt all present were opposed to the principle of cutting. At the same time the prescribing of proprietary articles was to be condemned on obvious grounds. A physician should not prescribe a certain man's preparation where there were several makes of the preparation, but he should leave it to the discretion of the pharmacist to select the best make. It seemed to him that the sale of proprietary articles over the counter as an ordinary business transaction was not attended by so much loss as when they were prescribed. Chemists were intended by their education to be the sole dealers in drugs, and in his opinion a good anti-cutting movement would be one to protect the sale of drugs, for the proposals of the Association seemed more designed to benefit intruders than chemists, and did not attack the principles of cutting. As matters at present stand the manufacturers take all the profits, and it would pay chemists better to let the whole sale of proprietaries slide and devote attention to their own articles.

Mr. Glyn-Jones wished it to be understood that the Association's first aim was to ensure the payment of "face values" for proprietary articles, and, for his part, he would cease to be Secretary to the Association when that condition lapsed. In reply to the arguments that had been brought forward in favour of confining the movement to chemists, he read an extract from a St. Helens newspaper, in which the advertiser—a qualified chemist—made a boast of cutting proprietaries containing poisons.

Mr. Andrews said that one of the most powerful arguments in favour of the movement was that when the conditions were equal, there was no doubt that the public would rather purchase articles of this nature from a chemist than from a grocer.

The President's motion, was then seconded by Mr. Parker, and put to the members of the Western Chemists' Association, only four of whom voted in favour of it. This terminated the meeting, for although an attempt was afterwards made to put forward an amendment, it was ruled out of order.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION.

EXCURSION TO DUNDEE.

On Thursday, May 21, being the Queen's birthday holiday, the members of this Association, to the number of about fifty, including several ladies, made an excursion to Dundee on the invitation of Professor Patrick Geddes, of University College. The company left Waverley Station, Edinburgh, at 9.35 a.m., and reached Dundee at 11.30, where they were met by Mr. R. Smith, assistant to Professor Geddes, by whom they were conducted over the museum, and then climbed the Law Hill, which commands on one side a complete view of the city of Dundee and the Firth of Tay, with the pretty watering-places of Newport and Tayport on the opposite shore. On the other side the hill gives a fine view of the beautiful Carré of Gowrie and the Siddlaw Hills. A sumptuous luncheon was served in Lamb's Temperance Hotel, at which Mr. James McBain occupied the chair, and had Professor Geddes on his right, and Mr. R. Smith on his left, Professor Geddes' secretary, Miss Ritchie being also present. After luncheon the company proceeded to University College Botanic Garden, where Professor Geddes gave a garden demonstration, in course of which he spoke of the possibilities of town gardening, of the necessity of choosing the right plants and planting them in the right places. No desert, he said, but might blossom; no soil in nature, however poor, but might be made to bloom. In study he insisted upon the necessity of first-hand observation, and of learning only what one wanted to know.

There was a period of the year—during the winter—in which they studied botany, and that indoors, and in which also they made post-mortem examinations and wrote out the result of their studies. Then they projected their winter botany throughout the year, whereas botany was really the science of summer. But it was difficult for people in town to get the impression of the seasonal year. They were apt to miss, for instance, the spring scene of

snowdrop, the scene of crocus, of narcissus, of lilac, and so on. But it was simply by enjoying the spectacle of the flowers that botany was to be learned. One might, he said, laboriously endeavour to get up lines of music by rote, and might even be able to reproduce them from memory, but that would not make one a musician. Botany was one of the subjects which readily lent itself to be learned in this stupid way—without meaning, without even an instrument, or anything else.

The best text-books he believed were books which like 'Flora Feast,' by Walter Crane, had caught the spirit of the subject, and those which taught in relation to the seasons; old books such as Gilbert White's 'Selborne,' and Richard Jeffreys's on to Thoreau's and Thomson's; or books again like 'Through the Fields with Linnæus,' a more important and observant naturalist than any of the present century, with the exception of Darwin. These gave descriptions of the actual world, while all our science back to geography, back to astronomy, was a study of the world through the seasons. He pointed out how in the train from Edinburgh to Dundee one might get not simply a little section of Scottish scenery, but a very large section of the scenery of the world. Any park around them was an example of the southern slopes of the great mountains, of the pastures leading up to the forests in a moderately temperate climate. On the rock-work they had alpine plants, such as made Switzerland the garden of the world. The bits of scenery by the shore, too, were worth noticing, sometimes as at Aberdour Woods the forest sloped down to the sea, or came out into barrennesslike great regions of Northern Russia and of Lapland, the desert of the north. There were the dry regions with the heather, and the wet ones with the willows. In the patch of sand-dunes they had not simply the little landscape they saw but the level shores of northern Europe, just as one coming from Edinburgh and looking up the Forth might see something of the coast of Norway, while the Firth of Tay was the great fiord of the Northern world. And so in one's busy town-life, one had the possibilities of gardening and the possibilities of seeing not only local scenery but the scenery of the world.

Adjourning to the Professor's laboratory, Mr. Smith demonstrated by a simple apparatus the formation of carbon dioxide in the germination of beans and, by another apparatus, the liberation of oxygen by green leaves submerged in water. After attending the ordinary college lecture on botany, the company entered brakes provided by Professor Geddes, and drove by Lochee to Balruddery, the beautiful country seat of Mr. Martin White, M.P., situated about six miles from Dundee. Here they were conducted by the Professor over the hot-houses and through the gardens and grounds, and then walked through the picturesque Den of Balruddery and back to the Conservatory, where tea was served at 6.30 under the superintendence of Mr. Smith and Miss Ritchie. About 8 p.m. the company started to drive back by the Perth road through the village of Invergowrie, and amid the beautiful scenery of the Tay valley, reaching Dundee just in time to catch the 9.10 p.m. train for Edinburgh, where they arrived about 11 p.m. The drive to Balruddery, both going and coming, was enlivened by songs and choruses, and on the Dundee departure platform Mr. McBain proposed a very hearty vote of thanks to Professor Geddes, which was accorded with great enthusiasm and musical honours. Notwithstanding some rain, the day's outing was greatly enjoyed, the splendid hospitality of Professor Geddes being highly spoken of, and Mr. Hay, the Secretary, and his committee deserve hearty acknowledgment of the admirable way in which all the arrangements were carried out.

EDINBURGH PHARMACY ATHLETIC CLUB.

ANNUAL SPORTS.

The fifth annual sports took place in splendid weather, at Powderhall, on Tuesday, May 26, at 6.45 p.m., in presence of a large gathering, among others present being Mr. J. Bowman, President of the Chemists' Trade Association, and Mrs. Bowman. In the 300 yards flat race handicap for apprentice members the first prize was won by Mr. R. Scott, and the second prize by Mr. J. M. Foote. In the 120 yards open flat race handicap, for which 78 entered, the third prize was gained by Mr. G. Somerville, of the Pharmacy Athletic Club. In the half-mile flat race handicap confined to members of the club, R. Scott (Pinkerton, Gibson, and Co.) was first, and A. G. Paterson (Raines, Clarke, and Co.) second. W. J. Walker was first and James Laughton second in the one mile bicycle handicap confined to the trade. In

the 220 yards flat race handicap confined to the trade W. B. Hendry was first, and J. M. Foote second. A new feature of the sports was the final tie of a five-a-side football competition, which fell to be decided between teams representing Duncan, Flockhart and Co. (North Bridge) and Duncan, Flockhart and Co. (Canongate), which resulted in 2 goals and 1 point for the latter to 0 for the former. Mr. Donald Mackenzie (T. and H. Smith and Co.) presided at the presentation of prizes, and in a few words congratulated the club on the successful turn-out. The prizes were then handed to the successful competitors by Miss Smith, and the proceedings closed with a vote of thanks to Mr. Mackenzie for presiding, and three cheers for Miss Smith, which were heartily accorded on the motion of the Honorary Secretary, Mr. J. P. Gibb, to whose exertions the success of the gathering is mainly due.

EDINBURGH DISTRICT CHEMISTS' TRADE ASSOCIATION.

ANNUAL MEETING.

The fourth annual meeting of the Association was held in the Pharmaceutical Society's House, 36, York Place, Edinburgh, on Friday, May 22, at 9 p.m., Mr. Peter Boa, President, in the chair. The minutes of the last meeting were read and approved, and on the motion of the Hon. Secretary, Mr. Wm. Spence, Howe Street, was elected a member.

The Honorary Secretary (Mr. C. F. Henry) read the annual report and financial statement, from which it appeared that there was now a membership of sixty-five, being an increase of six. Amongst the subjects which had engaged the attention of the Association during the year had been the relationship between prescriber and dispenser, on which an interesting discussion was initiated by the Chairman's opening address. As the result of a communication from the Decimal Association, a petition in favour of two of the three objects aimed at by that Association, namely, the legalising of the metric system of weights and measures for all trade purposes and the introduction of the metric system at an earlier stage in the ordinary school curriculum, had been sent by the Association to a Member of Parliament. The Association had also passed a resolution thanking the Council of the Pharmaceutical Society for the efforts it was making to amend some of the evils of the one-man company system. The Association had also considered and approved generally of Sir John Lubbock's Shop Hours Bill. The label book of the Association now contained 291 specimen labels indicating the decision of the Inland Revenue authorities as to the question of liability to stamp duty. For the first time the Edinburgh Chemists' Ball had been carried through by the Association, and had been a decided success, there being a balance of £4 4s 9d., and the balance of £27 from the former Ball Committee had been handed to the Association. The Association had also given facilities and assisted the Proprietary Articles Trade Association to hold a meeting of the retail drug trade in Edinburgh.

On the motion of the Chairman, seconded by Mr. D. McGlashan, the report was unanimously adopted.

The financial statement showed a balance in favour of the Association of £47 5s. 7d., and on the motion of Mr. Maclaren, seconded by Mr. J. McGlashan, it was unanimously adopted.

Mr. Lunan moved, and it was seconded by Mr. R. J. Macdougall, that a donation of £3 3s. be given to the Benevolent Fund of the Pharmaceutical Society.

Mr. J. T. Coats suggested, and it was unanimously agreed, that £2 2s. be given to the Benevolent Fund and £1 1s. to the Orphan Fund.

Mr. Maclaren then reported for the Committee as to the annual picnic, which, it was suggested, should take the form of a circular tour. It had been arranged to leave Edinburgh (Waverley) at 9 a.m. by train for Craigendoran, which would be reached at 10.35. Then they would take steamer up Loch Long to Arrochar and walk across, two miles, or take 'bus to Tarbet, Loch Lochmond, which would be reached at 1.45. Dinner and tea would be served in the spacious hotel, and they would, about 5 p.m., sail down Loch Lomond to Balloch and reach Edinburgh about 9.23 p.m., travelling by Buchlyvie, Stirling, Alloa, and the Forth Bridge. It was also suggested that members of the Glasgow and West of Scotland Pharmaceutical Association might be invited to join the excursion, and that the tickets should be 10s. 6d. for Edinburgh, and 8s. 6d. for Glasgow.

After some discussion the report was approved of and remitted to the Committee to be carried out.

The following office-bearers were elected for next year:—John Bowman, President; David MacLaren, Vice-President; Claude F. Henry, 1, Brandon Terrace, Secretary and Treasurer; and Messrs. Anderson, Boa, Forret, Glass, R. L. Hendry, D. McGlashan, J. McGlashan, Wylie, Smith, Macpherson, McDougall, and Lunan, as members of Committee.

The meeting closed with votes of thanks to the Pharmaceutical Society, the Ball Committee, and the Chairman.

NOTTINGHAM AND NOTTS. CHEMISTS' ASSOCIATION.

The annual meeting of this Association was held in the Masonic Hall, Nottingham, on Wednesday, May 20. There were present:—Mr. R. Fitzhugh, J. P. (President, in the chair), Mr. T. Mason (Vice-President), Mr. Wilford (Treasurer), Mr. Eberlin (Hon. Secretary), Messrs. Bolton, Beilby, Beverley, Cook, Gell, Lumby, Middleton, R. and W. Widdowson, Jackson, Smith, Adams, etc. The Secretary read his report, which showed the Society to be in a very flourishing condition. The evening meetings held throughout the winter had been well attended, and papers of much interest read. The pharmaceutical classes held at the University College had also been well attended, and the reports of the same were deemed very satisfactory. The election of officers for the ensuing year resulted as follows:—President, Mr. R. Fitzhugh; Vice-President, Mr. A. Middleton; Treasurer, Mr. J. Wilford; Hon. Secretary, Mr. A. Eberlin; Council, Messrs. Bolton, Beilby, Beverley, Cook, Gell, Gascoyne, Mason, and Sergeant. Votes of thanks were accorded to the retiring officers, also to the Pharmaceutical Society for the donation of the *Pharmaceutical Journal*, and the British Pharmaceutical conference for the 'Year-Book of Pharmacy.' Mr. R. Widdowson read an interesting paper on "Legislation in Pharmacy," the discussion on which was postponed to the next meeting.

IRISH NEWS.

PHARMACEUTICAL SOCIETY OF IRELAND.—The monthly meeting of the Council was held on Wednesday, the 6th instant, at 67, Lower Mount Street, Dublin. The President, Mr. W. H. Wells, Junr., presided, and there were also present the Vice-President (Mr. Downes) and Messrs. Grindley, Beggs, Murray, Evans, Conyngham, Bernard, Whitla, Professor Tichborne, and Kelly.

The President reported what had taken place in connection with the case of the Society *v.* Wilson, of Rathfriland, in which two convictions had been obtained against the defendant, one for selling poison without being qualified to do so, and the other for keeping open shop. The defendant appealed to Newry Sessions, and in the course of five successive adjournments the Judge, after pressing the Society's Counsel as much as he could to accept one penalty and accept a dismissal in the other case, and on one occasion said, "I will upset you if I can," eventually on the last day of the sessions said he would dismiss one of the cases, but that he felt bound by a decision, to which he referred. He (the President) considered such a course of conduct disgraceful. It was not the first time that judges in the north of Ireland had tried to coerce the Society. There was another case to which he wished to refer. In September last a defendant named Noonan appealed to the Privy Council for a reduction of a penalty which had been imposed on him. On November 18 the Privy Council wrote stating that they did not see their way to reduce the penalty. The petty sessions clerk was then written to to collect the penalty, but up to the present the magistrates had refused to sign the necessary warrant for that purpose. Their last statement on the subject was that it would be "signed on the next court day." He thought these matters deserving of the attention of the Lord Chancellor and the Government.

Mr. Murray said the Lord Chancellor had no control over county court judges, but he had over magistrates.

Mr. Haynes said the best course was to put these matters in the hands of some of their Members of Parliament.

Mr. Bernard said that if the warrant for the collection of the penalty in Noonan's case was not signed at once they should apply to the Queen's Bench division for a *mandamus*.

The President called attention to a statement which had been made on oath by a pharmaceutical chemist some months previously, at an inquest on a child in the city, to the effect that he had prescribed for the child. He was asked whether his licence entitled him to prescribe, and he said it did not, but he claimed the right to do so because he had served his time to his father, a qualified medical man. The Coroner said he was aware that it was the habit of pharmaceutical chemists in Dublin to prescribe, and the matter had since been referred to in the *Irish Times* as if that were the case, and by the *Medical Press* as if the responsibility of putting down the practice of "counter prescribing" devolved on the Society and its Council. They had no power whatever, the President said, to do so. None of them had any sympathy with the practice. It could be more effectually dealt with by the Apothecaries' Hall and the other medical bodies.

Professor Tichborne, Mr. Conyngham, and Mr. Murray repudiated the statement that "counter prescribing" was practised by the respectable members of the Society in Dublin or the country. The President said the editor of the *Medical Press* had not been unfair to them in the matter, for, he said, "We are well aware that the most respected members of the Irish Pharmaceutical Society have always discouraged counter prescribing, but neither they nor the Council of the Society have been able to prevent it." Mr. Murray thought a letter ought to be written to the *Medical Press*, contradicting the statement that members of the Society prescribe, but Professor Tichborne said it was sufficient to repudiate it on the part of the Council.

Other business having been disposed of, the Council adjourned.

PHARMACEUTICAL CHEMISTS' AND APOTHECARIES' ASSISTANTS' ASSOCIATION OF IRELAND.—At the last meeting of this Association, Mr. H. Harris read a most interesting paper on "Coca," at the conclusion of which there was some friendly criticism by Messrs. Hardy, Hunt, Ash, and the Chairman, Mr. J. B. Alister, M.P.S.I., followed by a cordial vote of thanks to the writer, who suitably replied. The session is now suspended until the end of August next, as many of the members will be leaving Dublin for the holiday season. A committee meeting will be held to consider the date of adjournment, and also to decide when the winter session will begin.

FOREIGN AND COLONIAL NEWS.

NUISANCE FROM ANIMAL REFUSE.—The attention of the Public Health Council of the Department of the Seine has been called to the nuisance caused by the animal refuse accumulating in the course of the day in the shops of butchers, etc., during the summer months, no less than 25,000 kilos of this animal matter (almost always in a more or less putrid state) being manipulated daily in the neighbouring manufactories at Aubervilliers alone, which largely contributes to produce what is euphoniously termed the "Odours of Paris." It was stated that the disagreeable smells would be efficiently suppressed if the resolution of the Council, passed in October, 1892, were carried into effect. It was then proposed to compel the use by butchers of a 2 per cent. solution of chloride of zinc in which all *débris* would be immersed. This, while preventing putrescence would not interfere with the employment for industrial purposes of this refuse. The following resolution was unanimously adopted:—This Council renews the recommendation made in October, 1892, and insists on the urgency of its realisation, and upon the utility of applying the same to all districts in the Department of the Seine.

DEATH OF M. LEFORT.—The ranks of pharmacy have suffered a severe loss by the death of M. Jules Lefort, which occurred suddenly at Pierrefonds. M. Lefort was born in 1819, and received his diploma of "Pharmacien de 1ere Classe" in 1845, when he commenced business at Ganat (Allier). In 1850 he acquired the well-known Pharmacie Seguin at Paris, and during his business career the title of Lauréat was four times conferred upon him by the Académie de Médecine for original communications of pharmaceutical interest. He retired from business in 1862 in order to devote himself exclusively to scientific researches, and published numerous papers on the various subjects embraced by pharmacy. He was best known, however, by his extensive study of the composition of natural mineral waters, his 'Traité de Chimie Hydrologique' being a standard book of reference. He was successively Vice-President

of the Paris "Société d'Hydrologie Médicale," Président of the Société de Pharmacie et de Chimie, Member of the Académie de Médecine, and he was also named Chevallier of the Legion of Honour.

SECOND INTERNATIONAL CONGRESS OF APPLIED CHEMISTRY.—On July 2 this Congress will open in Paris. In addition to strictly technical questions the Congress will discuss the analytical processes needed for the guidance of manufacturers and the benefit of the consumer. The proceedings will be conducted in ten sections, and judging from the number and interest of the questions which will be brought up in each, there will be no lack of work. The sections represent such diverse subjects as chemical products, pharmaceutical products, electro-chemistry, colouring matters and dyeing, metallurgy and mining, sugar refining, vintery, brewing and distilling, agricultural chemistry, photography, alimentation, and milk supply. The Association des Chimistes du Sucrierie and de Distillerie, which is organising the Congress, has formed a committee, comprising several members of the French Government and a large number of members of the Institute, together with many of the foremost men of science and industry of France.

NEW BACTERIOLOGICAL LABORATORIES.—The Minister of War has decided to create three new bacteriological laboratories, viz., at Marseilles, Bordeaux, and Rennes. The necessary experts will be appointed from the staffs of the nearest technical establishments already existing.

STERILISATION OF RIVER WATER.—A decision has been arrived at by the Paris Municipal Council concerning the offer made by Baron Tindal to sterilise river water for Paris consumption by his ozone process. This process has already given excellent results in Holland, where water from the Rhine is treated. The inventor proposes to instal, at his own risk, the apparatus necessary to sterilise 5000 cubic metres daily, and guarantees that the water shall be free from all germs, colourless, of natural and agreeable taste, whilst the amount of organic matter shall be reduced at least 30 per cent., and the water shall contain no noxious matter resulting from the method of treatment. The cost is not to exceed 2½ centimes per cubic metre, and the royalty demanded will be 1½ centimes per cubic metre for all water treated during fourteen years for the use of the city of Paris. In the event of the trial being unsuccessful, or of the decision by the experts appointed that the conditions are not duly fulfilled, M. Tindal undertakes that the city shall be freed from all expense, and that the installation shall be displaced and the original works restored at his personal charge. The Council has decided to adopt this system of purification on the conditions stated, with the proviso that M. Tindal shall have no ground for claim in the event of his method being superseded by any other within the term proposed.

THE RÖNTGEN RAYS IN SOUTH AFRICA.—As yet, South African scientists have not been able to put the Röntgen rays to any practical test, although Professor Holm promises the Cape Town Philosophical Society that he will do so shortly. At a recent meeting of the Society Mr. Trotter said he had been experimenting with Dr. Hahn, but, so far, without success. He believed that in time they would be able to produce light without heat, which was now only done by the glow-worm and fire-fly. There were many points in the discovery of far more importance than photography. For instance, he said, they could locate the injury to a limb, and the attention of scientists was now being directed to the velocity of the propagation of these rays and their wave length. Luminous paint, he mentioned, would emit these Röntgen rays when exposed to light or heat.

CAPE COLONY'S NEW MEDICAL BILL.—An announcement was published in a recent issue of the *Cape Colony Government Gazette* to the effect that a Bill is to be brought in to repeal certain sections of the Medical and Pharmacy Act, 1891, and to make other provisions in lieu with regard to the Colonial Medical Council and Colonial Pharmacy Board. Some alterations are proposed in the method of electing members of the Colonial Medical Council and Pharmacy Board, but chemists and druggists will be more particularly concerned with Clause 5, which regulates the conditions under which it is proposed to allow the medical practitioner to act as his own dispenser. The clause is printed below:—

"Every medical practitioner registered under the said Act shall be entitled to practise as an accoucheur and dentist, and may compound and dispense medicines prescribed by himself or any other medical practitioner with

whom he is in partnership or with whom he is professionally associated, either as principal or assistant, upon payment to Government of an annual licence fee of £2 10s. sterling, provided that no medical practitioner shall be required to pay any annual licence fee for merely compounding or dispensing any medicines prescribed by him for and on behalf of the Government. And upon payment by any such medical practitioner of the annual licence fee required by law to be paid by a chemist and druggist (in which case he will not be required to pay the fee before-mentioned in this section), shall be further entitled under such licence or any removal thereof to practise generally as a chemist and druggist, subject to any provisions relating to chemists and druggists contained in the said Act, and provided that he shall not be entitled to dispense medicines prescribed by any medical practitioner with whom he is in partnership or with whom he is professionally associated either as principal or assistant."

Writing in the *Cape Times*, a "Pharmacist" says one of the Bill's chief provisions is to create a whole army of chemists and druggists from the rank and file of the medical profession, not by the imposition of a four years' apprenticeship and a searching examination which pharmacists have to undergo, but by the mere stroke of the pen. What a fuss was made by certain medical men when by a similar legal process their rights were infringed by Parliament in 1891 on the passing of the Act above referred to. He concludes by hoping that chemists throughout the Colony will see that the Bill, which is to be submitted to Parliament during the ensuing session, does not pass the Legislature in its present form, and suggests that meetings of protest be convened in every town towards that end. The proposal is regarded in some quarters as monstrous, and whilst Cape Colony doctors are making great effort to get the Bill passed, the pharmacists see the growing danger of such a measure becoming law, and are strenuously opposing it. The *Cape Times* observes that this is "an attempt on the part of a section of the faculty to obtain the free and unrestrained right to sell medicines—or feeding bottles—as they please, and it will be interesting to see how far public and professional opinion will support them in their endeavour. The prospect is by no means an unalluring one for young and struggling doctors in a country where the Old World prejudice against the counter is a less powerful factor to be reckoned with. But *prima facie*, it certainly seems to press with hardship on pharmacists who have been compelled to pass a stiff examination, from which the medical man will be exempt."

THE CAPE OF GOOD HOPE MEDICAL COUNCIL has just issued its 1895 report, and comments upon the substantial advance made during the past year compared with 1894. Last year there were 62 applications for licences to practise at medicine compared with 39 of 1894. In connection with the subject of the amendment of the present Act, the Council reports that strenuous, but unfortunately again unsuccessful, efforts were made during the past year to secure Parliamentary sanction for those changes which experience has indicated to be necessary, and which have been represented in various reports. To facilitate the preparation of an amending Act the Council has had its proposals drawn up as a Draft Bill, and although duly framed by the Government last year, it was not laid before Parliament, but more than likely will be this season.

PUBLICATIONS RECEIVED.

- DIETERICH'S HELFENBERGER ANNALEN, 1895. Pp. 87. (Berlin: Julius Springer.) From the Publishers.
- THE HISTORY OF SURGICAL ANÆSTHESIA. By H. BELLAMY GARDINER, M.R.C.S., L.R.C.P. Pp. 31. Price 1s. (London: Baillière, Tindall, and Cox, 20 and 21, King William Street, Strand, 1896.) From the Author.
- THE PHYSIOLOGY OF THE CARBOHYDRATES. By F. W. PAVY, M.D., LL.D., F.R.S. Pp. 21. (London: J. and A. Churchill, 7, Great Marlborough Street, 1896.) From the Publishers.
- ON EXTRACTION, WITH NOTES ON THE ANATOMY AND PHYSIOLOGY, OF THE TEETH. By W. D. WOODBURN, L.D.S. Pp. 96, illustrated. Price 5s. (London: Baillière, Tindall and Cox, 20 and 21, King William Street, Strand, 1896.) From the Publishers.
- MICROGRAPHIE DES POUDRES OFFICINALES. By A. Herlant. Pp. 50, illustrated. (Brussels: Henri Lamertin, 20, rue du Marche-au-Bois.) From the Publisher.
- A NEW SYSTEM FOR DETECTING SOPHISTICATION IN ESSENTIAL OILS. By M. PERLS. From the Author.

CORRESPONDENCE.

All Articles, Letters, Notices, and Reports intended for publication in the Journal, Books for Review, and communications respecting Editorial matters generally must be Addressed "Editor, 17, Bloomsbury Square, London," and not in any case to individuals supposed to be connected with the Editorial Staff. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

ANY INSTRUCTIONS from Members, Associates, and Students of the Pharmaceutical Society, with reference to the transmission of the Journal should be sent to the Secretary.—Mr. Richard Bremridge,—17, Bloomsbury Square, London.

BUSINESS communications—including advertisements, orders for copies of the Journal, and instructions from Subscribers respecting transmission of same—must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London. Cheques and money orders should be made payable to "Street Brothers."

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

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

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

QUERIES addressed to the "Editor" will be replied to in the Journal as early as possible after receipt. The Editor cannot undertake to reply to queries through the post.

THE JOURNAL AND THE SOCIETY'S FINANCIAL STATEMENT.

Sir,—Methinks the Society's financial statement places the Journal in a false light, or rather in a black hole, inasmuch as it is made to bear the whole burden of a debit balance of £2761. Whereas if the number of those to whom it is sent without the credit of any financial return—members, associates, students, honorary and corresponding members of the Society—be taken into account, the sum of the number of half-guineas would exceed the considerable sum of £3000; leaving a surplus and happiness, in the logic of Dickens. The President, in stating that the Journal was sent post free to all connected with the Society, failed to recognise the density of many of us, provincials, who might consider that the word "free" pertained to the postage only, and did not include the Journal also. Of course, this should be known to all the Society's adherents, numbering some 6000; but other trade journals have been weaving hysterical romances and trying to make capital out of the expensiveness of the Society's organ, and I like to play fair.

Glasgow, May 25, 1896.

ALEX. LAING.

THE PHARMACEUTICAL EXAMINATIONS.

Sir,—More than a quarter of a century since I had the audacity to forward a letter to the *Pharmaceutical Journal* expressing in forcible language my feelings of disappointment and disgust at the miserably inadequate arrangements for examining candidates in dispensing and pharmacy existing in 1868. In that letter I traced the wretched state of the arrangements to the "oleaginous complacency" of the Bloomsbury Square "ring," and truly described the dispensing facilities "as equalling in dirtiness and incompleteness those to be found in the most neglected pharmacy in the East End." The letter was not published, but the condition of things was altered. I have waited for more than a year, carefully examining each issue of the Journal, to see if any of the official set at the "Square" had anything to say about the increase in the proportion of rejections of candidates for the Minor examination, and without result. Everything appears to be for the best, to the best of all possible people, at the best of all possible "squares," and really one feels reluctant to disturb the beautiful serenity which still prevails at our superior mutual admiration society. To me this question of rejections appears to be a very serious matter, and worthy of the consideration of all concerned, and it certainly is a question ripe for discussion.

In the first place one cannot help feeling that an examination is faulty which permits men to pass who are hastily and imperfectly prepared, and rejects many who have had adequate practical experience of the business

and have passed at least a complete session at the "Square." I know several cases of both sorts. The following cases appear to me most disquieting. Three men at full age have at different times during the last three years gone to the "Square" for preparation. They all had received an unusual amount of practical experience and had probably dispensed not less than 5000 prescriptions each. They were all of full age, in sound health, worked hard during the whole session, and I am sure no professor could say a word against them. Yet notwithstanding all this they have been rejected from three to five times. I know other cases where men of comparatively little practical experience, supplemented with four months' tuition at a "School," have gone straight through.

This state of things, shown by the proportion of rejections, cannot be satisfactory to anybody, except it be to the Treasurer of the Pharmaceutical Society, and although, after looking through the accounts, I am not without a feeling of sympathy for this official, it does not appear to me to be very high-class finance to depend upon knocking over an increasing number of pharmaceutical ninepins at five guineas a time, to balance accounts which show evidence of want of prudential management.

Now, sir, can any light be thrown on the causes making for this deplorable state of things? I should at once like to state that I desire that the examinations should jointly be a real test of a candidate's fitness to undertake the responsibilities of our calling. But at the outset of our inquiry we ought to know whether the increased proportion of rejections is caused by increased stringency of the examinations or by defective teaching, and I think it must be attributed to the former rather than the latter cause; for although I am not able to say that the teaching methods at the "Square" are perfectly satisfactory, I am prepared to state that the teaching is quite as thorough now as it was when the rejections were only fifty per cent.

In the first place it appears to me important to ask the question, How do the examiners as a body view the responsible duties they have to perform? Do they try to find out what a candidate knows, and whether it would be prudent to entrust him with a certificate, or do they try to find out what a candidate does not know? This is more important than appears on the surface, and an examiner who treats the work of preparation and examination as opposing and antagonistic forces has a very imperfect acquaintance with his real duties.

And may I be permitted to ask this question? Are all the examiners qualified by sufficient knowledge to examine? Is there a single examiner able honestly to examine a candidate in botany as now taught, except the professor who takes charge of this subject? Do the examiners keep strictly to the syllabus? To this question I can give a most positive "no." Instances are not wanting to show that extraneous subjects are dragged in, and although they may not be used to reject a candidate directly, they often unfit him nervously for doing his best and thus lead to the same result.

I know of an altercation that took place at a recent examination as to whether the preparation of syr. ferri iodidi made in a water bath was P.B. or not—the examiner stating it was not, and the candidate (who adopted this method from excess of caution) holding the reverse. Surely this was excess of duty and a pettiness on the part of the examiner. If that examiner were to attempt to prepare syr. ferri iodidi strictly P.B. (as to vessels used) in my shop, he would probably be removed. The second day of the examination, as long as the present conditions last, should be by written papers, as the most difficult part of this second day's business is to work out the personal equation of each examiner. Having once passed the first day a candidate ought not to be expected to go through the practical examination again, and it ought not to be in the power of one examiner on the second day to reject a candidate; the candidate should have the right of appeal. A candidate is sometimes rejected on matters of opinion, not on matters of fact. It is unfair to the candidates to be a long time in the examination rooms waiting to be called; many men have thus become nervously exhausted before the examination is half over.

It is unfair and unnecessary to charge full fees for examinations after the first unsuccessful attempt, and as long as this is the case, and the examination cannot be passed in two steps, the Council must not be surprised to find an opinion prevalent that this is permitted to continue for the value of the shekels it brings to the Society's coffers. There are other matters still untouched, but I must omit them at present, as I should not like to conclude this highly critical contribution without offering some constructive suggestions as to the future.

I would venture to suggest that the examinations should be three in number, as at present:—

1st. Educational, as at present.

2nd. Practical, as first day of Minor examination, qualifying for assistantship under a "Master in Pharmacy."

3rd. Theoretical (written) qualifying as a "Master in Pharmacy" (*Ph. Mag.*), who alone should keep open shop, and then only with his own capital, or capital for which he has the sole responsibility.

Hertford, May 25, 1896.

GEORGE R. DURRANT.

Sir,—It seems generally conceded that the pharmaceutical examinations are unsatisfactory all round. If we commence with the "First" examination, this is really an absurdity as it stands at present, and a totally inadequate test of the school training of the would-be pharmacist. The title should be the old one, the Preliminary examination, and should be fully equivalent to the Medical Preliminary. Until the Society have power to enforce such, I would suggest that the "First" examination be divided into two parts. The examination as it now is might be known as the Preliminary examination, lower grade; and the second part be called the Preliminary examination, higher grade. The papers given should contain for the "lower grade" the present form; and for the "higher grade," which would for a time be optional subjects, the additional papers making the examinations equal to those of the medical preliminaries. This would be appreciated by most candidates. Those who have passed the "lower grade" to be allowed to take the extra subjects required for the higher grade" at any subsequent time and at a reduced fee. The "Minor" examination is known by an absurd title, which is quite an insulting term for an examination requiring considerable study and time to pass it. The term "Minor examination" should be entirely dropped, and a more dignified name used, such as "the qualifying and practising examination," or other suitable term. The present form of this examination is an improvement upon what it was a short time back, but is not stringent enough for a qualifying examination, and certainly requires adding to. It is imperatively necessary in the public interest to prevent "crammed" or book-learned aspirants getting through by mere chance.

The Major examination is not as popular as it ought to be. The title of pharmaceutical chemist given to those passing this examination is not much more than a useless title, and little benefit is in reality obtained by passing it. I think the Minor examination should be practically what the Major is at present, and the Major examination should be more confined to chemistry and analysis, including urinalysis, the detection of poisons, the microscopical examination and culture of disease germs, microscopy, etc. This examination should be more than equal to those required to become a F.I.C., and be such as doctors and the public would have confidence in. A class of trained chemists much needed would thus be created, and a boon conferred on physicians and patients. Botany, etc., should be more stringent in the Minor, and be left out in the Major. The title should be distinctive, such as "The Analytical and Honours Examination of the Pharmaceutical Society," and those passing such might be known as "Analysts and Doctors of Pharmacy." There would thus be created a reliable body of trained men, who would doubtless have preference as public analysts, chemists to public bodies and large works, and be an ever constant inducement to the "Minor man" to study for and to pass the highest examination.

Moss Side, Manchester, May 19, 1896.

P. N. GELSTON.

DECOCTUM CINCHONÆ.

Sir,—If not too late for the new Pharmacopœia I would suggest that the decoctions be ordered for eight ounces instead of a pint. Of course more water must be taken or there will be danger of burning the contents of the pan. This is how I make decoctum cinchonæ—

Red bark, in 20 powder ½ oz.

Distilled water 13 ozs.

Boil for ten minutes in an "open" vessel, stirring with a glass rod for the first five minutes of the boiling period, cool, strain through linen, and pour distilled water over the strainer to make eight ounces.

This would more nearly correspond to the infusions, for by taking 10 ounces of the water we usually obtain about 8 ounces, and decoctions or infusions are mostly ordered in 6 oz. or 8 oz. mixtures, or gargles. It is rarely necessary to make a pint of decoction for one prescription. I do not suggest an open vessel for all decoctions, that of cinchona is especially troublesome, and

should always be made in a fairly large pan. It is generally understood that decoctions and infusions should be made as required, not from So-and-So's liquor or concentrated infusion. I recently dispensed an 8 oz. mixture with 4 oz. inf. cascarillæ, and the patient complained of the intense bitterness of my mixture compared with what had been supplied in another town. The mixture was repeated after some explanation, but it might have ended in my not seeing that client again.

Wolverhampton, May 25, 1896.

J. CLOWER.

THE METHODS OF A FIRM OF TRANSFER AGENTS.

Sir,—In the interests of the trade I enclose you a circular received from Messrs. ——— the transfer agents, and from inquiries made I find similar letters, identical in composition, have been sent to many others. Yesterday, being at Halesworth and Southwold, I found both businesses in each town had been applied for by the gentleman desirous of purchasing a business in those localities. I send, herewith, two copies of Messrs. ———'s letters, and I trust that in addition to this letter you will append one of them.

Stowmarket, May 26, 1896.

GEO. JAS. GOSTLING.

[COPY OF LETTER ENCLOSED.]

London, E.C., May 23, 1896.

G. J. GOSTLING, ESQ.

Dear Sir,—Having a gentleman desirous of purchasing a business in your locality, we have taken the liberty of writing to ask if you would feel disposed to sell yours; we trust you will pardon our asking the question, but if you should feel disposed to sell we shall be pleased to send our client to see you. We make *no charge* unless we introduce a purchaser, and then 5 per cent. on the first £100, and 2½ on the balance of the purchase money. If you will sell, kindly favour us with particulars in the *strictest confidence*; our client can pay cash.

Waiting favour of reply,

Yours faithfully,

———— AND CO.

CORRECTIONS.

MIDLAND PHARMACEUTICAL ASSOCIATION.—Mr. A. C. Weaver of Wolverhampton, points out that his name was misspelt "Wheeler" in the report of the annual meeting of this Association, on page 414. The name was printed as it appeared in the report sent.

THE "SILVER YEN."—In the Journal for March 7, on page 198 it was stated, on the authority of Whitaker's "Almanack," that the Japanese silver yen is equivalent to about 4s. 3d. English money. A Brighton correspondent pointed out at the time that, as a matter of fact the yen is worth only about half that amount, and this is now confirmed by a Shanghai correspondent, to whom we are obliged for the correction.

OBITUARY.

BEESLEY.—On May 15, at West Street, Banbury, Thomas Beesley, Chemist and Druggist. (Aged 78.)

MITCHELL.—On May 12, at Glasgow, William Mitchell, Chemist and Druggist. (Aged 29.)

RIDLEY.—On May 15, at Ipswich, Albert Cowell Ridley, Chemist and Druggist. (Aged 60.)

MEDCALF.—On May 17, Benjamin Medcalf, Pharmaceutical Chemist, of Ware. (Aged 79.) Mr. Medcalf joined the Society in 1842, and has ever since manifested a loyal interest in its affairs.

ALLEN.—On May 20, A. Underwood Allen, Pharmaceutical Chemist, of Lymington. (Aged 74.) Mr. Allen had been a member of the Society for forty-three years.

HOARE.—On May 25, Charles Francis Hoare, Chemist and Druggist of Derby.

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs Atkinson, Blythe, Buchanan, Calvert, Coull, Culley, Clower, Durrant, Eberlin, Edgson, Gelston, Guyer, Gostling, Harrison, Hill, Lewis, Llewellyn, Laing, Merck, Naylor, Nightingale, Rowell, Smith, Turner.

Several letters and answers to queries are unavoidably held over until next week.

RUMEX NEPALENSIS, WALL.*

BY DR. O. HESSE.

The roots of this plant are largely employed in Madras and other parts of India for medicinal purposes and for dyeing, on account of astringent properties. Mr. D. Hooper was of opinion that they contain chrysophanic acid, but after Hesse had shown that the chrysophanic acid of *Parmelia parietina* is a substance different from that contained in rhubarb, he requested Hesse to repeat his experiment, and supplied him with a quantity of material for that purpose. The results of the investigation have now been published in Liebig's 'Annalen,' and it appears that the substance present in these roots is not the chrysophanic acid of rhubarb, though closely analogous to it. Hesse suggests for it the name "rumicin," and for two other substances which are associated with it the names "nepalin" and "nepodin."

For the extraction of these constituents the crushed roots were digested with hot ether in a flask fitted with a flux condenser until the ether acquired a deep yellowish-brown colour. On cooling, the liquid crystals were deposited, and a further quantity was obtained on evaporation. This crystalline deposit was then treated with a water solution of potassium carbonate, the dark brown liquor being filtered out of access of air to prevent alteration. On addition of hydrochloric acid in excess, and shaking with ether, nepodin was dissolved, together with some amorphous material, and when the residue undissolved by the potassium carbonate solution was boiled with acetone, rumicin was dissolved, while most of the nepalin was left in the residue.

RUMICIN.—The acetone solution above mentioned deposited on cooling greyish-brown, granular, and laminated crystals, which melted at 182° C. When separated from mother liquor by washing with acetone, they were dissolved with hot benzene, the solution mixed with three or four times its volume of petroleum spirit, boiled for a time, and then filtered to separate a brown flocculent substance. On cooling the solution crystals were deposited, and by re-crystallisation from benzene and petroleum spirit, the substance was sufficiently purified for analysis, which gave results leading to the formula $C_{15}H_{10}O_4$.

Rumicin has the form of yellow laminar crystals of metallic lustre; it dissolves readily in hot alcohol acetone or glacial acetic acid, slightly at the ordinary temperature, readily in chloroform, and scarcely at all in petroleum spirit. It melts at 186°—188° C.; with potash solution it gives a purple-red solution which is gradually decolourised by exposure to the air in consequence of absorption of carbonic acid and separation of the rumicin. With a water solution of potassium carbonate it gives a faint rose colour. Heated with alcoholic potash it dissolves, and on cooling the solution deposits fine purple prisms, which soon become yellow by exposure to the air. Rumicin dissolves in concentrated sulphuric acid, and on addition of water is deposited unaltered in yellow flocks. Heated with hydriodic acid, no alkyl iodide is formed, but a substance identical with that produced under the same conditions from chrysophanic acid—chrysophan-anhydanthron.

The only difference between rumicin and chrysophanic acid appears to be in the melting point. They might be regarded as physical isomers, but as yet Hesse has not succeeded in converting the one into the other.

NEPALIN.—The substance separated as above described may be purified by solution in hot benzene, adding three or four times the volume of petroleum spirit and boiling for some time; a dark

brown flocculent deposit separates, and the clear solution on cooling gives crystals of nepalin, which can be further purified by crystallisation from glacial acetic acid.

Nepalin forms orange-coloured microscopic crystals, melting at 136° C. to a red liquid: it is not volatile and does not contain water of crystallisation. Analysis gives results leading to the formula $C_{17}H_{14}O_4$.

In treatment with acetic anhydride nepalin forms a crystalline acetyl derivative, $C_{17}H_{12}(C_2H_3O)_2O_4$, milky at 181° C.

NEPODYN* may also be purified by treatment with benzene and petroleum spirit. It crystallises in long greenish-yellow prisms, melting at 158° C. Its composition is represented by the formula $C_{18}H_{16}O_4$. The acetyl derivative, $C_{18}H_{14}(C_2H_3O)_2O_4$, crystallises in rhombic plates of a pale yellow colour, and melts at 198° C.

These results show [that *Rumex nepalensis* contains substances quite different from those existing in the allied species of *Rheum* from which rhubarb is derived.† This latter drug contains chrysophanic acid, $C_{15}H_{10}O_4$; emodin, $C_{15}H_{10}O_5$; and rhein, $C_{15}H_{10}O_6$; differing in the relative proportions of oxygen, while the rumex constituents differ in the carbon. The opinion that the rumicin obtained from other varieties of rumex is identical with chrysophanic acid‡ is considered by Hesse to be without sufficient foundation, although the circumstance that rumicin and chrysophanic acid both yield the same product on treatment with hydriodic acid requires further investigation.

THE DETECTION OF COPPER IN VEGETABLE SUBSTANCES.

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

There is an interesting paper, by Dr. Victor Vedrödi, in the *Chemiker Zeitung* of May 16, on this subject, in which the author questions the accuracy of the method followed by Professor Lehmann for the determination of copper in vegetable substances. Dr. Vedrödi claims to have obtained by his method one hundred times as much copper as that obtained by Lehmann. Considering that an accurate determination of small quantities of copper in vegetable and in alimentary substances generally is of the highest importance, in view of the discrepancies in results which not unfrequently occur in cases of prosecution under the Sale of Food and Drugs Act, these different results of Vedrödi and Lehmann require some consideration. Taking for example Vedrödi's results as to the amount of copper in natural peas, he finds 90 milligrammes and 150 milligrammes per kilo as the minimum and maximum amounts, or, in other words, 0.9 and 1.5 per 10,000, the last figure in many cases representing more than the amount of copper which is used to artificially preserve the colour of green peas, and, as Lehmann points out, Vedrödi's result is ten times as much as Tschirch found in vegetables which had been grown in intensely coppered soil.

Lehmann's method for the determination of copper in vegetables consists in mineralising the vegetable material with concentrated sulphuric acid, and determining the copper colorimetrically, either with ammonia or with ferrocyanide, according to the amount of copper present. Vedrödi, on the other hand, burns the material in a muffle furnace for 8 hours or until mineralised, takes up with hydrochloric acid, passes sulphuretted hydrogen, and burns the pre-

* This name, formed from "Nepal" and "Emodin," is intended to suggest the resemblance to emodin shown by the separation with potassium carbonate from its associates.

† *Pharm. Journ.* [4], i., 325.

‡ v. Than, *Annalen der Chem.*, 107, 324.

* Translated from a paper in the *Annalen der Chemie*, 291, 306.

cupitate to oxide. In both methods there is a liability to error. Lehmann's method is open to the objection that copper is very liable to be left undissolved by the sulphuric acid. In Vedrödi's method it is uncertain that the hydrochloric acid will take out all the copper from the ash constituents; moreover, all that is precipitated by SH_2 is regarded as copper. A very ready and accurate method we have found consists in carbonising about 100 grammes of the material in platinum, extracting the ash with strong hydrochloric acid, filtering through an acid-washed filter, washing the filter with hot water all into a porcelain dish. The residue, which is insoluble in hydrochloric acid, is treated with a few drops of strong nitric acid, then dried and ignited. The ignited mass is treated with strong hydrochloric acid, and the filtered solution is added to the first portion. In this way there is no loss of copper as is likely to occur from the reduction of the copper salt to metallic copper when the carbonisation is being carried out, and its subsequent insolubility in sulphuric and hydrochloric acids, as in Lehmann's and Vedrödi's methods.

The hydrochloric acid solution, after concentrating to about 30 to 40 C.c., is placed in a weighed platinum dish and the copper precipitated by pure zinc. If the deposited copper after weighing is not of a pure copper colour, it is dissolved in a little nitric acid made up to a known quantity, and the copper determined colorimetrically in an ammoniacal solution. In this way the following results showing the amount of copper found in various alimentary substances have been obtained.

	Part of Metallic Copper.	Parts of the Substance.	Parts of Copper in 10,000 of the Substance.
OYSTERS—			
Portuguese	1	in	3,450
Whit-table	1	"	5,500
Dutch	1	"	5,500
Plymouth	1	"	3,300
COCOA—			
Pure Cocoa (free from husk) ..	1	"	21,000
Cocoa containing Sugar and Starch	1	"	17,000
" " " " "	1	"	34,000
BRANDY—			
Sample No. 1	1	"	185,000
" 2	1	"	928,000
" 3	1	"	208,400
" 4	1	"	852,720
WHISKY—			
"	1	"	224,850
PRESERVED PEAS—			
Sample No. 1	1	"	6,980
" 2	1	"	8,770
" 3	1	"	9,020
" 4	1	"	17,500
" 5	1	"	18,420
" 6	1	"	7,140
" 7	1	"	10,520
" 8	1	"	10,520
" 9	1	"	8,000
" 10	1	"	10,520
" 11	1	"	14,280

These results and others show that the amount of copper in preserved peas varies considerably. Some of the samples were also guaranteed not to have been treated with a copper salt.

For comparison with the above results as to the amount of copper found in preserved peas, it may be as well to add Vedrödi's figures as to the amount of copper he found by his method in various vegetable substances:—

	Copper.	
	Parts per ten thousand.	
	Min.	Max.
Winter Wheat	2.5	8.6
Summer Wheat	2.5	3.0
Barley	0.1	0.9
Linseed	1.4	1.9
P. as	0.9	1.5
Mustard Seed	0.9	1.0

So that according to Vedrödi there is more copper naturally present in many vegetable substances than is found in vegetables to which it has been added to preserve their natural colour.

AINU MEDICINAL PLANTS.

(Concluded from page 148.)

Upen (*Seseli libanotis*, Koch, var. *sibirica*, DC.).—This herb has a strong smell and flavour, and is described as a useful medicine for every complaint. It grows in dry places, especially on sandy beaches, and the root is the part used. In times of epidemic diseases it is much sought after by the Ainu on account of its reputation as a preventive of illness, in which it is said to act as a charm. The writer says: "I have often seen the natives chewing it, and found it hanging up in huts to keep off sickness. During a time when small-pox was raging, I saw a dog with some tied to his collar driven round a house." This plant may be taken at any time in place of tea or water and is indeed often preferred; a decoction is usually taken by steeping the herb in hot water and is so taken in cases of severe cold. Some of the old Ainu mix small pieces of the root with their tobacco to improve its flavour.

Yakara-kina or Mo-shiu-kina (*Angelica refracta*, Fr. Schm.).—The plant is found in wet or damp situations. The root-stock is the only part used, and it is generally taken in the form of a decoction by cutting it up in very small pieces, which are put into hot water, and the decoction thus made is drunk, herb and all. It is said to be especially valuable for pains in the stomach, as well as for diseases of the chest. It is sometimes put into soup and eaten as food.

Chima-kina (*Aralia cordata*, Thunb.).—A decoction of the root-stock is used in some parts for washing wounds inflicted by bears and other animals, and after washing, fresh slices are often applied to the wounds.

Oinamat (*Adenocaulon adhaerescens*, Max.).—The leaves, softened by warming at a fire, are generally applied when a person is poisoned by the sumach or *Rhus*.

Noya (*Artemisia vulgaris*, L.).—The stem and leaves are boiled in a pan, and the patient is made to inhale the steam with a cloth covered over his head and the pan until he or she freely perspires. Sometimes in similar affections a decoction of the stems and leaves are drunk. A moxa is also made by pounding the leaves. The plant is considered a charm against evil, especially against disease, and is frequently seen hung up in houses.

Kamui-noya (*Artemisia sacrorum*, Ledeb., var. *latiloba*, Ledeb.).—This particular form of *Artemisia* grows chiefly on rocky cliffs and sometimes on the sandy banks of rivers. It is sub-shrubby in habit, and has a strong medicinal odour. It is largely used in medicine by the Ainu of Kushiro, Kitami, and Teshio.

Makayo (*Petasites japonicus*, Miq.).—A strong decoction of the flower shoots, which are very bitter, is often taken for heavy colds. They are also used sometimes as an article of food.

Seta-korokoni (*Arctium lappa*, L.).—The young leaves, softened by rolling them in the palms of the hands, are applied to skin eruptions; boiled they are also occasionally eaten as food.

Ikema or Penup (*Cynanchum caudatum*, Max.).—This plant is used both for food and medicine. It is said to be good for any complaint, but is a special remedy for small-pox. To wounds of all kinds a thick decoction when applied is said to prevent the formation of pus. Half-cooked roots are said to have an intoxicating effect and to cause loss of all control over the limbs, and to do away with the sensation of the skin. The root is dried and stored up for future use, but it is sometimes taken fresh, either roasted or boiled, and it is said to have a very sweet taste. In time of epidemic sickness the root is chewed in its raw state, and the juice blown from the mouth, sometimes upon and over the afflicted person; sometimes all over the inside of the hut, and through the doors and windows; and sometimes again

round the house, and even whole villages. When so used it is supposed to act as a kind of charm to drive away the demon of sickness; those who use this plant so are generally intoxicated by it. It is also said to be very efficacious as an antidote to poison. As an article of food it is used very sparingly, and always well cooked.

Chiukomau (*Physalis alkekengi*, L.).—The smashed fruits are applied as a poultice for pains in the hips.

Seta-endo (*Elsholtzia cristata*, Willd.).—The decoction of this highly aromatic plant, which is commonly found around the huts of the Ainu, is prescribed to persons suffering from the after-effects of intoxication. It is also used in the place of tea.

Shumnu-hash (*Lindera hypoglauca*, Max.).—Among some Ainu this plant is looked upon as a good remedy for stomach ache, and has a very nice smell and flavour. The wood is broken up fine and boiled, and a dose taken when cool. Sometimes, however, the decoction is poured over rice or millet, and taken. The Japanese names for this plant are Kuromoji or Torikoshiha, the first of which has become somewhat familiar in this country of late in connection with the oil of *Lindera sericea*, Bl., so that the common name seems to be applied to both species.

Ketu-hash (*Daphne chinensis*, Lam., var., *breviflora*).—The whole plant is reputed poisonous, but especially the berries and root. Some Ainu burn the roots to charcoal and reduce them to powder, which is applied to bruises or places where there is any internal pain, but it is never applied to cut wounds.

Ni-haru (*Viscum album*, L.).—The Ainu, like many nations of northern origin, hold the mistletoe in peculiar veneration. They look upon it as a medicine good for almost every disease. It is taken either in food or separately as a decoction. The leaves are used in preference to the berries, the latter being of too sticky a nature for general purposes. Some Ainu have been known to use the mistletoe leaves merely for tea without any reference to their supposed medicinal properties, while others sometimes mix it with their stews. By many of the people the plant is supposed to have the power of making the gardens bear plentifully. For this purpose the leaves are cut up into fine pieces, and after having been prayed over, are sown with the millet and other seeds, a little also being eaten with the food. Barren women have also been known to eat the mistletoe in order to be made to bear children. That mistletoe which grows on willows is supposed to have the greatest efficacy, because the willow is considered by the Ainu a sacred tree.

Kamui-tat (*Betula ermani*, Cham.).—The bark of this species of birch can be peeled off in very thin layers; these papery layers are sometimes pasted over wounds in place of plasters. They are said to possess good healing properties, and to prevent inflammation.

Nitat-kene (*Alnus japonica*, S. et Z.).—A decoction made by steeping the bark of this tree in hot water is said to be good for pains in the stomach. Ainu women take a dose of this medicine immediately after childbirth. It has a very bitter taste.

Ura-susu, or Urai-susu (*Salix multinervis*, Fr. et Sav.).—The fresh bark of this shrubby willow is widely used by the Ainu for application for cut or bruised surfaces. The bark is cut into fine shreds and plunged for a short time in hot water to make it soft. It is then applied to the wound, and is retained there by a bandage. The bark is renewed from time to time.

Yai-ni, or Nup-kurun-ni (*Populus tremula*, L.).—The fresh bark is cut into fine shreds and applied to cut wounds to prevent the formation of pus.

Shungu-unkotuk (*Picea ajanensis*, Fisch.).—The resin of this pine is used by some of the Ainu for applying to cut wounds to hasten their healing.

Nimak-kotuk (*Cremastra nallichiana*, Ldl.).—The root of this

orchid is used as a remedy for toothache; it is merely chewed and then expectorated. It is of a very sticky nature, and clings to the teeth very tenaciously, hence its name "Nimak," teeth, and "kotuk," to adhere to. Sometimes a stiff paste or ointment is made of this plant, and spread over swellings and boils as a remedy, but it is not very much appreciated, and seldom used if other remedies are at hand. A strong glue is made from the roots by pounding them well.

Shuwonte (*Smilax herbacea*, L.).—The application of the softened leaves is said to heal affections of the eyes; they are also applied to skin eruptions and wounds.

Etoruratskip (*Polygonatum giganteum*, Dietr., var. *falcatum*, Maxim.).—A piece of the root-stock is sometimes put into the mouth of a child who suffers from laceration of the tongue and lips, and is allowed to remain there until the pain is relieved.

Pukusa or Hurarui kina (*Allium victorialis*, L.).—This plant is said to be especially useful as a remedy for colds. It is also sometimes to be found hung up in doorways and entrances, and by windows as a charm against epidemic disease.

Surngu-kusuri (*Acorus calamus*, L.).—The root-stock is extensively used by the Ainu as a medicine. A decoction of it is said to cure pains in the stomach caused by drinking bad water or by eating improper food. It is also valuable in colds and head-ache.

Shiu-karush or Kui-karush (*Polyporus officinalis*, Fr.).—This fungus grows upon larch trees, and has a very bitter taste. It is chewed and rubbed into painful places, and is also taken in decoction as a remedy for stomach ache. It comes chiefly from the Kurile Islands, and was greatly prized by the old Japanese doctors.

The foregoing are the chief plants recorded as of medicinal value amongst the Ainu people, who, in the matter of drugs, seem to have a smack of Chinese custom.

SELL YOUR OWN FILLED CAPSULES.

BY EMILE P. FERTE.

The retail pharmacist can just as well as not (and to his profit) sell his own filled capsules of cubeb oil, sandalwood oil, oleoresin copaiba, etc. I use the regular cylindrical shape, having had poor success with the soft, egg-shaped ones.

Procure a well-seasoned board about 1 Cm. thick and make as many holes in it as the number of capsules you wish to fill at one time. It is a good idea to make holes to accommodate the different sizes of capsules, in the same board. Nail a thinner board on one side which is to be the bottom. Have the holes just large enough to hold the capsule without squeezing too hard. Put the empty capsules in the holes and proceed to fill.

Use small (I use 50 C. c.) bottles fitted with the patent stopper-pipette (used as eye-droppers) and keep the oils in them. One pipette-full will fill from three to six capsules, and it can be done without getting any on the outside of the capsule. Do not fill too much. Let the upper part of the meniscus be just below the upper edge of the capsule. To seal, use a camel hair pencil and the following solution:—

Gelatin (Cox's).....	10 grms.
Gum Acacia	50 grms.
Acid Boric.....	1 grm.
Distilled Water q.s. to make.....	100 C.c.

Use slightly warmed (about 40 C.).

I have attained better results with a mixture of gelatin and acacia than with either alone. Experience will teach one just how much to use, which should be sufficient to make a good seal, yet not enough to "slobber." Put the cover on with a spiral motion, pressing gently.—*Spatula*.

THE MAKING OF TABLETS.*

BY FRANK EDEL.

(Concluded from page 384.)

Materials of a hygroscopic nature should be granulated with acacia.

Five-grain Tablets Sodium Salicylate.

Sodium Salicylate	500 grs.
Powdered Acacia	25 grs.

Mix, moisten with water, pass through sieve and dry. Lubricate with vaseline; when dry pass through sieve, and just before compressing add 25 grs. powdered talcum; make 100 tablets.

The bisulphate of quinine is usually preferred to the sulphate for making tablets because of its greater solubility, and also because it needs no preparation for compression other than the lubrication with vaseline and addition of two per cent. talcum.

Headache Tablets.

Acetanilide	300 grs.
Caffeine.....	50 grs.
Sodium Salicylate	400 grs.
Sugar	50 grs.
Acacia.....	25 grs.

Powder freely and mix; then moisten and pass through sieve and dry. Lubricate with vaseline, and when dry pass through sieve again. This makes a good headache cure, for putting up as a remedy to replace the headache cures of the market.

Tablets which contain considerable quantities of extract of liquorice require no additional adhesive added, and should be lubricated with vaseline if necessary.

Granular potassium bromide, iodide, and chlorate, and ammonium chloride are easily compressed without any preparation, requiring also no lubricant.

Tablets can also be made from monobromated camphor, and also of potassium permanganate, by reducing them to granular form so that they will pass through a No. 20 sieve, and compressing.

Tablets containing chemicals which are likely to react on each other in a moist condition are best made by granulating the different materials separately, and then mixing the granulated powders, and compressing. Or, in case the chemicals are insoluble in some liquid, rub them to a fine powder; after granulation, mix thoroughly, and granulate by moistening with some liquid in which neither chemical is soluble. In this way tablets of calomel and sodium bicarbonate are best prepared.

Tablets Calomel and Sodium Bicarbonate.

Calomel.....	100 grs.
Sodium Bicarbonate	100 grs.
Acacia	10 grs.
Powdered Sugar.....	30 grs.

Mix the calomel and 15 grains sugar, moisten and dry. Mix the soda with acacia and balance of sugar, moisten and dry; then rub the two to a fine powder, mix, and granulate by moistening with alcohol, then dry. Make 100 tablets.

Sodium bicarbonate can be made into tablets by granulating with 8 or 10 per cent. powdered acacia. Tablets of charcoal are best made by granulating with 20 per cent. sugar and 5 per cent. acacia moistening thoroughly and carefully drying.

There is a large class of tablets in which the medicinal part constitutes but a small portion of the tablet, the balance being sugar of milk. These are best made by adding a few drops of simple syrup and mixing, then completing the moistening with water. Some, however, prefer to use 10 per cent. of powdered sugar and moisten with water alone.

In tablets containing fluid extracts or tinctures, it is best to add the required amount of liquid to a small amount of starch, mix

thoroughly, and then add sugar of milk to make to required weight. When the amount of tincture is excessive, an equivalent amount of fluid extract should be used, and where even this would be excessive, it is necessary to continuously evaporate it to a soft extract before adding the starch and milk sugar.

If extracts are to be incorporated in tablets, it is handiest to use the powdered extracts, but if these are not at hand the extract should be rubbed to a soft consistency, a suitable starch added and thoroughly mixed, and the proper amount of milk sugar then added, the whole being finally granulated, dried, and compressed.

Throat Tablets.

Oleo-Resin of Cubebs	2½ grs.
Balsam Tolu	20 grs.
Oil Sas-afra	10 min.
Extract Liquorice.....	700 grs.
Powd. Ammonium Chloride.....	250 grs.

If the balsam of tolu is soft, cool with ice and powder by rubbing with a small portion of the ammonium chloride, then add the liquorice and the rest of the ammonium salt and mix, reducing to fine powder; add the cubebs and oil sassafras and mix thoroughly; finally moisten with water and granulate. Make 100 tablets.

This makes a superior tablet for the throat and voice, and can be put up as a special remedy in place of similar proprietary goods largely sold.

The best base for making hypodermic tablets is pure cane sugar. This is much more satisfactory in every way than either dried sodium sulphate or chloride, it is also much more soluble than milk sugar. They are best lubricated with powdered boric acid, using only a small amount, from one to two per cent.

Tablets of creosote are made by adding the creosote to starch, mixing thoroughly, then adding the required amount of milk sugar and granulating.

If it is desired to make effervescent tablets, they can be made in two ways: 1. The material can be prepared exactly as in making effervescent salts, and granulated by moistening with alcohol, then rubbing through a sieve and drying. This should be lubricated if necessary with vaseline.

2. The materials (that is the alkaline and acid parts) can be granulated separately, and when dry the two are mixed by agitation and compressed.

Tablets Lithium Citrate.

Lithium Citrate.....	300 grs.
Sodium Bicarbonate.....	300 grs.
Tartaric Acid	275 grs.
Powdered Sugar.....	275 grs.

These should be all thoroughly dry before mixing, then thoroughly mixed and moistened with alcohol, passed through a No. 20 sieve and dried thoroughly, next passed through a sieve again and made into 100 tablets; or the lithium citrate, 125 grs. sugar and the soda, can be mixed, moistened with water, granulated and dried, and the acid and the rest of sugar mixed, granulated, and dried; the two granulations being finally mixed thoroughly by agitation, passed through the sieve and compressed.

One of these processes must be used if it is desired to add small quantities of acid (citric or tartaric) and alkali to tablets in order to increase their solubility. Tablets containing sulphur are best granulated with both sugar and acacia; if carefully dried they need no lubricant.

Tablets Sulphur (Comp.).

Sulphur	500 grs.
Cream Tartar.....	200 grs.
Extract Ipecac.	1 gr.
Extract Capsicum	1/5 gr.
Acid Arsenious	1/10 gr.

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Bisulph. Calcium	12½ grs.
Powdered Sugar	50 grs.
„ Acacia	50 grs.

Mix and moisten with water, then pass through sieve and dry, finally pass through sieve again. Make 100 tablets.

Tablets Hypophosphites (Comp.).

Calcium Hypophosphite	16 grs.
Potassium „	24 grs.
Manganese „	16 grs.
Iron „	24 grs.
Quinine Hypophosphite	7 grs.
Strjchnine „	1 gr.
Powdered Sugar	40 grs.

Mix the hypophosphites, moisten slightly, and rub to fine powder; add the sugar, mix and moisten carefully, pass through sieve, and dry. Lubricate with vaseline when dry, and pass through sieve again. The above is calculated to make 128 tablets. These can be increased in size by adding more sugar or milk sugar.

If the pharmacist will only use that care that he should use in his every-day work, he will find but little difficulty in preparing any tablet he may wish to. In tablet making, however, as in everything else, a little experience goes a great way in overcoming difficulties.

REVIEWS AND NOTICES OF BOOKS.

CASSELL'S NATURAL HISTORY. Part I. Pp. 76, illustrated. Price 6*d.*
(London: Cassell and Company, Limited. 1896.)

It is truly wonderful what enormous value can nowadays be obtained in encyclopædic works on popular science. The publishers of this work occupy a leading position in such enterprise, but they have probably never excelled the present undertaking, which is to supply a splendidly got-up natural history containing 2500 quarto pages and about 2000 high-class illustrations for thirteen shillings. The first weekly part deals with the man-shaped apes—the gorilla, nschiego mbouvé, koolo-kamba, soko, chimpanzee, orang-utan, gibbon, and siamang, the writer of this section of the work being the editor, Professor P. Martin Duncan, M.B., F.R.S. The matter is well printed on paper of very fair quality, and besides the numerous letterpress illustrations there are full-page engravings and coloured plates, which have been carefully prepared from authentic sources. The text is written in the simplest language possible, and numerous anecdotes serve to render the work interesting as well as instructive.

THE TAX-PAYERS' CASH BOOK. By ALFRED M. SCARF, Fellow of the Society of Accountants and Auditors. Price 2*s.* 6*d.* net (Cloth, 3*s.* 6*d.*). (London: The Income-Tax Adjustment Agency, 12 and 13, Poultry, Cheapside, E.C. 1896.)

There is, without doubt, a real need amongst tax-payers for such a book as this, which embodies an easy system of book-keeping for small trading concerns, with full instructions and examples for ascertaining profit and making returns for Income Tax, as well as preparing accounts in support of an appeal against Income Tax overcharges. The author rightly urges that every retail trader should know the exact amount of his purchases, sales, and expenses, month by month, and that an analysis of the expenses should be made at least once a year, showing the rent, rates and taxes; salaries and wages; carriage of goods; gas and fuel printing and stationery; advertising; stable expenses, repairs, etc., etc. "If, in addition to this, the stock be carefully taken once in each year, there can be no doubt that the comparison which the trader will be able to make of the business done in the various months of the year, and of the expenses under the different headings, will enable him to avoid the evil of overbuying on the one hand and excessive expenditure on the other." Much other perti-

nent advice is also given, and followed by a concise statement of the procedure to be followed in connection with Income Tax payments. Then there are specimen cash accounts for one week, with statements of affairs and forms of trading profit and loss accounts for a year, the rest of the book being taken up with the specially-prepared forms for keeping the weekly accounts. These are well planned for the purpose, being arranged to show full particulars of all private and business receipts and payments, with till and bank accounts, and there is also a space for memoranda. Nothing more simple, and yet accurate, could well be devised, and the cash book can be strongly recommended.

MODERN OPTICAL INSTRUMENTS AND THEIR CONSTRUCTION. By HENRY ORFORD. Pp. 100. Price 3*s.* (?) (London: Whittaker and Co., 2, White Hart Street, Paternoster Square, E.C. 1896.)

According to the preface, the main object of the author has been to place before the reader a descriptive outline of a few of the more popular optical instruments in use. The eye as an optical instrument is first considered, a brief general description being followed by details respecting the iris, retina, crystalline lens, the refraction of the eye, accommodation, and binocular vision. Next in order, the properties and aberrations of lenses are considered, then aberrations of the eye, ophthalmoscopes and their uses, and the various forms of ophthalmoscopes. Retinoscopy, a means of objectively determining the quantity of any error of refraction, has a special chapter devoted to it, as have also spectacles and their selection, illustrated descriptions of various forms of spectacles, stereoscopic projection, the principles of the optical lantern, the stereoscope, and the spectroscope. The book, which is fully illustrated throughout, is written in plain and simple language, and will be found exceedingly useful by students and practising pharmacists. The author is already well known for his work entitled 'Lens Work for Amateurs,' a practical and trustworthy guide to the subject of which it treats, and he cannot fail to add to his reputation by the one now under consideration.

ELEMENTARY INORGANIC CHEMISTRY, THEORETICAL AND PRACTICAL, with a course of chemical analysis and a series of examples in chemical arithmetic, by A. HUMBOLDT SEXTON, F.I.C., F.C.S., etc. Fourth edition. Pp. viii., 366. Price 2*s.* 6*d.* (London: Blackie and Son, Limited, 50, Old Bailey, E.C. 1895.)

This little book is one of that numerous class of works produced for the purpose of enabling a student to pass a particular examination, and in many respects the author has spoiled what might otherwise have been an excellent elementary manual by always keeping in view the fact that he was writing up to an examination schedule, all parts of the subject outside that schedule being carefully avoided. The first few chapters deal with explanations of terms, first principles, and chemical physics, and on the whole the elementary student will find this part a good introduction to general chemistry, but faults are apparent in many places. In discussing the properties of matter, for instance, a good deal is said about weight and the methods of measuring it, but no definition is given of mass. The word mass is not used at all until some ten pages further on in connection with the expansion of bodies, where we are told that "the increase of volume is proportional to the increase of temperature, and to the mass of the substance at 0°." Again, the law of Avogadro is stated without any account of the reasons we have for believing this law to be true. The explanation given of the molecular theory of matter is clear and interesting, and the comparison of the elements to letters and their compounds to syllables and words is probably original and will enable the learner to understand how from so few

elements such an infinite variety of compounds may be obtained. The bulk of the work consists of a more or less systematic course on certain of the elements and their compounds. Many of the chapters on the non-metals are clearly and carefully written, and as full as is desirable in an elementary work, while the summaries at the end of the chapters will be found very useful. But the treatment of the different parts of the subject is most disproportionate. The only metals considered are sodium, potassium, ammonium, calcium, iron, zinc, lead, and copper, and thirteen pages are considered by the author sufficient in which to treat of these substances and their compounds, while the chapters on the non-metallic elements and their compounds occupy 168 pages, one page being devoted to the consideration of argon. Hydrogen is included among the non-metals, and no word is said of the many reasons there are for considering it to be a metal. Carbon, on the other hand, is on page 32 included by inference among the metals, this being evidently due to a slip of the pen.

The second part of the book contains the description of a series of experiments that the student is advised to perform, to illustrate the subjects considered in the first part of the book; the third part deals with chemical arithmetic, and is useful as far as it goes; the fourth part consists of questions on the previous work; and the fifth of an incomplete and unsatisfactory course on qualitative analysis. The sixty or more diagrammatic illustrations with which the work is embellished are distinctly good in principle and execution, and are far more suitable for the purpose than the pictures with which works on chemistry are usually provided.

THE HISTORY OF SURGICAL ANÆSTHESIA. BY H. BELLAMY GARDNER, M.R.C.S., L.R.C.P. Pp. 31. Price 1s. (London: Baillière, Tindall and Cox, 20 and 21, King William Street, Strand. 1896.)

In view of the forthcoming jubilee celebrations of the application of ether in Boston and of chloroform in Edinburgh as anæsthetics, this little book possesses considerable interest, giving as it does an authentic account of the origin and progress of surgical anæsthesia. Quotations are first given from writings by Homer, Herodotus, Dioscorides, Pedanius, Pliny, Galen, Lucian, Hoa-Tho, Cletius, Hugo de Lucca, and others, in which reference is made to the use of various drugs for producing sleep and insensibility to pain. During the middle ages some degree of anæsthesia was probably produced, previous to operation, by means of narcotic drugs or even by inhalation. Compression of the nerve trunks and hypnotism were resorted to later, but it was not until the renaissance of chemical research in the eighteenth century that the discoveries were brought about which have culminated in our knowledge of the anæsthetic agents of the present day. Dr. Michael Morris described some of the effects of sulphuric ether in 1758, Priestley discovered nitrous oxide in 1772, and later Humphrey Davy found that the gas appeared capable of destroying physical pain. Forty years elapsed, however, before this suggestion was put to the practical test by Horace Wells, a dentist of Hertford City, Connecticut, U.S.A., who inhaled some of the gas, and whilst under its influence had a tooth extracted without pain. Subsequently, he used gas successfully among his patients. Dr. Morton, of Boston, one of Wells' pupils, used ether vapour as an anæsthetic in 1846, and in December of that year Mr. Squire administered ether to two patients in University College Hospital, by means of an apparatus he devised for the occasion, while Lister, the famous surgeon, amputated a thigh in one case, and removed an in-growing toe-nail in the other. In November, 1847, Dr. J. Y. Simpson, of Edinburgh, having found ether somewhat irritating to the bronchial mucous membrane, was led to experiment with chloro-

form, which he tried in some thirty cases, and found to possess many advantages over ether. Bichloride of methylene was introduced by Sir Benjamin Ward Richardson in 1877, and strongly advocated by him as an anæsthetic, but has not been used to any great extent. Concerning local anæsthesia, induced by applying cocaine and other substances, the author does not treat, but the numerous facts stated in so limited a space possess a special attraction to everyone interested in the progress of the surgical art and the aid rendered to it by chemistry.

NOTES AND FORMULÆ.

MAGNESIUM PAPER FOR PRODUCING FLASH LIGHT.

Powdered magnesium is sprinkled over impermeable paper covered with starch paste, and dried face to face. After drying, a sheet covered with potassium chlorate is pasted on each side of the first sheet, and another sheet serves as a covering for the whole, which now forms a thick layer which is cut into strips. On lighting the end a brilliant light is obtained. This paper is said to be quite safe and to keep well (*Papier Zeit.*).

RESORCINOL.

Under this name Biélaieff (*Vratch*) describes a compound obtained by melting together at 104-110° C. equal volumes of resorcin and iodoform. The resorcin melts first and slowly combines; the reddish-purple compound when cooled and powdered affords a red-brown powder with a not unpleasant odour, completely soluble in ether, partially dissolved by water. Resorcinol does not possess the caustic action of resorcin, and neither the disagreeable odour nor the toxic action of iodoform. The author advocates the use of resorcinol for dressings in those cases where frequent changes of the bandages are undesirable, and in the case of suppurating wounds where the tissues are markedly disintegrated (*Nouv. Rem.* xii., 8).

PILLS OF SODIUM IODIDE.

Anhydrous sodium iodide, 4 grammes; powdered sugar, 40 centigrammes; distilled water, 1 gramme; powdered starch, 60 centigrammes. Rub the iodide and sugar together, add the water in one lot, mix, add the starch, and mix well. Remove the mass from the mortar while soft and lay it on the pill machine, well dusted with starch powder. Roll quickly and dry in a warm capsule (*Journal de Pharm. d'Anvers*, lii., 18).

PATENT FUMIGATING PASTILLES.

A patent has recently been taken out (Pat. No. 23,210, Nov. 30, 1894, J. Wheeler) for the manufacture of a combustible material for scenting and medicating the atmosphere from the epidermis of the *Betula alba*, or white birch. In order to make it into pastilles or cones for burning it is mixed with ground pumice or fire clay and nitrate of potash. The ground epidermis is also mixed with lobelia, stramonium, tea, and potassium nitrate and chlorate for use in treatment of asthma.

STEARATES OF THE ALKALOIDS.

Zanarch proposes the employment of the stearates of morphine, cocaine, and atropine, which he obtains by dissolving molecular equivalents of these alkaloids, and of stearic acid in alcohol on the water bath, and allowing the stearates so formed to crystallise on cooling out (*Nouv. Rem.* xii., 171., after *Apoth. Zeit.*). Except that these salts exist in a solid form, it is not very evident that they present any marked advantages over the well-known oleates.

PHARMACEUTICAL SOCIETY

MEETING OF THE COUNCIL.

WEDNESDAY, JUNE 3, 1896.

Present :

Messrs. Allen, Atkins, Bateson, Bottle, Carteighe, Corder, Cross, Gostling, Grose, Hampson, Harrison, Hills, Johnston, Martindale, Newsholme, Park, Savory, Southall, Storrar, Symes, and Young.

MR. MICHAEL CARTEIGHE TOOK THE CHAIR.

The minutes of the last monthly meeting and of the special meeting on May 20 were read and confirmed.

NEW MEMBERS OF THE COUNCIL.

Mr. CARTEIGHE, on behalf of the Council, offered a welcome to the newly elected members, Messrs. Bateson, Park, and Symes, and remarked that the principle of territorial representation seemed to be very fairly carried out at present.

LETTERS OF ACKNOWLEDGMENT.

Mr. CARTEIGHE read letters which had been received from Professor Bayley Balfour, Professor Thorpe, and Professor Tschirch, thanking the Council for their election as hon. members, and expressing their appreciation of the honour which had been conferred upon them. A similar letter was read from Professor Planchon, one of the recently elected corresponding members.

ELECTION OF PRESIDENT.

The ballot having been taken in the usual way, Mr. Walter Hills was unanimously elected President, and he accordingly took the chair.

The PRESIDENT thanked the Council for the great honour conferred upon him, which was all the more gratifying as the vote was unanimous. Twenty-three years ago his late uncle, Mr. Thos. Hyde Hills, was elected to the same office, and it was interesting to recall the fact that on that occasion two of the present members of the Council were also present, Mr. Bottle and Mr. Hampson, the former being elected Vice President on the same occasion, and acting as such to his late uncle for three years. It was a great satisfaction to him, as it must be to his colleagues, to still have the benefit of those two gentlemen's experience at the Council table. Since 1873 the duties attaching to the office of President had in no way decreased, and they appeared to him especially weighty when he recollected that he was following one who for fourteen years had presided over the Society with unparalleled ability. No one was more conscious than himself of the many respects in which he was deficient in qualities which his distinguished predecessor possessed, but he relied on the help of his colleagues to fulfil the duties of his office with credit, and trusted that in the course of the next twelve months they would be able together to accomplish something useful, if not heroic, for the common cause.

ELECTION OF VICE-PRESIDENT.

The ballot having been taken,

MR. JOHN HARRISON

was re-elected Vice-President.

The VICE PRESIDENT said that, being the first to speak in the Council following the election of their new President, he ventured to say, as bearing upon their friend's appeal for the support of the Council during his period of office, that he felt such support would be fully and freely accorded him. As for his own re-election to the position of Vice-President, he heartily thanked his brother members of the Council for this renewed mark of their confidence. He accepted the honour in the spirit in which it was proffered, and would only say that the interest he trusted he had shown in the work of the Council during the last twelve months he would endeavour to continue throughout the coming year. If the relations which had hitherto subsisted between the new President and himself should happily be continued during their new relationships it would be to him a source of much happiness.

ELECTION OF TREASURER.

On a ballot being taken, Mr. Robert Hampson was re-elected Treasurer for the ensuing year, and in acknowledging the compliment in a very few words, he said it would be his purpose to retain their funds with the tenacity he hoped he had hitherto exercised,

and he trusted the more they supplied him with the latter the better it would be for the interests of the Society in whose progress they were all so deeply concerned.

THANKS TO THE RETIRING PRESIDENT.

The PRESIDENT said it was his privilege to move :—

That this Council desires to tender its very heartfelt thanks to Mr. Michael Carteighe for the invaluable services he has rendered to the Pharmaceutical Society as President during a term of fourteen years, and to place on record its appreciation of his self-sacrificing devotion and loyalty to the interests of the Society during that period.

He felt sure that they would all agree that no formal resolution could possibly express their feelings of gratitude to Mr. Carteighe for the exceptional services he had rendered during the last fourteen years, and the resolution, though in a few words, came from their hearts. Some few years ago, on the occasion of the presentation of Mr. Carteighe's portrait, he had the opportunity of speaking in some detail of the good work which Mr. Carteighe had effected for the Society's welfare up to that date, and he could only add that since then he had been equally active, as none knew better than his colleagues on the Council. Mr. Carteighe's name had been before the pharmaceutical world for the last thirty years, and there was no need to refer in detail to what he had done; his public work was recorded in the volumes of the *Pharmaceutical Journal* for the last thirty years. During recent years he had been very closely associated with him, and had been somewhat behind the scenes, and he should like to put on record his appreciation of Mr. Carteighe's untiring devotion, of his never-failing and wonderful cheerfulness, of his genial hospitality, of his practical and unostentatious benevolence, and, lastly, of his loyalty to his colleagues. Mr. Carteighe, as they all knew, was a man of exceptional ability and fairly strong will, but he was always ready to recognise and encourage the carefully thought-out opinions of any of his colleagues, and when, as occasionally happened, the views of the majority were not the same as his own, he accepted those views with perfect loyalty. To say more in his presence would not be to his taste, but he might assure him that he carried with him their best wishes, and that they all hoped he would retain for many years the splendid powers of mind and body which he now possessed, and that some at least of those powers would be devoted to the interests of the Pharmaceutical Society.

The VICE-PRESIDENT, in seconding the motion, said he did so with very mingled feelings, because, while recognising the eminent services which Mr. Carteighe had rendered during the last fourteen years and longer to the Society, one felt a certain sense of loss at not seeing him still in the presidential chair. Fourteen years was no inconsiderable portion of a man's lifetime, and to give that time with the profuse liberality with which Mr. Carteighe had placed his abilities at the service of the Society was a sacrifice which none could fully appreciate. Mr. Carteighe was a man who would have risen to the front in any sphere of life, and he felt that they owed him an enormous debt for having so fully and freely placed his great powers at the service of the Society. When the history of the Society for the last twenty years came to be written, one name would stand above every other—the name of the late President—and with regard to the history of the last fourteen years, it would be more prominent still. It was a serious reflection that there were not more than five or six gentlemen present who were members of the Council when Mr. Carteighe was first elected President; in fact he had almost seen a new generation of pharmaceutical councillors grow up, and to a large extent had had to form the opinions and formulate the views of those gentlemen who had been elected since he had succeeded to the chair. It was impossible to find any man who had been more loyal to the Society than Mr. Carteighe had been. In regard to educational work, he had always been in the front rank, and in protecting the interests of those engaged in pharmacy he was always active and willing to go on, whilst in the cause of benevolence no one was more eloquent or more persevering. It was not too much to say that his industry, activity, and energy commanded the admiration of all, whilst his personal qualities compelled their sincere affection. Whilst listening to the observations of the President, it occurred to him that two words would express what they all felt with regard to Mr. Carteighe, viz., genius and geniality. His genius for business they all knew, and his geniality of temperament and never-failing good humour ensured him their personal affection to a degree not often shared by the head of a public assembly. During the last fourteen years several attempts had been made to

obtain larger legislative powers for the Society, and if they had not been successful it was no fault of the late President. Whatever man could do had been done by him, but while man proposed, the disposition of affairs was in higher hands. He was quite sure that had the fates been propitious, Mr. Carteighe would have carried through legislation which would have been satisfactory to them all. Though he was now retiring from the front rank he would always occupy a very prominent position, and he felt sure that he would still assist in the prosecution of the work of the Society, and that when the time came for placing their case before Parliament he would do all he could to assist those who had the matter in hand. He also felt confident that sooner or later he would have the satisfaction of seeing that the bread which he had cast so abundantly on the pharmaceutical waters would bring forth fruit to his own satisfaction and the great advantage of the Society.

Mr. BATESON asked leave to add a word in support of the resolution on behalf of members of the Society outside the Council.

The PRESIDENT said he was sure most, if not all, his colleagues would like to speak to the resolution, but he proposed to commence his duties by being autocratic and putting the motion at once.

The motion having been carried by acclamation,

Mr. CARTEIGHE thanked the President and Vice-President for the too flattering terms in which they had spoken of him. He had now become what Mr. Reynolds called one of the old moons, and ought to put on a certain elderly and stately deportment for the remainder of his term of office as a member of Council; at any rate, he would endeavour to act as became a past President. He could assure his colleagues, one and all, that this expression of their thanks, and the kindness which had always been shown him, not only by the Council, but by the Boards of Examiners, north and south of the Tweed, and by members of the Society in all parts of the country with whom he had come in contact, were very welcome, and had been shown on many occasions in such a practical way, that the debt was really on his side.

STANDING ORDERS.

The standing orders of the Council were re-enacted for the ensuing year.

SECRETARY AND REGISTRAR.

Mr. Richard Bremridge was re-appointed Secretary and Registrar for the ensuing year.

EDITOR AND SUB-EDITOR OF THE JOURNAL.

Dr. B. H. Paul was re-appointed Editor, and Mr. John Humphrey Sub-Editor, of the Journal for the ensuing year.

CURATOR.

Mr. E. M. Holmes was re-appointed Curator of the Society's Museum for the ensuing year.

ASSISTANT-SECRETARY IN SCOTLAND.

Mr. J. R. Hill was re-appointed Assistant-Secretary of the Society in Scotland for the ensuing year.

EXAMINERS FOR THE COUNCIL PRIZES.

Messrs. Frankland, Ransom, and Seward were requested to conduct the examination for the Council Prizes competition in July next.

EXAMINATIONS FOR THE JACOB BELL SCHOLARSHIPS.

Messrs. Lucas, Bascombe, and Pinches were requested to conduct the examinations for the Jacob Bell Memorial and Manchester Scholarships.

ELECTION OF ASSOCIATES IN BUSINESS.

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

Ellis, John Alfred, King's Cliffe.
Folkard, Montague, York.
Hirst, Thomas, Bosccombe.

Ockwell, Edwin, Crayford.
Place, Edward Bland, Birmingham.
Woollons, Charles Henry F., London.

ELECTION OF ASSOCIATES.

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

Burgham, Harry H., London.
Chandler, Martin William, Swindon.
France, William Henry, Rotherham.
Hill, Richard Barker, Howden.

Smith, Albert George, Liverpool.
Umney, Ernest Albert, Sydenham.
Utley, Luke, Sutton.
Wrothwell, Fredk. J. H., Northallerton

ELECTION OF STUDENTS.

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

Alford, Edward, Plymouth.
Bailes, Arthur T., Stockton-on-Tees.
Bailey, Arthur Joseph, Birmingham.
Beardsley, Cyril, Belper.
Bell, Lilian A., Cambridge.
Bull, William Robert W., Bath.
Clarke, W. J., Stockton-on-Tees.
Daykin, Albert Ernest S., Ripley.
Dompé, Donato Onorato, Milan.
Edwards, George N., North Elmham.
Goeh, James Bowles, East Dereham.
Hutchings, Thomas, Launceston.
Jones, David, Kentish Town.

Jones, Henry Lloyd, Abergea.
Kidd, David Bell, Melton Mowbray.
Knight, Richard, Launceston.
Morris, George, Ludlow.
Packer, Frederick Ernest, Norwich.
Powell, Charles W., Middlesbrough.
Redfern, Harry Chaplin, Leek.
Ruff, William, Whitby.
Smith, Walter, West Hartlepool.
Stiles, Percy C. G., St. Ives (Hunts.).
Webb, Walter J., Newcastle-on-Tyne.
Wells, John James, Harrogate.
White, Frederick Ernest, Nunhead.

Wood, Robert John, Driffield.

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

APPOINTMENT OF COMMITTEES.

The Council went into committee to consider the arrangement of the different committees, as the result of which the following arrangements were made:—

Gen. Purposes.—The whole Council to meet on the evening before the meeting of the Council, and at such other times as may be necessary.

Finance.—The President (Mr. Hills), the Vice-President (Mr. Harrison), and Messrs. Allen, Carteighe, Grose, Hampson, Martindale, Newsholme, Park, Savory, and Storrar.

Benevolent Fund.—The President (Mr. Hills), Vice-President (Mr. Harrison), and Messrs. Atkins, Bateson, Bottle, Corder, Cross, Gostling, Johnston, Southall, Symes, and Young.

Library, Museum, School and House.—The President (Mr. Hills), Vice-President (Mr. Harrison), and Messrs. Allen, Atkins, Bottle, Carteighe, Hampson, Martindale, Newsholme, and Savory.

Law and Parliamentary.—The President (Mr. Hills), Vice-President (Mr. Harrison), and Messrs. Allen, Atkins, Bottle, Carteighe, Cross, Hampson, Johnston, Martindale, Park, Savory, Southall, Storrar, Symes, and Young.

Standing Committee to watch Parliamentary Business and take all action thereon in the interests of Chemists and Druggists.—The President (Mr. Hills), Vice-President (Mr. Harrison), and Messrs. Allen, Carteighe, Martindale, and Savory.

Research.—The President (Mr. Hills), Vice-President (Mr. Harrison), and Messrs. Carteighe, Ekin, Martindale, and Dr. Lauder Brunton, Professor Michael Foster, and Professor Edward Frankland.

Evening Meetings.—The staff of the Society's school, the Editor, and the Curator were requested to assist the President and Vice-President in making arrangements for the Society's evening meetings in London.

REPORT OF THE FINANCE COMMITTEE.

The SECRETARY read the report of this Committee, which was of the usual character, and recommended sundry accounts for payment.

Mr. CARTEIGHE, in moving the adoption of this report, said it contained nothing to which special attention need be called. The receipts and payments were of the usual character, and the like observation applied to the Benevolent Fund, to which he might add that they had received from the Secretary to the Edinburgh Chemists' Assistants' Association a guinea to this fund. They had, he was glad to say, now sufficient funds in hand to provide for another orphan. It had always been understood and loyally observed, that canvassing for subscriptions to the Orphan Fund was to be done with the special object in view

of not damaging the Benevolent Fund. It was therefore the more pleasing to reflect that whilst they were educating and maintaining one orphan they had now enough for another. He trusted that this husbanding of their funds might lead not simply to a continuance of the existing subscriptions, but also to a substantial addition to them.

The report was then adopted.

REPORT OF THE BENEVOLENT FUND COMMITTEE.

The report of this Committee recommended grants to the amount of £33 to the following cases:—

An Associate (1841-46) who has had eight previous grants, and who suffers from chronic bronchitis and asthma. (London.)

The widow of a Member and subscriber who has had two previous grants. (Motherwell.)

A sum for the completion of the education of orphans, who have received similar aid during the last four years. (London.)

Three cases were deferred for further information, and one was not entertained.

The VICE-PRESIDENT in moving the adoption of this report said the Committee had seven cases before them the previous day. Of these cases grants were made in three, three were deferred for further information, and one was declined. He thought he might well point to one of those dealt with as an example of the great value of this Fund. One of their grantees on this occasion was a widow left with several children, who had had several previous grants amounting to £50. The result had been that three of the children were now able to provide for themselves, a fourth they hoped would soon be able to do the same, and a fifth would be in a similar position in twelvemonth's time. He trusted that these examples would enable the Council and all concerned in the interests of this Fund to take heart and renewed courage from realising what might follow from enabling their orphans to go out into the world equipped for the battle of life.

Mr. HAMPSON asked to be permitted to add to those observations bearing on the working of the Fund the gratifying intelligence that a letter had been received from the executor of the late Mr. Taylor, of Nottingham, and a former associate in business of the Society, to the effect that he had left them a legacy of £500. This announcement, he hoped, might stimulate others into following so commendable an example. He proposed that a letter of hearty thanks be sent from the Society to the relatives of the deceased, acknowledging his gratifying remembrance of and assistance in the work they were carrying out.

The PRESIDENT, in putting this to the meeting, said he felt it would be carried with cordial unanimity.

LIBRARY, MUSEUM, SCHOOL, AND HOUSE COMMITTEE.

The report of this Committee stated that Professor Attfield's nomination of Mr. C. E. Ashby as demonstrator in the Laboratories was approved, and his appointment until the end of the session was agreed to. The Committee had also appointed Mr. H. L. Lee to act as lecture-room assistant until the end of the present session.

Library.

The report of the Librarian had been received, including the following particulars:—

	Attendance.	Total.	Highest.	Lowest.	Average.
April	{ Day	359	21	6	15
	{ Evening	98	9	1	5
Circulation of Books.	Total.	Town.	Country.	Carriage paid.	
April	171	91	80	19s. 10d.	

Donations to the Library had been announced (*Pharm. Journ.*, May 23, p. 410), and the Committee had directed that the usual letters of thanks be sent to the respective donors.

The Committee had recommended that the under-mentioned works be purchased:—

For the Library in London:—

- Pharmacopœia of Evelina Hospital.
- Wanklyn, Water Analysis, 8th edition.

For the Library in Edinburgh:—

- Wanklyn, Water Analysis, 8th edit'ion.
- Scott, Structural Botany.

Museum.

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

	Attendance.	Total.	Highest.	Lowest.	Average.
April	{ Day	369	31	7	15
	{ Evening	24	4	1	1

Donations to the Museum had been received (*Pharm. Journ.*, May 23, p. 410), and the Committee recommended that the usual letter of thanks be sent to the respective donors.

Mr. CARTEIGHE, in moving the adoption of this report, said there was nothing in its details to which attention need be called, and the report was adopted.

THE INAUGURAL ADDRESS.

It was resolved that the selection of a gentleman to deliver the inaugural address at the commencement of the autumn session should be referred to the Library, Museum, School, and House Committee.

THE BURROUGHS SCHOLARSHIP.

Mr. CARTEIGHE announced that the stock for this scholarship had been purchased, namely, £720 in New Zealand Consols, and he said it was necessary to affix the seal of the Society to a form authorising the Bank of England to pay the dividends and the Society's bank to receive them. He moved accordingly, and the motion being put to the meeting, was passed.

GENERAL PURPOSES COMMITTEE.

Mr. CARTEIGHE said that on receipt of the intimation from Professor Dunstan of his acceptance of the position in connection with the Imperial Institute, and resigning his position as Professor in the School and Director of the Research Laboratory, the General Purposes Committee was requested by the Council to consider the relations of the Society to the School and its general education scheme. With this view the Committee appointed a sub-committee of their number, which had had a good many sittings and submitted at the last meeting a short interim report. That interim report was approved by the General Purposes Committee, and afterwards by the Council, and would form part of a complete report to be made later on, when the whole subject had been considered and it could be put in a form suitable for publication. Its chief recommendation was that in future the teaching of chemistry in the Society's School should be entrusted to one person, who should deliver lectures on chemistry and physics, have charge of the educational laboratory, and also be director of the Research Laboratory. The Council, having adopted this report, authorised the Committee to place itself in communication with the present professor of practical chemistry, and accordingly a letter was addressed to him requesting him to favour the Committee with an interview. The result was that on Professor Attfield becoming acquainted with the wishes of the Committee, and as soon as he saw the obvious advantages which would accrue to the School if their proposed arrangement could be carried out, he with very great good nature at once placed his resignation in the hands of the Council. He (Mr. Carteighe) therefore had to report on the part of the General Purposes Committee that two letters had been received from Professor Attfield, one addressed to the Chairman of the Sub-Committee and one to the Council, resigning the position he had held for thirty-four years in the Society's School; and, further, the recommendation of the Committee that a resolution of thanks be passed to the Professor for his services. Such a resolution it would be his pleasure to propose presently. What he would now move was that the report and recommendation of the General Purposes Committee, with reference to the future teaching of chemistry in the Society's School, be received and adopted. He was sure the Council would appreciate the good fortune by which it was enabled to carry out a change of this kind at the earliest possible moment, and to that Professor Attfield's prompt action had contributed in a marked degree. A further recommendation of the Committee was that an advertisement inviting applications for the appointment of a professor to deliver lectures on chemistry and physics, to superintend the practical work in the School Laboratory, and to direct the Society's Research Laboratory, be inserted in such papers as the Sub-Committee think fit, and that it be further empowered to consider and report to the General Purposes Committee on the applications received in reply to such advertisement. The General Purposes

Committee had full confidence in the Sub-Committee which had been appointed, and he had no doubt the Council would adopt the recommendation. Later on it would be the duty of the General Purposes Committee to submit a complete report on the nature of the changes proposed, but he might say that one, which had already received the approval of the Council, was that the Council should take the Laboratory into its own hands, receiving fees and paying the professors, assistants, and demonstrators whatever sums might be determined upon, reverting, in fact, to the plan which was in vogue some years ago. The object of this and other changes, which would be duly reported, was that the School should be placed under the direct control of the Council, which should be able to deal with the fees in such a manner as possibly in some cases to reduce them, and at the same time, perhaps, lengthen the course and give more instruction in the shape of practical work in the Laboratory. The Professor, also, would devote his whole time to the duties of his office. The report recommended that Professor Attfield's resignation be accepted and that steps be taken to advertise for a professor to undertake the work under the new conditions, and obviously it was not possible to deal with the matter as a whole until an arrangement had been made with Professor Attfield.

The motion was seconded by Mr. Martindale, and carried unanimously.

VOTE OF THANKS TO PROFESSOR ATTFIELD.

Mr. CARTEIGHE next moved—

That the cordial thanks of the Council be given to Professor Attfield, F.R.S. for the services he has rendered to the Society during the thirty-four years he has held the distinguished position of Professor of Practical Chemistry in the Society's School. His efforts, while holding numerous honorary offices in promoting pharmaceutical education, and in encouraging good feeling amongst all those engaged in the practice of pharmacy will always be appreciated by the Council and the members and associates of the Society.

Professor Attfield was one of the Society's early pupils. He went from their School as an assistant or demonstrator to Dr. Edward Frankland at St. Bartholomew's, and eventually came back to the Society's School in the position of director of the chemical laboratory. Up to the time of this appointment Dr. Redwood had charge of the chemical laboratory as well as of the lectures, but as he was getting older and was not able to devote so much time to the superintendence of practical chemistry as the then Council thought necessary, Dr. Attfield was appointed director of the laboratory, and subsequently professor of practical chemistry, which position, as he had already observed, he held for thirty-four years. It was very unusual for so young a man as Mr. Attfield then was to be appointed to so responsible a position, but as a fact he was looked upon as one of the rising young men from their School, and especially as being a good teacher and a good organiser; hence his appointment, though so young, to the directorship of the laboratory. His work had been of a varied kind, but probably that which he would prefer to dwell upon, that to which he devoted most of his attention, was his literary and scientific work in connection with his well-known book, and perhaps also his work in connection with the editing of the last Pharmacopœia, its addendum, and the edition now being prepared. Professor Attfield was an extremely good organiser, and a very capable man in many ways, and in saying "good-bye" to him officially they might congratulate themselves on the fact that fortune had smiled upon his efforts in various ways. Although he was retiring from this important position he was only sixty years of age, and happily was in better health than was the case some few years ago. Those who were approaching that age would probably think that it was about the prime of life, and that having done this work for thirty-four years, should he begin again they would hope it might prove free from the cares and routine attaching to teaching, and that for at least another twenty years he might enjoy uninterrupted happiness in such pursuits as he should think fit to follow. Professor Attfield was identified with the Society as one of its honorary members, having been elected some years ago, so that he already possessed the highest honour which it was in the power of the Council to bestow on any distinguished man, and he had all the privileges of an ordinary member, so that, although he would be no longer Professor, he would be in touch with the Society, and would be able to render it important assistance in many ways. They parted with him officially in the belief that he would still retain his interest in the Society, and that they might be able still to avail

themselves of his sterling common-sense and great business capacity in dealing with the affairs of the Society, especially in connection with educational matters. He had known the Professor probably as long as anyone there, though they were all his personal friends and would all join with him in wishing Dr. Attfield and his family all possible welfare and happiness in future.

Mr. HAMPSON, in seconding the motion, said he would not attempt to add to what had been said by Mr. Carteighe. He had always found Professor Attfield a man of great ability and perseverance, and he was sure his long services were appreciated by all members of the Society.

The PRESIDENT said he had asked Mr. Carteighe to take charge of this resolution because he had the subject more at his fingers' ends. It was not from any want of compliment to Professor Attfield, who was a personal friend, and he cordially echoed all that had been said by Mr. Carteighe in moving the resolution. He felt sure that Professor Attfield carried with him the best wishes of the whole Council.

The resolution having been carried unanimously,

Mr. CARTEIGHE said he must apologise for not having referred to the fact that both in his letters and in his interview with the Committee, Professor Attfield distinctly said that if he had been thirty years younger he should have offered himself as a candidate for the new appointment, but under the circumstances he felt it impossible to do so.

LEGAL BUSINESS.

The Council then went into Committee to consider the legal portion of the report, which included the usual letter from the solicitors. On resuming, the report and recommendations were received and adopted, and special resolutions were passed authorising proceedings to be taken against certain persons named.

PARLIAMENTARY INTELLIGENCE.

GRANTS FOR TECHNICAL EDUCATION.—One of the first acts of the House of Commons on assembling after its brief Whitsun recess was to order a return showing the extent to which, and the manner in which, local authorities in the United Kingdom have applied or are applying funds to the purpose of technical education (including science, art, technical and manual instruction) during the years 1894-5 and 1895-6. The return when presented will form a valuable commentary on the various Local Taxation and Technical Instruction Acts passed during recent years, and may furnish material for earnest reflection.

THE GENTLE ART OF OBSTRUCTION.—Few pharmacists would suspect Dr. R. Farquharson, M.P., of obstructive proclivities, but on Tuesday last he apparently found it necessary to vindicate his principles by a sturdy disregard to relevancy. The occasion was the consideration in Committee of the Diseases of Animals Bill, and it is recorded that the Chairman had to call the attention of the Committee to continued irrelevancy on the part of Dr. Farquharson, and to direct the honourable gentleman to discontinue his speech.

LONDON TRADESMEN ON THE SHOPS BILL.—A deputation of metropolitan retail tradesmen, representing drapers, grocers, provision dealers, oil and colourmen, pawnbrokers, watchmakers, hosiers, etc., waited upon members of Parliament interested in the Shops (Early Closing) Bill, in one of the committee rooms of the House of Commons, on Monday night last. Major Dalbiac, the Hon. H. V. Duncombe, Mr. H. S. Samuel, Mr. Money Wigram, and other members of Parliament were present, Major Dalbiac occupying the chair. It was stated that though the deputation was organised by the Voluntary Early Closing Association, it was, nevertheless, a representative body of traders, both with regard to trades and districts. Those represented protested against the Shops (Early Closing) Bill, considering it unworkable, unnecessary, inequitable, and unjust. The Bill was further objected to as being un-English and interfering with adult labour, whilst reference was made to the enormous difficulties which must of necessity arise as to the boundary of any district. It was also urged that London should be entirely excluded from the Bill, one speaker pointing out that the average draper of London now voluntarily gives his assistants forty-five working days holiday per year. Major Dalbiac and the Hon. H. V. Duncombe assured the deputation of their sympathy and support in opposing the Bill.

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THE COUNCIL MEETING.

THERE was a full attendance of members of the newly re-constituted Council last Wednesday, and in accordance with usual custom the chair was taken by Mr. CARTEIGHE. After the minutes of the May meeting had been read and confirmed, letters received from Professor BAYLEY BALFOUR, Professor THORPE, and Professor TSCHIRCH, the recently elected honorary members, were read, expressing their appreciation of the honour conferred. A similar letter of acknowledgment was read from Professor PLANCHON.

In the ballot for the election of PRESIDENT for the ensuing year, the votes were unanimously in favour of Mr. WALTER HILLS, who on taking the chair, and thanking the Council for the honour conferred upon him, expressed his satisfaction that two of the present members of Council, Mr. BOTTLE and Mr. HAMPSON, occupied that position when his late uncle, Mr. THOMAS HYDE HILLS, was elected PRESIDENT twenty-three years ago. Although the duties appertaining to the office of President have become more onerous since that time, and they would be especially so in following a President who has so long occupied the position with unparalleled ability, Mr. HILLS said that he should rely upon receiving the help of his colleagues in his endeavour to fulfil the duties of the office with credit, and to accomplish something useful.

In the ballot for Vice-President, Mr. JOHN HARRISON, was re-elected and, taking advantage of the opportunity thus afforded of speaking on behalf of the Council, expressed the conviction that the support asked by the PRESIDENT would be fully and freely accorded. In thanking the Council for the renewed proof of confidence afforded by their re-electing him, Mr. HARRISON said that his interest in the work of the Council would be as great as heretofore.

Mr. ROBERT HAMPSON was re-elected Treasurer, and in acknowledging this compliment, promised that his tenacity in adhering to the funds should not be relaxed.

The PRESIDENT then moved a resolution of thanks to Mr. CARTEIGHE for the services he has rendered to the Society, adding that although no formal resolution could express their feelings of gratitude for what he had done, he hoped that some at least of his splendid powers of mind and body would continue to be devoted to the Pharmaceutical Society.

In seconding this motion, the Vice-President said that it would be impossible to find anyone more loyal to the Society or more desirous of protecting the interests of those engaged in pharmacy, and he felt confident that sooner or later Mr. CARTEIGHE would have the satisfaction of seeing the bread he has cast so abundantly on the pharmaceutical waters would bring forth fruit to the great advantage of the Society.

Mr. BATESON supported the motion on behalf of members of the Society outside the Council, and on being put by the PRESIDENT, it was carried with acclamation.

Mr. CARTEIGHE, in returning thanks, assured his colleagues that this expression of their thanks was very welcome, and like the kindness he had met with in all parts of the country, it showed that the debt was really on his side.

The Standing Orders of the Council were then re-enacted for the ensuing year. Mr. RICHARD BREMRIDGE was re-appointed Secretary and Registrar; Mr. J. R. HILLS was re-appointed Assistant Secretary in Scotland; and Mr. E. M. HOLMES, Curator of the Society's Museum. As Examiners for the Council prizes, Messrs. FRANKLAND, RANSOM, and SEWARD were appointed, and for conducting the Jacob Bell Scholarship examinations, Messrs. LUCAS, BASCOMBE, and PINCHES.

The additions to the Society comprised fourteen Associates and twenty-seven students.

The report of the Finance Committee was of the usual character, and was adopted on the motion of Mr. CARTEIGHE, who mentioned that a contribution to the Benevolent Fund had been received from the Edinburgh Chemists' Assistants' Association, and that there are now sufficient funds in hand to provide for another orphan.

On the recommendation of the Benevolent Fund Committee, three grants amounting in all to thirty-three pounds were ordered to be paid, and the Vice-President, in moving the adoption of the report of this Committee, pointed out how useful grants from the Fund might be in enabling a widow left with several children to provide for their acquiring a position of independent support.

The PRESIDENT announced that a letter had been received from the executors of the late Mr. TAYLOR, of Nottingham, to the effect that he had left the Benevolent Fund a legacy of five hundred pounds.

The report of the Library, Museum, School, and House Committee contained, in addition to the usual statistics of attendances in the Library and Museum, recommendations as to the appointment of a demonstrator and a lecture assistant. The arrangements relating to the delivery of an inaugural address were referred to this Committee.

On the motion of Mr. CARTEIGHE, it was resolved that the seal of the Society be affixed to a form authorising the payment of dividends on the stock purchased in connection with the Burroughs Scholarship.

Mr. CARTEIGHE then reported the substance of an interim report made by the General Purposes Committee upon the relations of the Society to the School and its general education scheme. The chief recommendation was that the teaching of chemistry should in future be entrusted to one professor, who should also be Director of the Research Laboratory. The resignation of Professor ATFIELD having followed upon his knowledge of the decision come to by the Council, Mr. CARTEIGHE went on to report the recommendation of the Committee that the Professor's resignation be accepted, and he moved that a resolution be passed thanking him for his services, also that an advertisement inviting applications

for the appointment should be published, and that the sub-committee be empowered to consider and report to the General Purposes Committee on applications received. Pending the issue of a complete report on the contemplated changes, Mr. CARTEIGHE mentioned that the Council has already approved of the proposal that it should revert to the plan of paying the professors, assistants, etc. and taking the fees, so that the School should be under the direct control of the Council, the Chemical Professor devoting the whole of his time to the duties of his office. The adoption of these recommendations having been proposed by Mr. CARTEIGHE, and seconded by Mr. MARTINDALE, a resolution was passed to that effect.

Mr. CARTEIGHE then moved that the cordial thanks of the Council be given to Professor ATTFIELD for his services as Professor of Practical Chemistry (see p. 450), reviewing the past work of the Professor, and expressing the hope that the Council would still have the benefit of his assistance in many ways as one of the honorary members of the Society. This motion was carried unanimously.

THE GENERAL MEDICAL COUNCIL AND THE NEW PHARMACOPŒIA.

THE sixtieth session of the General Medical Council was opened on Tuesday afternoon last at the new council room, 299, Oxford Street, London, and after the Registrar had notified the Council that the appointment of Sir RICHARD QUAIN as President terminated on May 26 last, Sir DYCE DUCKWORTH, the Senior Treasurer, was appointed to the chair. Subsequently, it was resolved, on the motion of Sir WILLIAM TURNER, seconded by Mr. WHEELHOUSE—

“That Sir Richard Quain, Bart., be re-elected President of the Medical Council till the expiration of the term for which he has been nominated a member of the Council by the Crown.”

The PRESIDENT, after thanking the Council for his re-election, referred first in his address to the chief features of interest in the history of the Council. He then dealt briefly with the incidents of his “stewardship” since the previous meeting of the Council, and next proceeded to explain what had been done in connection with the revision of the Pharmacopœia. Sir RICHARD observed that whilst progress has been continuous it has necessarily been slow, in consequence of the great care that is being bestowed upon the work. The subjects brought under consideration at the meetings of the Pharmacopœia Committee have been those relating to general construction, omissions and additions, weights and measures, nomenclature, dosage, and the classification of the monographs into ten sections for revision purposes. Four such sections only are as yet in type, two of these have been revised, and two await revision. The Pharmacopœia Committee of the Pharmaceutical Society has also been engaged more or less continuously in replying to the many questions of the Medical Council’s Committee, and has already sent in three reports. It has been decided to introduce the metric system of weights and measures side by side with the imperial system throughout the general text of the Pharmacopœia, and to employ the metric system alone in the paragraphs relating to analysis. Finally, the PRESIDENT stated that, “under present circumstances, to forecast the period at which the new Pharmacopœia will be issued is impossible. In the meantime, it has been found necessary to order five hundred additional copies of the present issue.”

ANNOTATIONS.

DEATH OF SIR J. RUSSELL REYNOLDS.—The failing health which caused Sir John Russell Reynolds to relinquish the post of President of the Royal College of Physicians some two months ago has soon resulted in his death, which occurred on Friday, May 29. Dr. Russell was educated at University College, London, where he obtained three gold medals, and he graduated in the University of London in 1851, when he took the M.B. degree with honours in two sections. Five years later he was elected Fellow of University College, and subsequently Fellow of the Royal College of Physicians and of the Royal Society. He was at one time Holmes Professor of Clinical Medicine, and also succeeded Sir William Jenner as Professor of the Principles and Practice of Medicine. Elected President of the Royal College of Physicians in 1893, in succession to Sir Andrew Clarke, Dr. Reynolds was twice re-elected to that position, and has also acted as President of the British Medical Association. His name appeared in the list of New Year’s honours for 1895, a baronetcy being then conferred on him by the Queen.

DEATH OF SIR GEORGE JOHNSON.—Early in the week a report appeared that Sir George Johnson had a sudden attack of illness, and on Thursday the *Times* announced its fatal termination. Up to Monday last Sir George was engaged in writing on the subject of his treatment of cholera, but on returning from a drive in the afternoon he became unconscious, and remained in a serious condition until his death on Wednesday evening. Sir George was born in 1818, and was throughout his life connected with King’s College Medical School, both as a student and in various prominent positions, contributing largely by his researches and publications to advance the knowledge of diseases. He was made a Fellow of the Royal College of Physicians in 1850, and in 1872 a Fellow of the Royal Society; in 1889 he was appointed a physician extraordinary to the Queen, and in 1892 he received the honour of knighthood.

EUPHORBIIUM AS A CAUSTIC.—A correspondent of the *Lancet* states that the fresh milky juice from the stems of the “common garden euphorbium” is used as a remedy for warts in Normandy, and that he has been able to verify the claims made on its behalf by removing a number of warts from a girl’s hands. According to Dorvault’s ‘L’Officine,’ euphorbium resin enters into the composition of an “everlasting blister,” and is also used in some topical applications for cancer and in veterinary remedies, whilst “aveloz nült,” a cancer specialty, is composed of the same drug. The original aveloz or alvelos was, however, obtained from a Brazilian plant nearly allied to *E. euphorbia anomala*, Salzm. (*Ph. J.* [3], xv., pp. 504, 614. The two species common in English gardens, viz., *E. peplus* and *E. helioscopia*, have long been a popular remedy for warts in England, and the wood spurge, *E. amygdaloides*, is even more acrid than the two species mentioned, so that it has to be used with the utmost caution on persons with abnormally sensitive skin. The exact therapeutical action of the acrid principle present in so many of the genus does not seem to be thoroughly understood, but it appears probable that it might be turned to account in diseases dependent on local deficiency of nerve power, as in leprosy, cancer, and local paralysis, etc., and it is at all events worthy of scientific investigation. It may be worth while recalling the fact that in Brazil the local inflammation caused by alvelos milk is kept within proper bounds by the use of infusion of tobacco (*Ph. J.* [3], xv., p. 245).

THE SILVER YEN.—Referring to the value of the Japanese yen, Mr. William Shepperson writes from Aston Clinton to say that when he was in Japan in 1884-85, it depended much whether paper or silver money was in question. The silver yen is of the same value as the dollar, and varies with the fluctuations of the silver market. Mr. Shepperson visited the Mint, which he describes as a perfect one, at Osaka. This was originally the Hong-Kong Mint, and was purchased from the British. With one exception it was entirely worked by Japanese, and could not possibly have been better managed. Our correspondent possesses several interesting and scarce specimens of the Japanese gold and silver coinage, and also of Corean money, which did not circulate long as it cost more to produce than its face value.

THE POSSIBILITY OF MECHANICAL FLIGHT.—Successful experiments with a flying machine have been performed by Mr. S. P. Langley, Secretary of the Smithsonian Institution, the facts being vouched for by Mr. Alexander Graham Bell, the inventor of the telephone. The aerodrome employed weighed about twenty-five pounds, and measured twelve to fourteen feet from tip to tip, the method of propulsion being by aerial screw propellers, actuated by steam power. In one experiment the aerodrome rose, in the face of the wind, to a height of nearly a hundred feet, and the actual length of flight exceeded three thousand feet, whilst the velocity attained was between twenty and twenty-five miles an hour.

THE KELVIN JUBILEE.—The following programme of the celebrations of the jubilee of Lord Kelvin as Professor of Natural Philosophy in the University of Glasgow has been published in *Nature*:—On the evening of Monday, June 15, at 8.30 p.m., the University will give a conversazione, when there will be an exhibit of Lord Kelvin's inventions. On Tuesday, June 16, addresses will be presented to Lord Kelvin by delegates from home and foreign university bodies, from several of the learned societies of which he is a member, from student delegates from other universities, and from the students and graduates of the University of Glasgow. It is expected that the honorary degree of LL.D. will be conferred on the same day on several of the distinguished foreign visitors. On Tuesday evening, June 16, the city will give a banquet to Lord Kelvin, to which the visitors who have come to do him honour have been invited. On Wednesday, June 17, the senate of the university will invite the visitors of the university staff to sail down the Clyde. The students of the university also invite the student delegates from other universities to a similar trip. Representative scientific men—about fifty in number—from America and the British colonies, and from all the European countries, besides about one hundred and fifty from the United Kingdom, have signified their intention to be present.

PRESCRIBING BY CHEMISTS.—According to the *British Medical Journal* of last week, in answer to a correspondent, "Chemists who prescribe either evade or break the law, and are frequently punished on the prosecution of the Apothecaries' Society or the Medical Defence Union." Without any desire to defend the practice of prescribing by chemists, it may safely be asserted that the latter statement is quite wrong. An isolated case may occur now and again, but so far from chemists being "frequently" punished for the alleged offence, these instances are of very rare occurrence indeed, and it is much to be regretted that an important medical organ should give publicity to such a mis-statement of fact. Moreover, with regard to the first statement in the above reply, prescribing in itself is not a legal offence, the penalty under the Apothecaries Act—the only Statute protecting medical practice—being for acting or practising as an apothecary, which is not the same thing as prescribing.

PHARMACISTS AND THE X-RAYS.—The Leeds correspondent of the *Daily News* has telegraphed to that paper, announcing that a Leeds chemist, Mr. Branson (presumably of the firm of Reynolds and Branson), has announced a new and most interesting development in connection with the Röntgen or x -rays. He now finds no difficulty in penetrating bone as well as flesh by means of the rays, and he is said to have succeeded in taking photographs for surgical purposes, showing the presence of a piece of steel needle in bone. Before this he had revealed the position of a bullet embedded a quarter of an inch in the bone, but until recently had not been able to show anything so diminutive as a needle in bone. The result has been obtained with a new form of tube.

PRODUCTION OF CAOUTCHOUC IN BRAZIL.—The *Bulletin Commercial* states that, according to American statistics, the production of caoutchouc in the province of Para (Brazil), which is constantly on the increase, has doubled in the last twelve years, and quintupled in the last thirty years. The production of 1895 was 13.4 per cent. greater than that of 1894, and 10.2 per cent. greater than that of 1893. The following statement shows the value of the exports in certain years:—

Years.	Value.
1865	£8,243,000
1870	10,528,000
1875	15,144,000
1880	18,889,000
1885	29,310,000
1890	36,300,000
1895	46,363,000

The imports of caoutchouc into the United States have increased in about the same proportion as the exports from Brazil, but in 1895, for the first time, the amount of caoutchouc sent from Para to Europe was greater than that sent to the United States. The increase is specially noticeable in England, France, and Germany, where Para caoutchouc is in great demand.

OPIUM IN CHINA.—The importation of Indian and Persian opium at Foochow still continues to decrease, native opium gradually but surely driving them out of the market. The net import for 1895 was 3563½ chests, as against 3871 in 1894, and 4479 in 1893. Malwa opium realised during the past year 675 to 760 dol.; Patna, 675 to 880 dol.; Benares, 670 to 820 dol.; Persian, 757 to 820 dol. In Foochow, as in other parts of China, the Indian drug is becoming exclusively the luxury of the rich smoker, whilst the coolies satisfy their craving either with Szechuan opium or with the inferior stuff produced in the neighbourhood of Fu Ning.

GROCERS AND THE SALE OF MEDICINES IN FRANCE.—The Paris correspondent of the *Medical Record* recently commented upon the anomaly that grocers in France should be permitted to sell candies and pastilles containing santonin, when the laws regulating the sale of drugs by pharmacists are so stringent. Thus, whilst the pharmacist is forbidden to sell twenty drops of laudanum without a physician's prescription, the grocer may distribute santonin by the pound in the forms specified. That the danger indicated is a real one is shown by the fact that many serious accidents have occurred through such sales by grocers.

THE BRITISH ASSOCIATION, which goes to Toronto next year, is to be invited to visit Bristol in 1898, a suggestion to that effect having been made to the Mayor of the western city by a deputation representing the chief local scientific societies and educational institutions. Sebastian Cabot, who discovered the American mainland in 1497, started on his second voyage from Bristol, his native place, in 1498, and *Nature* thinks a visit to the city in 1898 would be very appropriate, and serve to commemorate the fourth centenary of one of Bristol's greatest citizens.

CHEMICAL SOCIETY.

An extra meeting was held on May 28, Mr. A. G. Vernon Harcourt, F.R.S., President, in the chair, and a large and distinguished audience assembled to hear the Lothar Meyer Memorial Lecture, by Professor P. Phillips Bedson, D.Sc.

LOTHAR MEYER MEMORIAL LECTURE.

The lecturer gave a clear and systematic sketch of the late scientist's life. Lothar Meyer, one of two brothers, commenced life as a student of medicine under very adverse conditions of health, at Oldenburg, graduating there as M.D. Bunsen's reputation attracted him to Heidelberg, where he studied chemistry until 1856. At Königsburg he taught mathematics and physics for a year and a half, and his thesis on the "Action of Carbon Dioxide in the Blood" got him the degree of Ph.D. In 1864 he published his book on 'Moderne Theorien der Chemie.' After a short sojourn at Breslau he undertook the duties of Professor of Forestry at Eberswalde, where he remained for two years. There, however, he had no outlet for his abilities as an investigator, and he naturally wished to get into a more congenial atmosphere. His Professorship in the Polytechnicum at Karlsruhe, where we next find him, was interrupted by failure of health (1874-5). Then, in the hostilities between France and Germany the Polytechnicum became a hospital, and Lothar Meyer became for the time being a surgeon. At the University of Tübingen he was Professor of Chemistry, and had the opportunity of resuming his investigations, his name attracting students from many lands.

In 1887 Lothar Meyer visited this country, and attended the meetings of the British Association in Section B at Manchester, and although he could speak English fluently he addressed the section in German.

In April of last year illness again overtook him, and he died.

Lothar Meyer's publications embraced a variety of subjects. His first was on the condition in which gases exist in the blood, and was published in 1856. His conclusions on this subject are valid at the present day.

At Breslau he wrote a paper on the "Estimation of Carbon Dioxide in the Water of the Springs." Professor Bedson here referred to the recent work of Rayleigh and Ramsay on the subject of the gases evolved from these springs.

At Karlsruhe and Tübingen, Lothar Meyer brought out a long series of publications, and especially may be mentioned his work on the 'Atomic Weights of the Elements.'

A number of tables—the Elements, and the Atomic Weight and Atomic Volumes—were exhibited on the walls, and Professor Bedson pointed out the differences between the weights in the old and new systems.

Lothar Meyer's labours were not all for science. He took much interest in educational matters, and wrote articles on various subjects to magazines. He strongly advocated mathematics and languages for education, and considered that original labour should take the place of examinations. Finally, it was stated that he was a recipient of the Davy Medal of the Royal Society.

Sir Henry Roscoe in a few words proposed a vote of thanks to Professor Bedson for his lecture, and Dr. Gladstone seconded.

Professor Russell, at the request of the President, spoke a few words. He had a clear remembrance of Lothar Meyer as a fellow student, having worked in the next desk to him in Bunsen's Laboratory. He was a thorough good companion.

The President said that at Manchester, at the meeting of the British Association, he had the pleasure of making Lothar Meyer's acquaintance.

Professor Bedson briefly replied, and the proceedings terminated.

APOCODEINE HYDROCHLORIDE AS AN EXPECTORANT, ETC.—
Murrel and Meder agree that apocodeine acts chiefly as an expectorant, while Guinard is followed by Meder in attributing to it a markedly sedative action in maniacal cases. The administration, per os, as well as by subcutaneous injection, gives rise to intestinal peristalsis and produces one or two evacuations. The sedative dose is from 2 to 6 centigrammes either subcutaneously or internally. For internal administration apocodeine hydrochloride, 50 centigrammes; distilled water, 100 grammes; syrup of raspberries, 25 grammes. One half to one teaspoonful for a dose. Or subcutaneously, apocodeine hydrochloride, 20 centigrammes; distilled water, 10 grammes. One Pravaz syringe-ful at a dose (*Intern. Med. Mag.*, v., 129, after *Therapeut. Woch.*).

SCHOOL OF PHARMACY STUDENTS' ASSOCIATION.

A meeting was held on Thursday, May 28, Mr. E. J. Eastes occupying the chair. After the minutes of the previous meeting had been read and confirmed, Mr. C. E. Ashby read the following "Report on Botany":—

RECENT WORK IN BOTANY.

BY C. E. ASHBY.

The behaviour of the cell-nucleus at different periods in the life of a plant has during recent years been the subject of very minute investigation. You will remember that the nucleus has as its groundwork a modified form of protoplasm, within which lies a coiled thread of linin containing small granules of chromatin. On the occurrence of nuclear division, the thread breaks up into distinct portions containing now conspicuous masses of chromatin embedded as before in linin. These portions of the thread are known as chromosomes. At the next stage of the division each chromosome splits into two halves, one of which passes to each of the daughter nuclei. In the latter the chromosomes again form a thread by uniting end to end. When the daughter-cells divide the process repeats itself, and the thread of linin invariably breaks up into the same number of chromosomes as did the thread in the mother-cell. The nuclei, then, of any individual will all have the same number of chromosomes. It is extremely probable that the chromosomes do not during the process lose their physiological identity, for striking similarity has in some cases been observed between their positions and form at the end of one division and at the commencement of the next. This will be dealt with later. The nuclear thread may be compared to a chain with a definite number of links. Cell-division will then consist in the separation of the links, their splitting in half and the joining of the halves into two fresh chains, each with the same number of links as the original one. Such is the process of cell-division as found in the cells which form the plant body.

In every nucleus of the vegetative parts of the plant the number of chromosomes is the same, but in the spores, and in the generation developed from the spore, half this number is invariably found. There is a particular division of the nucleus which precedes the formation of the spores in which this reduction in number is effected. This is known as the reducing division. The manner in which the reducing division occurs has been more or less satisfactorily traced by several botanists. The chromosomes appear to possess two axes along which division can take place. What we may term vegetative cell division consists in the splitting along the longitudinal axis. Less is known of the reducing division, but careful investigation has proved almost conclusively that it takes place along the transverse axis. It is probably more correct to look upon the bodies which undergo longitudinal splitting, not as single, but as pairs of chromosomes, closely united end to end. Reducing division consists in the separation of these individuals, their distribution to two nuclei, and reunion by their ends into pairs.

These facts afford ample scope for theory. We will first take up the subject from the morphological point of view. Consider the case of a unicellular organism which has not attained sexual differentiation. The very simplest plants we know among the algæ are such. In their single nuclei are enclosed a definite number of chromosomes. The plant is reproduced by mere cell-division, and the daughter nuclei each possess the same number of chromosomes as the original mother-cell. We have abundant evidence to show that progressive development in any direction remained in abeyance as long as the only method of reproduction followed the

asexual or purely vegetative plan. If then the offspring of our plant are to rise in the scale of creation they must develop a sexual mode of reproduction. This might be brought about by one of the daughter-cells, without undergoing any further modification, becoming a gamete and uniting with a similar cell. The product is an individual with twice the original number of chromosomes. All the asexually produced offspring of this cell will now have the double number. If its gametes were to have this number also the individuals of the next generation would have four times the original number, and so in the course of a few generations the number of chromosomes would become infinite. Reduction is necessary at some phase before the coalescence of the gametes in order to prevent this increase. The process has been observed in every class of the vegetable kingdom, but the extreme minuteness of the chromosomes of the cryptogams renders investigation in this group somewhat difficult. We shall find it instructive to examine the process in connection with the life history of a phanerogam. We have seen that the remote ancestors of the phanerogam were asexual plants. These very soon attained sexual differentiation, but at the same time a check was put upon numerical increase, and to compensate for this various asexual reproductive mechanisms were elaborated. Flowering plants, we find, produce spores in great numbers upon the generation which results from the fertilised gamete.

The nuclei of the spores contain only half the number of chromosomes present in the nuclei of the plant which produces the spores. That this reduction in number is of first importance to the plant is evident from its regular and universal occurrence. But it must not be regarded as a process which has gradually been developed and perfected by reason of its utility in the plant's economy. On the contrary, it makes its appearance at the same time as sexuality, to which it is a necessary complement. The reduction in the number of chromosomes really marks the return in the fresh generation to the representative of the primitive form in which the early ancestors of the plant existed. This form, as found in flowering plants, has advanced far up the scale of development. It is no longer unicellular; it has attained sexuality and, in addition, dimorphism, some of the individuals being male and others female. The gametes it bears when they unite give rise to the sporophyte, a generation with the double number of chromosomes in each nucleus, and which must be looked upon as of more recent development than the small gametophyte, for the especial purpose of providing for the sufficient increase in number of the individual.

Passing from the morphological side of the subject we will take it up in its physiological aspects. How is it that a plant shows the same tendencies and characters in all its parts, and that these again are repeated in its offspring? Are these tendencies in some way impressed upon material which pervades the whole plant, and which is transmitted to its offspring? If this be the case, the nucleus is clearly the structure to which this property belongs. This body is found in all living cells, and functions of vital importance take place within it, and furthermore, it is always formed from another nucleus, and on the occurrence of fertilisation the nuclei of the uniting cells completely fuse. We are further led to believe that hereditary characters centre in the chromosomes. These bodies show a definite organised structure; they are constant in number, and divide into equal halves at cell-division, and as we have seen, it is probable that they retain their physiological individuality. The chromosome, then, is regarded as an element of the nucleus charged with all the hereditary characters of the species. In support of this view we find that equal division of the chromosomes, as far as can be ascertained, always takes place, and with it an equal distribution of characteristics. Also Gruber has found

that if a unicellular organism be cut into several portions, one of these, though only containing a fragment of the nucleus, is capable of growth, producing an individual with all the characteristics of the parent. Strasburger has observed that in the division of the pollen mother-cells of *Hemerocallis fulva* single chromosomes not infrequently remain behind in the equatorial plate of the nuclear spindle. These chromosomes induce changes in the surrounding protoplasm, and develop into pollen-grains—usually very small, but still having the characteristics of the species.

It would at first sight appear that a single chromosome in each nucleus would be all sufficient for the transmission of individual characteristics. But should this undergo apparently accidental variation the entire character of the individual might be changed and its chance of life seriously affected. If, instead, a number of chromosomes are present, slight variations in one or two of these will be counterbalanced by the constancy of the greater number, and are not likely to so alter the course of the life of a plant as to unfit it for its environment.

Since the same number of chromosomes are always found in the two gametes between which fertilisation takes place, the two parents would presumably impress their characteristics upon the offspring to an equal extent. Frequently this is the case, but at other times the peculiarities of one parent are more pronounced in the offspring than those of the other, as though the chromosomes of this parent masked to some extent the influence of those of the other in the daughter nuclei. At the reducing division the chromosomes of the nuclei of the mother-cells separate into two groups. These groups contain the same number of chromosomes, but there may be considerable difference in their character. It might so happen that half of the chromosomes from each of the parents of the plant go to each spore, in which case the spores would, in all probability, transmit the characters of the actual plant by which they were produced. Or it might happen that all the chromosomes from one of the parents of the plant went to one spore and all those from the other parent to the other spore. In this case the spores would transmit the characters not of the plant upon which they were formed, but of the two parents of that plant; one spore being exactly like the spores of the female parent and the other like the spores of the male parent. The union of chromosomes in pairs is so complete that it is highly probable that they lose their identity on union. The resultant pair will have characters derived from the two individuals, but the physiological identity of the latter will be lost. The nuclei of hybrids are built up of two kinds of chromosomes, those of one parent differing markedly as a rule in character from those of the other. As a consequence hybrids show a combination of the qualities of the two parents. At the reducing division the chromosomes are re-sorted, as it were, to form the spores. These receive chromosomes representative of each parent in varying numbers, and therefore have characteristics varying between those of the parents. Many of the spores are almost exactly like those of one parent, many closely resemble those of the other, while many have the chromosomes so combined that their characters combine those of both parents.

At the conclusion of the paper a discussion took place to which Mr. H. Brown and the Chairman and Secretary contributed.

The following "Report on Physics" was then read by Mr. T. A. Henry:—

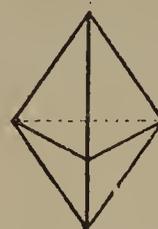
THE RELATION OF CHEMICAL NATURE TO PHYSICAL CONSTANTS.
BY T. A. HENRY.

Although many important and far-reaching discoveries have been made in this branch of science during the past year, I do not think there is anything in the work recorded which would be of

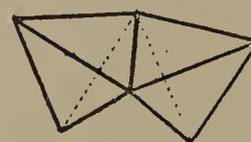
interest to pharmaceutical students, and to the discussion of which we could profitably devote one of our meetings; so that in compiling this report I have written instead a short account of the more recent developments of what is now called physical chemistry. The evidence of this inter-relationship of physical condition and chemical nature presents itself almost at the commencement of one's study of organic chemistry. We find that the physical condition passes from simplicity to complexity as we go up any homologous series of carbon compounds. We have an ideal case in the paraffins; the simplest members of the series are gaseous, and as we pass up the series we come to liquids, viscous liquids, semi-solids, and solids. The physical constants again show the same gradual alteration; beginning with the liquid members we find that for every addition of CH_2 we have a rise, tolerably constant, of about 18° to 20° C. in the temperature of the boiling point. Similarly, the melting points of those solid paraffins, which have been obtained in anything like a pure state, show the same gradual rise. This alteration of constants is what one would expect from purely physical considerations. The conversion of any liquid into a gas involves the rendering latent of a certain amount of energy (supplied in the form of heat), and we would naturally expect that to change a liquid whose molecules are heavy (comparatively speaking) into a gas would involve a greater expenditure of energy than the conversion of a liquid whose molecules are light, that is, other conditions being the same, we would expect a complex substance to have a higher boiling point than a simpler one of the same series.

The whole subject of the inter-relation of the physics and chemistry of substances has absorbed a great deal of attention of late years, chiefly because it is generally recognised that it is in this direction probably that some light will ultimately be shed upon the methods by which complex substances are built up from simpler ones, or even from elementary bodies; but apart from these ultimate considerations, the subject is one of immense interest to every working chemist, for chemistry has secured many new methods of dealing with its problems as the result of physico-chemical research; for instance, the whole subject of stereo-chemistry is founded upon the observation that certain substances have the power of causing rotation of the plane of a ray of polarised light, and you know how far-reaching have been the effects of stereo-chemical considerations. The valuable work carried out by Guye and others on the alteration of rotation amount, due to the substitution of heavy radicals for light ones (without disturbing the general order of the original compound), has resulted in a method of determining the position of the centre of gravity for a great number of substances. The application of this method is simple when the substance contains only one asymmetric carbon atom, but is a little more complicated when we have to deal with substances containing multiple asymmetric carbon. But here, also, the same workers in an ingenious system of experiments, wherein the optical effect of each asymmetric carbon was successively masked, have shown that in such compounds "the total optical effect is the algebraic sum of the optical effects of the several asymmetric carbons," and so the effect of each can be satisfactorily allowed for. There is one ingenious application of physical considerations which may interest you. You know that some of the compounds of acetylene with metals are very explosive, *i.e.*, they are unstable combinations, and we have no chemical method of explaining this, but if we suppose that the binding points of a carbon atom are situated not at the solid angles of a tetrahedron but in the centres of the triangular faces, and we have no grounds for supposing that one position is less likely than the other, we have a complete explanation of this instability, for in the paraffins we should then have two plane faces in contact, in the olefines we should have an edge in contact, and in the acetylene series only a

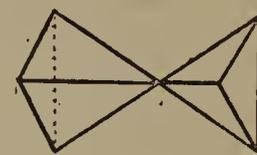
solid angle of each in contact, arrangements which are evidently in a decreasing order of stability; and we reach the limit of stability when we substitute a heavy element like copper for the hydrogen in acetylene, and the result is an explosive compound.



Paraffin.



Olefine.



Acetylene.

Passing now to the consideration of physical constants, we will take first the viscosity co-efficient, upon which constant a good deal of work has been done recently. By the viscosity of a liquid we mean practically its mobility; thus we say a liquid like ether is mobile, while glycerol is viscous. Putting the same thing accurately we should say ether has a low co-efficient of viscosity, while that of glycerol is high. The viscosity of a liquid is an expression for the internal molecular friction of the liquid, and this, again, depends on the mean free space of the constituent molecules. The simplest method of obtaining relative viscosities would be to take two similar pipettes and fill each to the mark, and then allow the liquids to flow out under the action of gravity, and at atmospheric pressure, observing carefully the relative times taken by the two liquids to empty the pipettes. We should then have a ratio expressed in seconds; for various reasons, however, it is more advantageous to have this ratio expressed in pressure units, *i.e.*, in dynes per square centimetre. So that, theoretically, we take a pipette, fill it with a standard liquid, and then allow it to flow out at, say, atmospheric pressure. We then fill the same pipette with the liquid to be investigated and we increase or decrease the pressure upon it until it flows out at the same rate as the standard liquid. For convenience the velocity chosen is unit velocity in the C.G.S. system. We are now in a position to define exactly the "coefficient of viscosity," but experimentally there is still the difficulty of temperature. It is an old observation that viscous liquids become more mobile when heated, that is rise of temperature increases the mean free space of the molecules, and therefore diminishes the viscosity co-efficient. When viscosity co-efficients are determined through a long range of temperatures it is found that on plotting a curve in the usual way for each substance that usually a certain length of each curve for different liquids corresponds to an equal rise of temperature, *i.e.*, for many liquids there exist in this way "temperatures of equal slope," and it is found experimentally that viscosity co-efficients determined at these temperatures show most relationship to chemical nature. There is still to be got over the difficulty of alteration caused by the complexity of the molecule; this is got over by changing "viscosity co-efficient" into "molecular viscosity," which is simply the product of; the molecular weight by the co-efficient of viscosity determined at temperatures of equal slope. Using this constant, the regularities previously mentioned for such constants as the boiling point are found to obtain for viscosity, and it is also found that for the great majority of substances the molecular viscosity can be calculated from fundamental constants expressing the effects of atoms in the molecule, and those due to different atomic groupings. I have devoted some considerable space to the consideration of viscosity, because it does not usually come very much in the way of students. The regularities I have already pointed out to you for the constants we have taken so far are seen again in the observation of the refractive indices of liquids. The

refractive index of a liquid is a ratio expressing the amount of bending which a ray of light undergoes when passing from one transparent substance to another, and is given by the well-known formula $\frac{\text{Sine of angle of incidence}}{\text{Sine of angle of refraction}}$ and is usually represented by the Greek letter μ .

Just as in the case of viscosity there are secondary influences to be got rid of before relationship with chemical nature becomes evident, and these influences are of the same kind as before, and are got rid of in the same way; so that we have as a final expression for "molecular refraction"—

$$\frac{\mu^2 - 1}{\mu^2 + 1} \times \frac{M}{D} \quad \text{where } M = \text{molecular weight.}$$

$$D = \text{density, i.e., weight of unit volume.}$$

An example of the additive character of this constant may be useful, thus for benzene; the molecular refraction from observation is 25.93, while calculating from fundamental constants we get 26.316, an agreement with observation which is remarkably close.

Atomic refraction of singly linked carbon	= 2.365	CH	
" " " doubly " "	= 1.836	CH	
" " " hydrogen atom	= 1.103	CH	
		CH	
For benzene = 3 ethylene unions	= 3 × 1.836 = 5.508		
6 single "	= 6 × 2.365 = 14.190		
6 hydrogens	= 6 × 1.103 = 6.618		
			<u>26.316</u>

Another constant which has been very completely worked out is that of "magnetic rotation of the plane of polarisation."

The first observation on the subject was due to Faraday, who observed that when any transparent liquid (although not optically active) was subjected to the action of a magnetic field it acquired the property of causing rotation of the plane of a polarised ray of light. Dr. Perkin has made this subject his own, and has made observations on a very large number of substances, and his general deductions are similar to those already mentioned for other constants.

Leaving the consideration of physical constants, I should like to conclude the report with a short *résumé* of the relationship of colour to chemical structure. You are, no doubt, all aware that what we call colour is merely the result of the reflection from the coloured substance of light-rays of certain vibration rates, thus we can say that a substance is red because it reflects those portions of white light incident upon it, which vibrate at so many millions per second.

This being so, we should expect to find some evidences of relationship in structure among coloured substances, and this conclusion is supported by observation. Very few coloured substances are found outside the derivatives of such series as benzene, anthracene, naphthalene, etc., so that a nucleus of a special character seems to be essential to the occurrence of colour. It is found again that colourless compounds do not give absorption spectra, but if we begin with a colourless substance having the required fundamental structure, and gradually substitute in that substance certain groups, we find that absorption lines begin to appear at one end of the visible spectrum, and as the substitution of more groups goes on these bands become displaced towards the other end of the spectrum, and if substitution be still continued, the absorption lines begin to pass back again. As the position of the lines in the spectrum changes, the substance changes in colour, and the following table shows how the position of the lines in the spectrum indicates the colour of the substance giving them:—

Position of lines.	Colour of substance.
Violet	Green-yellow.
Indigo	Yellow.
Blue	Orange.
Blue-green	Red.
Green	Purple.

These are, of course, interchangeable, and one list represents the position of absorption lines when the other gives the colour of the substance.

All radicals do not cause a displacement in the same direction, thus, groups like HO, CH₃, COOH, C₆H₅, and the halogens cause a displacement from the "violet" to the "red end," these are known as "batho-chromic groups."

On the other hand, the introduction of such groups as NO₂, NH₂, H causes the reverse displacement, and these groups are "hypso-chromic." A simple series exhibiting this change cannot be prepared, because as the substitution or addition of new groups go on, secondary absorption lines appear, which complicate matters.

In some cases the colour seems to depend on the presence of certain groups, this is well seen in the *azo*-dyes which contain of course the "azo" group, such groups are called "chromophors" or chromogens, and their influence seems to be greater the nearer their position is to the nucleus. The whole subject is of course still in embryo, but there is no doubt that the importance of it from an industrial point of view will be a great incentive to the prosecution of research in this direction. From the work so far accomplished one or two generalisations can be clearly drawn.

1.—That the simplest coloured bodies are those in the green and yellow.

2.—That on the whole complexity of the molecule seems to be necessary to the production of colour.

To the latter generalisation many exceptions will at once occur to you, thus, liquid NO₂ is yellow while the gas is reddish-brown. Iodine in CS₂ is violet, while an ethereal solution is brown, yet determinations of the molecular weight give the same figure in both cases.

The reading of this paper was followed by a discussion in which Messrs. Brown, Tunbridge, and the Chairman took part. The meeting then adjourned.

PROPRIETARY ARTICLES TRADE ASSOCIATION.

MEETING AT CARDIFF.

A meeting of chemists residing in Cardiff and district, was held at the Town Hall, Cardiff, on Thursday, May 28, under the presidency of Mr. J. Munday. There were also present Messrs. A. Tebbutt (Sutton and Company), H. S. Norris (Condal Aerated Water Company), and W. S. Glyn-Jones (Secretary), representing the Proprietary Articles Trade Association, Lloyd (Brigend), H. Spencer Fargher, H. Furnivall, A. Hagon, A. Coleman, R. Mumford, and J. A. Jones (Cardiff), E. W. Harris, and H. Thomas (Merthyr), W. E. Giles, T. P. Garrett, A. Gratte (Newport), D. Arnott (Pontypridd), M. H. Clare (Liebig's Extract Company, Limited), etc.

The Chairman said the meeting had been called by the Proprietary Articles Trade Association to invite full discussion on the advisability of joining the Association or otherwise. Letters of apology and sympathy with the movement having been read from Messrs. Key (Pontypridd), Benjamin (Penarth), T. Davies (Porth), R. Drane, and C. Sanders (Cardiff),

Mr. Glyn-Jones delivered a lengthy address on the aims and objects of the Association, and the advantages to be derived by becoming members. In order to improve the present position of affairs it was necessary for the retail trade to combine, and he expressed a hope that Cardiff would take its share of the work, so that they might go to the manufacturers and wholesale houses with full confidence.

Mr. A. Hagon then proposed the following resolution:—

"That this meeting of chemists residing in Cardiff and neighbourhood pledges itself to support the Proprietary Articles Trade Association, and invites the co-operation of manufacturers in connection with the movement."

For years, he said, the manufacturers had snapped their fingers at the retail trader, but now they were in a position to discuss terms. They could tell the manufacturer that he must consider their interests a little and not expect them to handle his goods for nothing. With regard to the question of profits, he thought they should have a minimum of at least 20 per cent. He believed that was the general feeling throughout the country. He expressed his belief in the powers of the Association, and hoped all those present would join the movement.

Mr. T. P. Garrett seconded the resolution and advocated unity.

Mr. Tebbutt pointed out that the Association had already done a vast amount of good, and said it would be to the interest of them all to support the movement.

Mr. J. A. Jones referred to his practice of refusing to stock an article that he could not sell at a profit, and expressed the opinion that in going to the manufacturer they should not ask for too much profit. He, however, was willing to support the Association in any step it might take.

Mr. Tebbutt pointed out that the Council had fixed upon a minimum profit of 20 to 25 per cent.

Mr. A. Coleman also supported the resolution.

Mr. Arnott pointed out that this Association would do just what the Pharmaceutical Society had failed to accomplish. The Pharmaceutical Society did nothing to increase their profits, or to make it worth their while to carry on business. What the Pharmaceutical Society did not do this Association would take up, and look after their trade interests. For that reason he supported the proposition. He asked whether the grocers were being included, because the great stores and universal providers were their greatest enemies.

Mr. Hagon said the grocers would be only too glad to join them.

The resolution was supported by Mr. Mumford, who welcomed the formation of an association to help to save them from themselves. As retailers they could do nothing, but by combination with the manufacturer and wholesaler they could do everything.

Mr. Lloyd also supported and said that when an article was sold by grocers it ceased to be considered a remedy. He quoted as an instance Eno's fruit salt, which he said was simply looked upon as a pleasant saline which could do no harm.

The Chairman endorsed the opinions of the previous speakers, but pointed out that it was not within the province of the Pharmaceutical Society to look after trade interests. They watched the questions of qualifications and fees, and looked after the sale of poisons.

After a little further discussion the resolution was carried and a vote of thanks to the Chairman and Mr. Glyn-Jones terminated the proceedings. A suggestion was made that local associations should be formed in the various towns in South Wales, with a central association or federation which should meet at Cardiff.

SCOTTISH NEWS.

EDINBURGH PHARMACY ATHLETIC CLUB.—The golfing section held its monthly competition on the Braid Hills Course for the "Dick Handicap Challenge Medal" on Friday and Saturday last. Mr. J. Greig was the winner with the net score of 92.

ABERDEEN PHARMACISTS AND THE AMENDMENT OF THE COMPANIES ACTS.—A deputation from the Aberdeen and North of Scotland Society of Chemists and Druggists, consisting of Mr. John Johnston, President, and Mr. John Cruickshank, Honorary Secretary, waited on Captain Pirie, M.P. for North Aberdeen, in Mr. J. S. Watts' office, on Friday, May 29, and asked his support to Lord Herschell's Amendment to the Companies Bill. The deputation explained that the effect of the Amendment was to prevent companies from selling or dispensing drugs or poisons, unless the same conditions as to qualification which apply to other traders are complied with, and pointed out that under the existing law companies could defy those provisions of the Pharmacy Acts which were designed in the interest of public safety. Captain Pirie expressed himself strongly in favour of the Amendment, and undertook to give it his support when the Bill reaches the House of Commons.

ENGLISH NEWS.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.—The following members have been elected as officers of the above Association:—T. C. Clarke (President), H. S. Lawton and R. M. Williams (Vice-Presidents), H. Jessop (Hon. Treasurer), H. M. Bindloss, 17, Bull Street, Birmingham, and J. W. Bland, 8, Corporation Street, Birmingham (Hon. Secretaries).

BOTANICAL RAMBLE.—The second botanical ramble in connection with the Plymouth, Devonport, Stonehouse and District Chemists' Association took place on May 27, Mr. Reade conducting his followers to the neighbourhood of Beer Ferrers (Devon), where several specimens were found. The attendance was not quite equal to the first outing, but the excursion was, nevertheless, equally enjoyable and interesting.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION (JUNIOR SECTION).—The usual monthly meeting was held on May 28 at the Association rooms, Foresters' Hall, Plymouth Octagon. Mr. A. J. Buckley occupied the chair, and there were also present Messrs. E. Hodge, Downing, J. E. Pond, H. J. Reynolds, Treener, Vibert, Osborne, A. T. Darke and others. Mr. R. F. Roper, M.P.S., delivered an able lecture on "Pharmaceutical Testing," and impressed upon his audience the absolute necessity and importance of every pharmacist occasionally testing his chemicals to see that their quality was up to the required standard. He maintained that to apply the test frequently it must be accomplished with as much speed and simplicity as could be brought to bear. He further mentioned that the water of Plymouth, if filtered, was quite as pure as distilled water (*sic*), and that no advantage would accrue to a Plymouth chemist in having a still. Mr. Roper fully explained the use of the specific gravity bottle and tested the s.g. of some tinctures. His explanations regarding the term "melting point" and the use of the hydrometer were very clear. A vote of thanks to the lecturer was proposed by the Chairman and, seconded by Mr. E. A. Hodge. Mr. Roper briefly replied.

DISPENSING OF WORKHOUSE DRUGS.—At a meeting of the Wells (Somerset) Board of Guardians last week, Mr. J. Welch, sen., presiding, the Clerk (Mr. A. G. Russ) said he had written letters to the four medical officers of the Union asking them if they would, at an increased salary, consent to dispense the drugs in future in addition to giving advice. Three out of the four medical officers decidedly disapproved of the proposal, while the fourth only consented to give it a conditional trial. In a discussion that followed, Mrs. Clark and Mr. S. Austin argued in favour of the medical officers being given a sufficient salary to make them properly attentive to the poor. Mr. Hawkins asked, if the proposed system was carried out, whether the doctors would be permitted to make arrangements with chemists for the dispensing of drugs. Mr. J. Welch, jun., thought the Board should adhere to their decision, and that the doctors should be asked to give a definite acceptance or rejection of the proposals by the next meeting of the Board. He moved a resolution to that effect. Mr. G. Slade proposed a modification, which Mr. Welch accepted, but on a division it was decided to refer the question to the General Purposes Committee.

BRISTOL AND THE EARLY CLOSING MOVEMENT.—At a meeting of Bristol shop-assistants and others, presided over by the Right Worshipful the Mayor, on Thursday night, May 28, the following resolution was adopted:—

"That this meeting recognises the grave physical and moral losses to the community resulting from the excessive hours imposed on shop assistants, and urges the citizens of Bristol to support early closing by early shopping, dealing only with shops that are willing to secure reasonable hours by mutual arrangement."

A further resolution was also passed, welcoming Sir John Lubbock's Early Closing Bill as an instalment of much needed reform.

ROYAL INSTITUTION.—A general monthly meeting of the members of the Royal Institution was held on June 1, Sir James Crichton-Browne, M.D., LL.D., F.R.S., Treasurer and Vice-President, presiding. The following were elected members:—Mr. William Phipson Beale, Q.C., F.G.S., Miss Esther Bright, Mr. Edward Ball Knobel, Treas. R.A.S.

CORRESPONDENCE.

THE SOCIETY AND ITS MEMBERS.

Sir,—Like many others I think it unfortunate that so little interest is taken in the Society's affairs by a great majority of its members. What appears to me even more regrettable, however, is that much of the little interest that is taken is not directed in business-like fashion. I fear that members on the whole simply do not understand the constitution of the Society and the part which individual members may take in causing its functions to be exercised in particular directions. It might be attended with good results if you gave a lecture on procedure occasionally, and had a few questions put to you bearing on points felt to be obscure. It is evident that much of the expression of opinion upon pharmaceutical business is only so much waste of energy. Airing of opinions, even though good in themselves, is not always so creditable as it might be to the persons giving them forth, much depending on the time, place, and manner in which that is done. Mr. George Coull, in writing to the *Journal* (*ante*, p. 419), after referring to what he regards as an injustice in the nature of work set to Minor candidates in London, and to his having been debarred from discussing this subject at a meeting of the North British Branch Executive, puts the following extraordinary question: "If we are not to discuss a subject of that kind at a meeting of the so-called governing body in Scotland, where on earth are we to discuss it?" Why, sir, surely that is about the last place to resort to for such a purpose. The business of the Scottish Executive cannot be to criticise how the Council transacts purely London business, but the Executive's meetings, we must assume, are for the transaction of business connected with the Society in Scotland.

It would be an altogether different matter, though questionable "form," perhaps, were the members of the Scottish Executive collectively—in their non-official capacity, and simply as ordinary members of the Society—to discuss such a question and forward a resolution to the Council, which is the proper authority to deal with it. To my mind the best method would have been for Mr. Coull, as a member of the Society, either to have asked a member of the Council to raise the question in Council or to have applied direct to the Council through Mr. Bremridge. In the event of either of these methods resulting in disappointment to him, he could appeal to the Society at large against the doings of the Council. Business is the end in view not discussion, and surely it is reasonable to suppose the Council would deal with this matter when specifically laid before it without waiting for a preliminary discussion upon it by the Society at large. I would, however, like to see the *Journal* very much more made use of by members than at present; the more we study how to use it and the resources of the Society generally the better will it be for our craft.

Glasgow, May 26, 1896.

J. ANDERSON RUSSELL.

Sir,—As an old chemist I have always looked askance (like many of my brethren) at the Pharmaceutical Society and its doings. Why has it not long since embraced all registered chemists in its fold? Subscriptions would have come in more plentifully, and the funds would not now be so languishing. The Council has hitherto been too exclusive; it alone has created such a gulf between those gentlemen who have gone in for the Major examination and the humbler (may I say it) members of the craft. If all were placed on an equal footing it would be better. What careth the great metropolis or the British public for an M.P.S.G.B.? They are not as a rule such good (commercially speaking) business men as those who have just passed the required standard of qualification. Use your influence to break this terrible barrier, and remember that we all open shop to secure a livelihood for self and family; there should not be such distinctions in this age of enlightenment. To further our interests the Council may easily see its way clear to support the Anti-Cutting League in getting back the full advertised prices of patents and proprietaries, instead of wasting so much annually in prosecutions, etc. The result of such assistance would be in the long run to considerably augment the funds of the Society.

Forest Gate, E., May 27, 1896.

HUGH EDGSON.

CREAM OF TARTAR.

Sir,—Owing to my absence from home on a brief holiday, the *Journal* of the 23rd inst. reached me too late to enable me to reply in your next issue to Messrs. Kirkpatrick, Barr, and Guthrie's letter (*ante*, p. 420). They say that my experience is not wide enough,

or I would know that by the precipitation process calcium sulphate is a natural impurity in cream of tartar. I may here point out that the British Pharmacopœia is our guide, and that it does not recognise what these good people call the precipitation process. Cream of tartar is described in the B.P. as: "An acid salt obtained from the crude tartar which is deposited during the fermentation of grape juice and from the lees of wine." I am aware that the B.P. permits compounds of a definite and known composition to be made by other processes than those described, so long as they "accord with the descriptions and tests given for their identification." See preface to the B.P., fol. xv. Now it has been clearly shown, and the fact is not disputed by Messrs. Kirkpatrick, Barr and Guthrie, that their cream of tartar does not respond to the B.P. test, notwithstanding that it contains 95 per cent. of potassium bitartrate. That is where the shoe pinches, but as they say it is so easy to remove the impurity and thus to make cream of tartar of 100 per cent. purity, I fail to see why they do not make it pure, unless it be for the additional profit it yields by being impure. The whole thing is in a nutshell so far as pharmacists are concerned. Under the Food and Drugs Act, the British Pharmacopœia is invariably taken in courts of justice as the standard for the purity of drugs, and as this particular kind of cream of tartar does not respond to the character and test therein given it is essential to their reputation that pharmacists should give it the cold shoulder.

Liverpool, May 31, 1896.

M. CONROY.

THE PHARMACEUTICAL EXAMINATIONS.

Sir,—Before trying to reply to the letters of Messrs. Durrant and Gelston (not that it is any affair of mine, but that as I know something about the examinations I am interested in any criticisms of them), I took a look at the regulations now in force, and then looked through a book or two to see with whom I had to deal. I find that they are both Minor men, and that it is nearly thirty years since Mr. Durrant passed, and seven since Mr. Gelston got his diploma, so that I think if they went in again next month they would write us very different letters on the subject to those which appeared on Saturday. But in the meantime it would be very useful and interesting to us all if they both, but especially Mr. Durrant, would, instead of finding fault with titles, examiners, examinations, rooms, fees, and everything else, except masters and candidates, tell us what they have done or are doing to promote the education they so strongly advocate. How much time for study do they give or have they given to their apprentices or assistants? Do they keep microscope, burettes, balance, herbarium, etc., for their use, or let them make syr. ferri iod. or ung. hyd. nit., or see that they test and assay their new stocks of hydrocyanic acid or sp. eth. nit.?

The examinations are not perfect, and the examiners are only human, like the rest of us, but their work is very hard and anxious, as it is exceedingly difficult to pass the men who are well up and nervous, and pluck those who are well crammed and have plenty of cheek, and who, if they do get through, do as much harm to the trade as all our other adversaries put together. No; what we seniors ought to do to promote the well-being of the next generation of pharmacists, is each one to encourage and help those apprentices and assistants with whom we come in contact to develop and cultivate a taste for scientific pharmacy. We should teach them not to put themselves on a level with the grocer's or draper's assistants, who are not expected to know much about the goods they sell, but rather to work hard and study all there is to know about everything in the shop, not neglecting the wholesale price and the selling price of mag. sulph. or pulv. glyc. co., but not to let that be the limit of their knowledge, and to take an intelligent scientific interest in everything that comes under their hands. There are plenty of young men up and down the country who are working on these lines, spending their scanty leisure over their books or microscope, or test-tubes or herbarium, instead of wasting it over all sorts of frivolities, which are very pleasant while they last, but don't last long enough to be worthy of more than a passing glance, whereas the man who when young devotes himself to science will take his examinations as they come with a quiet easy mind, and will find his life full of a calm, quiet strength, equally free from bluster and depression, and will unconsciously become one of the leaders of the set in which he finds himself, and will not make the mistake of criticising an examination he knows very little about.

Willingham, Cambs., June 2, 1896.

W. SPENCER TURNER.

"THE METHODS OF A FIRM OF TRANSFER AGENTS."

Sir,—Will you kindly permit us to state that we are the firm of transfer agents referred to by Mr. G. J. Gostling, and that what he describes as a circular was a letter in an envelope, fastened down, and with a penny stamp thereon. Having applications from three clients for a business in the county of Suffolk, we sent the letter, of which you published a copy last week, to about half of the chemists in that county. We certainly cannot see where the interests of the trade are concerned in this matter. If the chemist addressed does not wish to sell his business, he usually says so, or does not answer the letter. The only persons then interested are ourselves, to the extent of the stamp, stationery, and clerk's time.

London, June 1, 1896.

BERDOE AND Co.

MESSRS. ORRIDGE AND COMPANY, the transfer agents, of 32, Ludgate Hill, E.C., write to inform us that the letter reprinted in our last issue did not emanate from them, and that they do not find it necessary to send out such letters; in view, however, of the receipt of Messrs. Berdoe and Company's letter, printed above, there is no need to print their communication.

A CORRECTION.

Sir,—Will you allow me to correct a mistake which appears in your report of the last meeting of the Western Chemists' Association (London). I am represented as saying that six per cent. of retail chemists are in favour of anti-cutting. What I did say—and it is correct—was that over eighty per cent. were in favour of it.

Brixton, S.W., May 30, 1896.

W. JOHNSTON.

PROPOSED TRADE MEETING.

Sir,—I am invited by a well-known manufacturer to sign an agreement not to sell his goods, for which he charges 10s. per dozen, at less than 10s. 6d. per dozen. I have no doubt he expects to derive an advantage by this agreement, but I fail to discover any I shall receive as the retailer, the small fixed price not being worth consideration. I am glad to find manufacturers are beginning to perceive it is not to their interest that their goods are retailed at cost price, and are willing to unite with the retailer for mutual protection. But let the protection be mutual; what is here proposed is certainly not. In order to protect our interests, I propose that a meeting of all chemists in business be held at 17, Bloomsbury Square, and that the Pharmaceutical Council be requested to fix an early date for the same. This, I think, would lead to an active union of the trade, and for this purpose I think Bloomsbury Square is the proper place of meeting.

346, Essex Road, Islington, June 3, 1896. WM. MACGEORGE.

ANSWERS TO QUERIES.

BAKING POWDERS.—Weight for weight, cream of tartar is not cheaper for baking powders than tartaric acid; for the latter having a much stronger neutralising power on the bicarbonate, it goes farther. Cream of tartar is used because it is more slowly soluble, and so causes the more gradual evolution of carbonic acid, which gives a greater porosity and lightness to the mass of dough. [Reply to R. H. R.]

WATER ANALYSIS.—It is impossible to answer your question on the oxygen absorption process unless we know the number of C.c.'s your hypo. solution used up when titrated against the standard permanganate. This solution is very unstable, so that it is always necessary to do a "blank" experiment with pure distilled water. Having found the amount of hypo. equivalent to 10 C.c. of standard permanganate, the water being tested will probably take less, representing the unconsumed oxygen, which number, subtracted from the original quantity taken, will give you the oxygen absorbed. You cannot tell from this process how much "free" and "albuminoid" ammonia is present. Unfortunately, there is often very little accordance between the two methods. All that the oxygen method will do, is to give some idea of the amount of readily oxidisable matter present. You will find an Ehrlenmeyer's flask fitted with a splash trap bulb better than a retort for distilling the ammonias. It is very important to determine the amount of nitrates or nitrites in the class of water you are dealing with. Refer to paper on "Water Analysis" by Millard (*Ph. J.* [3], xviii., 916, 993). [Reply to VANILLA.]

REGISTRATION OF A LABEL.—It is quite possible to protect a label, and not difficult to do so if it bears some distinctive name, signature, device, or word. It is sometimes necessary, however, to disclaim any right to the exclusive use of other matter printed

on the label. Get an application form, costing five shillings, from the local post office, fill it up and send it to the Comptroller, Patent Office, 25, Southampton Buildings, Cursitor Street, Chancery Lane, London, E.C., being careful to attach one of the labels and state what you regard as the essential particular or particulars. If the design is accepted for registration, and there is no opposition to it by other traders, after publication in the *Trade-Marks Journal*, the cost in your case would be about twenty-five shillings.

"ASSOCIATE."—The three specimens sent are:—1, *Carex hirta*; 2, *C. vulpina*; 3, *C. glauca*.

"SECUNDUS."—1, *Ajuga reptans*; 2, *Stellaria holostea*. Please note that specimens will not be named unless the correct name and address of sender accompany them.

TREATMENT OF LEATHER.—Possibly the following glue may suit you; it is largely used for fastening leather at ordinary temperatures, and if well dried, would probably answer at a greater heat:—Take 4 ozs. each of glue and isinglass, just cover them with vinegar, and let soak for twelve hours; then gradually boil, and while boiling add a little tannin until the mass becomes "ropy." Buff off the surfaces of the leather to be joined, and apply the glue while hot. To soften the leather you cannot do better than use what is technically known as "sod oil." This is crude cod-liver oil which has been used in the preparation of chamois leather. You can obtain it from any currier. [Reply to J. C.]

QUALITY OF SAMPLE OF SUGAR.—There is nothing wrong with the sugar you send; we do not find any insoluble white matter, such as you mention. When made into syrup in the B.P. proportions it is perfectly bright. Probably the white deposit you noticed after a time in your syrup bottle was due to the deposition of small crystals of sugar, resulting either from your not having added a little water to make up for that lost by evaporation, or else by storing the syrup in a vessel in which evaporation could take place. Nor do we find any "blue" in your sample. It appears to be of very good quality; you need not fear to use it. [Reply to CUMMINGS BROTHERS.]

TROMMER'S SOLUTION.—This is merely copper carbonate dissolved in excess of sodium carbonate. It is generally made extemporaneously as required by adding an excess of saturated solution of sodium carbonate to a solution of cupric sulphate. [Reply to ASSISTANT.]

PUBLICATIONS RECEIVED.

MODERN OPTICAL INSTRUMENTS AND THEIR CONSTRUCTION. By HENRY ORFORD. Pp. 100. Price 3s. (?). (London: Whittaker and Co., 2, White Hart Street, Paternoster Square, E.C. 1896.) From the Publishers.

THE TAX-PAYERS' CASH BOOK. By ALFRED M. SCARF. Price 2s. 6d. net (cloth 3s. 6d.). (London: The Income Tax Adjustment Agency, 12 and 13, Poultry, Cheapside, E.C. 1896.) From the Publishers.

CASSELL'S NATURAL HISTORY. Part I. Pp. 76. Price 6d. (London: Cassell and Company, Limited. 1896.) From the Publishers.

SANOFORM, EIN NEUES ERSATZMITTEL FÜR IODOFORM. Von Dr. ALFRED ARNHEIM. Reprint from the *Allg. Med. Central-Zeitung*. (Berlin: Oscar Coblentz.)

OBITUARY.

WHEELDON.—On May 21, of pneumonia, Leopold, youngest son of J. Wheelton, 241, Stockport Road, Manchester. (Aged 24.) Mr. Wheelton was a representative of Messrs. Johnson and Johnson.

WHEELDON.—On May 29, James Wheelton, Chemist and Druggist, aged 59, at his residence, 241, Stockport Road, Manchester. Mr. Wheelton was a member of the Pharmaceutical Society.

WILLIAMS.—On May 25, John T. Williams, Pharmaceutical Chemist, of Swansea. (Aged 62.)

HAWTHORNE.—On May 28, George Hawthorne, Chemist and Druggist, of Leamington. (Aged 72.)

HOLT.—On May 30, Herbert Collins Holt, Pharmaceutical Chemist, of Altrincham. (Aged 29.) Mr. Holt was a life member of the Pharmaceutical Society.

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs. Bayley, Berdoe, Campkin, Conroy, Gostling, Hawley, Hudson, Kemp, Miller, Morley, Orridge, Sandall, Shapley, Thompson.

THE DETERMINATION OF CAFFEINE IN TEA.

BY A. PETIT AND P. TERRAT.*

When dried tea is treated with chloroform but a small proportion of the caffeine present is removed, in spite of the great solvent power of the liquid for the alkaloid, and it appears to be with the view of obviating this difficulty that certain chemists have recommended the addition of lime or magnesia to remove the caffeine from its natural combination. Commaille, amongst others, makes the tea and magnesia into a stiff paste, which is left to itself for about twenty-four hours, then dried on a water bath, and exhausted with chloroform. This process, however, is far from giving exact and concordant results, as is proved by the accompanying table; in fact, by this process, from tea containing 2.5 per cent. of caffeine, we have obtained only from 0.3 per cent. to 1.2 per cent., according to the conditions of the experiment. There is nothing novel in this observation, however, and experiments by Paul and Cownley,† who made a special study of the subject, seemed to show that magnesia and, more especially, lime possess the property of retaining caffeine when chloroform is used as a solvent. According to those chemists alcohol should be substituted for chloroform, as it does not cause the same difficulty. The employment of alcohol of 80° or 60° has given us very satisfactory results, but with alcohol of 98° there was a very great loss.

To elucidate the question whether caffeine really combines with lime and magnesia or not, we have conducted two assays by Commaille's process, using calcined magnesia, slaked lime, and perfectly dry caffeine, and have been able to recover all the caffeine known to be present. Our results then are not in accord with those obtained by Dr. Paul, who experienced a loss of 27 per cent. with a mixture of caffeine and lime, and a loss of 0.8 per cent. when magnesia was employed.

Combination of the lime or magnesia with the caffeine fails as an explanation of the small yield when chloroform is used for extraction. On the other hand, if the tea be damp, the yield of caffeine is not surpassed by that obtained by any other process. This method, recommended by A. Petit and Legrip,‡ appears to be little known or employed, the probable reason being the existence of a preconceived notion that chloroform cannot completely exhaust a substance containing much water; indeed, it is quite customary to dry such substances before acting upon them either with chloroform or ether. This procedure may be necessary in certain cases but not in the case of tea, in fact the presence of water is indispensable to obtain a good result. The water appears to dissociate the caffeine from its combinations and thus permits the chloroform to exercise its solvent effect properly.

A further proof of the action of water is found in the process of Grandval and Lajoux, who, believing the presence of an alkali to be necessary, and yet wishing to avoid the use of lime or magnesia, substituted ammonia in the proportion of 20 Gm. for 100 Gm. of either of those bases. They prepared a mixture of tea, ammonia, and ether, and percolated it with chloroform, but the results were not better than those obtained by Petit and Legrip's process, and it is evident that the ammonia is unnecessary. By the use of alcohol of 80° and 60° we have obtained almost as good results, but the operation is longer than when chloroform is employed, and it is also more difficult to obtain the caffeine in a pure state.

The following are the details of the Petit and Legrip process:— 25 Gm. of powdered tea is treated with three times its weight of boiling water, and left in contact with it for a quarter of an hour, with occasional agitation. The mixture is next evaporated on a water bath until the tea is just damp and then extracted with chloroform, the percolation being continued until some of the residue left by the chloroform, when dissolved in boiling water and the solution filtered, gives neither precipitate nor opacity on the addition of a solution of tannin. Finally, distil off the chloroform, dissolve the residue in boiling water, filter the solution through paper, wash carefully, and evaporate on a water bath. Usually, the caffeine thus obtained is sufficiently pure to be weighed forthwith.

To remove the chlorophyll, which sometimes impairs the purity of the product, the method followed by Grandval and Lajoux may be adopted: the impure caffeine is dissolved in the cold in 15 C.c. of ten per cent. sulphuric acid, and the solution left for some time before filtration, after which the acid is neutralised with ammonia, and the liquid evaporated. The dry residue is next treated with chloroform, and the chloroform solution evaporated at a very low temperature.

The results stated in the following table demonstrate the effect of the presence of water, the tea used in the experiments containing 2.5 per cent. of caffeine:—

Method Employed.	Caffeine Obtained.	
Dried tea exhausted with anhydrous chloroform	0.18 per cent.	
" " " hydrated "	0.32 "	
" " " boiling "	0.48 "	
Petit and Legrip's process: Moist tea exhausted with chloroform	2.50 "	
Grandval and Lajoux's process: Dried tea and ammonia	2.44 "	
Commaille's process {	After complete desiccation of the mixture	0.30 "
	The mixture being slightly moist.....	1.20 "
	The same, very moist.....	2.50 "
Tea treated with boiling water, dried, and then exhausted with chloroform	0.20 "	
The same, moistened with water before exhausting with chloroform	2.50 "	
Tea, lime, and water mixed into damp paste, dried, and exhausted with chloroform	0.80 "	
The same, moistened with water before exhausting with chloroform	2.47 "	
Dried tea exhausted with alcohol of 98°	0.88 "	
" " " " 80°	2.38 "	
" " " " 60°	2.33 "	
Dried tea and magnesia with alcohol of 98°	0.76 "	
" " " " 80°	2.34 "	
" " " " 60°	2.33 "	
Dried caffeine, 1 Gm., and slaked lime, 4 Gm., made into a paste with water, then dried and exhausted with chloroform	0.997 Gm.	
The same, with magnesia in place of lime.....	0.998 "	

These figures enable us to establish—

1. That magnesia and lime do not enter into combination with caffeine under the conditions of Commaille's process.
2. That lime and magnesia are useless, since by their employment one obtains no more caffeine than in their absence, and, further, they do not serve the purpose for which they have been recommended, since they do not split up the combination or combinations in which the caffeine naturally exists.
3. That, if the Commaille process furnishes variable results, this is not due to the formation of a compound of caffeine with magnesia, which is insoluble in chloroform, but rather to the

* Translated from the *Journal de Pharmacie et de Chimie*, for June 1, 1896.

† *Pharmaceutical Journal* [3], xviii., 417, xxi., 882.

‡ *Bull. de la Soc. Chim.*, 1877, p. 290.

insolubility in that liquid of the combination in which caffeine naturally exists in tea, whence the necessity arises of splitting up this combination with water, magnesia being useless for the purpose.

4. The necessity of operating upon moist tea, since tea treated with water and afterwards dried gives similar results with chloroform to dried tea; during desiccation the previously liberated caffeine again enters into combination.

5. The necessity, if alcohol be employed for extraction, of having it sufficiently dilute, since nearly anhydrous alcohol gives but a very small yield.

ALCHEMY AND PHARMACY. THEIR MYSTERY AND ROMANCE.

BY C. J. S. THOMPSON.

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(Concluded from page 382.)

CHAPTER IX.

The Pioneers of Pharmacy.

The operation of distillation was unknown to the ancient Greeks and Romans, although Dioscorides and Pliny describe a process which may be considered that of distillation in its infancy. The process was not known in England until the time of Henry II. To the Arabs we are indebted for the discovery of manna, cassia, senna, and rhubarb, also aromatics, such as musk, nutmeg, mace, and cloves. Blisters were also known and used by the Arabs, who are the first on record to mention sugar, extracted from the cane, and sugar candy, which they called honey of cane.

Rhases and Avicenna were the first physicians to introduce improvements in pharmaceutical preparations. The latter was the first to mention the three mineral acids, and distinguish between the vegetable and mineral alkalies.

In the year 1226, Roger Bacon, a native of Ilchester, in Somersetshire, and a Franciscan Monk, may be said to have laid the foundation of chemical science in Europe. He was excommunicated by Pope Nicholas, and imprisoned for ten years for supposed dealings with the devil. He professed to have discovered an elixir of life, which he affirmed prevented corruption of any constitution and the infirmities of age for many years. Following Bacon at the end of the thirteenth century came Arnould de Villa Nova, who was the first to recommend the distilled spirit of wine impregnated with certain herbs, from which we date our use of tinctures in medicine.

Basil Valentine followed as a pioneer in the administration of metallic medicines; he discovered volatile alkali from sal-ammoniac, and noticed the production of ether from alcohol.

In the year 1493, Paracelsus was born near Zurich, in Switzerland, a man of extraordinary conceit and boldness, but who wrought a greater change and influence in materia medica than any physician since the time of Galen. He travelled all over Europe, and so obtained an extensive knowledge of chemistry and medicine.

This genius of science and quackery, for such Paracelsus must be termed, who scoffed at all the doctrines believed in since the time of Hippocrates, professed to have received his knowledge from the divine being himself. His sheer impudence carried the sympathies of the public with him, and they kissed the skirts of his gown as he passed through the streets, whilst he had among his followers many princes and nobles.

He denounced the apothecaries, who, he said, could only compose insipid syrups and repulsive concoctions, when they have ready to hand at the bottom of their stills, extracts and dyes derived from

the best vegetables and minerals. He disagreed with the doctors also, whose prescriptions he stigmatised as barbarous, and was much against the use of correctives added to pharmaceutical recipes when they had no natural relation to the preparation itself. He believed in the existence of an active principle in plants, which he termed the Ether of Aristotle, that could be isolated and used to avert the various disorders of the human body—an idea which is now the leading spirit in pharmaceutical research. His labours did much to stimulate the practical side of chemistry, and his language was mysterious, as, like other alchemists, he wrapped up all his wisdom and his ignorance in the garb of allegory. He was reported to carry about a familiar spirit in the pommel of a long sword that always hung at his side.

Paracelsus is said to have been the first to use mercury internally; he also employed opium, antimony, and lead largely in his treatment; and he devised a process for the preparation of red oxide of mercury. He was sent for to many of the European Courts, and by the interest of Erasmus was made Professor of Chemistry at Bale, the first chair that was established in Europe. It was here while seated in his chair that, with arrogant impudence, he burnt with great solemnity the writings of Galen and Avicenna, saying that "if God would not impart the secrets of physic, it was not only allowable, but was justifiable, to consult the devil."

He had the greatest contempt for his fellow physicians, and said he had more knowledge in the very down on his bald pate than was in all their writings, and in the buckles of his shoes there was more learning than in Galen and Avicenna, and in his beard more experience than all their universities. The man was a mass of conceit and egotism, yet feared and liked by the people for his boldness.

Latterly he took to drinking heavily, seldom taking off his clothes for many nights together. At length he broke down and the end came at the age of 48, when this singular man died after a few hours' illness at Saltzburg in Austria, a bottle of his boasted panacea for all ills being found in his pocket. He believed the human body to be composed of salt, sulphur and mercury, and that in these "three fast substances" health and disease consist. To give Paracelsus his due, although empiricism and quackery were the chief elements in his career, he swayed an undoubted influence on the medical practice of his time, and with all his egotism did his best to advance the science and art of medicine.

The next pioneer was Van Helmont who flourished some hundred years later. He was the first to notice the existence of gases, also the first to use alum in uterine hæmorrhage, through which he acquired a great reputation.

Little was known of materia medica by the nations of the west from the eighth to the tenth century. The chief cultivation of medicinal herbs took place in the monasteries, each having its own botanical garden, which contributed so much to the progress of medicine. At this time the knowledge of the medicinal value of herbs and roots was much more advanced in the East, and we find that during the reign of Almansour, in the eighth century, a large school was founded at Bagdad, which became a refuge for scientists when exiled from Athens and Alexandria. The works of Aristotle and Galen were translated into Syriac, and the greatest generosity and encouragement were shown to savants who settled there. Before this, the Arabs had considerable knowledge of the use of plants in medicine, and had made some valuable discoveries. Their physicians recommended the use of senna, tamarinds and cassia in place of the violent purgatives used by the Greek doctors, and a number of new plants were introduced by Rhases from India, Persia and Syria. Mesné wrote his treatise on medicine ('De Re edica'), which, on being translated into Latin, was used as a manual in all the schools up to the Renaissance.

Constantine was the first to introduce the most noted Arab works into Europe, himself a writer of no little repute. Then several Arab travellers added to the store of knowledge, among these, Ebor-Taitor, a native of Malaga, travelled in Asia to study plants, and eventually became minister of the Caliph at Cairo.

Otho, of Cremona, in a poem of one thousand five hundred lines, contributed his knowledge of plants, and John, of Milan, in his 'Code of the School of Salerno,' compiled the discoveries in medical botany of a century.

Coming to the twelfth century, scientific progress was not so rapid, yet all the investigation that was made originated in the study of medicine. Most of the monasteries and convents had their botanical gardens and also collections of minerals and animals, which were carefully watched and tended, and the monks and nuns would not only administer to the sick of their own orders, but also to the suffering who claimed their charity. Once lodged there the treatment was good and wholesome, mostly by decoctions of some simple, backed up by good kitchen medicine, quietness, and rest. One or two monks who had special knowledge of herbs were usually allotted to this department. It can then hardly be wondered at, that during the thirteenth and fourteenth centuries most of the record we have of medicine is from works by the brethren of the monasteries. An excellent collection of recipes, comprising also a summary of plants, animals, and minerals was compiled by Hildegard, Abbess of Bingen, called the "Jardin de Santé."

This good lady, like many other abbesses of her time, was much interested in the art of healing. She cultivated her own medicinal plants, and carefully noted down their properties for the use of others, and thus left a valuable record.

In the thirteenth century an advance was made in materia medica by Gilbert and HERNICUS ARVIELL, two Englishmen who travelled through Asia to study plants and their uses. Simon de Cordo, called Simon of Genoa, also took a botanising exploration into Sicily and the islands of the Archipelago, and afterwards wrote a botanic dictionary.

Another eminent botanist of this time was Peter de Crescenzi, a man of good birth and fortune, who was born at Bologna in 1330, and who greatly interested himself in botany and horticulture. His great work, which was translated into several languages, was called 'Opus Rubarium Commodorum.' Contemporary with Peter were three names we must not omit, viz., Vincent de Beauvais, Albertus Magnus, and Arnaud de Villeneuve, who compiled a knowledge of both alchemy, astrology, and physic. Vincent de Beauvais was a dominican monk, and his great work, the 'Speculum Naturale,' is saturated with the superstition of the time. In this book he states 'the mandragora is of the same shape as the human body; the winged

dragon is capable of carrying off an ox, and devouring the same whilst flying." He also describes the scythion lamb, a sort of animal plant which had roots and grew in the ground, and other fearsome creatures, and declared that in Scotland the fruits of certain trees, when they fall into the water, produced the birds called black divers. Villeneuve wrote many treatises on plants and animals, and eventually became teacher of medicine and botany at the University of Paris. He was undoubtedly a man in advance of his time, and boldly declared "that the most solemn mysteries of the Catholic faith could be explained by the teachings of natural history and experimental physics."

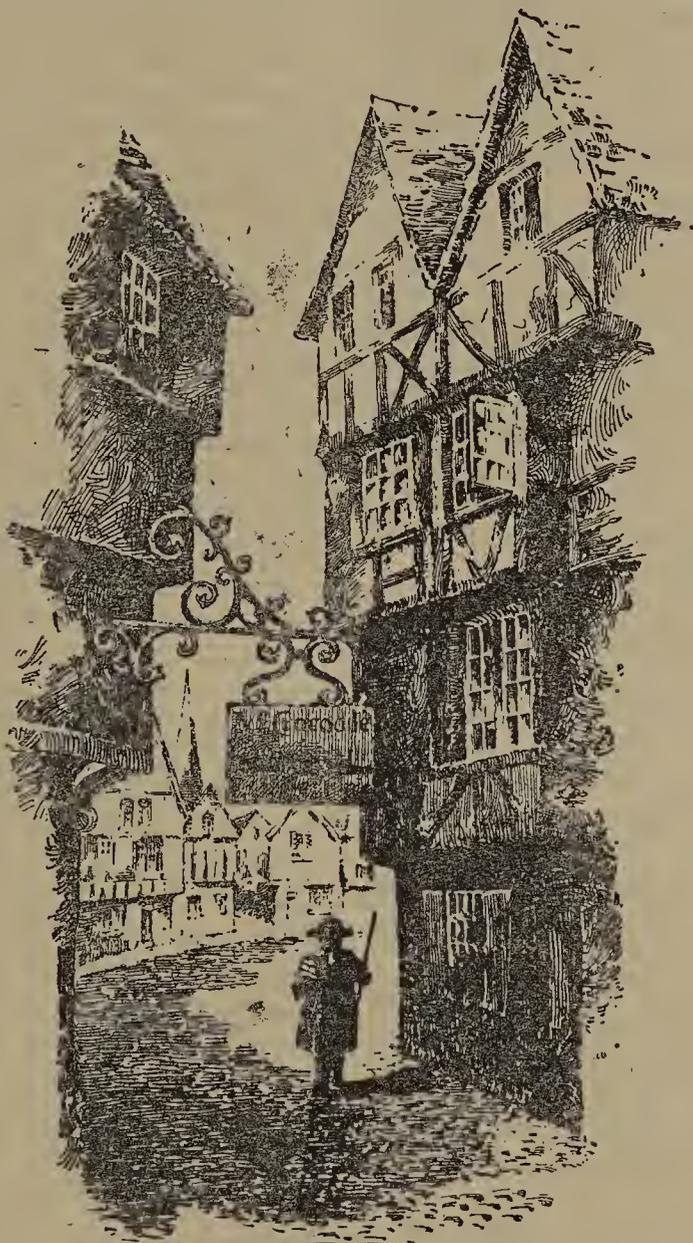
He was therefore accused by the magistrates of sorcery and magic, but he escaped through the special protection of Charles of Anjou into Italy, where he settled for a long time.

The fourteenth century saw little advance in the medical art, but it was enriched by one or two great works. One of these written in Latin by Bartholomew Glanvil, an English monk, was a kind of encyclopædia of immense size, and was called, 'Liber de Proprietatibus Rerum,' and had a great reputation for hundreds of years after.

The advent of printing about the middle of the fifteenth century rapidly spread the knowledge of more recent discoveries throughout Europe, and many large works on botany and herbalism, illustrated with woodcuts, were published at Mayence and Louvain. At Venice many of the works of the old Arab physicians, Avicenna, Mesné, and others were printed and eagerly purchased. The discovery of America in 1492 heralded the introduction of numerous fresh additions materia medica, which were brought to this country by explorers and naturalists.

In the sixteenth century, by the labours and researches of George Agricola, a German, and Conrad Gesner, a Swiss, a considerable advance was made in the knowledge of what was called chemical medicine and botany. Agricola, who was the greatest mineralogist the world had

then seen, explored and spent much time in the mines of Bohemia and Saxony, and thus obtained a practical knowledge of the then known methods of the working of metals. His contemporary, Conrad Gesner, born at Zurich in 1516, has been called the originator of scientific botany, as he was the first to discover a method of recognising each genus and kind by examining the organs of fructification, and in this way discovered 1800 new varieties. A famous physic garden was planted in Paris in the early part of the seventeenth century by Jacques Gohory, an enthusiastic pharmacist, and this garden eventually became part of the Jardin des Plantes. In connection with this garden a school of medicine was founded, the first occupant of the chair of chemistry being William Davisson, a Scotchman, and pre-



AN APOTHECARY'S SHOP. 15TH CENTURY.

decessor to Lefebvre, who afterwards became a chemist at St. James's.

The practice of the teachers at this time was to dictate to their students, and in order to save themselves the trouble of dictating and the students the trouble of writing, which was a very laborious matter in those days, the lecturer would write a book. Such was done by Jean Beguin, who wrote a chemical text-book in 1612, which passed through no fewer than fifty-three editions.

We must also not forget to mention two other pioneers in science of this age, who made important discoveries in botany; they were Matthias of Lille, who eventually settled in England, and Andrew Cesalpin, professor of botany at Pisa. The former first formulated the true principles of classification and arrangement into families, such as the orchids, palms, and mosses, and to the latter belongs the honour of having devised the first system of botany. Having compared the process of generation in animals to the seeds of plants, he distinguished male plants by their stamens, and those which yielded seed as female.

The next era is marked by the publication of the first pharmacopœia at Nuremburg in 1542. "For this act," says Paris, "we are indebted to Valerius Cordus, a young student, who, during a transient visit at that place, accidentally produced a collection of medical receipts which he had selected from the works of the past esteemed writers, and with which the physicians of Nuremburg were so highly pleased, that they urged him to print it for the benefit of the apothecaries, and obtained the sanction of the Senate to the undertaking." To this slight circumstance we owe the institution of pharmacopœias. The first London Pharmacopœia was, however, not published until the reign of James I., in 1618.

Having thus shown how these now almost forgotten pioneers of science laid the foundation stones of the arts of medicine and pharmacy, and how much we owe to their patience and diligence, this series may now be fittingly concluded with a brief reference to the class of medicaments in use in the days of Queen Elizabeth, immediately prior to the differentiation in England of the first pharmacists—the apothecaries—and the beginnings of pharmacy as a separate art.

"A few simples," says Burton, "well prepared and understood are better than such a heap of nonsense, confused compounds, which are in apothecaries' shops ordinarily sold."

For madness and melancholy, wormwood was used. Another remedy was clarified whey, with borage, bugloss, endive, succory, etc., a good draught of which was taken in the morning, fasting. For the spleen and liver, syrups were prescribed composed of borage, thyme, epithyme, hops, scolopendra, fumitory, maiden-hair, and bizantine. These syrups were mixed with distilled water by the apothecaries or stirred into juleps.

Of conserves there were innumerable varieties, and ointments of oil and wax, as well as liniments and plasters of herbs and flowers, well boiled with oil or spirits.

Cataplasms and salves were frequently made of green herbs sodden, pounded, and applied externally.

Gradually as the years have rolled on, the science of chemistry has shed its searching light and unlocked the marvellous resources and products of nature, most of these old relics of the days of superstition and witchcraft have been left behind and forgotten, and it remains only for some old black-lettered tome to tell the story and fill in the background to the picture.

ZINC VALERIANATE IN HAY FEVER.—Dr. Abercrombie has found valerianate of zinc given in three-grain doses in a pill, to be taken immediately after meals, of great service in a troublesome case of hay fever in a neurotic patient: the salt appears to act both as a curative and as a preventive (*B. M. J.*, 1/96, 967).

HOW TO NAME A PLANT.

EXOTIC OR GARDEN PLANTS.*

The season is approaching when inquiries concerning the names of plants are more numerous than usual, and not unfrequently plants are met with which are evidently not indigenous to Britain, but the seeds of which have by some accident become deposited in the most unexpected places, where ballast may have been thrown, or grain, etc., sifted. The difficulty of naming such plants has doubtless been often experienced by amateur botanists, and a brief explanation of the best mode of procedure may be useful to some of our readers.

It may be assumed that after some practice in examining indigenous British plants, the student will have become fairly well acquainted with the general appearance and family peculiarities of the larger and more frequently occurring natural orders, and that he will be able to determine without much difficulty whether any plant that comes under his notice presents the diagnostic characters of any of these orders. If such be not the case, he has to deal with nearly 200 natural orders, and to locate his specimen in its proper position. Supposing he has decided that it belongs to the *Thalamifloræ*, the next step is to ascertain to which of the cohorts or alliances of natural orders under the *Thalamifloræ* section it belongs. The easiest way of doing this is to turn to Warming's 'Handbook of Systematic Botany,' translated by Professor M. C. Potter (Swan, Sonnenschein), p. 580, and taking the cohorts in turn, compare the characters of the ovary, stamens, sepals and mature seeds with the description therein given.†

Having determined the cohort to which the plant belongs, the more difficult task of finding out the natural order remains, and it is useless to attempt this with any hope of success unless well-developed fruit is obtainable, as well as flowers. If these necessary materials can be had, a previous knowledge of the larger and more common natural orders proves of great value. Thus, supposing the plant to belong to *Thalamifloræ*, the ovary being apocarpous, then the plant evidently belongs to the *Ranales* (i.e., *Ranunculales*), and it will be noticed on turning to page 6 of Vol. I. of Bentham's 'Genera Plantarum' that the *Ranunculaceæ* may be used as a peg upon which to hang all the natural orders in the group. Thus the *Dilleniaceæ* have flowers like the *Ranunculaceæ*, but differ in having arillate seeds, and in consisting chiefly of shrubby plants, all the other orders in this cohort having the sepals and petals in three or more rows running more or less into one another. Of these the *Magnoliaceæ* are characterised by an elongated receptacle, the *Calycanthaceæ* by having the receptacles enclosed in the calyx tube (as in the rose) and by the opposite leaves the *Anonaceæ* by the ruminated albumen of the seeds; the *Menispermaceæ* by the small dioecious flowers and (usually) three carpels, and superior micropyle; and the *Berberidaceæ* by the valvate anthers, and usually single carpel (three in polygamous species). The *Nymphaeaceæ* has such characteristic leaves that although on the one hand it resembles the *Ranales* in the apocarpous ovary (*Nelumbium*), and there are plants in the family (*Nuphar*) which ally it to the next cohort, *Parietales*, in which the carpels are

* Articles dealing with the identification of indigenous plants appeared in the last volume of the *Pharmaceutical Journal*, pp. 7 and 226.

† The advantage of using Warming's book is that in the excellent appendix on the classification of plants by Professor Potter, a bird's-eye view of the whole of the classification of the 'Genera Plantarum' is available, whereas in the latter work it is scattered over three large and inconvenient volumes. Moreover, the student will be able to obtain an excellent idea of the divergences of opinion amongst botanists as to the alliances of the groups, from the time of John Ray in 1703 to that of Engler in 1892.

united, and the placentation parietal, there is no difficulty in recognising the plants of the order. The above remarks must be considered merely in the light of giving as briefly as possible the leading differences in these natural orders, and not as a key to be used in determining accurately the natural order. To do that it is necessary to see that the plant agrees with all the characters given in the 'Genera Plantarum,' on pp. vi.-vii., and, if any difficulty is experienced, to refer to the abnormal forms enumerated after the general description under each natural order. When the natural order had been decided upon, the tribe and sub-tribe can be determined in the same way, and then the genus, under which, as a rule, very few diagnostic characters are given, so that if the steps have been carefully followed the determination of the genus is tolerably easy.

To accurately determine the species is a much more difficult matter. If it be a garden plant, there are two or three books which may first be consulted. Of these Nicholson's 'Dictionary of Gardening' is one of the best and most recent. Loudon's 'Encyclopædia' is an old but useful book of reference, and 'The Treasury of Botany' (Longmans) is very useful for giving interesting details concerning the commoner plants of a genus. A list of plants of very recent introduction into horticulture is given every year in the 'Kew Bulletin,' with brief descriptions of the colour of the blossoms, date of flowering, native country, and special characteristics. If the plant does not appear to be given in any of these, the only plan is to take or send it to one of the large national or provincial herbaria, and compare it there with the species of the genus to which it presumably belongs. If the plant has a double flower, and is a purely horticultural variety, the best plan to get it named is to forward a specimen (showing all the characteristic forms of leaf that occur in the plant, with flower and fruit) to one of the leading journals on horticulture for identification.

If the plant be an exotic not in cultivation, the best plan is to inquire at one of our national herbaria the name of the most recent monograph on the genus, and to compare the plant with the descriptions there given. If it does not coincide with any of them it still remains to ascertain whether any new species of the genus have subsequently been described. This may be learnt to within the date of two years back by consulting the index of the 'Botanischer Jahresbericht' (Borntraeger Bros., Berlin).^{*} Unfortunately a list quite up to date of the new plants published every year in all countries cannot apparently be published by our national herbaria, owing to the lack of funds available, since it would occupy the entire time of one clerk to make it out. An annual list of the plants published every year, with the references to the works in which they occur, arranged alphabetically under the natural orders, which might also be arranged alphabetically, would be a great boon to all workers in systematic botany, and would be a saving of valuable time to hundreds of botanists, since there is probably no herbarium in existence which contains a specimen of every known plant. Without available descriptions of new plants it is impossible to say whether any given plant that cannot be found in an herbarium is new or not.

If the above description of the difficulties of naming a plant will render those who send plants to journals to be named a little more careful to enclose specimens in fruit, some little good will have been accomplished, and if it induces them to try and name them for themselves before sending them, the experience will prove very valuable to those who do so, for names learned through the work of others are easily forgotten.

^{*} The 'Index Kewensis' contains the names and references to the descriptions of all flowering plants known up to A.D. 1885.

CHEMICAL VERSUS BACTERIOLOGICAL EXAMINATION OF POTABLE WATER.

BY W. P. MASON.

Apropos of the recent articles upon this question, which have appeared in the English papers, it is noteworthy that there is a growing tendency among physicians and civil engineers to belittle the chemist's opinion regarding the potability of a water, and to pin their faith exclusively upon what the bacteriologist may have to say upon the subject. This feeling is strengthened by the publication of the results of such trials as that undertaken by the London Local Government Board, in which, it will be remembered, water samples purposely inoculated with typhoid germs were sent for analysis to one of England's leading chemists, and were by him pronounced pure.

Those who set special value upon such a "test" of methods as the above, and who consider it quite final as showing the inability of chemistry to detect pollution in a liquid which the bacteriologist would instantly pronounce very foul, should remember that such a sample of water could not be found in practice, and that the very conditions under which it was prepared eliminated the chemical items indicating pollution, while it increased tremendously the signs governing the bacteriological side of the case.

The bacteriologist sought for the Eberth bacillus, and, very naturally, quickly found it in a water purposely sown with a culture of the germ.

The chemist looked for those elements which always occur in sewage-laden water, whether the sewage be from sources of disease or otherwise, and, not finding them, he pronounced the water to be what it really was, free from sewage addition.

Sewage, as it occurs in practice, contains an immense deal of material other than that productive of disease, and it is upon just this comparatively harmless, but constantly present material, that the chemist relies for the indication upon which he bases his opinions.

He is unable to say whether or not a sewage-laden water is disease-bearing on any particular date, for to him all sewage is alike; but he condemns the water, for the reason that, although it may be harmless to-day, it is impossible to predict what may be its condition to-morrow.

Within the week I have been requested to make a bacteriological examination of the water of a certain well, in order to determine if it be affected by neighbouring cesspools.

The physician who made the request was impressed with belief in the paramount value of such an examination and the comparative uselessness of chemical analysis.

I am quite convinced that had I followed his suggestion I should have sought in vain for any specific microbe; but inasmuch as upon chemical analysis I found that the "chlorine" ran twenty-four parts per million, which is about ten times the local "normal," and the "nitric nitrogen" read nine parts per million in place of 0.116, I condemned the water off-hand without going further.

There is simply no comparison between the two methods in question for water problems of this class, and the value of chemistry is still more pronounced in those instances where it is possible to introduce common salt or lithium chloride into a source of suspected pollution, and then look for increased chlorine or presence of lithium in the water of the well. In legal cases touching upon this point of contamination of wells, by cemeteries for instance, the chemical testimony is especially strong.

In the matter of determining the suitability of a stream for city supply, the services of the bacteriologist should be unquestionably secured, but it is doubtful if his report can be considered of more importance than that of the chemist.

Chemical analysis, by comparing the water taken at the site of the proposed intake with that from the same stream above all points of possible pollution, can indicate whether or not up-stream contamination is felt at the lower point; nor is it necessary that the polluting sewage be from pathogenic sources in order that its presence may be recognised.

As Dr. Dupré has pointed out, chemistry in such cases anticipates what may happen in the future, and, by timely advice, may prevent an outbreak of disease, while, on the other hand, the discovery of disease germs in a water is only possible after the water has become infected.

Bacteriology is of especial value, and greatly superior to chemistry for the testing of filters and watching any variation in their efficiency.

For this purpose the simple count of germs per C.c. is most valuable, and differentiation is a secondary matter; for the assumption is a just one, that a filter which will remove the harmless bacteria will take out the objectionable ones as well.

It is very far from my desire to decry the value of bacteriology; but I cannot but feel that, in their enthusiasm over the great triumphs of the new science, the people at large have gone slightly "bacteria mad," and are apt to expect more than can be furnished by the means and information now available.—*Journal of the American Chemical Society.*

BERTHELOT'S CONTRIBUTIONS TO THE HISTORY OF CHEMISTRY.*

BY H. CARRINGTON BOLTON, PH. D.

Marcellin Berthelot, Professor of Chemistry in the Collège de France, Perpetual Secretary of the Academy of Sciences, Senator, Minister of Public Instruction, and recently appointed Minister of Foreign Affairs, known to the scientific world by his masterly researches in synthetical chemistry, has added to these honours that of editing the most important and far-reaching documents pertaining to the history of chemistry ever brought to light.

The six handsome quarto volumes published by him between the years 1887 and 1893 contain the most ancient Greek, Arabic, Syriac, and Latin treatises on alchemy and technical chemistry preserved in the great libraries of the old world. Besides reproducing the original text of these precious manuscripts, these volumes contain complete translations of many treatises, analyses of the contents of others, and critical studies of their mutual relations, their sources and authorship, as well as erudite essays on the chemical knowledge exhibited in them. The six volumes form two distinct works: three of the volumes bear the title 'Collection des anciens Alchimistes Grecs,' and three of them 'La Chimie au moyen âge,' each volume having, moreover, specific sub-titles more exactly indicating its contents.

Not having seen any adequate review of these works in English, I propose in this article to examine their scope, contents, and manner of treatment, as well as to show some of the more important changes resulting from Berthelot's historical studies. The existence of ancient Greek and Arabian manuscripts had long been known; Reuvs, and later Leemans, of Holland, had published summaries of certain papyri preserved in Leyden, more than forty years before, but in such a fragmentary manner as merely to excite curiosity. Ferdinand Hoefer, the French historian of chemistry, and Herman Kopp, the erudite German, had made partial use of some of the manuscripts; but it remained for Berthelot to collect and

compare the diverse copies, to reproduce and translate them for the benefit of students. This he could scarcely have accomplished without the aid of the French Government, both series being "published under the auspices of the Minister of Public Instruction." Government co-operation was brought about through the report made by Berthelot to the "Comité de Travaux Historiques et Scientifiques," and adopted by them in 1884. This report directed attention to the existence of Greek alchemical manuscripts and to the utility of their publication, owing to the great light they throw on the history of natural science, the technology of metals and ceramics, and the history of philosophy in the first centuries of the Christian era.

The difficulties of deciphering, transcribing, and editing Greek, Arabic, Syriac, and Latin manuscripts were prodigious, and Berthelot was fortunate in securing scholars of eminence to assist in the task. In dealing with the Greek papyri, he was aided by Ch. Em. Ruelle, of the Bibliothèque Sainte Geneviève, Paris, and by André Berthelot, son of the editor; the Arabic scholar, Professor Houdas, and the Syriac linguist, Rubens Duval, also contributed their learning, each in his own sphere.

The 'Collection des Alchimistes Grecs' opens with an "Introduction" by Berthelot, which occupies 268 pages; this forms an important contribution to the history of chemistry, based upon a critical study of the ancient treatises; he agrees with other historians in tracing the birth of alchemical ideas to Egyptians, whence they reached Europe through Greeks.

Certain Greco-Egyptian papyri, preserved in Leyden, are of the greatest interest; several of them treat of magical formulæ, incantations, love philtres, dreams, and similar gnostic notions; one of them, known as "Papyrus X," is a treasury of information on metallurgical operations, at so early a period as the third century of the Christian era. It was found in a tomb at Thebes, secured by the Swedish Consul at Alexandria, Anastasi, and presented by him to the Netherlands in 1828. Berthelot conjectures it is one of the ancient Egyptian books on the preparation of gold and silver, which escaped the destruction ordered by Diocletian in 290,—an order issued lest the people using them should grow rich by their art and revolt against the Romans.

This precious document contains one hundred and one chemical and alchemical recipes, followed by ten paragraphs taken from Dioscorides. The recipes are for making alloys to be used in the manufacture of cups, vases, images, and other objects of the goldsmith's art, also processes for soldering metals and superficially colouring them, besides formulæ for making gold and silver links. The text is full of grammatical errors and ignorant spellings, which show the writing to have been the work of an uneducated artisan; the recipes are not arranged in order, several appear in duplicate,—they exhibit no indication of chicanery, although some of the methods are unprofitable. The whole papyrus, in short, is evidently the memorandum-book of a goldsmith (or silversmith) engaged in attempts to imitate gold and silver for fraudulent purposes. Only one author is cited, "Phimenas," who is probably Pammenes, author of recipes occurring also in other manuscripts. The preparation of *asem*, an amalgam of copper and tin, plays a prominent part among the recipes for imitating gold. But time forbids a full analysis of this remarkable manuscript; as a result of Berthelot's careful study of this and analogous treatises, he comes to the conclusion that the doctrines of alchemy concerning the transmutation of metals did not originate in the philosophical views of the constitution of matter, as generally supposed, but in the practical experiments of goldsmiths occupied in making fraudulent substitutes for the precious metals. The "Introduction" contains a chapter on the relations between the metals and the planets, of Chaldean origin,

* Read before the Washington Section of the American Chemical Society, March 12, 1896. From the *Journal of the American Chemical Society.*

and constant occurrence in the early writings, which is illustrated by facsimiles of several manuscript pages. Another chapter is devoted to the figures of apparatus occurring in the treatises of the eleventh to fourteenth centuries; these include water-baths, digestors, aludels, alembics, and a great variety of apparatus for distillation.

The sixth chapter of the Introduction is divided into twelve sections; these deal with several Greek manuscripts, notably those preserved in the libraries of St. Mark, Venice, the Escorial, the Vatican, Rome, Gotha, and in Munich, appertaining to the eleventh to fourteen centuries; of these we note only a few features. At the beginning of the MS. of St. Mark, in one of the earliest of chemical bibliographies, it gives the title of fifty-two treatises, verily not in modern style, yet quite suggestive; among them are the following:—"Emperor Heraclius, eleven chapters on the manufacture of gold." "Justinian, five chapters on the secret art." "Heliodorus, on the divine art." "Theophrastus, verses on this art." "Moses, on the diplosis (doubling) of gold." "Lexicon of the gold-maker, in alphabetical order."

This association of names of Emperors of Rome, Greek classical writers, and the Hebrew law-giver, with chemical and alchemical treatises, is characteristic of the period at which they were compiled, and by no means denotes actual authorship; the names of prominent men were given to the treatises in order to add to the dignity and authority of the writings. This custom prevailed as late as the sixteenth century, and, in certain cases to be noted here after, gave rise to undeserved honours. An entire group of writings have been ascribed to Democritus, giving rise in Egypt to what may be styled the school of Democritus. A certain Zosimus, of Panopolis, is credited with a veritable encyclopædia of the sacred art, a work which occupies ninety pages of Berthelot's volume.

The 'Collection des Alchimistes Grecs' comprises no less than 160 different treatises on the science of Hermes. Many of these are fragmentary in the extreme, extending to only six lines, and even less. All are composed in an archaic, enigmatical style, combining, in one undecipherable medley, chemical terms of obscure meaning, magical formulæ, astrological notions, citations from mythical authors, and mystical allusions to a philosophy long since buried too deep for present resurrection. It is not surprising that commentators early felt the need of lexicons of the sacred art, and such are preserved in these volumes; unfortunately, however, the definitions are no clearer than the words defined; one word was often used for a score of different objects and processes, and a single article was known by a dozen different names. To convey to readers any idea of these extraordinary literary productions by citations is hardly practicable in the space available, for passages lose much when removed from their original settings. The actual chemical knowledge exhibited in these ancient manuscripts is varied, and yet indefinite owing to the numerous obscure expressions; the authors were acquainted with a large number of ores, minerals, earthy substances, and saline bodies, as well as vegetable and animal products, but their ignorance of the mineral acids and their important derivatives limited them to products obtained by aqueous solution, distillation, and the action of heat. Of scientifically classified knowledge there is no trace; the alleged opinions of mythical writers are given as authoritative, and information is imparted in the tedious form of dialogues between philosophers, who remind one of the Scotchman's definition of metaphysicians:—"Poor bodies discussing things of which they know nothing in a language neither of them can understand." Many of the writings contain reverent acknowledgments of the Deity and other evidences of piety. There is a good deal of duplication, arising from the introduction into an essay of passages from another, generally

without acknowledgment. Berthelot remarks incidentally that the term *Philosophers' Stone* does not occur in writings earlier than the seventh century, although the central idea is much more ancient.

Each of the three quarto volumes which constitute Berthelot's *La Chimie au moyen âge* bears an independent title; that of the first volume reads—"Essay on the transmission of the knowledge of Antiquity to the Middle Ages; transmission of Technology; translations of Arabico-Latin treatises, with a new version of the 'Liber Ignium' of Marcus Græcus, and an original edition of the 'Liber Sacerdotum.'"

This volume covers the period from the fall of the Roman Empire to the thirteenth century, thus filling the gap between the ancient Greek alchemists and the Latin writers of the later epoch, a period which had been previously unworked or misunderstood. Berthelot finds that the transmission from the earlier to the later era was accomplished by two agencies; first through the Arabians, who succeeded to the literary and scientific wealth of the Greeks. The Arabic treatises, preserved in the Mohammedan libraries of Spain, were translated into Latin, and thus became for Western nations the sources of their knowledge in medicine, alchemy, mathematics, and philosophy. Some of these translations were collected and printed in the seventeenth century in the works entitled 'Theatrum Chemicum' (5 vols., 1613-22), and 'Bibliotheca Chémica' of Mangetus (2 vols., folio, 1702), and Berthelot discovered in these Arabico-Latin treatises entire passages from the ancient Greek alchemists.

The connection between the Greeks and Arabians was not, however, immediate, but through the Syrians, who were among the first to translate the philosophy and science of the Greeks into an Oriental tongue. These Syriac versions form the subject of the second volume.

A second link between the Greeks and the Latin alchemy was more directly forged, though difficult of recognition; the processes used in industrial arts and metallurgical operations by the Greeks had been adopted by the Latins as early as the time of the Roman Empire, and this chemical technology was preserved through centuries of intellectual degradation to the beginning of the Middle Ages.

The most ancient Latin treatises on chemical technology are the 'Compositiones ad tingenda,' dating from the close of the eighth century, and the 'Mappæ clavicula,' written before the tenth century. These are collections of recipes for industrial processes analogous to those in the Leyden papyrus, and forming links in a chain that extends from that ancient work through the treatises of the Middle Ages to the modern 'Workshop Recipes' and 'Manuels Rorets.' The full title of the 'Compositiones ad tingenda' is as follows: [Translation.]—"Recipes for colouring mosaics, skins, and other objects, for gilding iron, for using minerals, for writing in letters of gold, for soldering metals, and other technical documents." The following are some of the subjects treated:—The colouring of artificial stones used in the manufacture of mosaics; the manufacture of stained glass; the dyeing of skins in purple, green, yellow, and reds; the dyeing of wood, bone, and horn; a list of ores, metals, earths, and metallic oxides, used in jewellery and in painting; a number of recipes for gilding on glass, woods, skins, garments, and the metals. All these topics are treated in barbarous Latin, bordering on a species of jargon; some were originally written in Greek, and copied by ignorant scribes in Latin letters, which shows the influence of Constantinople. In one of the sections on ores the word "vitriol" occurs for the first time, being the eighth century, and in the correct significance of an impure ferrous sulphate. A very rational grouping of substances occurs in this work; the minerals and earths are by themselves; then follow gums, resins

and other products of plants and, thirdly, substances derived from the ocean, such as salt, coral, and mollusks yielding purple dye. A certain receipt for writing in letters of gold is practically identical with one in the Papyrus of Leyden.

A formula for making bronze shows the origin of this name, *De compositio brandisii*, Brindes being a synonym of Brundisium (Brindisi), a town noted in Pliny's days for its metallic mirrors.

A large part of 'Compositiones ad tingenda' is reproduced in the work entitled 'Mappæ clavicula,' of which the earliest known manuscript dates from the tenth century. This latter treatise contains recipes for making gold, for multiplying gold, and imitating the precious metal, closely resembling those of the ancient Greek papyri. In this connection cautions are given to conceal the secrets, and an incantation is prescribed to be used during the operation. Exceeding interest attaches to the fact that the use of the hydrostatic balance in analysis of an alloy is clearly described, for this proves that the knowledge of this instrument did not pass through Arabian channels, and possibly came down direct from Archimedes.

The 'Liber ignium ad comburendos hostes,' by Marcus Græcus is one of the most ancient Latin treatises on Greek fire, dating from the twelfth or thirteenth century, and is probably a translation from an earlier Greek work transmitted through Arabian channels. It deals with instructions for making Greek fire, so-called, phosphorescent materials, fire-proofing substances, and the preparation of fuses and petards, composed in part of saltpetre. Greek fire itself, however, dates from the second century B.C., and phosphorescent stones are named in the much earlier Greek alchemical manuscripts.

Berthelot devotes an interesting chapter to the discovery of alcohol. This product of distillation first appears under the name *aqua ardens*, and the term alcohol in its present signification does not occur before the middle of the fourteenth century; the term *spiritus vini* is also comparatively modern, and *aqua vitæ* seems to have been applied to alcohol for the first time by Arnald de Villanova, who died in 1314. The fact that wine yielded an inflammable substance was, however, already noted by Aristotle, but this body was not isolated. Rhases has been given credit for acquaintance with alcohol, but this is erroneous.

The preparation of alcohol by distilling wine is, however, mentioned in a copy of the 'Mappæ clavicula,' written in the twelfth century, and in the 'Liber ignium' of Marcus Græcus.

In attempting to trace to their origin Latin treatises which claim to be translated from Arabic, Berthelot made the important discovery that they are fraudulent, the Arabic manuscripts having no existence. Thus the chemical works attributed to the Arabian physician Jabir ibn Hayyan (Abu Musâ), commonly called Geber, are shown to be fictitious, and the great reverence paid to him as a pioneer in chemistry has been misplaced. The whole history of chemistry has been falsified by giving credit to the Arabians for knowledge which really belonged to a period five hundred years later.

Yet the historical personage Geber, who lived in the ninth century, left many treatises in Arabic, now preserved in Paris and Leyden, and the translation of these occupy 100 pages of the third volume; they are very different from the works so widely known as Geber's, which are found in Latin, French, German, and English.

In like manner the current alchemical treatises ascribed to Raymond Lully are shown to be fictitious, yet his works on philosophy in the Provençal language are extant.

The pseudo-Arabic works in their Latin form contain, however, traces of the ancient Greek alchemical writings, and to endow them with authority the writers referred the text to mythical personages,

and as these were cited by later authors who did not doubt their genuineness, the pseudo-treatises acquired undeserved renown. Students of alchemy who have been revelling in the works of Morien, Kalid, Zadith, Mary, and the collection of citations entitled 'Turba philosophorum,' are loth to have their antique idols shattered, but this is the fate of every branch of human knowledge when subjected to the modern methods of searching analysis.

The second volume of 'La Chimie au moyen âge' has the sub-title, "Syriac Alchemy, comprising an introduction and several treatises of Syriac and Arabic alchemy from the manuscripts in the British Museum and Cambridge; text, and translation."

The existence of Syriac alchemical manuscripts in the British Museum was pointed out to Berthelot by Professor Richard Gottheil, of Columbia University, New York City. The most important of these, entitled "The Doctrine of Democritus," was translated from Greek between the seventh and ninth centuries. It begins with a charge of self-purification, followed by a key to the symbols used in the manuscript; these signs resemble in part those occurring in the writings of the earlier Greek alchemists. The first section of the "Doctrine" is called "The Preparation of Gold," the second is called "On the Philosophers' Stone," and the succeeding parts contain a collection of recipes, processes with metals, as well as with sulphur, antimony, arsenic and ores, analogous to the Leyden papyrus and the 'Mappæ clavicula.' Rude drawings of apparatus accompany the text. The writer shows acquaintance with a very large number of chemical substances.

The Library of the University of Cambridge possesses a Syriac manuscript, which is a translation of portions of the Greek writings of Zosimus, Democritus, and others. It is similar in character to the preceding.

Volume III. of 'La Chimie au moyen âge' has the sub-title, 'Arabian Alchemy, comprising an historical introduction, the treatises of Crates, el-Habib, Ostanes, and Djâber, from manuscripts in Paris and Leyden; text and translation.'

The Arabic treatises here named are the genuine writings, not the fictitious ones known only in Latin. The first Mohammedan writer on alchemy was Khâled ben Yezid ibn Moaouïa, Prince Omeyyade, who died in 708; he is a historic personage and the reputed teacher of Djâber. Only the titles of his works have come down to us. Djâber, the Geber of the Latins, was, however, the great master of the art and enjoyed the highest reputation throughout the Middle Ages; he is credited with 500 treatises, an Oriental exaggeration. Six of these are here collected and translated. They exhibit evidence of Moslem faith on the part of the author; he shows familiarity with the hydrostatic balance, with many species of minerals (of which an ingenious classification is given), and he discourses on the changes in volume produced by heat and by cold; at the same time he admits using allegorical and obscure language in all his works. There is no reference to the mineral acids, to nitrate of silver, and other chemicals that Geber is supposed to have known. Perhaps the most clever passage in his works is the following from the 'Book of Mercy':—

"I saw that persons engaged in attempts to manufacture gold and silver were working ignorantly and by wrong methods; I then perceived that they were divided into two categories, the dupers and the duped. I had pity for both of them."

Berthelot's superb volumes comprise more than 2600 pages, and much of the contents defies review. Besides these original documents he has published two works dealing in more popular style with the periods of alchemy and Middle Age chemistry. These are entitled: 'les Origines de l'alchimie' (1885), and 'Introduction à l'étude de la chimie des anciens et du moyen âge'

(1889) the latter is largely reprinted in the quarto volumes; all are charmingly written, well illustrated, and well indexed.

Berthelot had extraordinary qualifications for the task and enjoyed unrivalled opportunities; the result is a magnificent contribution to the history of chemistry, of the utmost interest to the chemical student as well as to the philosopher.

LAVENDER AND ITS CULTIVATION.

BY F. S. CLIFFORD.

Old England with all its historical memories flood upon us when the refreshing odour of lavender greets our smelling faculties. The climate of England appears to be better adapted to the perfect development of this fine old favourite perfume than any other on the globe.

"In each bright drop there is a spell,
'Tis from the soil we love so well,
From English gardens won."

Various authors say that the sense of smell is the sense of imagination. As it has before been stated, how wonderful is the mind, that one who has learned to distinguish and name odours can recall many hundreds by name through the sense of smell. There is no doubt that pleasant perfumes exercise a cheering influence on the mind, and easily and indelibly become associated with remembrances. Sounds and scents share alike the property of refreshing the memory, and place vividly before our minds scenes of our past life, an effect which Thomas Moore beautifully illustrates in his "Lalla Rookh":—

"The young Arab, haunted by the smell
Of her own mountain flowers as by a spell,
The sweet Elcaya, and that courteous tree,
Which bows to all who seek its canopy,
Sees called up round her by the magic scents,
The well, the camels, and her father's tents,
Sighs for the home she left with little pain,
And wishes e'en its sorrows back again."

Tennyson expresses the same feeling in his "Dream of Fair Women":—

"The smells of violets hidden in the green,
Poured back into my empty soul and frame
The times when I remember to have been
Joyful and free from blame."

Criton, Hippocrates, and other ancient doctors classed perfumes among medicines and prescribed them for many diseases, especially for those of a nervous kind. Pliny also attributed therapeutic properties to various aromatic substances, and some perfumes are still used in modern medicines. Who would think of depriving the sick or well of flowers or of forbidding their use?

When perfumes are rightly and discriminatingly used, as they should be, how do they differ, except in favour of the perfumes? For it is true that some particular kinds of flowers if left in a sleeping-apartment all night, will sometimes cause headache and sickness, but this proceeds not from the diffusion of their aroma, but from the carbonic acid which they evolve during the night. If a perfume extracted from the same kind of flowers were left open under the same circumstances no evil effect would arise from it.

Discarding, however, all curative pretensions for perfumes, I think it right at the same time to combat the doctrines of some who hold that they are injurious to health. I have never heard or knew of a case where anyone was seriously harmed by their use in large quantities or by continual use.

It can be proven that the use of perfumes in moderation is beneficial than otherwise, and in cases of epidemic they have been known to render important service, both as curatives and preventives, were it only to the four thieves, who, by means of their famous

aromatic vinegar, were enabled to rob half of the population of Marseilles at the time of the great plague, without any fear of infection.

We have also seen the benefits of the employment of perfumes in our own times, when small-pox, cholera, and contagious diseases were prevalent in our land. As for health, we only ask that those who are constantly engaged in handling and manufacturing perfumery be observed, and that their physical condition be compared with that of any other class of manufacturers or professional men. The cultivation of flowers for the manufacture of perfumes also gives out-of-door employment to thousands.

One great benefit in the use of perfumes is that it tends to cleanliness, and "Cleanliness is akin to Godliness." Almost compelling one to notice when they are breathing a vitiated air, or associated with filth. The nose educated is a true monitor. To the "unlearned" nose all odours are alike, but when tutored, either for pleasure or profit, no member of the body is more sensitive.

Lavender is a native of Persia, the Canaries, Barbary, and the south of Europe, from the last of which it is said to have been first brought to England, where, finding a congenial soil, and being cultivated, it yields an otto very far superior to that produced from its original place of growth.

Lavender is grown to an enormous extent at Mitcham, in Surrey, and at Hitchin, in Hertfordshire, England. Very large quantities are also grown in France, that grown upon Mont Blanc being the finest.

Who will be the first to experiment with the growth of lavender in the United States? Surely some part of our wonderful country will be found to be the most favourable place in which to cultivate it to perfection. Thirty-five hundred lavender plants can be grown on an acre of ground if the plants are placed three feet apart and four feet between the rows. An acre of plants yields about fifty pounds of otto of lavender.—*Spatula*.

CAMPHOR.

Camphor is not the exclusive product of any one natural order, genus, or species; but what is more remarkable, of closely allied species of camphor-yielding genera—one species possesses the secretion, while no trace of it is found in another. Although several kinds of camphor are articles of commerce, little, if any, reaches this country, save that obtained from *Cinnamomum camphora* (*Camphora officinarum*), a member of the laurel family, and of the same genus as the tree whose bark furnishes the spice called cinnamon. Like many other natural products of which scientific research has multiplied the applications, camphor is becoming dearer and scarcer, and the question has arisen, How is the supply to be maintained equal to the demand? The bulk of the camphor imported into Europe comes from Japan and Formosa, and comparatively little from China. This is the product of *Cinnamomum camphora*, and Dr. E. Grasmann has published* an interesting account of this tree, both from a scientific and commercial standpoint. He has rather overweighted his article with second-hand information respecting laurels generally and those of Japan in particular, which, as might be expected, is inaccurate in some details. Disregarding these, we find much that is interesting concerning the camphor tree itself, which is one of the noblest objects in the forests of eastern sub-tropical Asia. It attains gigantic dimensions, surpassing all other trees of the Japanese forests, at least in girth of trunk if not in total height. Dr. Grasmann gives

* 'Der Kampherbaum. Mittheilungen der deutschen Gesellschaft für Natur- und Völkerkunde Ostasiens in Tōkiō,' vi., pp. 277-315, with illustrations. 1895. Reprinted from *Nature*.

the recorded dimensions of various notable trees, but what is more to the point, he also gives measurements made by himself. A tree in the neighbourhood of the town of Miyazaki, Oyodomura, measured in 1894, was 14.80 metres in circumference at 1.30 M. from the ground, or 4.48 M. in diameter, and it was 35 M. high.

There is an illustration of this giant reproduced from a photograph. Concerning the distribution of the camphor tree in Japan, the author states that it grows naturally in Kinshin up to about 34° lat., and scattered in favourable situations some 2° farther north, the extreme limit being 36° 24'. It is abundant in the island of Formosa, and also occurs in the Tsusima and Luchu groups. On the mainland of China, according to Dr. Grasmann, it inhabits the coast region from Cochin-China to the mouth of the Yangtzekiang, and it may be added that it is now known to extend westwards at least as far as Ichang in the central province of Hupeh. From Dr. A. Henry's notes accompanying his specimens in the Kew Herbarium, it appears that the wood is in great request, but no camphor is extracted; and Consul Playfair reported the same from Pakhoi, Kwangtung, in 1883. Indeed the camphor industry would seem to be at present very limited in China, although the tree is common and widely spread. The little that is exported is mostly from the province of Fokien, but the amount is increasing in the same measure as the production is decreasing in Japan. In the latter country something has been done to maintain the supply, but Dr. Grasmann holds that the present rate of planting is wholly inadequate. He urges the importance of increasing the plantations to the greatest possible extent, inasmuch as every part of the tree is useful, from the roots to the young shoots and leaves. Even the fruit is employed in the preparation of tallow. In Formosa camphor distilling has been carried on in the most recklessly extravagant manner imaginable. It is suggested that Japanese rule in the island may put a stop to such disastrous waste.

With regard to the increasing price of camphor, it has been stated in various publications that this is due to its being used in the manufacture of smokeless powder. In reply to inquiries on this point, Sir Frederick Abel wrote to the Director of Kew in November last as follows:—

"Any increase of demand, involving a rise in the price of camphor, is not due to its application as a constituent of smokeless powder. That material was used in the earliest days of the manufacture of a successful smokeless powder for artillery and small arms; but its employment was soon demonstrated to be attended with serious practical disadvantages, and its application for the purpose can therefore not be said to have been other than experimental, and of no great importance, even at that time, as affecting the market value of camphor. This substance, has, however, been used extensively for many years past, and no doubt in continually increasing quantities, for the conversion of collodion cotton into the material known as celluloid, which is applied to the manufacture of imitation ivory, tortoiseshell, horn, and a great variety of purposes."

As Dr. Grasmann observes, the greatest enemy of the camphor tree is man, and in Japan large trees are eventually killed through the felonious nocturnal grubbing of their roots. Some birds are fond of the fruit and seed, and the caterpillar of *Papilio sarpedon* feeds on the leaves; but, except to young plants, they cause comparatively little damage. Apart from the wanton destruction of trees, the probability of the supply of camphor being maintained is seriously diminished by the fact that the tree grows but slowly in its early years. At the same time it colonises freely, and is now naturalised in several countries, notably in Madagascar, where, according to Dr. Meller, in a note accompanying a specimen in the Kew Her-

barium, it was abundant as long ago as 1862, and was much used for building purposes.

Next in point of importance in producing camphor is *Dryobalanops aromatica*, a tree belonging to the Dipterocarpeæ, and inhabiting Borneo and Sumatra. The formula of ordinary camphor is $C_{10}H_{16}$; of Borneo camphor, $C_{10}H_{18}O$; and the latter can be artificially prepared from the former. Borneo camphor is deposited in clefts and hollows of the wood, and has simply to be taken out; but it is comparatively rare, and exceedingly dear, bringing eighty times more, according to Grasmann, than ordinary camphor. Nearly the whole production is imported into China, where it is esteemed beyond the ordinary camphor, and used as incense.

Blumea balsamifera (Compositæ), a shrubby plant exceedingly common in tropical Asia, yields a kind of camphor by distillation. Hainan is the principal seat of the industry, but the crude article is refined at Canton, whence there is an annual export of about 10,000 pounds. No doubt this source of camphor could be much more extensively utilised.

Members of various other natural orders, notably the Labiatae, yield essential oils of the same composition, and having the same properties, as camphor. Menthol is an example.

PHARMACEUTICAL SOCIETY.

DONATIONS TO THE LIBRARY AND MUSEUM.

At a meeting of the Library, Museum, School, and House Committee, held on Wednesday, the 10th inst., the Librarian presented the following report of donations:—

To the Library (London).

School of Pharmacy Students' Association:

Papers read, 1894-95, vol. 21.

New South Wales Department of Agriculture:

Agricultural Gazette, 1891-93, vols. 2-4.

Pharmaceutical Society of New South Wales:

New South Wales Pharmacy Board Register, 1896.

Herr E. Dieterich, Helfenberg:

Helfenberger Annalen, 1895.

Prof. A. Tschirch, Bern:

Pamphlets on various subjects.

Mr. John Barclay, B.Sc., Birmingham:

Southall's Organic Materia Medica, 5th ed., 1893.

Royal Institution of Great Britain:

List of Members, etc., 1895.

Proceedings, no. 89, 1896.

American Pharmaceutical Association:

National Formulary, revised ed., 1896.

To the Library (Edinburgh).

American Pharmaceutical Association:

National Formulary, revised ed., 1896.

Royal Society of Edinburgh:

Proceedings, vol. 20, 1893-95.

Indian Meteorological Memoirs, by J. Eliot, M.A., vol. 7; vol. 8, part I. 1894-95.

The following report of donations was presented by the Curator:—

To the Museum.

Mr. G. H. Hawtayne, C.M.G., F.R.G.S., Administrator-General British Guiana:

Specimen of the pods of *Mucuna pruriens*.

Messrs. T. Christy and Co., London:

Three specimens of medicinal products from Curaçao.

Messrs. Wright, Layman, and Umney, London:

Specimen of spurious jaborandi.

The Smithsonian Institution, Washington, U.S.A.:

Report of the U.S. National Museum, 1893.

To the Herbarium.

Dr. Geo. King, M.B., LL.D., C.I.E., etc., Superintendent Botanical Gardens, Calcutta:

Flowering and fruiting specimens of *Microstemon officinalis*.

Mr. H. N. Ridley, M.A., F.L.S., Director Botanical Gardens, Singapore:

Specimen of *Alyxia lucida*.

PHARMACEUTICAL JOURNAL.

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THE WORKING OF THE SALE OF FOOD AND DRUGS ACT.

THE evidence given before the Select Committee appointed to inquire into the working of the Acts of Parliament relating to adulteration, has in various ways given definite expression to the belief that considerable amendments will be necessary for effectually repressing adulteration, without at the same time inflicting hardship or unduly interfering with trade. The report of the Second Committee, which sat during this year, has still to be published, and it may be expected that the advantage of thoroughness may result from the long duration of the inquiry and from the opportunity which has been given for statements of opinion on all sides. In the present state of parliamentary affairs there is probably but small prospect of amended legislation on this subject during the current session, but some brief indication of the results arrived at may be useful meanwhile.

It has been shown that the initial machinery of the Food and Drugs Acts was faulty, because if the local authorities of any district declined to come under the provisions of the Acts, or were indisposed to work them to prevent adulteration, there was no central authority possessed of the power to compel them to do their duty to the community in protecting the consumer. Even after the principal Act had been in operation twenty years it was shown that the food of a population of about three millions was not protected, the Act either not having been put in force or no samples taken for analysis. This defect must be remedied without delay, and there is reason to expect that the Committee will recommend that the Act be made compulsory instead of permissive as at present. Complaints were common that the inspectors' purchases were made from small rather than large tradesmen, from ignorant shopkeepers not knowing the law. Hence for mutual protection certain manufacturers of proprietary articles, such as cocoa and mustard, stated that to safeguard such customers they had been compelled to modify the sizes of their packages, so that the smallest quantity usually required should be sold in an unbroken packet labelled in conformity with the law, and not taken from a bulk quantity to be labelled by the seller, as has been the practice till recently.

Representatives from such branches of trade as the milk, butter, and lard industries, where the natural variations of composition are marked, or where changes occur by keeping, spoke strongly of the expense which had been incurred in defending actions brought against them for adulteration. Many analysts have not yet realised what an adulterated article really is, and consequently attempts have been made to fix arbitrary standards of purity and to work up to an average quality instead of conforming to the provisions of the Act. The illegality of such a course is well illustrated by the recent case of *HEWITT v. TAYLOR*, better known as the "Mossley Milk Case," tried in the Court of Appeal before Lords Justices LINDLEY and KAY. It was contended that because the non-fatty solids of a milk were 7.98 per cent., and the analyst had certified that upwards of six parts of water had been added to every 100 parts of the milk, the defendant should be convicted on the analysts' certificate. The defendant, however, satisfied the magistrates that the milk was, when sold, in the same condition as when milked from the cow, and they dismissed the case. The Lords Justices upheld the magistrate's decision.

A representative of the lard refiners mentioned four cases which occurred in the year 1895, in which the local analysts, whose names were given, had pronounced the lard sent out by his firm to be adulterated. In the interest of his customers the cases were defended, and all were dismissed. The cost of the defence amounted to £425, but the costs allowed reached the insignificant sum of £15, leaving £410 as expenses out of pocket, in addition to the loss of time and injury done to the business by such proceedings.

One of the most striking indications of the defective nature of the present Acts is the conflict between public analysts and the chemical officers of the Board of Inland Revenue appointed to act as referees in cases of dispute. In the absence of any sufficient definition of what constitutes adulteration, differences of opinion have arisen which have been in many instances perplexing to magistrates, and have hindered the just administration of the law. The friction which has existed between the analysts and referees, since they were appointed in 1875, assumed, as was natural, an acute form when Mr. HEHNER, as the representative of the public analysts, gave evidence. He claimed for the public analysts that their methods of analysis were the best of their kind, and that the improvements in food analysis were mainly due to the original work duly recorded in the *Analyst*, which "is a mine of information to which every analyst in this or other countries goes." The charges made by other witnesses as to the unsatisfactory work of some analysts were represented as beneath notice, and even the lard cases above referred to were not explained.

The evidence given was considered by the PRESIDENT as challenging the competency of the Court of Appeal, and in the end rebutting evidence was allowed. It was then contended that the detection of the adulteration of articles such as tea, coffee, pepper, spirits, arrowroot, vinegar, and other products on which a duty had been imposed, had been in existence long before there was an Adulteration Act, and that in the case of milk and butter, but especially milk, reliable methods of analysis had been in force shortly after the passing of the Act, and that the natural variation in the composition of milk and butter were at the same time investigated. The pages of the *Analyst* were referred to, and quotations made from it to show that in 1885, ten years after the Act had been in operation, a special committee of public

analysts, selected by their colleagues for their expertness in milk analysis, could not examine the same milk under the most favourable conditions without varying from each other in the non-fatty solids and fat as much as seven-tenths of one per cent., and that when attempting to estimate the quantity of water which had been purposely added to a sample of milk, whose composition was known to them, they were compelled to abandon the figures they had obtained as representing "solids not fat," and "fat," and rely on the "total solids" for their results. In the case of butter, reference was made to the writings of the Public Analysts' representative, where it was stated that the average percentage of insoluble fatty acids in butter was 85.85, that three years later the average was 87.3, and that the lowness of the first results was due to "loss by spurting" in the evaporating basin. Much evidence of a similar kind was given.

THE CONFERENCE AT LIVERPOOL.

THE time of meeting of the British Pharmaceutical Conference is rapidly approaching once more, and the provisional arrangements made by the local committee at Liverpool were explained by Mr. WARDLEWORTH at a meeting of the Executive Committee, held on June 3. Briefly, the proposed arrangements and approximate times are as follows (see page 476):—

Monday, July 27.	{ 8.30 p.m.—Reception by the President (Mr. Wm. Martindale) at the Walker Art Gallery.
Tuesday, July 28.	{ 10.0 a.m.—Address by the President, followed by Sessions of Conference.
	{ 1.15 p.m.—Luncheon at the Adelphi Hotel, followed by Sessions of Conference.
	{ 4.0 p.m.—Cruise on the Mersey, and visit to the Manchester Ship Canal.
Wednesday, July 29.	{ 10.0 a.m.—Resumption of Sessions of Conference.
	{ 4.0 p.m.—Visit to the Watch Factory at Prescott.
	{ 8.30 p.m.—Smoking and Drawing-Room Concerts at the Adelphi Hotel.
Thursday, July 30.	{ 9.0 a.m.—Excursion to Hawarden, Eaton Hall, and Chester.

There is good reason to believe that exceptional efforts will be made locally to render the meeting of 1896 a memorable one, and it is common knowledge that the pharmacists of Liverpool, who usually work so well together, are fully capable of making a success of anything of the sort they take in hand. It may also be noted here that the arrangements for reporting the proceedings in the *Pharmaceutical Journal* will be somewhat modified this year, the intention being to publish a full report, including all the papers read, in the number for August 1. Members who find themselves unable to attend the meeting will, therefore, be able to read a full account of the proceedings in the Journal before the company assembled at Liverpool has dispersed.

With regard to the place of meeting for 1897, we understand that it will probably be still further north than Liverpool, as Scotland is likely once more to have an opportunity of displaying her unsurpassed capacity for entertaining public bodies. At the Liverpool meeting an invitation to the members of Conference to assemble at Glasgow the following year, will be given on behalf of the pharmacists of that city and district, by Mr. W. L. CURRIE, President of the Glasgow and West of Scotland Pharmaceutical Association, and it may well be imagined that few will complain if the invitation should be as cordially accepted as it will be given.

ANNOTATIONS.

THE SALE OF POISONOUS PREPARATIONS BY UNQUALIFIED PERSONS.—The *Patent Medicines Journal*, referring to the action of the Pharmaceutical Society in fulfilling its statutory duties with regard to the sale of poisons, thinks "there will have to be an end one of these fine days to the pretence that all these prosecutions are instituted in the interests and for the 'protection of the public,'" as "it is a hollow cry at best," and "why not admit that the real main-spring is the determination of the chemists to protect themselves?" It might be imagined from this petty outburst that the Society was on its trial before our contemporary and had been pleading justification. But surely there is no necessity for the Society, as a legally constituted body, to excuse itself for doing what the law requires of it, and perhaps if the readers of the *Patent Medicines Journal* would in like manner seek to keep within the letter of the law, there would be little need for the publication of rash assertions about "harassing respectable people who are engaged in a respectable manner of earning a living." Perhaps, too, the *Patent Medicines Journal* might then find its occupation gone, and the energies of its staff be devoted to more promising labours?

GERMAN CHEMICAL INDUSTRY.—According to the Consular Report on the trade of Mannheim for 1895, a number of newly-invented pharmaceutical products were offered during the year, some of which are expected to prove valuable, but it is complained that most of them had been introduced before being properly tried. Trade in quinine recovered towards the end of the year, after being rather dull, whilst cocaine was in good demand throughout the year, though at prices that left little or no profit. Salicylic and gallic acids fell greatly by reason of fresh competition or dissolution of conventions, and the sale of alcohol preparations was considerably affected by the continued changes in the fiscal impost. Export prices for such products were purely speculative, as the manufacturers were quite uncertain whether drawback to the full amount would be allowed. The new tax is said to demand a fresh revision of the import duties on alcohol preparations, since as things are, both foreign countries and the chemical factories in the free port of Hamburg can alike manufacture such products cheaper than Germany itself.

PHARMACIES IN DENMARK.—The number of pharmacies in Denmark is so limited that it is possible to indicate their position very clearly on a map of the country of moderate size, as has been done by H. J. Moller in his 'Kort over Danmarks Apotheker.' There are 88 "personal" pharmacies (*Personligt Apotheksprivilegium*), the licence to conduct which is not transferable, and lapses with the death of the owner or his widow. Unless the widow is herself legally qualified, she must have a qualified apotheker in charge. Then, there are also 81 "real" pharmacies (*Reelt Apotheksprivilegium*), which may be conveyed by the owners to others, and seven branch pharmacies (*Hjælpeapothek*). Denmark also boasts of 160 physicians (*Distribuerende Læge*), who are permitted to sell medicines, 11 others (*Dispenserende Læge*), who may dispense their own medicines but not keep open pharmacies, and 10 retailers of medicines other than poisons or potent drugs and preparations, who must not dispense (*Haandkøbsudsalg af Medicamenter ved Ikke Apothekere*). The neighbourhood of Copenhagen is naturally best served from a pharmaceutical point of view, whilst Iceland is the abode of four apothekers only—three "personal" and one "real."

ELECTION OF EXECUTIVE OF THE NORTH BRITISH BRANCH.—Voting papers for the election of members of the North British Branch Executive have been issued, and must be returned by Thursday next, June 18. The list of persons eligible and willing for election includes twenty-three names, the whole of the members of the retiring Executive standing for re-election, except Messrs. Adam Gibson and John Nesbit, whilst the following eight new candidates offer themselves:—

Aitken, Robert, 73, Princes Street, Edinburgh.
 Baker, William Charles, 13, Dundas Street, Edinburgh.
 Dunlop, Thomas, 181, Albert Road, Pollokshields, Glasgow.
 McKellar, Arthur, 69, South Portland Street, Glasgow.
 Mackenzie, James, 45, Forroth Road, Edinburgh.
 McLaren, David, 42, South Clerk Street, Edinburgh.
 Macpherson, Colin Allen, 97, Dalry Road, Edinburgh.
 Mitchell, Donald, 30, Union Street, Inverness.

The result of the election will be announced on Friday, June 19, at a meeting of the Members and Associates in Business of the Pharmaceutical Society, residing in Scotland, and the Chairman's statement will be made at the same meeting.

ABERDEEN CHEMISTS' ANNUAL PICNIC.—At the last meeting of the Aberdeen and North of Scotland Society of Chemists and Druggists, the Secretary reported that the arrangements for the annual picnic were now completed. It has been arranged to go on Wednesday, July 1, by train to Aboyne, and from there, by kind permission of Sir William Cunliffe Brooks, Bart., of Glen-Tana, the company will drive to the top of the Forest of Glen-Tana, where a stay of two hours will be made to allow any who care to ascend Mount Keen (2305 feet). On a clear day a very extensive view to the south can be obtained from the summit, and the drive through the Forest is one of the finest on Dæside. Any member of the craft spending holidays in the neighbourhood, and wishing to join the excursion, should communicate with the Secretary, Mr. J. Cruickshank, 42, George Street, Aberdeen, as early as possible.

EDINBURGH CHEMISTS' ANNUAL EXCURSION.—We are requested to announce that the annual excursion of the Edinburgh District Chemists' Trade Association will take place on Wednesday next, June 17, when Loch Long and Loch Lomond will be visited. Full particulars and tickets (Edinburgh, 10s. 6d. each, Glasgow, 8s. 6d. each, including dinner and tea at Tarbet Hotel) may be obtained from the Hon. Secretary, Mr. C. F. Henry, 1, Brandon Terrace, Edinburgh, and any friends in the trade on the line of route, or at present sojourning in the district, will be heartily welcomed.

ANÆSTHETICS IN OPERATIONS ON THE THROAT, NOSE, AND EAR.—On May 22 last, at the Central London Throat and Ear Hospital, a post-graduate lecture on "Anæsthetics for Operations on the Throat, Nose, and Ear" was delivered by Mr. W. G. Holloway, B.A., M.D., Camb., Assistant-Surgeon to the Hospital, and brother of Mr. C. T. Holloway, A.P.S. The advantages in such operations of nitrous oxide gas, either alone or combined with ether, were pointed out and confirmed by a table recording 4500 successful administrations. The upright position was advocated as being the safest and most convenient both to operator and patient. Chloroform was deprecated as being dangerous in operations on the upper air passages, and unnecessary for short surgical procedures where nitrous oxide gas was sufficient to produce anæsthesia. The lecture was illustrated by photographic lantern slides specially prepared by the lecturer.

THE RÖNTGEN RAYS IN BOTANY.—Experiments with the Röntgen rays have been conducted at the University Extension College, Reading, and a brief report on the results obtained in botanical work appears in *Nature* for June 4. Mr. G. J. Burch there states that by suitably arranging the exposure and development, it has been found possible to show the ovules inside the ovary in an unopened bud, the seeds within a seed vessel, and even the veins upon the white petal of a flower. Apparently these results are due to refraction and reflection of the rays when the incidence is sufficiently oblique. Similar indications are visible in a photograph of a fish's eye prepared by Mr. Yetts, in which there is a narrow dark shadow that can only be due to internal total reflection, whilst the feathers are seen in a picture of a bird by Mr. Soper, and a print of a foot, developed by Mr. Herbert, shows the fabric of the stocking.

TWO KINDS OF X-RAYS.—Some phenomena observed by Mr. T. C. Porter, of Eton College, and also reported in *Nature*, seem to indicate that the rays to which attention was first directed by Professor Röntgen, are of two kinds. To one kind, designated x_1 , flesh is fairly transparent, and bone opaque, but to the others, distinguished as x_2 , flesh seems nearly if not quite as opaque as bone. Under ordinary circumstances, in the cold, most of the rays emitted from an excited tube are x_1 , but if the tube be heated the proportion of those is diminished, and more of x_2 are emitted. Wood and paper seem fairly transparent to the x_2 -rays, but glass is very opaque, and aluminium much more opaque than to the x_1 -rays. It is possible that the x_2 -rays may be related to the x_1 in the same kind of way that red is related to violet light.

DOCTORS' SHOPS IN ENGLAND, managed by unqualified individuals, do not perhaps constitute so great an evil as in the sister kingdom, but such do exist, as was shown at an inquest held at Sheffield on Saturday last. A spring-knife cutler, who had been somewhat addicted to drink and had also suffered from paralysis, purchased a quantity of laudanum at the shop belonging to Mr. Walter Mitchell, Sharrow Lane. This he drank, and death was the result. Mr. Mitchell, though a chemist and druggist, and as such fully entitled to keep open shop for the sale of poisons, is also a licentiate of the Society of Apothecaries, London, and his name appears on the 'Medical Register.' His brother, Thomas Mitchell, who is not registered as a chemist and druggist, stated at the inquest that he managed the shop and sold the laudanum during the proprietor's absence. He also pleaded ignorance of the fact that he had broken the law by so doing, but the jury considered that he had acted wrongly in selling the poison, and the coroner said that if any proceedings were taken, the Pharmaceutical Society would initiate them. The position of the proprietor of the shop, it may be observed, is hardly consistent with the principles that should guide him, either as a registered chemist or as a medical practitioner.

VACANCY OF THE PROFESSORSHIP OF CHEMISTRY.—As announced in the advertising columns of this and other journals this week, the Professorship of Chemistry in the Pharmaceutical Society's School of Pharmacy is now vacant, and applications are invited to be sent together with not more than six testimonials to the Secretary and Registrar, on or before Tuesday, 23rd inst. The Professor will be required to give his whole time to the duties of the chair, and will have charge of all the lectures and practical instruction given in the subject during the session, lasting from October to July. Full particulars may be had on application to Mr. Richard Bremridge, Secretary and Registrar, 17, Bloomsbury Square, W.C. It is specially noted that personal canvassing by candidates will be considered to be a disqualification.

REVIEWS AND NOTICES OF BOOKS.

A MANUAL OF PHARMACOLOGY AND THERAPEUTICS. By DR. WILLIAM MURRELL, Physician and Lecturer to Westminster Hospital. Pp. 657. Price 16s. 6d. (London: Baillière, Tindall, and Cox, King William Street, Strand. 1896.)

Dr. Murrell is so well known both as a physician and a therapist, that his work is sure to command attention. The physiological action of drugs and their practical uses are explained concisely, clearly, and correctly. The author has also managed to make the subject interesting; this is a great achievement, and is sure to find favour with students.

The omission of lists of pharmacopœial preparations no doubt makes the book more pleasant to read, but it certainly prevents it from being a complete and comprehensive text-book for the student, who is told by the author that "it is not worth while trying to remember the preparations of opium. There are only twenty of them, and they practically remember themselves." Dr. Murrell must be a man of some humour; for instance, in his description of the watering-places, he tells us that "Sandgate lives on the reputation of a past landslip and the promise of future improvements."

Speaking of the impurities of opium, we are told that "bullets and cow's dung are at a premium in opium-producing countries." The article on aconite is extremely important; Dr. Murrell lays stress on the great variability of the strength and composition of aconitine. The English aconitine is at least seventeen times as active as the German, the French being intermediate in power. There are many preparations of aconitine sold; Merck's is twenty to thirty times as active as that of Friedländer, whilst Petit's is eight times as active as Merck's. It appears that persons have been poisoned by the substitution of one preparation for another.

Antipyrin, or phenazonum, which is now so frequently prescribed, is not a drug that Dr. Murrell likes. He writes that "after small doses the symptoms not infrequently observed are epigastric pain, nausea, and vomiting, followed by weakness of the pulse, hurried respiration, and cyanosis. In some cases there is persistent sneezing, with lachrymation, and a flow of mucus from the nostrils. After larger doses the symptoms observed are intense headache, persistent vertigo, loss of memory, confusion of ideas, and deafness." It may safely be said that the general experience of the medical profession will scarcely confirm this statement, but nevertheless the warning is valuable.

At the end of the book is found a list of useful prescriptions, and also a dietary and recipes for preparing food for those in sickness and in health, describing not only the preparation of beef-tea and jellies, but also such dishes as devilled lobster and baked pork and beans.

CHEMICAL TECHNOLOGY. Edited by C. E. GROVES, F.R.S., and W. THORP, B.Sc. Vol. II.: Lighting. (London: J. and A. Churchill.)

Probably in no department of technology is the indication of progress more strikingly manifest than in the matter of "Lighting," and we have here the first instalment of the history of that subject in a well-illustrated volume of 400 pages, preparatory to the final consideration of "Gas and Electric Lighting, Lighthouse Illumination, and Photometry," which is promised at an early date in the next forthcoming issue.

The authors of the present treatise are Messrs. Dent, McArthur, Field, Redwood, and Louis, each taking the department for which he is specially qualified, and the subjects covered include Fats and Oils, Stearine Industry, Candle Manufacture, the Petroleum Industry and Lamps, and Miners' Safety Lamps. Taking these in the order mentioned Mr. W. Y. Dent devotes forty-five pages to the

description of the physical properties, processes for extraction, and modes of testing oils and animal fats, taking account only of those which are suitable for illuminants. The next section, Stearine, by Mr. J. McArthur, describes the methods of treatment (saponification and super-heated steam distillation) resorted to by De Milly, in France, and George F. Wilson, F.R.S., in this country, and enumerates the successive attempts directed to the preparation of fatty acids of higher fusion point, with saving of the glycerin. The apparatus for cold and hot pressing of the resulting fatty bodies is further illustrated, and the process of conversion of oleic into palmitic acid described.

There is a flavour of ancient history about the next article on Candle Manufacture, by the Messrs. Field, but the reader eventually finds in the narrative a clear account, with some admirable illustrations, of the latest and most approved forms of candle-making machinery. The chronology is certainly well told, and it is curious to note how in 1852, when bismuth was cheap, this metal and its corresponding nitrate were extensively employed for making Palmer's "Metallic Wick" and candles which did not require snuffing.

Section IV.: The Petroleum Industry, by Mr. Boverton Redwood, being an important division of the subject, is treated of very fully, reaching the length of 150 pages. There are maps of the districts and tables of statistics showing how widely distributed are these oil wells over the face of the globe. The United States and Canada, Russia, Hungary, India, Assam and Burmah, China and Japan all come in for extended notice; besides the shale oil beds of North Britain, Trinidad pitch, ozokerite, and natural gas. The drilling and boring plant, receptacles for storage and transport, distilling apparatus, etc., are fully described; and so enormous is the yield of the world's petroleum that it is easy to see how for a long time to come this product (refined kerosene) must continue to be the "poor man's candle." Reference is made incidentally to the light oils (petroleum naphtha), paraffin, and vaselin products; also to certain residues used as lubricants. The average constitution of the different sorts of burning oil, the modes of refining, and apparatus employed are very fully set out, the latter forming the subject of numerous illustrations.

The transition to Lamps, also by Mr. Redwood, is appropriate, and here we find ninety pages full of interesting matter and beautiful engravings, the details ranging from the elaborate Carcel lamp to the flaring lucigen. Oil gas, air-gas machines and carburettors, Railway and Ships' Lights form a kind of supplement to this chapter.

Finally, Section VI., covering fifty pages, is descriptive of Miners' Safety Lamps, and Professor Clowes's recent experiments with his Fire-Damp Indicator here find a record. The authors, Messrs. Boverton Redwood and D. A. Louis, seem to have got together every known kind of safety lamp, and from statistics it appears that the favourite nowadays is Marsaut's lamp or the Clanny, with glass cylinder fitted with two or three concentric upper cones of wire gauze protected by a strong metal covering or "bonnet." The lamp now seems to be generally provided by the miners, and not, as formerly, by the colliery proprietors.

It only remains to be said that the style of production of the work before us is eminently satisfactory, the printing and paper are good, and the illustrations excellent. The authors have spared no pains in bringing up to date the accounts of the several branches of technology entrusted to them, as will be seen by the formidable array of authorities quoted in the preface; and not only are the current sources of information laid under contribution, but a vast amount of extra professional or special papers brought under survey, including British and foreign government reports, transactions of learned societies, and especially those of mining and

engineering institutes, Cantor lectures, patent specifications, etc. For those engaged in technical teaching as well as pupils entering upon advanced courses of study, the volume ought to prove invaluable; and, in the rare cases of specialists demanding more than is here described, the numerous foot-notes and references to further sources of definite or local information and statistics will supply all that is needed to meet the case of what may fitly be termed extraordinary requirements, so that really nothing seems to have been omitted from the careful compilation which the editors have succeeded in placing before their readers in the work now under review.

LECTURES ON PHARMACOLOGY FOR PRACTITIONERS AND STUDENTS.

By Dr. C. BINZ, Director of the Pharmacological Institute in the University of Bonn. Translated from the second German edition by ARTHUR C. LATHAM, M.A., M.B. Vol. I. (London, 1895: The New Sydenham Society.)

It is with great pleasure that the appearance of an English translation of Professor Binz's admirable lectures on pharmacology is welcomed. In their original language they are well known and highly appreciated by many readers in this country, and the present excellent translation will do much to extend their usefulness. They possess a special interest in that they show us the matured opinions not only of a well-known teacher, but also of an investigator to whose experimental work we owe much of our knowledge of the precise actions of many important drugs.

Professor Binz defines pharmacology as "the scientific investigation—with reference specially to the requirements of the physician—of such substances as are contained in the official pharmacopœias of various countries, and are employed in the treatment of disease." He therefore attaches to it a much wider meaning than is usually understood in this country, and includes not only an account of the action and uses of each drug, but also its mode of preparation, composition, and tests; in fact, all that we usually understand as *materia medica*.

Only the first volume is published as yet, but this contains a large number of the more important drugs, including the anæsthetics, opium, the compounds of iodine, alcohol, the belladonna group, the digitalis group, strychnine, cocaine, ergot, the ammonium salts, the essential oils, and others of minor importance.

A clinical classification is adopted, not because it is free from faults, but "because it leads to the creation of a natural system, the ultimate aim of pharmacology being to provide for clinical needs." The pharmaceutical and chemical details are in most cases subsidiary to the account of the actions and uses of each drug; the toxicology and the treatment of poisoning is fairly given. All through the volume special prominence is afforded to such properties of drugs as are capable of experimental demonstration; many experiments are described in detail, and a number of diagrams are introduced to illustrate the effect of drugs on pulse, heart, or respiration. It is impossible to criticise fully all the chapters of the book. There are, however, a few points that may be noted as especially illustrating the marked differences which exist between the methods of using drugs here and in Germany. In the group of narcotics are found many drugs, such as the iodides and the nitrites, which one is not usually accustomed to consider under that head; on the other hand alcohol is not included as a narcotic. The *spiritus ætheris nitrosi* is, however, described with ether and not with the nitrites, and it is stated that the nitrite action is not produced by its administration in the usual doses; its reputed diuretic action is mentioned, but no reference is made to its diaphoretic properties. The account of the nitrite of amyl is full, but the other nitrites are disposed of very summarily. Sodium

nitrite is stated to be not suitable for practical purposes as it readily decomposes in the stomach, and "it will be well to regard it as a substance which simply serves to illustrate and explain the general action of the nitrites." Of nitroglycerin it is stated that "the only practical way of prescribing it is in small tabloids which are prepared with chocolate and gum arabic"; apparently the author is unacquainted with the liquor trinitrinæ, or similar solutions of nitroglycerin.

In connection with morphine, a short account is given of the chemical properties and constitution of vegetable alkaloids. The description of opium and morphine hardly seems adequate to the importance of these drugs. A reference is made to the frequency of poisoning by morphine in England and America compared to Germany, and credit is given to "the strict and very salutary laws which exist in Germany with regard to pharmacy, and prevent such a frightful abuse."

For hypodermic use Professor Binz prefers a one per cent. solution of morphine, and the doses he recommends are considerably smaller than the doses generally given in England. It is almost generally recognised that the *injection morphinæ hypodermica*, B.P., is too concentrated for general use, and probably favours the administration of an unnecessarily large dose; a reduction to a 1 in 20 solution would be a decided improvement in the forthcoming Pharmacopœia. Codeine is said to be superseded in practice by *codeinum phosphoricum*.

In describing squill its expectorant action is not even mentioned: it is said to be popularly used as a diuretic, but not often prescribed by physicians. Zinc salts are treated of as acting on the nervous system, and though vomiting is given as a symptom of zinc poisoning, no mention is made of the therapeutic employment of zinc salts as emetics.

Colchicum is said to be not often prescribed in Germany, and considerable doubt exists as to its efficacy in relieving the pains of gout and rheumatism, because it is almost always given with opium. It would appear from the context that Professor Binz does not clearly distinguish between rheumatism and gout, as he states that in sodium salicylate, antipyrine and similar medicines, we possess remedies more efficacious and safer than *colchicum*.

Alcohol is very fully treated as to its action upon the temperature, the heart, and the process of digestion; the position of alcohol as a food is insisted upon. Very little is given as to the effect of alcohol upon the brain and nervous system, and paralysis is not mentioned as one of the results of chronic alcoholism. An interesting statement supported by experiments is that "alcohol in large doses increases in an extraordinary manner the power of resistance to septic poison."

The translator has added useful explanatory notes, which might have been extended with advantage; for example, "Hoffmann's anodyne" is given as the synonym of "*spiritus ætheris*," without any note that the German Pharmacopœia differs from the British in not containing the *spirit ætheris co.*, which more nearly corresponds to the original Hoffmann's anodyne. Other instances where explanation is required might easily be quoted.

Many interesting historical details are given, and a number of cases are also graphically described; these were selected because they presented many of the conditions of a scientific experiment, and they undoubtedly add much to the interest of the subject. Professor Binz's style of writing is clear and graphic, and the translator is to be congratulated upon the success with which he has rendered it into excellent English. It must be pointed out, however, that the addition of an index to the volume would have rendered reference easier, and saved much time in looking up any required subject.

BRITISH PHARMACEUTICAL CONFERENCE.

MEETING OF THE EXECUTIVE COMMITTEE.

A meeting of the Executive Committee was held at 16, Bloomsbury Square, on Wednesday, June 3, at 3.30 p.m.

Present:—Mr. Wm. Martindale (President), in the chair, Messrs. Atkins, Attfield, and Carteighe (Vice-Presidents), Messrs. Bird, Holmes, and Symes, Mr. Wardleworth (Hon. Local Secretary), Messrs. Naylor and Ransom (Hon. General Secretaries), and Mr. Nightingale (Assistant Secretary).

The Secretaries announced that letters had been received from Messrs. Groves, Umney, Ewing, Wells, Coull, Conroy, Martin, Moss, Farr, and Wright, regretting their inability to be present.

The minutes of the previous meeting were read and confirmed.

Mr. Wardleworth, on behalf of the Local Committee, presented a draft programme of the local arrangements in connection with the Liverpool meeting. It is intended that the Reception by the President shall be held on Monday evening, July 27, at the Walker Art Gallery. The opening meeting of the Conference will be held at University College on the following morning, when the President will deliver his address and the reading and discussion of papers will be commenced. Luncheon will be provided at 1.15 p.m., on this and the following day, at the Adelphi Hotel, which will be the headquarters of the Conference. The business will be resumed at 2 p.m. and at 4 o'clock it is intended to take a cruise on the Mersey, visiting the entrance to the Manchester Ship Canal, and passing the docks to the mouth of the river. Business will be resumed at 10 a.m. on Wednesday, and at the conclusion of the sittings in the afternoon it is proposed to drive to the watch factory at Prescott. The usual smoking concert will be held at the Adelphi Hotel in the evening, and a drawing-room will be arranged to take place at the same time. Thursday will be devoted to the excursion, when it is intended to cross the river and visit various places of interest, including Hawarden, Eaton Hall, and Chester.

It was moved, seconded, and carried unanimously:—

That the programme as submitted be accepted, and that the best thanks of the meeting be accorded to Mr. Wardleworth for his kindness in coming from Liverpool to give details of the suggested arrangements.

The place of meeting for 1897 was considered, and it was announced that an invitation would probably be received at the Liverpool meeting. A list of officers for the ensuing year was drafted for recommendation to the general meeting. Thirty-four gentlemen, having been nominated, were elected to membership.

CHEMICAL SOCIETY.

An ordinary meeting was held on June 4, Mr. A. G. Vernon Harcourt, F.R.S., President, in the chair.

Before proceeding to the business of the evening, Professor Dunstan announced that an address had been presented to Cannizzaro on the occasion of his 70th birthday. This eminent scientist has been a Fellow of the Chemical Society since 1862, and had delivered the Faraday Lecture in 1872. The address which was read to the meeting by Professor Dunstan was dated June, 1896, and was signed by the President, Treasurer, and the Secretaries.

Dr. W. H. Perkin, F.R.S., read his paper on "The Magnetic Rotation of Organic Substances, with Especial Reference to Benzenoid Compounds."

The original object of this research was to study the magnetic rotation of bodies of the aromatic series. As results accumulated, it was found that there was peculiar behaviour in the case of bodies of this and of the fatty series. About two hundred substances had been examined, and the present paper was a brief account of the more striking results Dr. Perkin had obtained.

The apparatus used for the investigation was the same form as that used by the author in 1884, when this work was first undertaken.

Photographs and drawings of the elaborate apparatus were thrown on the screen by the electric lantern, and were fully explained by Dr. Perkin. The arrangement roughly consists of an electro-magnet between the pole pieces of which the body to be examined is placed. The polariser and analyser, which are on different stands, are placed at a certain distance from the back ends of the pole pieces. The observations are made by the sodium flame, a special piece of apparatus being required for maintaining this flame satisfactorily. The glass tube employed for holding the substance to be examined

is shaped thus \perp , the perpendicular piece being used as a sort of funnel to fill the tube.

Dr. Perkin had taken particular care to have all the substances examined perfectly pure, and in this particular alone the paper should be of especial value.

After Dr. Perkin had very fully explained the apparatus, a long series of tables of the numbers he had obtained for the magnetic rotation of the various substances examined was shown on the screen. The effect of temperature was noted, and it appears that each class of compounds has its own temperature difference. The influence of the nitrogen group is most remarkable, the magnetic rotation always being lowered, and of all the compounds examined the amines were found to yield the most striking results. The effect of displacing hydrogen by phenyl and other groups was gone into at some length by the author. Incidentally he mentioned that dimethylaniline hydrochloride was generally considered not to be crystalline, but Dr. Perkin had found that it was crystalline. The magnetic rotation of aniline is reduced by hydrochloric acid.

Dr. Perkin took something like two hours to read his paper, and though exceedingly interesting in many respects, it grew somewhat monotonous from the incessant repetition of dry figures.

Several gentlemen present spoke in very complimentary terms of the plodding perseverance Dr. Perkin had shown in collecting the material for his paper, and a vote of thanks was duly proposed to him.

The President stated that the paper entitled "Note on Santalal and Some of its Derivatives," by Alfred C. Chapman and H. S. Burgess, would be postponed until the next meeting on the 18th.

The paper on "Mono-nitro Guaiacol," by Professor Meldola, F.R.S., was taken as read.

PHARMACEUTICAL CHEMISTS' AND APOTHECARIES' ASSISTANTS' ASSOCIATION OF IRELAND.

At Dublin on the 3rd inst, a committee meeting of the above Association was held at 51, Heytesbury Street, Mr. James B. Alistair, M.P.S.I. (President), in the chair. The following were present:—Messrs. H. Hunt, Ewing, Parker, Payne, D. O'Sullivan, Walsh, and W. J. Hardy (Hon.-Secretary). A concise and very satisfactory statement of receipts and expenditure during the past session was submitted by the Honorary Treasurer (Mr. W. B. Payne), who said that out of close on 100 who had joined the Association since its formation in August, some eighty were in good standing. Several valued members had left the city, but this he was glad to say had not terminated their connection with the body. Since they had started a sum of over £20 had been received in respect of subscriptions, and after meeting all claims and demands in full, there remained on hand a balance of £5 6s. 8d., irrespective of the subscriptions for the current half, which, if added to the balance on hand, would more than double the credit balance. During the early part of the session the very heavy item of rent for the premises in the "X. L." Café was obliged to be met, and were it not for the kind grant of the Society's rooms to hold their meetings, they would not be so well off. It was unfortunate they did not earlier ask the Council for the accommodation, but it was better late than never, and the little experience of roughing it on their own account would enable them the better to appreciate the excellent quarters now assigned to their use. An inspection was made of the list of membership, and several names were expunged by reason of continued absence or non-payment of subscriptions. A resolution was formally passed suspending the bi-monthly meetings of the Association during the summer months, and the Secretary was directed to acquaint the general body of members accordingly. A circular to that effect was drawn up and ordered to be printed for circulation. It was arranged to hold meetings of the Committee at stated intervals towards the close of the summer for the purpose of revising the rules and preparing a syllabus of lectures, papers to be read, etc., during the winter months, those concerned to be notified beforehand in writing. The President and Hon. Secretary spoke in felicitous terms of the strides made by the Association, which numbered among its honoured and honorary members the names of some of the most prominent physicians and pharmacists in the city. Hopes having been expressed that the coming winter's session would prove a record one, the proceedings terminated.

MANCHESTER PHARMACEUTICAL ASSOCIATION.

At a meeting of this Association held during the present session, a convenient form of apparatus for the extraction of drugs by hot or cold solvents was exhibited and described, as follows :—

NEW EXTRACTION APPARATUS.

BY J. H. HOSEASON,

Assistant Lecturer on Pharmacy, Owens College, Manchester.

The apparatus consists essentially of a jacketed copper percolator tinned internally, of a tubular condenser. The lid of the percolator is fitted air tight by a vulcanised rubber band inserted between the rims and secured by clamps. The screws at A and B (Fig. 1), are of the same size, so that the tubular condenser can be attached at either position.

For the purpose of extraction the apparatus is arranged as in Figs. 1 and 2. The tubular condenser is attached to A by a nut, the joint being rendered secure by the insertion of a thin rubber or cork washer. To B is fitted a block tin tube G, connecting the

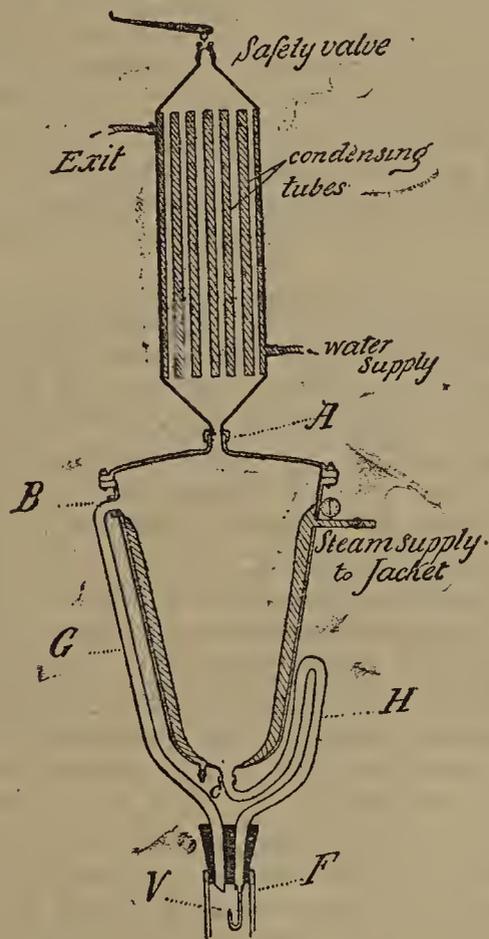


FIG. 1.

percolator with the receiving flask F, and from C a syphon tube H, also of block tin, passes into the neck of the flask F. The lower end of the syphon tube H is fitted with a downward acting glass valve, V, to prevent the hot vapours ascending this tube. The following details give the principal dimensions of the apparatus :—

Condenser tubes (length)	18 ins.
Diameter of condenser	6½ "
Total length of condenser	26 "
Depth of percolator (from level B to bottom)	20 "
Inside diameter of percolator at the same level.....	14 "
Inside diameter of bottom of percolator	6 "

The centre of the side tube G at B is 1½ inch below the lid rim. Practically a rise of 6 inches has been found sufficient in the syphon tube H.

The percolator is prepared for use by placing a thin layer of absorbent cotton at the bottom and covering that with a sheet of thick filter paper; the powdered drug is then carefully and evenly packed in.

A sufficiency of menstruum (alcohol 50 to 60 per cent., ether or ligroin 40 to 50 per cent. in proportion to the weight of drug employed) is now added and maceration allowed to proceed for twenty-four hours, A being closed by a screw cap.

On application of an air force pump at A the first percolate may be obtained without the aid of heat; by adding a quantity of fresh menstruum, equal in volume to that already driven over, this process may be repeated if considered necessary.

To thoroughly exhaust the marc add another equal portion of solvent, placing three-quarters of the volume in the percolator and the remainder in the receiving flask F. The condenser is now to be attached to A, and heat applied to the flask F by a suitable steam or water bath. During the first few minutes the heated air

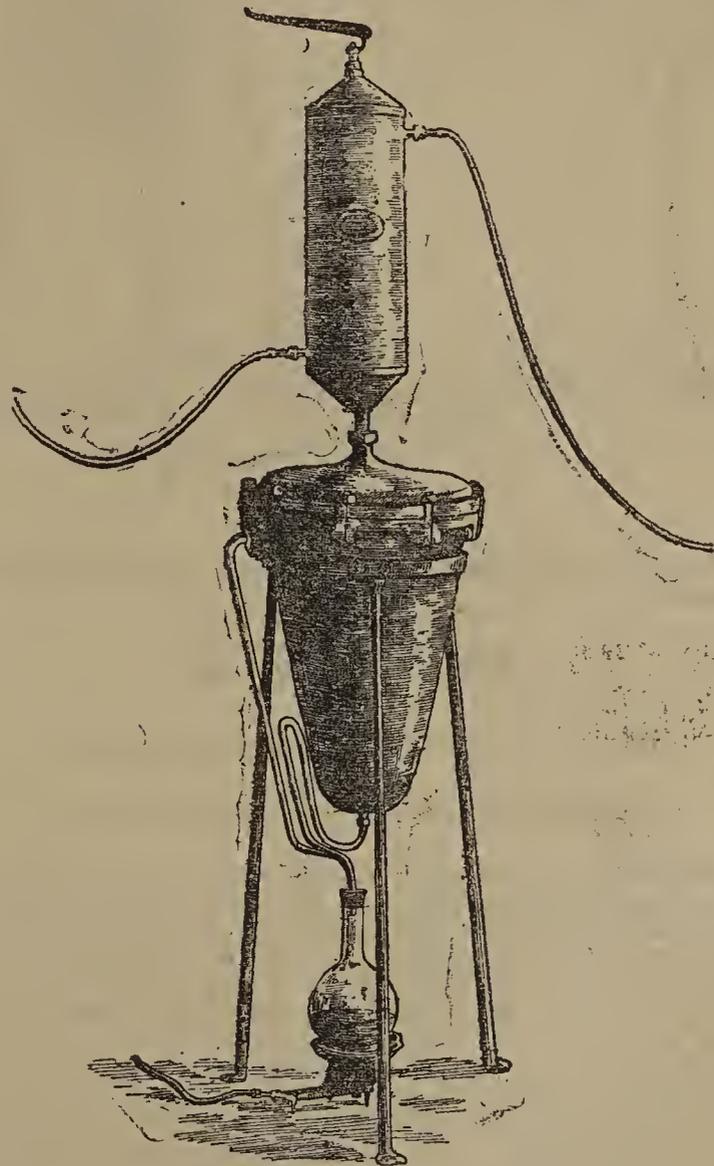


FIG. 2.

contained in the apparatus should be allowed to escape by opening the safety valve. The solvent having been raised to the boiling point, the vapours will pass up the tube G into the top portion of the percolator, and be rapidly liquefied by the condenser. Percolation will begin and the process become continuous.

The boiling point of the solvent will be lowered, as the apparatus necessarily works under reduced pressure.

After extraction has been completed the condenser is removed, and pressure by an air force applied at A to remove as much of the solvent as possible. To recover the remainder, remove the side tubes G and H, close A and C by screw caps, and apply the condenser to B (Fig. 3). On passing steam or hot water into the jacket, distillation will shortly take place.

The use of such an apparatus is indicated where drugs have to be exhausted by volatile solvents; especially in plant analysis is this the case. It effects a great saving in solvent by preventing evaporation, and does away with the necessity of transferring the drug from percolator to still. By attaching an exhaust pump the apparatus can be used as a vacuum pan. It will adapt itself to many other pharmaceutical operations, e.g., preparation of syrups,

infusions, waters, hot filtration, simple maceration, percolation, etc., etc. It may be used for the extraction of drugs by hot solvents when necessary (by keeping the percolator jacket steam

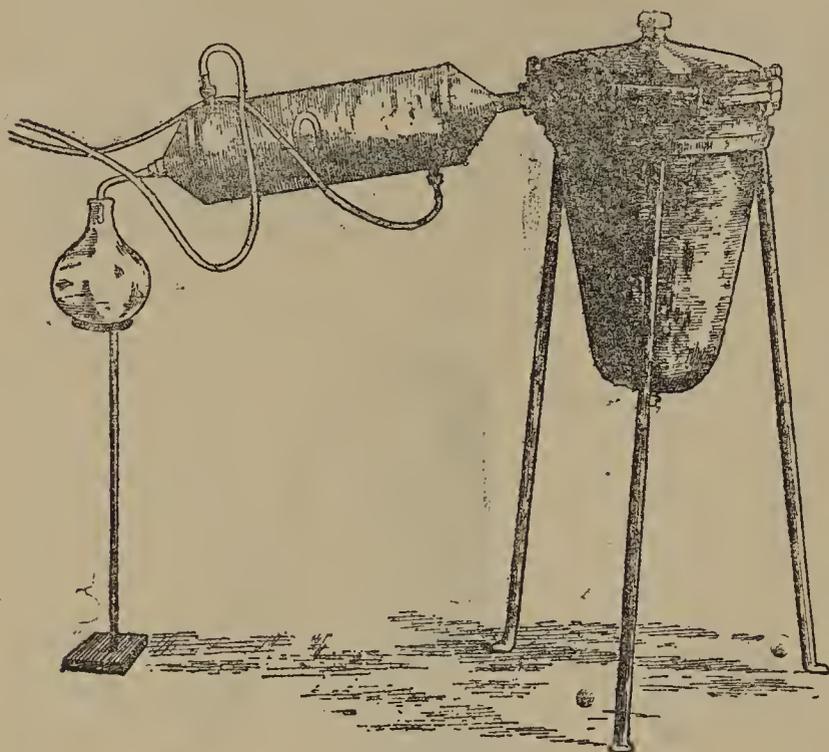


FIG. 3.

or water heated), although this process is not a desirable one as a general rule.

LEGAL REPORTS.

CASE UNDER THE COMPANIES ACT.

THE CHEMISTS' ASSOCIATION, LIMITED.

A petition for the winding up of this company came before Mr. Justice Romer on Monday, June 8. Mr. Eve, Q.C., who appeared for the petitioner, Jos. Beecham, said it was a creditors' petition for a compulsory order, or, in the alternative, for a winding-up under supervision. There was a voluntary winding-up pending, and Mr. Farwell, Q.C., who appeared for the company, had agreed with him that if a supervision order were made, the present voluntary liquidator would retire in favour of some independent gentleman, to be agreed upon, out of three or four names which had been submitted. The real object was to ensure the interests of the unsecured creditors being protected.—Mr. Justice Romer made the supervision order, referring it to Chambers to appoint a fresh liquidator, when he should see that a proper person was appointed.—Mr. Jenkins, for other creditors, supported the petition.

CASE UNDER THE SALE OF FOOD AND DRUGS ACT.

DEFICIENT SPIRIT OF NITROUS ETHER.

At Sittingbourne Petty Sessions, on Monday, April 6, William George Saffrey, of Sheerness, described as a chemist, but not registered as such, was summoned under the Sale of Food and Drugs Act, with selling spirit of nitrous ether, not of the nature and quality demanded.—Defendant said he was guilty of selling the article, not knowing that it was as described in the charge.—Police-constable Cook, stationed at Sittingbourne, deposed to going to defendant's shop on February 24, acting under instructions from Superintendent Capps, and purchasing four ounces of spirit of nitrous ether. Defendant served him, and he paid defendant one shilling. He then informed defendant that he had purchased the article for the purpose of being analysed by the public analyst.—Superintendent Capps stated that he went into the defendant's shop and received the spirit which had been purchased by the previous witness. He told defendant

that it would be analysed by Dr. Adams, of Maidstone. The analyst's certificate was to the effect that the article was adulterated, because it was deficient in nitrous ether to the extent of 44 per cent.—Defendant informed the magistrates that the article came into his possession by mistake, he having ordered the proper article from the traveller of a firm, who, however, sent the wrong kind. He had had it since January 4, and produced a letter from the firm mentioned to show that his statement was correct. This was handed to the magistrates, but the Chairman said it was not evidence.—After some consultation on the Bench, the Chairman said there must be a conviction. The magistrates could not overlook the fact that there was a deficiency of 44 per cent. of nitrous ether, and defendant would be fined £1, including costs.

PARLIAMENTARY NOTES AND NEWS.

PARLIAMENTARY PROCEDURE.—Mr. Sydney Gedge has given notice of a new Standing Order with the object of saving time in taking Divisions of the House of Commons. He proposes that the "Ayes" or "Noes" shall, in succession, hold up their hands, and that, if the Speaker or Chairman declares that the Ayes or Noes have it by a large majority, his decision shall be conclusive; while, failing such a declaration, the Division will take place in the ordinary way. In case the Speaker or Chairman declares the judgment of the House, any member who desires to have his vote recorded may write his name and the word "Aye" or "No" on a card, which he will deposit in a box under care of the Sergeant at Arms, the vote so signified to be printed in the Division Lists.

THE COMMERCIAL INTERESTS OF THE EMPIRE constitute a sonorous and effective text for election addresses, but those interests do not always commend themselves to honourable gentlemen after they have passed triumphantly the ordeal of the polls. Sir Joseph Leese (Accrington), however, is not to be included in the list of those who morally degenerate after election, or he would not have asked the Secretary of State for India the other night to interest himself about rhea fibre. It appears that a certain Professor Bilderbeck Gomess has recently discovered an effective and economic process for treating the fibre and rendering it available for manufacture into fabrics. Presumably the professor has overcome the difficulty hitherto experienced of decorticating and cleaning without injury the fibre from the green stems. Sir J. Leese, whose constituency is chiefly engaged in textile industries, recognising the importance of the alleged discovery, both to Indian agriculture and to Lancashire manufactures, asked that inquiries might be made with a view to developing the production of the fibre. But Lord George Hamilton could not be induced to exhibit any interest, and he replied to the effect that he knew nothing of the discovery, but that if it was of commercial value, no doubt it would receive attention from those specially interested in the subject. No official inquiries would however be made. This answer is in marked contrast with the active efforts made by Lord Mayo's administration in 1869 to stimulate the invention of a satisfactory method of cleaning the fibre. It might interest the honourable member for Accrington to learn that despite official indifference here the Government of India is keenly alive to the importance of developing the economic products of the Empire, and that an official committee of experts is at the present moment engaged in considering the practicability and utility of encouraging the extended cultivation of indigenous medicinal plants. One of the members of that committee, Dr. George Watt, C.I.E., an honorary member of the Society, has, in his 'Dictionary of Economic Products of India,' brought together all that was known at the time of publication concerning rhea fibre.

THE COMPANIES BILL.—The Select Committee of the House of Lords appointed to consider the Companies Bill was expected to meet on Friday. It is believed that the Government will not offer any opposition to the amendment proposed by Lord Herschell, and there is ground for hope that the Bill may leave the Upper House with the desired clause incorporated among its provisions. Its subsequent fate, however, appears to be no longer in doubt, for it is futile to imagine that the Government will willingly add another official measure to the burden of business under which the House of Commons and the Ministerial Party are already groaning.

Under such circumstances it will be wise for pharmaceutical associations which may have contemplated memorialising local members of Parliament on the subject, to husband their strength and reserve their efforts until the fitting moment arrives and the signal is given for concerted action.

VACCINATION has been rather a prominent topic of late outside the House, hence Sir William Priestley was quite opportune in signalling his return, as member for the Universities of Edinburgh and St. Andrews, by asking Mr. Chaplin to arrange a uniform system of direct vaccination from calf to arm when calf lymph was employed. The chief of the Local Government Board, though no expert on the subject, fully realised the importance attached in medical circles to the direct calf to arm system, but was much more impressed by the consideration that meeting the wishes of his honourable friend would involve an entirely new organisation and a very large expenditure of public money. Sir William Priestley was also reminded that the Royal Commission on Vaccination was now engaged in compiling the result of its six years' deliberations, and would probably have something to say on the matter.

THE SECOND COMMISSION ON TUBERCULOSIS is at last in process of formation, and the President of the Local Government Board, urged by the interrogations of Dr. Farquharson and Mr. Lees Knowles, has intimated that he will shortly be in a position to announce the names of those who will constitute the Commission. Replying to Mr. Knowles, Mr. Chaplin disclosed the full terms of reference to the Commission. They are: (a) To inquire and report as to what administrative procedures are available and would be desirable for controlling the danger to man through the use as food of the meat and milk (with the products thereof) of tuberculous animals; and (b) what are the considerations which should govern the action of the responsible authorities in condemning or not condemning for purposes of food supplies, animal carcasses or meat exhibiting any stage of tuberculosis. The Commission will have something very much like a "wholesale order" in dealing with the work allotted to it. The whole subject is surrounded with difficulties, but in the interest of the public health it is to be hoped that they may be surmounted.

EXIT EARLY CLOSING.—An unpropitious fate and an unsympathetic Ministry have willed that the Shops (Early Closing) Bill and the Shop Assistants' (Half Holiday) Bill shall take their places with the vast and increasing crowd of measures for which the subsequent proceedings of Parliament this Session will possess no interest. Though the Shops Bill is deferred till Friday the 12th and its rival till Monday the 15th instant, it is a mere matter of form, and the Bills are as dead as the hopes of their supporters.

OBITUARY.

- BROWN.—On May 27, Edwin Brown, Chemist and Druggist, late of Liverpool. (Aged 44.)
- LA TROBE.—On May 29, Henry La Trobe, Chemist and Druggist, Bristol. (Aged 54.)
- TOLLEY.—On May 31, W. A. Tolley, Chemist and Druggist, late of East Barnet. (Aged 55.)

PUBLICATION RECEIVED.

A MANUAL OF BOTANY. By J. REYNOLDS GREEN, Sc.D., F.R.S. Vol. II. Classification and Physiology. Pp. 541. Price 10s. (London: J. and A. Churchill, 7, Great Marlborough Street. 1896.) From the Publishers.

WILKINSON'S OINTMENT IN ECZEMA.—In the obstinate inveterate forms of eczema, Lassar extols the application of Wilkinson's ointment, originally introduced as a remedy for scabies. This is composed of sulphur; ol. rusci, aa, 4 parts; cretæ preparat., 1 part; sapon. moll., paraffin. moll., aa, 8 parts (*Brit. Journ. Derm.*, viii., 185).

CORRESPONDENCE.

THE SOCIETY AND ITS MEMBERS.

Sir,—It must have been exceedingly gratifying to official minds to see the severe reprimand that was attempted to be administered to unhappy me in this week's Journal, an admonition characterised by such spontaneity, and from the second city of the Empire too. I think the title you gave the letter was rather a misnomer though, it would have been a better description had it been entitled "The Society and Two Members" or "Mr. J. Anderson Russell v. Mr. George Coull."

I am sorry I cannot congratulate Mr. J. Anderson Russell on his contribution to the discussion now going on, because it has neither breadth nor depth. He gets hold of one point, and that a subsidiary one, and makes it his text, namely, what he calls the "extraordinary" question which I asked in my previous letter to you. Then with an assumption of superiority decidedly refreshing, but which I rather resent, he proceeds to give me certain advice as to what I ought to have done under the circumstances.

The first question that strikes one is the motive Mr. Russell had in writing his letter, because he quite misses the point of mine, which was, as I distinctly stated, to publicly call attention to a statement in the Annual Report to which I took exception, not as he calls it, "to what I regard as an injustice to Minor candidates in London," but to what actually is a manifest injustice, and is admitted to be so by all with whom I have conversed about it. And I may here remark that the Council has been remiss in its duty in permitting such a thing to occur at all. If Mr. Russell does not consider it unjust, I am sorry for his standard of ethics.

He then refers to my being debarred (harsh word) from discussing this subject at a meeting of Executive, and to the fact that I put the already mentioned "extraordinary" question. Then comes the statement that "the business of the Scottish Executive cannot be to criticise how the Council transacts purely London business, but the Executive's meetings, we must assume, are for the transaction of business connected with the Society in Scotland." Now this sentence contains the crux of the whole question, and on its correct interpretation rests the value of Mr. Russell's letter, apart from the personal criticism of myself and my methods. My contention is that the examinations, in whichever division of the kingdom they are conducted, cannot be said to be either purely London or purely Edinburgh, they are the examinations of the Pharmaceutical Society of Great Britain. And if, as it appears, we can discuss the First examination and send a resolution to the Council on that subject, why may we not similarly discuss the other examinations? Some of our young men go to London to be examined, and many Englishmen come to Edinburgh. Therefore I think we are quite within our rights in asking a question on the subject.

I am reasoning this out on the assumption that my question did refer to the London examinations, in order to show that my position is not so untenable as it is thought to be. But I am afraid Mr. Russell has not referred to the report of the Meeting of Executive at which my original question was put (*ante*, p. 336); he will there find that the question had reference to the Edinburgh examinations. Hence there was no necessity for your correspondent writing you at all. I think it is Lord Salisbury who gives his political opponents the advice, "Verify your references," and I would seriously commend the same to Mr. Russell's careful consideration. With regard to the advice about writing to a member of Council to raise the matter at a Council meeting, I am obliged to him for it, but there is no necessity to do so when one can raise it oneself. It would probably be referred to some committee, and that is not what is wanted; we want, as men sometimes do, light.

If Mr. Russell has read the history of the Society aright, he will know that it is this concealment of things that gives men a dislike to the Society and has done an incalculable amount of harm. The more openly matters are managed the more interest will be taken in the affairs of the Society. It might be argued (adopting the above advice) that a Member of Parliament ought not publicly to put a question which is of great importance to his constituents and the public at large, but should write privately to a Secretary of State for information.

Another of Mr. Russell's fallacious statements I cannot allow to pass without notice, namely, "Business is the end in view not discussion." That sentence to the unthinking sounds extremely well, but when it is analysed how illogical it is. For how can business be done without discussion unless the business proposed by one

member be accepted without demur? and if that is done then Councils and Executives are superfluties.

In conclusion, sir, to ease Mr. Russell's mind, I may publicly state that there is no member of Executive I hold in higher esteem than our worthy Chairman, and, further, that my loyalty to the Pharmaceutical Society is undoubted, having become connected with it as a Student of the Society before my apprenticeship began.

I should be sorry if the healthy discussion now going on should degenerate into a personal squabble, and, so far as I am concerned (in the language of diplomacy), the incident may be considered closed.

Leith, June 6, 1896.

GEORGE COULL.

THE PROPRIETARY ARTICLES TRADE ASSOCIATION.

Sir,—I beg you would correct the report of my remarks at the Cardiff meeting of Proprietary Articles Trade Association which appears in the *Pharmaceutical Journal* of this date. It contains a glaring misrepresentation of what I said. My allusion to the Pharmaceutical Society was to this effect, that this Association would do just what the Pharmaceutical Society had been blamed for not doing, and that it would form the complement of the Society. In this allusion I was referring to the usual criticisms which one hears from non-supporters of the Society. As a local secretary it would have been ridiculous for me to have made such statements as are attributed to me. I have always considered that it was outside the province of our Society to take up the question of prices. I further stated that the very persons who had blamed the Society for not looking after our trade interests were the ones who refused to take advantage of what it had done in the matter of proprietaries containing poisons by joining to obtain better prices for these articles. Injustice to myself I trust you will rectify these statements.

Pontypridd, June 6, 1896.

D. ARNOTT.

* * * Though the reporter might perhaps have made a happier choice of words, the general impression conveyed by his report of Mr. Arnett's remarks seems to be the same as that given by the above letter.—[*Ed. Pharm. Journal.*]

THE JAPANESE YEN.

Sir,—I think your note on this subject requires a little explanation. In the days referred to there was a very active ring of money-changers—and there may be now—whose business it was to get a living out of the variable exchange, and their system was to collect in, say, the month of June, all the paper currency—yen-satsu—they could possibly lay their hands on, so that paper was at a premium; then out it would come from the said money-changers, and, silver easy, they commenced to apply the same treatment conversely to the coin, and frequently with greater success than in the case of paper, which was not too strong or secure in the minds of many in those days; and so it was, the value of the paper and silver yen rose and fell at the will or caprice of these said money-changers or financiers.

Aston Clinton, Bucks, June 5, 1896. WILLIAM SHEPPERSON.

INCOME TAX OVERCHARGES.

Sir,—If instead of paying income tax for which they are not legally liable and then grumbling, taxpayers would be more prompt taking action, there would be fewer complaints as to the manner in which the Acts are administered. It is not sufficiently realised how large a measure of relief is to be obtained by taking a little trouble at the right time. Will you permit us to briefly refer to a few of the various grounds on which taxpayers can obtain relief? Persons whose incomes from all sources for the year 1895-6 did not exceed £160 are entitled to exemption, and those whose incomes did not exceed £500 to considerable abatements. Claims for exemption or abatement may with few exceptions still be made in respect of the years 1893-4 and 1894-5, even when the income is said to be "free of income tax," while in many cases claims can also be made in respect of life insurance premiums. The amount recoverable for the three years named may amount to upwards of £20 on an income under £400 per annum. A wife's income derived from a profession, employment, or vocation, where the joint income did not exceed £500 for 1894-5 or 1895-6, is to be dealt with separately, the effect of which may be to give two abatements off the joint income, when the tax recoverable for 1894-5 and 1895-6 would amount to £21 6s. 8d. Persons engaged in business whose average profits for the three years ending 1895-6 were less than the amount upon which they paid tax may make a claim on the ground of diminution of profits, and in this connection farmers should note that claims under Schedule B. must be lodged before July 6 next. A loss in business or farming can be set off against income from any other source. The time for making

appeals is limited, and it is of the utmost importance to remember that there is no time better than the present for appealing, as by doing so at once not only can repayment of tax overpaid be obtained, but the assessment for the ensuing year 1896-7 will also be settled at the same time. If any of your readers are in doubt as to whether they can make a claim we shall be pleased to tell them, if they will send us full particulars of their incomes and a stamped directed envelope for reply.

THE INCOME-TAX ADJUSTMENT AGENCY.

12 and 13, Poultry, London, E.C., June 10, 1896.

CREAM OF TARTAR.

Sir,—Mr. Conroy's letter is only a further condemnation of the present B.P. test, and has already been answered by Mr. Alfred H. Allen's (Sheffield) able paper before the Society of Public Analysts. This will no doubt hasten the alteration of the B.P. standard, but in the meantime we will cheerfully defend any action under the Food and Drugs Act for supplying cream of tartar containing three per cent. more potass. bitart. than required by the B.P. We have already had the matter decided in our favour in three police courts, and the more we are prosecuted the more the present ridiculous standard will be exposed.

London, June 10, 1896. KIRKPATRICK, BARR, AND GUTHRIE.

ANSWERS TO QUERIES.

BOTANICAL SPECIMEN.—The specimen you send is a proliferous growth of some grass. It is impossible to name it with certainty unless an entire plant is sent. [*Reply to W. F.*]

PYROCATECHIN MONOACETATE OF SODIUM.—Probably you will be able to obtain this from Merck's agent, F. Boehm, 16, Jewry Street, E.C., if the article is yet on the market. [*Reply to J. T.*]

MURCELL'S SOLUTION.—We have, so far, failed to trace this anywhere. Can it be a corruption of Mutzel's solution or mixture given as a liver stimulant in hepatic obstruction? This is composed of neutral tartrate of potash, 10 parts; extract of gentian and extract of centaury, of each 10 parts; water, 250 parts. Dose: A dessert-spoonful. [*Reply to ASSISTANT.*]

DISPENSING QUERY.—You do not state the volume of the mixture of glycerin and water you used; the only definite quantity you give is for the tartaric acid. It is quite possible that the morphine was altered in some way by prolonged heating, particularly if you boiled it. The alkaloid is very liable to change in the presence of free acid (see *Ph. J.* [3], xvi., 654). If you send us some of the separated crystals perhaps we can tell you what they are. The neutral tartrate is by far the best salt to use for strong solutions of morphine. [*Reply to G. W. B.*]

HOW TO BECOME A SANITARY INSPECTOR.—Examinations intended to enable persons desirous of becoming Inspectors of Nuisances to prove their competency are conducted by the Sanitary Institute, Margaret Street, London, W., and the Local Government Board accepts the certificates of that body as proof of the fitness of those holding them. Candidates must be of full age, and the fee payable for the examination if held in London is three guineas, whilst a guinea extra is charged when an examination is held at Plymouth, Birmingham, Newcastle, or other provincial centre. The subjects of examination are elementary physics and chemistry; local conditions; water; materials and construction; air, lighting, and warming; drainage, sewage, and sanitary appliances; and sanitary law. Apply to the Secretary of the Institute for a copy of the syllabus and particulars of the course of special lectures and demonstrations conducted in the Parkes Museum. [*Reply to "RUMEX."*]

TONING AND FIXING SOLUTION.—A cheap and efficient toning and fixing solution without lead salts is the following:—

Hyposulphite of Soda	4 ozs.
Aluminium Sulphocyanide	30 grs.
Salt	60 grs.
Chloride of Gold	2½ grs.
Water	to 20 ozs.

The prints should be well washed prior to immersion in this bath, and the above quantity is sufficient for a full sheet of paper 17½ × 24 inches. The reason why lead salts are objected to in those baths containing lead, alum, and acid salts is that although the baths tone well in most cases the toning is entirely due to the so-called sulphur toning. This is really the formation of sub-sulphide of silver, which is not a stable salt, hence such prints are not permanent but quickly fade and turn yellow. A combined toning and fixing bath "without lead and alum salts or acid" ought to be a good line now, as a good deal of attention has been directed to this question of late. [*Reply to HYDROQUINONE.*]

SENNA AND ITS ADULTERANTS.*

A MICROGRAPHIC STUDY.

BY E. LATOUR.

The medicinal importance of senna leaflets, and the numerous sophistications to which they are subject, have induced the author to study their anatomical structure, and also that of the leaves and leaflets which are most frequently mixed with the drug, in the hope of being able to find some sure means of detecting these foreign admixtures. This is of especial importance in view of the possibility of the presence of the leaves of *Coriaria myrtifolia* or other dangerous species. The use of the microscope is the most valuable means available for the purpose, other methods of determination being so frequently inapplicable. Thus, in cases where the specimen consists of minute fragments only, or where the principles naturally contained in the drug have undergone considerable change, the anatomical elements are yet often found completely preserved. Independently of the chemical and organoleptic characters, therefore, the purity of the specimen and the nature of possible impurities may be detected by macroscopic characters (as revealed to the naked eye or disclosed by means of a hand-lens), or by the more minute anatomical characteristics, which are only distinguishable by the use of a microscope. The object of the present article is to deal exclusively with the last named.

STRUCTURE OF LEAFLETS OF SENNA (*Cassia* sp.).

Senna is the product of several species in the natural order Leguminosæ (Cæsalpineæ), including *Cassia acutifolia*, Del., *C. angustifolia*, Wahl., *C. obovata*, Collad, *C. lenitiva*, Bisch., and their

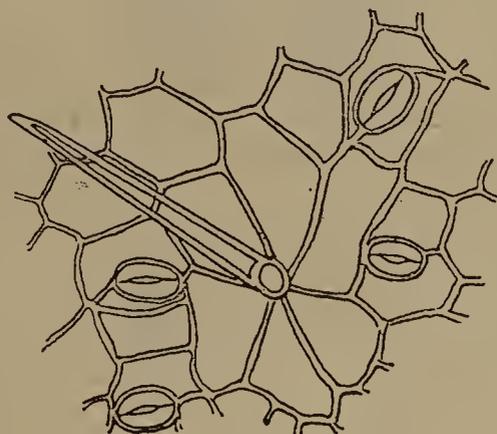


Fig. 1.—*Cassia obovata*, Collad. Upper epidermis of leaflet, showing unicellular hair and stomata with simple outlines. (x 300.)

different varieties. There is little difference between the upper and lower epidermis of senna leaflets. The cells are irregularly polygonal with thin walls, and there are numerous stomata, which are each in contact with two to four cells. There are also numerous unicellular hairs on the epidermis, which

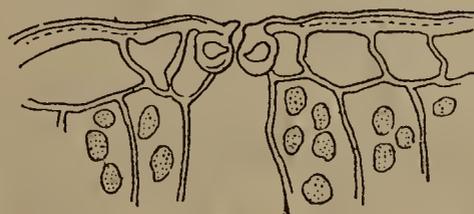


Fig. 2.—*Cassia obovata*, Collad. Section of stoma in upper epidermis of leaflet. (x 400.)

are deciduous, leaving as they detach themselves a base having the appearance of an annular pad, around which the neighbouring cells seem to radiate. In *Cassia obovata* (Figs. 1 and

2) the stomata are situated on a level with the surface, and their outline appears simple under the microscope; other sennas have the

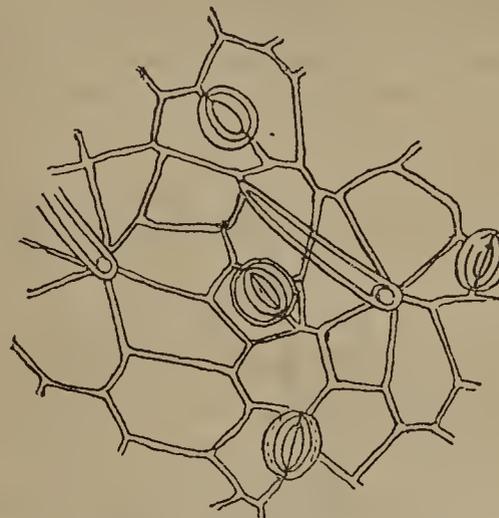


Fig. 3.—*Cassia acutifolia*, Del. Upper epidermis of leaflet, showing unicellular hairs, and stomata with doubled outlines. (x 300.)

stomata placed below the surface, and also with doubled outlines (Figs. 3 and 4). The parenchyma, which is protected by an epidermis covered with a stout cuticle, is divided into three

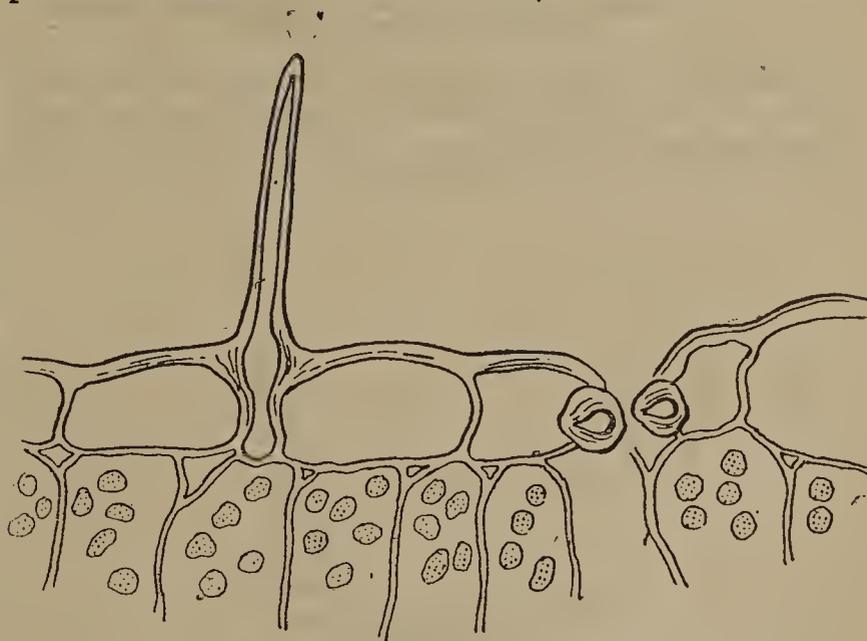


Fig. 4.—*Cassia acutifolia*, Del. Section of lower epidermis of leaflet, showing a stoma, a hair, and a portion of the palisade tissue. (x 385.)

layers, the uppermost and lowest consisting of palisade tissue, whilst between these there is a zone of very small, rounded, parenchymatous cells. Stellate crystals of calcium oxalate are seen

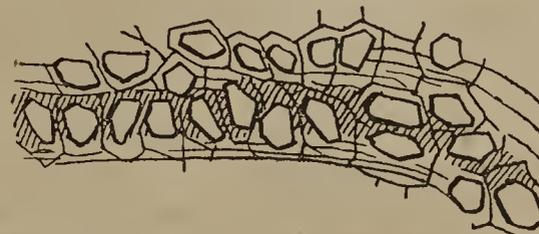


Fig. 5.—Fragment of senna leaflet, showing vein surrounded by cells containing crystals. (x 400.)

here and there throughout the parenchyma, and prismatic crystals of similar composition occur singly in cells which unite to form sheaths around the principal veins (Fig. 5). The endodermis is not coloured by sodium hypochlorite.

STRUCTURE OF POSSIBLE ADULTERANTS OF SENNA.

Other leaves or leaflets that have been found mixed with senna are those of *Coriaria myrtifolia*, L., *Solenostemma argel*, Haynè,

*. Translated from *L'Union Pharmaceutique* for May 15, 1896.

Vaccinium vitis-idaea, L., *Colutea arborescens*, L., *Globularia alypum*,
Tephrosia apollinea, De C., and *Cassia marilandica*, L.

1. *Leaves of Coriaria myrtifolia*, L.

The cells of the lower epidermis of these leaves are about a third larger than those of the upper epidermis. The cells are irregularly polygonal, with thin walls, and the stomata have elliptical

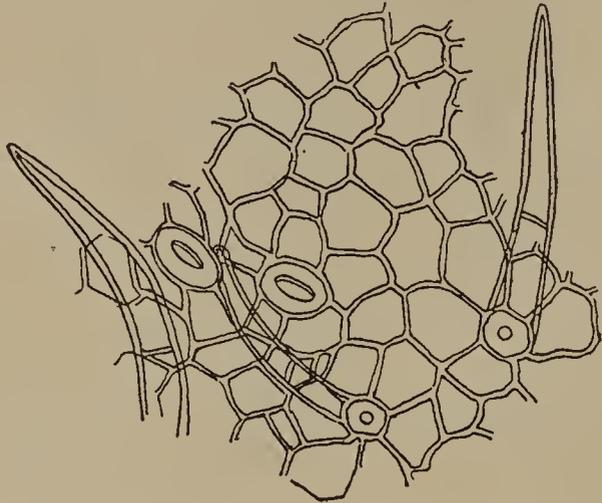


Fig. 6.—*Solenostemma argel*, Hayne. Leaf epidermis, showing stomata and multicellular hairs. (x 400.)

apertures, whilst each is accompanied by two cells placed symmetrically and finely wrinkled. Hairs are wanting. The leaf parenchyma consists in the middle of loosely-joined, rounded cells, and there are two rows of palisade cells adjoining the lower

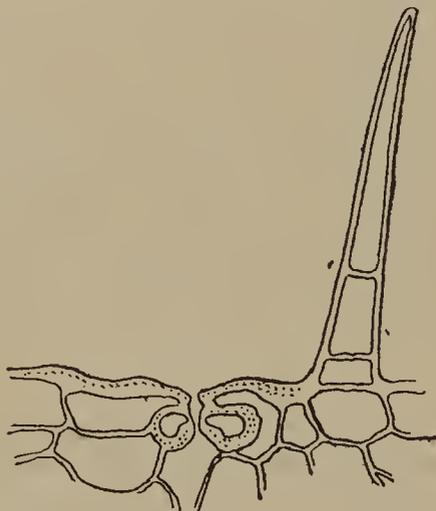


Fig. 7.—*Solenostemma argel*, Hayne. Section of stoma, and a multicellular hair on epidermis of leaf. (x 400.)

epidermis, but only one row adjoining the upper epidermis. The endodermis, which is clearly defined and consists of large cells, is coloured yellowish-brown by sodium hypochlorite.

2. *Leaves of Solenostemma argel*, Hayne.

The upper and lower epidermis of argel leaves are almost alike, being formed of very thin polygonal cells (Figs. 6 and 7). The not very numerous stomata have very large apertures and are bordered by five to seven cells each. The hairs are numerous and multicellular. The leaf is characterised by its double zone of palisade cells, its very limited spongy parenchyma, and by the presence of sphaero-crystals (Figs. 8 and 9) and secretion cells (Figs. 8 and 10). The median vein is large.

3. *Leaves of Vaccinium vitis-idaea*, L.

The upper epidermis of these leaves consists of polygonal cells with thick and sinuous walls, and is characterised by the lack

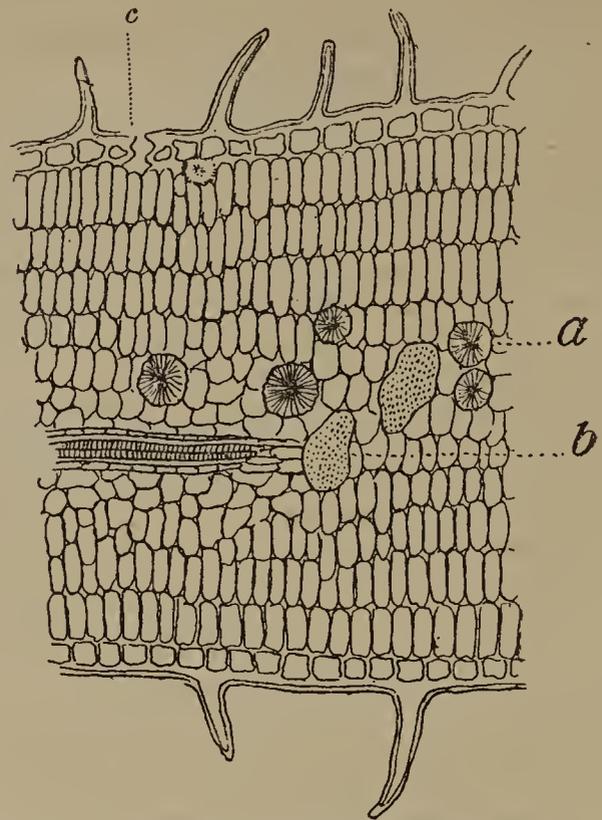


Fig. 8.—*Solenostemma argel*, Hayne. Transverse section of leaf, showing sphaero-crystals, a, secreting cells, b, and stoma, c. (x 10.)
of stomata, hairs, and glands (Fig. 11). The cells of the lower

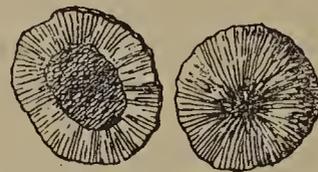


Fig. 9.—Two isolated sphaero-crystals (x 80)
epidermis are smaller, and on this side of the leaf there are numer-

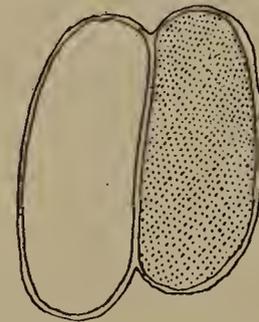


Fig. 10.—Two isolated secreting cells, one of which has lost its resinous contents. (x 800.)
ous small stomata, each surrounded by four or five cells, as well

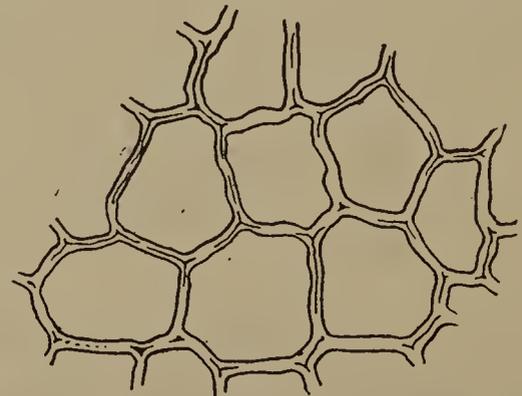


Fig. 11.—*Vaccinium vitis-idaea*, L. Upper epidermis of leaf, showing sinuous-walled cells. (x 400.)
as multicellular glands (Fig. 12). There are only two zones in the internal tissue of the leaf, one of palisade cells and the other of spongy parenchyma, and the edge of the leaf is traversed by a

bundle of fibres. The fibro-vascular bundles in the veins are also

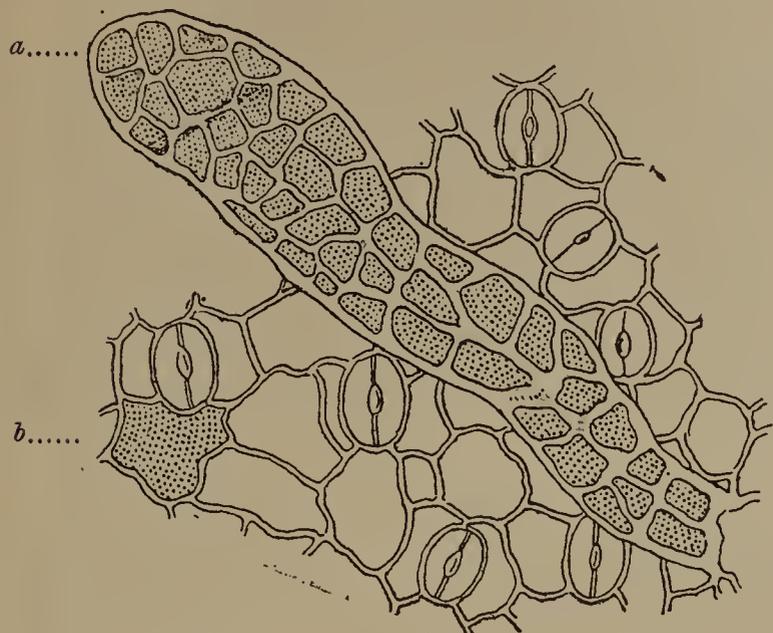


Fig. 12.—*Vaccinium vitis-idaea*, L. Lower epidermis of leaf, showing stomata, a large glandular hair, *a*, and an epidermal cell containing resinoid matter, *b*. (x 400.)

covered by a mass of pericyclic fibres on their upper and lower surfaces.

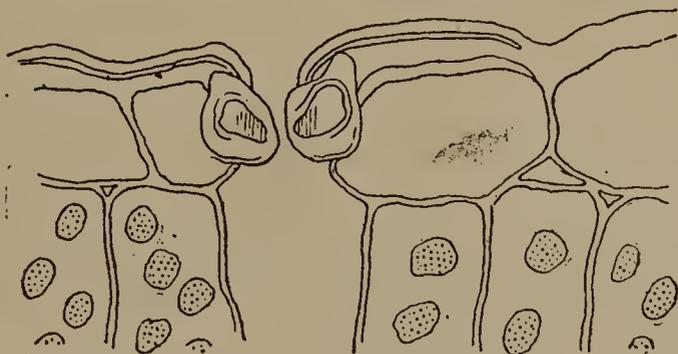


Fig. 13.—*Colutea arborescens*, L. Transverse section of leaf, showing stoma, cuticle, and epidermal cells. (x 800.)

4. Leaves of *Colutea arborescens*, L.

The leaves of *Colutea arborescens* have an upper epidermis consist-

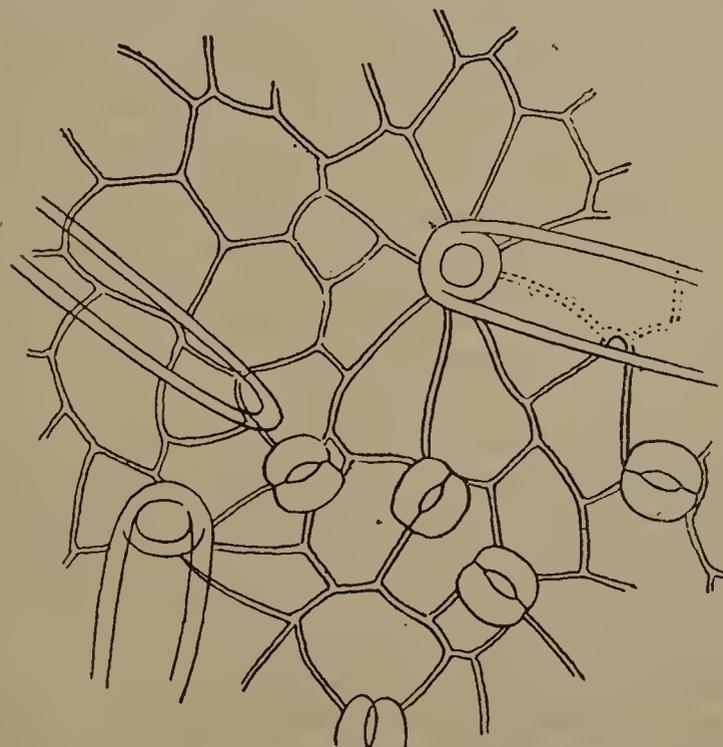


Fig. 14.—*Colutea arborescens*, L. Lower epidermis of leaf, showing stomata and unicellular hairs. (x 400)

ing of irregularly polygonal cells which have thin and sinuous walls. Hairs are wanting and stomata very rare. On the lower surface (Figs. 13 and 14), however, there are numerous small stomata with elliptical openings, each being surrounded by four or five cells. The long unicellular hairs are also abundant, and generally narrow at the base. The parenchyma presents no special features.

5. Leaves of *Globularia alypum*, L.

These leaves have the epidermis alike on both sides, consisting of irregularly polygonal cells with very thick walls, and containing

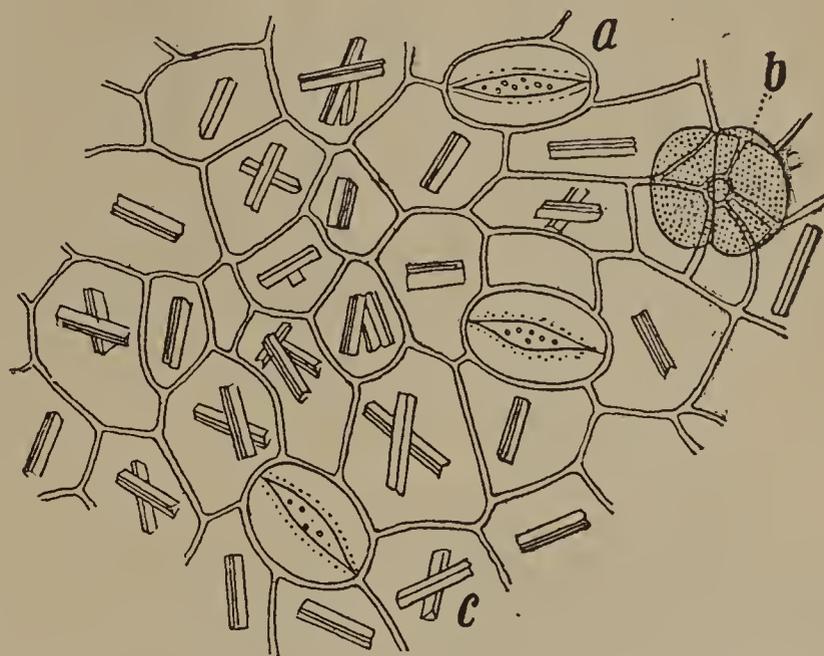


Fig. 15.—*Globularia alypum*, L. Lower epidermis of leaf, showing stomata, *a*, bicapitate gland, *b*, and crystals of calcium oxalate, *c*. (x 400.)

prismatic crystals of calcium oxalate (Fig. 15). The numerous stomata are surrounded by two to five cells each, and have elongated apertures. The leaves bear bicapitate glands but no hairs, and the parenchyma is homogeneous with but few interspaces.

6. Leaflets of *Tephrosia apollinea*, De C.

The epidermis is much alike on both sides of these leaflets, being formed of the usual irregularly polygonal cells, and the numerous stomata with large apertures are surrounded by several cells. The hairs (Fig. 16) are multicellular, long, and numerous, and the

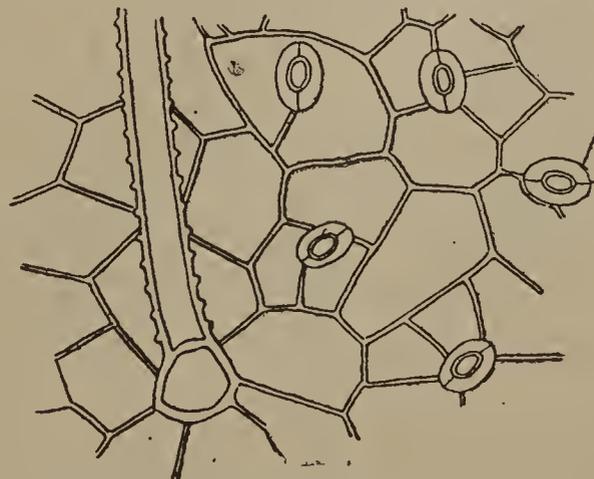


Fig. 16.—*Tephrosia apollinea*, De C. Lower epidermis of leaf, showing stomata and multicellular hair. (x 400.)

parenchyma is normal. The median vein is triangular, projects at the base, and diminishes towards the opposite extremity. It is

protected by a fibrous cover surrounded like the secondary veins by a sheath of cells containing crystals of calcium oxalate.

7. *Leaflets of Cassia marilandica*, L.

Large, sinuous cells and the absence of stomata characterise the upper epidermis of the leaflets of *Cassia marilandica*, whilst the lower epidermis differs in possessing stomata with small, elliptical

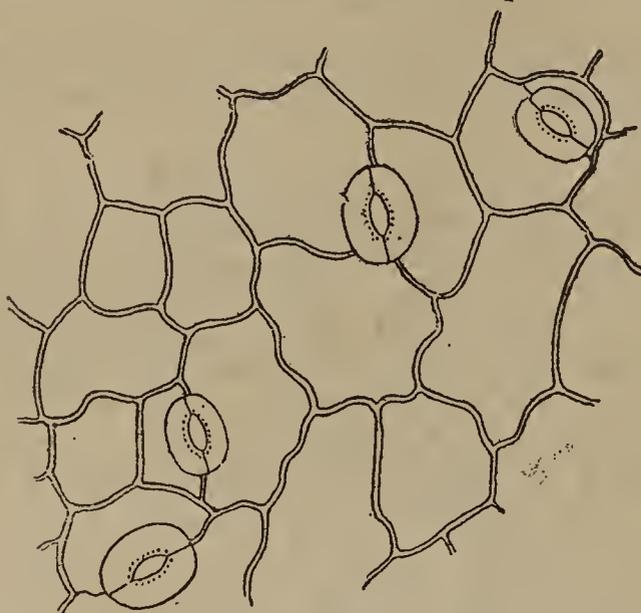


Fig. 17.—*Cassia marilandica*, L. Lower epidermis of leaflet, showing stomata. (x 400.)

apertures (Fig. 17). Hairs are lacking in both cases, the leaflet has but one row of palisade cells, and the spongy parenchyma is very loosely connected (Fig. 18).

TO DETERMINE WHETHER SENNA IS ADULTERATED.

The specimen to be determined, whether entire or not, is carefully picked over, and suspected pieces are placed on one side. The latter are then examined under the microscope after decoloration with sodium hypochlorite. It is well, however, to test with ferric

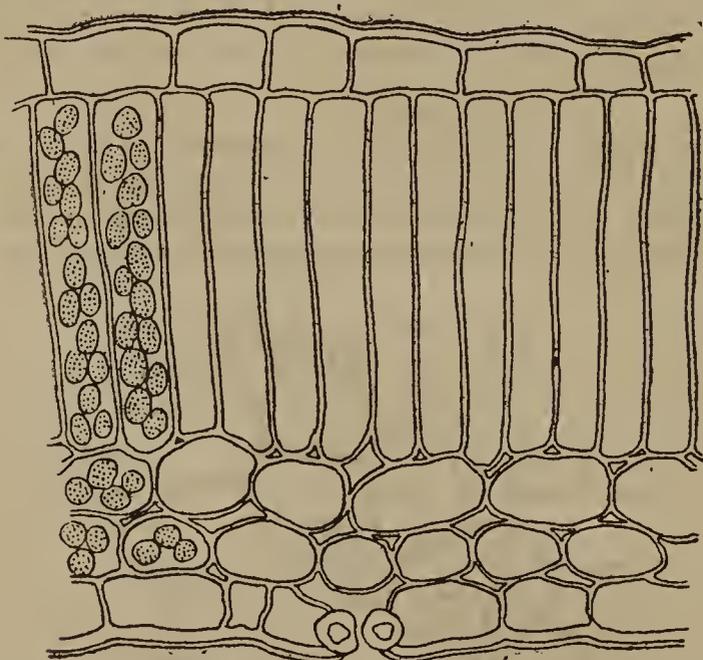


Fig. 18.—*Cassia marilandica*, L. Transverse section of leaflet, showing stomatal epidermal cells, palisade tissue, and spongy parenchyma. (x 400.)

chloride previously, as this gives a precipitate in the case of leaves from *Coriaria* and *Vaccinium*. The microscopic examination of specimens in the state of powder is an extremely delicate operation, but the clearly-defined characters of the principal substances used to adulterate senna readily enable us to determine the nature of any falsification.

NOTES AND FORMULÆ.

QUINOSOL: A NEW ANTISEPTIC.

Quinosol is a neutral compound of oxyquinoline, which readily liberates that body in the nascent condition, when it possesses very active antiseptic properties. Quinosol is readily soluble in water, has a slight, not unpleasant, odour, and is entirely non-toxic. A solution of 1 in 4000 prevents the development of staphylococcus. Kossman has employed this body largely as a substitute for phenol and for sublimate; no toxic action or eruption has been produced; when used as a dusting powder it is free from irritating or caustic action. The only inconvenience found with it is the yellow stain which it leaves on linen and on the hands of the surgeon. This, however, is easily removable by water (*Nouv. Rem.* xii., 132, after *Vratch*).

PYROCATECHIN AS A PHOTOGRAPHIC DEVELOPER.

Pyrocatechin is said to possess the following advantages as a developer:—its delicacy is equal to pyrogallol, the solution only alters very slowly on exposure to air, and is much more stable than hydroquinone, eikonogen, etc. The colour of negatives is very favourable to printing, which proceeds more rapidly than with other developers. It gives brilliant prints without hardness. It does not fog the plates. It does not stain the fingers. The same bath will develop several plates. The following are the principal solutions:—Solution A: Water, 1 ounce; sodium sulphite, 20 grains; pyrocatechin, 10 grains. Solution B: Water, 1 ounce; potassium carbonate, 100 grains. For use in ordinary exposures, equal parts of A, B, and water. For under-exposed plates, take one part A to two parts B. For plates that have had a timed exposure, the following one-solution developer is recommended:—Water, 2 ounces; sodium sulphite, 25 grains; sodium carbonate, 50 grains; pyrocatechin, 10 grains. To bring out contrasts, a two per cent. boric acid solution is recommended instead of bromide (*West. Drugg.*, xviii., 11).

GELATIN BOUGIES OF ALUM AND TANNIN.

Macerate 5 parts of gelatin in 35 parts of water for fifteen minutes, then add 10 parts glycerin, warm until the gelatin is dissolved and the liquid has evaporated to 40 parts. This may be rapidly and conveniently done in a capsule on an iron plate over a gas jet. To the hot mass add a warm solution of 8 parts of alum in 25 parts of water. This addition causes the gelatin to coagulate, but on continued heating, it again liquefies. Evaporate to 64 parts and strain. The mass then contains 12½ parts per cent. of alum. In a similar manner tannin may be combined with a gelatin basis by adding a solution of tannin in glycerin, 1 in 5, to the hot mass; the coagulated mass also, in this instance, becomes liquid again. The water is driven off and the liquid run into moulds. By this method perfectly transparent bougies are obtained (*Journ. de Pharm. d'Anvers*, lii., 19, after *Neder. Sijdschrift*).

ARTEMISIN.

According to Merck, artemisin, $C_{15}H_{18}O_4$, is obtained from the last mother liquors in the manufacture of santonin from the seeds of *Artemisia maritima*. It is freed from santonin by re-crystallisation from chloroform, being deposited combined with one molecule of the solvent which is evolved at 90°. It melts at 200°, gradually turns yellow in the air, and is more readily soluble in water, and in dilute alcohol than santonin. When heated with soda 10 parts, and water 40 parts, a fugitive carmine-red colour is produced, and like santonin it gives the same colour with alcoholic soda. Artemisin is apparently a hydroxy-santonin (*Journ. Chem. Soc.*, lxx., 60, after *Chem. Centr.*).

THE PHARMACEUTICAL CHEMICAL INSTITUTE AT MARBURG.

BY W. HARRISON MARTINDALE.

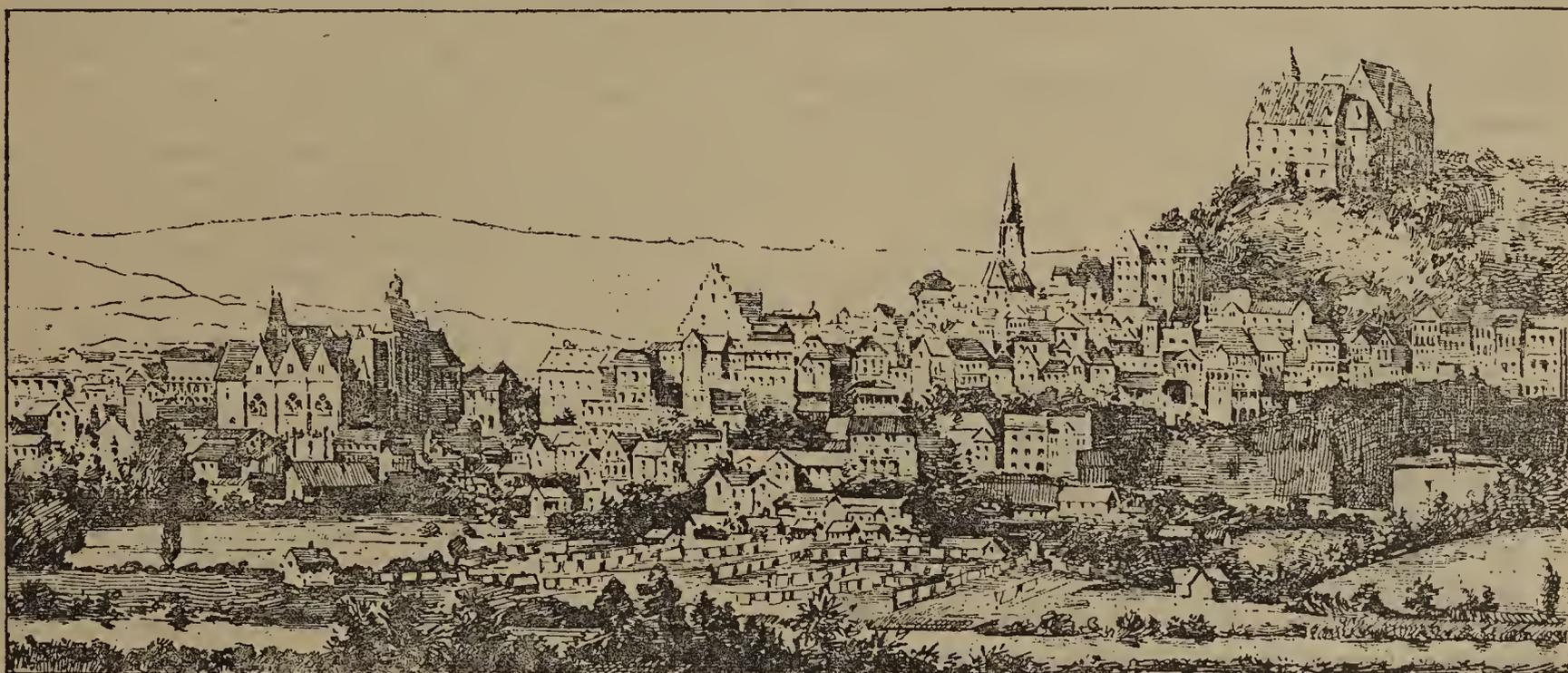
The University of Marburg, which is attended by about a thousand students, consists of the University building proper, together with numerous "instituts" working in complete union with the University in different quarters of the town. The present article embodies a description of one only of these institutes, the Pharmaceutische Institut, presided over by Professor Ernst Schmidt.

Passing up the avenue of acacias in the Ketzlerbach, we reach the Marbacherweg, also shaded with the same delicate foliage, and leaving the Anatomical and Dentistry Institutes on the right and left, we arrive at the Pharmaceutische Institut, surrounded by its garden, where trailing *Ampelopsis* does its best to hide the sternness of the portals. On entering the stone-paved hall we are sure to be greeted by some friendly "Assistent," who will not fail to recognise us as *Ausländer*s, and with the inimitable bow will conduct us to the sanctum of the professor. No one can be in the presence of Herr Geheimrath Professor Ernst Schmidt, without being impressed

The lecture-table is particularly ingenious in construction, besides being fitted with numerous gas and water connections, a portion can be lifted off, and reveals a white porcelain pneumatic trough, about a metre square, for gas collecting.

When a particularly stinking or fuming experiment is to be shown during the lecture a square glass shade with sliding door stands on a certain spot on the table, and should a Bunsen burner be introduced into the box (and the door naturally left ajar for the gas tube), the uninitiated wonder why no smell nor fumes escape into the air. The chicanery consists of an aperture in the table, over which the box stands, connected with an underground draught tube passing into a chimney.

The balance room and library is used mostly by the more advanced students, *i.e.*, not before their third semester. The balances are ten in number, standing on two sides of a long table—extremely good instruments—all weighing and calculations being carried to the fourth place in decimals. The balances are labelled, and set apart for "Assistenten," "Doctoranden," fourth and third semester men. A Mohr's specific gravity balance, polariscopes



GENERAL VIEW OF MARBURG.—The University is the large building on the left.

with his genial manner, his physique, his swinging gait (which carried him, it is said, over Crimea's battle-fields), his essentially "chemist's face," often beaming into a smile, with keen dark eyes behind the orthodox gold-rimmed spectacles, and when we hear his lecture in the auditorium we wonder whether he has acquired his voice by instilling the principles of "organic and inorganic" alternately each semester into the brains of two thousand odd students during the last five and twenty years. "Der alte Herr" celebrated his jubilee the year before last, and still we often hear of the great festivities on that occasion. The Institut consists of the professor's sanctum and private laboratory, auditorium, balance room, and library, four laboratories for first, second, third, fourth, and higher semester men respectively, volumetric analysis room, four sulphuretted hydrogen rooms, combustion room, extraction room, baracke-janitor's store-room and house, chemical collection, stock-rooms, etc.

THE LECTURE ROOM AND LIBRARY.

The auditorium is capable of seating a hundred students, and has a lecture-table some ten metres long, and black-boards sliding up and down forming doors to cupboards for reagent bottles on the wall behind the lecture-table.

spectroscopes, microscope, refractometer, saccharimeter, and other instruments are also ready for use.

THE LABORATORIES.

The laboratories are large, well-illuminated rooms, kept in "state" order and cleanliness, the second and fourth semester in the basement, the first on the ground, and the third semester on the first floor; in each thirty to thirty-five students on an average are at work, with the exception of the fourth semester, where the number is variable; the room is capable of accommodating eighteen "Practicanten." The benches and fittings in the laboratories are of carved oak, which from time to time is rubbed with "boiled oil" to preserve the same. Each student has on an average one and a half to two square metres of table room—varying, of course, with the kind of work he is doing—under which are his cupboards and drawers; each is provided with a separate tier of shelves above, and reagents in stoppered bottles with black enamelled lettering on white ground.

The second semester men have a balance-room to themselves. The volumetric analysis room adjoins that of the third semester, as this branch is a feature of the third semester study. All apparatus must be locked away before leaving, or a fine of 6*d.* is imposed for

every article found—this ensures the above-mentioned order, but naturally only refers to the first, second, and third semester students; throwing a match or a bit of paper on the floor is similarly punished.

The sulphuretted hydrogen in the different rooms set apart for it is generated from modified pieces of Kipp's generating apparatus, the delivery tube consisting of a pipe supported horizontally upon the wall, with a large number of smaller tubes branching at regular intervals at right angles from it, each being provided with a separate tap; these tubes are connected by means of rubber tubing with a row of wash-bottles on a shelf beneath, and the student brings his solution and his own glass delivery tube and finishes his H_2S work in the H_2S room. For leaving an H_2S tap on or bringing anything smelling of H_2S into a laboratory, the fine is 6*d*.

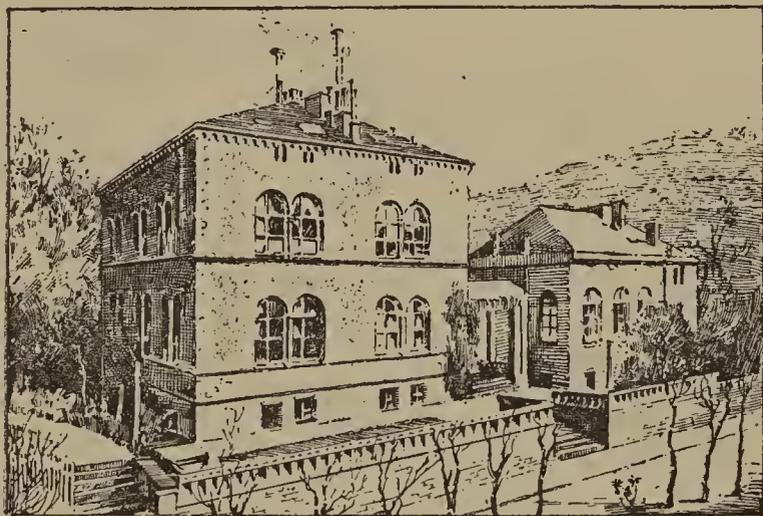
The consumption of sulphide of iron per annum is half a ton.

The combustion room in the basement has a blow-pipe and three ovens for organic elementary analysis.

The extraction room, also in the basement, is fitted with a Soxhlet extraction apparatus, drying cupboard, steam-pans, still for ethereal solutions, etc., for working drugs *en gros*.

The "Baracke" is an outhouse whither those ambitious in smell-producing are banished.

The chemical collection contains some hundreds of organic and inorganic specimens, the majority of which have been prepared by



PHARMACEUTICAL INSTITUTE, MARBURG.—The building on the right is connected with the main building by corridors, and contains the Auditorium, with the second semester laboratory in the basement.

the students working on their *arbeit* thesis for their "Dr." degree, and by those working *preparatif* in the fourth semester.

THE DAY'S WORK.

The day's work consists in attending lectures and practical work in the laboratory. The lectures in the summer semester commence with botany by Professor Meyer at seven, and those in the winter at eight. The Botanical Institute stands in the Botanical Garden in the town, in which peasant-women are employed in keeping the extensive collection of plants in order. The lectures last one hour each, although in the majority of cases the "academical quarter" comes into force and the professor enters at a quarter after the hour, the students rising until he has taken up his position at the reading-desk. Clapping or stamping is never resorted to during a lecture, except at the beginning of the first lecture and the end of the last lecture of the semester. The botany lecture over, the students must then climb the hill to the Physikalische Institut, where at 8.15 Professor Melde lectures on "Experimentalphysik"—mechanics and optics in the summer, and magnetism, electricity, and heat in the winter semester. This large new building, crowned with an astronomical observatory, is beautifully fitted within and provided with electric light. At 9.15 they are in time for Professor Schmidt's

lectures on inorganic chemistry in summer, and the organic branch in the winter at the Pharmaceutical Chemical Institute. Each professor has his "lecture-assistant" present at his lecture, and in the case of Professor Schmidt, the assistant's day is entirely employed in preparing the experiments for the lectures. In his first lecture Professor Schmidt exhorts the men to attend regularly, and explains that the aim of his lecture will be to discriminate between the cardinal points of the subject and the matter of secondary importance. This results in the students bringing their "Schmidts" (Ausführliche's 'Lehrbuch der Chemie für Pharmaceuten,' etc., I. Anorganische Theil; II. Organische Theil) with them, and marking the margins of the same during the lecture. This is a great improvement on the old note-taking system, as with the latter the student loses everything he has not written down, and cannot rely upon what he has written. Everything is explained with minute precision, the Professor's dry humour being proverbial and greatly appreciated.

Other lectures which the student attends are Professor Schmidt's "Toxicology," one day a week in the winter semester, and the "Chemical Examination of Drugs and Medicines," one day a week, extending through three semesters; Professor Meyer's "Chosen Points from the Physiology and Biology of Plants," and "Microscopical Practical Work"; Professor Kohl's "Classification of the Angiosperms and Gymnosperms, with Special Consideration of Medicinal Plants," and the same professor's personally conducted botanical excursions in the vicinity of Marburg on Saturdays. These take place almost entirely in the afternoons during the week.

At the conclusion of Professor Schmidt's morning lecture at ten o'clock the students work in their respective laboratories until one o'clock, under the direction of the assistant in charge of each. During this time the professor makes a daily visitation of the laboratories, and questions each student as to his work and his results. His memory in this respect is remarkable, and his friendly chaff when a first semester student finds lead that should be barium usually takes the form of "pseudo-lead, which in ordinary life one chooses to designate barium."

In the first semester the work consists of analysing mixtures of salts, at first few and simple, and gradually increasing in number and difficulty. When the student has gained sufficient proficiency in this he may receive qualitative mineral and qualitative inorganic toxicological analyses in flour, milk, meat, beer, etc. A student is expected to complete twenty-five qualitative analyses, but it is no great difficulty to complete twice the number in the time.

In the second he commences qualitative analysis, receiving solutions of copper, zinc, mercury, nickel, and other salts. He gives in his result the amount of the salt in question that he finds to the assistant, who then signifies in his note-book whether the result is satisfactory or not. This note-book is handed to the professor on entering the laboratory for his daily round. The student further determines the chemical composition of samples of such salts as calcium phosphate and barium chloride, etc., and still continues with qualitative mixtures, minerals, and toxicologicals.

In the third semester he carries out "separations," quantitative analyses of mixtures of salts; for example, zinc sulphate and nickel chloride, and quantitative toxicologicals (with one and more inorganic poisons), and still keeps himself in practice with qualitative analyses as before. In the volumetric work the students have to keep the room supplied with the stock volumetric solutions, and they are instructed in the handling of Mohr's as well as Guy Lussac's burettes, the latter being the greater favourites with the Professor. All the official volumetric analyses are carried out by each student.

In the fourth semester—usually after passing the "Staats Examen"—he busies himself with analysis of foods of all descriptions—milk,

butter, tea, chocolate, water, wine, etc., etc., and at the same time may prepare inorganic and organic compounds, but the student may choose his course of work.

THE STATE EXAMINATION AND THE PH.D. EXAMINATIONS.

The State Examinations take place during the holidays and last six to seven weeks, during which the student has inorganic and organic compounds to prepare in somewhat large quantities, receives qualitative, quantitative, toxicological and volumetric analyses and is examined *vivâ voce* and in writing in chemistry, analysis of drugs, and other subjects. Pharmacy, it will be noted, is not included in the qualifying examination (Staats-Examen), but has a place, however, in the assistants' examination (Gehülfer-Examen). For the "Doctor" degree six semesters' study is requisite, and the student is examined in one subject as principal subject (usually chemistry), and two others as secondary ones (usually botany and physics), besides being sounded in philosophy.

On passing an examination the newly-born Herr Reichs-Apotheker or Herr Doctor Phil. invites his friends to give him a "Hu ja ja Fahrt," which consists in their driving round the town with him in an open landau at evening (owners keep special vehicles for the purpose!) yelling "Dem Candidaten Hu ja ja, hurah, hurah, hurah!"—and there we will leave him!

TOILET PREPARATIONS.*

BY FRANK EDEL.

Among the articles meeting with steady sale in every pharmacy are tooth powders and pastes, as well as liquid preparations for the same purpose. These have a regular and constant sale, and I believe that a large proportion of such demand can be easily supplied with products of the pharmacist's own manufacture. Lately the demand seems to favour paste dentifrices, but these preparations are easily prepared. In putting up this class of preparations, as in putting up all special preparations, the pharmacist should see to it, first, that he has a meritorious formula; second, that the product of such formula be put up in nice style. It is impossible to make anything but a very limited sale on any preparation unless the preparation has merit. If it has, when once used it will be used again, and perhaps recommended to others. If it has not, its use will be limited.

It is a fact—which every pharmacist has seen demonstrated many times—that a nice, neat package goes a great way toward selling any preparation. My own observation has impressed these facts on my mind time and time again. The houses which make a business of manufacturing druggists' glassware have given the matter of containers for both liquid and powder preparations for the teeth attention, and several nice styles of bottles are now in the market designed especially for this class of preparation, so that now it is only a matter of choice with the pharmacist as to what style of bottle he will use.

A good liquid preparation for the teeth can be made by the following formula. For the want of a better name let us call it—

English Impearling Fluid.

Fl. Extr. Soap Tree Bark	2 ozs.
Glycerin	4 ozs.
Alcohol	4 ozs.
Water	q.s. to make 1 pint.
Oil Cloves	4 drops.
Oil Wintergreen	3 drops.
Tr. Cudbear to colour.	

Mix.

Or it can be made from the ground soap tree bark by percolation. It can be easily and cheaply prepared, and furnishes a preparation very similar in appearance and taste to the most popular preparations on the market. If it is desired to flavour it

similar to the preparations sold as imitations of the popular anti-septic "Listerine," it can be flavoured with eucalyptol and thymol in place of the flavours given above.

Par Excellence Tooth Powder.

Precipitated Chalk	2 lbs.
Prepared Chalk	2 lbs.
Powd. Sugar Milk	1½ lb.
Borax	½ lb.
Powd. Orris Root	1 lb.

Mix thoroughly and colour with carmine if so desired. This powder can be flavoured with oil of wintergreen or oil of rose as preferred. In mixing the carmine with powder it is better to dissolve it in a small amount of ammonia and mix with a small amount of the chalk first, and then incorporate with the balance of powder. This will be found an efficient and at the same time a cheap tooth powder.

After experimenting with many of the published formulæ for making tooth paste, with but little satisfaction, I came to the conclusion that the trouble was not so much in the powders used as in the liquid that was incorporated to make the same into paste form. After some considerable experiment the following liquid was found to give good results:—

Glycerin	2 parts.
Water	1 pint.
Gelatin	1 oz.

Macerate the gelatin in water until soft, then heat to dissolve, add the glycerin, and mix thoroughly. This was found very satisfactory for the purposes given above.

Imperial Tooth Paste.

Prepared Chalk	2 lbs.
Precipitated Chalk	2 lbs.
Powd. Sugar	1 lb.
Powd. Carb. Magnesia	½ lb.
Powd. Borax	4 ozs.
Carmine	q.s.
Oil Wintergreen or Oil Rose	q.s.

Mix the powders, and, if desired, colour as recommended above; then add the flavours and mix thoroughly; next gradually add the above liquid, mixing carefully in a mortar until the product is a paste of the proper consistency. It will be found difficult to get rid of the lumps entirely by mixing in a mortar, but this can be easily done by running the paste through a paint-mill. Such mills are not expensive, and aside from their use in making tooth paste as above, are very valuable in preparing such ointments as ointment of zinc oxide. The paste when made must be immediately put in jars or in collapsible tubes. The popular English pastes are put up in jars, while those made in this country are generally put up in tubes.

Some years ago it was customary to mix a small quantity of powdered myrrh with tooth powder or paste. This gives the powder, to my mind, a disagreeable taste, and has no advantage as a cleanser over those not containing it. Likewise the tendency now seems to be against soaps being incorporated into paste or powders. Soap is in no way advantageous in such preparations, and to me seems very disagreeable.

If it is desired to flavour the paste to meet the ideas of some who are advocating flavours as mentioned above in connection with the formula for English impearling fluid, eucalyptol and thymol can be used in place of the oils as recommended above. In either case it is well, however, to use a small portion of oil of wintergreen.

To those who have had no experience in filling collapsible tubes with tooth paste or toilet creams, I would say that I have found nothing so handy as a large-barrelled metal syringe. Remove the pipe and fill the barrel with paste, then force the given quantity into the tube, and close with a broad pair of pincers (which are furnished by the manufacturers for that purpose). It only requires a little ingenuity, however, to improvise pincers that will close the tubes nicely, and any tinsmith can make a suitable apparatus for filling the tubes.

* Reprinted from the *Spatula*.

An Elegant Cold Cream.

Glycerin	6 ozs.
Lanolin	1½ oz.
Petrolatum, White	4½ ozs.

Mix the lanolin and petrolatum and then incorporate the glycerin, flavour with oil of rose or oil of ylang-ylang, and put up in jars or collapsible tubes. This is the finest preparation of its kind I have ever seen. It is easily made and keeps perfectly.

What has been said in regard to putting up preparations for the teeth is equally true of toilet preparations in general, viz., first, be assured that you have a good formula and then put it up in nice style.

There is no lack of formulæ for colognes, but not one out of every dozen will be found worth anything. Some years ago, I remember seeing a formula recommended as similar to a very popular cologne. The writer of the article said that this cologne owed its peculiarity to the oil of Canada snake-root, and then proceeded to recommend a formula which called for the oil in such quantity as to drown every other odour and make a cologne having no resemblance to the one he said it resembled.

It is not the purpose of this article to propose formulæ imitating standard goods on the market, but rather to recommend such as in my own hands have proved satisfactory in every way. The following formula yields a musk cologne that is at once elegant and lasting, and will be found the equal of any on the market:—

German Cologne.

Oil Bergamot.....	1½ oz.
„ Lavender Flowers.....	½ oz.
„ Lemon	2 drs.
„ Asarum.....	1 dr.
„ Sandal, Best	1 dr.
„ Rose Geranium	1 dr.
„ Neroli, Bigarade	15 min.
„ Patchouly.....	20 min.
Fl. Extr. Orris Florentine.....	1½ oz.
Tr. Musk (1 dr. to pint).....	6 ozs.
Tr. Storax (1 part storax, 9 parts alcohol)	1 oz.
Alcohol Deodorised	80 ozs.

Mix and allow to stand one month or more and filter.

In making the above, as in all other colognes, only the best oils should be used. The above is in reality an extract for preparing a perfume, and does not come under the head of cologne proper. It is, however, an excellent preparation, strong and lasting, and will give general satisfaction.

Where the cologne is to be used as an aqua cologne for bath and other purposes, the following will be found excellent:—

Cologne Par Excellence.

Oil Bergamot	8 ozs.
„ Lemon	6 ozs.
„ Cinnamon Ceylon	2½ drs.
„ Cloves	2½ drs.
„ Neroli	5 drs.
Alcoholic Extr. Jasmine.....	6 drs.
Oil Rosemary Flowers.....	4 ozs.
„ Lavender	6 drs.
Benzoic Acid	2½ drs.
Musk	10 grs.
Alcohol	4 gals.
Water	1 gal.

Mix and allow to macerate a long time. This, I consider, the finest cologne of the kind I have ever seen.

The following formula yields an excellent preparation:—

Toilet Cream.

Blanched Sweet Almonds.....	2 oz.
Borax	30 grs.
Sweet Almond Oil	½ oz.
Quince Seed	1 oz.
Alcohol	4 ozs.
Dist. Water q.s. to make	32 ozs.

Rub the almonds to a smooth paste with a portion of the water; next add the balance of water gradually (making an emulsion of almonds); then strain and add the quince seed; let stand with frequent agitation for twelve hours and strain; then dissolve borax in 1 oz. water, add the oil and shake and mix with the mucilage of

quince seed, add alcohol and shake; finally flavour with oil of rose or oil of ylang ylang. This yields an elegant milk-white toilet cream that is an excellent emollient and dries quickly, or, if it is desired, one ounce of glycerin can be added in place of the oil and borax. If it is too thick it can be thinned by adding more emulsion of almonds.

Witch Hazel Toilet Cream.

Quince Seed	1 oz.
Glycerin	1 oz.
Dist. Ext. Witch Hazel.....	1 qt.
Alcohol	2 oz.
Borax	15 grs.

Mix the glycerin, quince seed and the extract, and let stand, with frequent agitation, for twelve hours; then strain and add the borax dissolved in small quantity of water and add alcohol gradually.

Violet Powder.

French Chalk.....	1 lb.
Powd. Orris Root.....	1½ lb.
Corn Starch	5 lbs.

Mix thoroughly and perfume with oil orris dissolved in alcohol if the orris root does not give odour enough. The above yields a very excellent dusting powder.

Par Excellent Face Powder.

Precipitated Chalk	23 ozs.
French Chalk	24 ozs.
Bismuth Sub-carbonate.....	7 ozs.
Zinc Oxide C. P.	17 ozs.
Corn Starch	30 ozs.

Perfume with Oil of Rose to suit.

This makes a very excellent face powder. If it is desired to make it a flesh colour, it may be coloured with carmine.

Superior Bay Rum.

Oil Bay.....	¾ oz.
Oil Orange	¼ oz.
Alcohol.....	3 pts.
Water	3 pts.
Precipitated Phos. Calcium.....	q.s.

Mix the oils and alcohol, add the calcium and shake; then add water and shake thoroughly and filter. Colour with 90 proof rectified Jamaica rum, or with slight amount of caramel.

Violet Water.

Extr. Violet	16 ozs.
„ Cassia	8 ozs.
Tr. Orris Root	16 ozs.
Tr. Musk.....	½ oz.
Extr. Rose.....	1 oz.
Extr. Jasmine	10 ozs.
Alcohol, Deodorised.....	9 pts.
Water	1 pt.

Mix and allow to stand at least one month. In making these toilet waters only the best orris should be used. The extracts ordered are the alcoholic extracts of the flower pomades, and not the perfume usually sold under similar names. Only the best deodorised alcohol should be used in the work.

CHEMISTS AS LEADERS.

BY PETER TOWNSEND AUSTEN.

The historians of human development speak of the Stone Age, the Bronze Age, the Iron Age, and other ages, meaning thereby the successive periods of human activity that have been characterised by the use of these materials. The most fitting term to apply to the period which began between fifty and a hundred years ago, and whose development is yearly more rapid and more wonderful, would be "The Chemical Age."

In the past, while what was called philosophy marked a high mental activity, much of it was a form of thought based almost entirely on abstract speculation, for the study of matter and its changes was almost unknown. Instead of the exact observation of material objects and their behaviour under varying conditions, and the study of the phenomena of Nature, all kinds of imaginative trains of thought were evolved, and speculations, often baseless, were put forward with little idea as to whether they were supported

or not by facts. Even when facts were observed, they were often distorted in order to make them accord with the false or visionary philosophy of the day. But when the delicate balance was invented, and the weights of the different kinds of matter could be exactly determined, and their changes followed with precision, the great principle of the indestructibility of matter was established, and the schools of abstract philosophy suffered an overturn. Instead of the observed fact being subservient to the speculation, the observed fact became dominant, and speculative philosophy retained its value only so far as it accorded with and explained, or amplified by inference, the fact.

All this bears directly upon the conditions of modern competitive life. For instance, men, first of all, must obtain food. To obtain it from weaker communities by force or robbery could be successful only for a time, as the producers were either exterminated or they gave up so unprofitable an industry. The food-supply of mankind depends on the application of a knowledge of the principles involved in plant growth. The basis of this knowledge is chemistry. It was not really until 1840 that it was demonstrated by the great chemist, Liebig, that plants, like animals, feed. They take certain kinds of nutriment out of the soil, and soon exhaust it. Soon they fall to grow. Liebig showed that if these nutritive substances were put back into the soil, the plants would keep on growing, and that there was no limit to the productiveness of the earth, when properly nourished as chemical science indicated. Malthus stated that the population must be restricted, else it would exceed the food supply. Liebig showed that the production of food stuffs, made possible by the application of chemical science, was so immense that such a danger is not to be feared. Chemical knowledge has rendered it possible to make several blades of grass grow where there was only one. Liebig then investigated live stock, and proved that, though animals eat many kinds of food, the food owed its value to a few definite nutritive elements that are found in greater or less amounts in all foods; and that the animals, though seemingly widely different in physiological nature, were composed essentially of the same substances. Thus the raising of live stock and the production of dairy products were placed upon a scientific basis. Agriculture began to employ scientific methods, and the cost of raising plants and animals was greatly reduced.

It is not always easy to appreciate at first glance the far-reaching effect of a chemical discovery. The introduction of the hot blast in the manufacture of iron increased the production of pig iron. The invention by Bessemer of the converter method of making steel practically revolutionised the manufacturing industry of the whole world. What cheap steel means to humanity could not be told in a large volume. The invention of the basic process for treating phosphatic iron ores by Thomas and Gilchrist made it possible to produce steel from ores existing in immense quantities and hitherto entirely worthless. And, strange to say, phosphorus, the "iron master's curse," is now obtained as a phosphatic slag, which is a most valuable fertiliser for the farmer. The chemist turned the bane of England's iron industry into a blessing to England's agriculture. Weldon utilised the waste product in the manufacture of chlorine, so that it could be used over and over again. In turn was reduced the price of bleach, of bleached white cotton and of white paper. Books were made cheaper. Education was cheapened. The waste tars of the gas manufacture under the skilful hands of a host of chemists are now the basis of an immense industry. They produce brilliant dyes, perfumes, antiseptics, medicaments, and what not. The astonishing development of chemical knowledge has assisted in the evolution of electricity, the commercial future of which is incalculable. The study of life has been taken up, and by the aid of the colossal genius of Pasteur, disease

in plants, animals, and men is checked and avoided, thousands of lives are yearly saved, and the tenure of human existence is far stronger than it was half a century ago. These modern advances in chemical science and their applications have taken place so quietly, although irresistibly, that the average individual does not appreciate the part they are playing; nor can we estimate the still greater part they are to play. Another striking instance of the results of chemical research is the development on the one side of explosives, and on the other of hard and tough steel. Without the assistance of the chemist war would be monotonous.

The stability of a community lies in its independence. Its independence is based on its productiveness. Manufacturing consists in changing one kind of form of matter into some other kind of form. It is easy to understand, therefore, that chemistry, the science that studies the changes in the identity of matter, underlies the manufacturing arts. Hence the industrial status of a nation may be fairly estimated by the condition of its chemical knowledge. It is fair to hold that the country that has the best chemists will in the long run be the most prosperous and the most powerful. It will have at the lowest cost the best food, the best clothing, the best manufactured materials, the fewest wastes and unutilised forms of matter, the best guns, the strongest explosives, the most resistant armour. Its inhabitants will make the best use of their country's resources; they will be the most healthy, the most free from disease; they will oppose the least resistance to favourable evolution; they will be the most thrifty and the least dependent on other nations. The education of its people in chemistry and the physical sciences is the most paying investment that a country can make. Competition to-day between nations is essentially a competition in the science and applications of chemistry.

It is fair to assume, also, that if men who have devoted their lives to the study and practice of chemical science, and who hence must have the clearest understanding of all men of the true relations existing both between material things and between material things and humanity, also possess the mental calibre that may enable them to be men of affairs, they ought to be especially successful in executive positions. Such an assumption is supported by the fact that the number of responsible positions, at first sight quite unconnected with chemistry, which at present are filled by chemists, or men who have received a thorough training, is large. This shows, not that the chemist is an unusual kind of man, but that a chemical education may make a man unusually efficient. Perhaps as striking an illustration of this as any is the increasing number of chemists in charge of large educational institutions. There is no position in which a man may more powerfully and so lastingly influence man than that of the head of a large school or college.

The Marquis of Salisbury, Prime Minister of England, is a chemist, and spends much of his spare time in his finely-appointed laboratory. And France recently placed in the most intricate and difficult of positions, that of Minister of Foreign Affairs, her most eminent chemist, Berthelot.

These are signs of the time—indications of the chemical age that the world has now entered into, and in which it is destined to remain for many years to come. It will be interesting to watch the course of the two great nations which are now under the guidance of chemists, bearing in mind that Germany is now the home of chemistry, nor forgetting that Russia's advance in chemistry during the last quarter of a century may fairly be called phenomenal. In this connection, too, it may be pertinent to ask what has become of all the clever and earnest young Japanese chemists who have been studying at the leading educational centres of Europe and America during the last few years?—*North American Review*.

REVIEWS AND NOTICES OF BOOKS.

A MANUAL OF BOTANY. Vol. II. Classification and Physiology. By J. REYNOLDS GREEN, Sc.D., F.R.S., F.L.S. Small 8vo, pp. i.-xi. ; 1-541. Price 10s. (London: J. and A. Churchill. 1896.)

This volume completes the sixth edition of the work hitherto known as Bentley's 'Manual of Botany,' but which, in consequence of the great alterations that have been made in nearly every chapter, except in the part on systematic botany, is now practically Green's rather than Bentley's 'Manual.'

The present volume is divided into two parts, devoted respectively to Classification and Physiology.

Comparatively few alterations have been made in the first part. The majority of those natural orders which have been reduced to tribes in Bentham and Hooker's 'Genera Plantarum,' such as Tropæolaceæ, Oxalidaceæ, and Limnanthaceæ, under Geraniaceæ, have been retained (possibly to avoid any alteration of the useful analysis of the natural orders that is given at the end of each sub-class), but their position in the 'Genera Plantarum' is indicated in each instance. Continental arrangements of the natural orders of plants do not fit in with the works on systematic botany published in this country, and for this reason it is well that Professor Green has retained the British arrangement, since the work will serve better than most others as an introduction to the numerous colonial and other Floras published in this country.

With few exceptions, the terminology has been rendered more uniform by the use of the termination "*aceæ*" to distinguish natural orders, thus aiding the memory of the student by conveying a definite idea. The division of the vegetable kingdom into four groups, viz., Thallophyta, Bryophyta, Pteridophyta and Spermophyta is another instance of this. The substitution of the word Spermophyta instead of Phanerogamia has the advantage of rendering the nomenclature uniform, whilst expressing more correctly the leading feature of the group than the word "Anthophyta," of A. Braun.

The arrangement of the natural orders in cohorts according to the plan of 'Genera Plantarum' is a decided gain, as is also the bird's-eye view of the cohorts and their characters given on p. 224. It is, however, to be regretted that the concession made to evolutionists, of altering the relative position of the sub-classes (beginning with Monochlamydeæ, and ending with Corollifloræ), makes the arrangement of the natural orders less useful for subsequent work in systematic botany; for all botanists have sooner or later to be systematists as well as biologists and histologists. Here and there a few short notes on the relationships of the different natural orders are given, but a comprehensive view of the reasons for grouping the natural orders into alliances or cohorts is wanting, and this is a feature that may well be dealt with in a future edition.

Economic botany has practically been removed from the manual, and space thereby economised. In fact, this branch of the subject has grown so much of late years as to require a volume to itself. 'The Treasury of Botany' and Boulger's work on economic botany should, however, be a help to those, and probably they are many, who regarded this as one of the most useful features of the late Professor Bentley's 'Manual.'

The physiology of plants is, as is well-known, Professor Green's special branch of the subject, and here he is evidently quite at home. This part of the work has been practically rewritten in the peculiarly lucid style characteristic of the author, and probably no better account embodying all the recent discoveries in this branch of the science could be found in the English language. It is satisfactory to feel that the student has now a useful manual of botany by an English botanist, which is brought up to date and not merely a translation of a German work, as so many of the recent text-books have been, at least to a considerable extent.

One novel but very useful feature which deserves notice is the glossarial character of the general index, explanations of the meaning of the terms being added wherever they can be briefly given.

It will be gathered from the above remarks that the book is well adapted to the requirements of botanical students in general, and pharmaceutical students in particular. Its handy size, clear type, and numerous well-printed illustrations make it even more suitable in this respect than it would be otherwise, and Professor Green is congratulated on the conclusion of a difficult and yet necessary task.

PARLIAMENTARY NOTES AND NEWS.

ANTI-BLOCKING SCHEMES.—Almost every private member who has been a victim of the pressure of Government business or the tactics of Her Majesty's Opposition is ready to express the opinion that Parliamentary procedure needs amendment. In addition to the proposals of Sir Albert Rollit, Sir Edward Clarke, and Mr. Gedge, to which allusion has been made in these columns, it has been recommended that a new Standing Order shall be adopted by the House with a view to preventing to some extent the present waste of legislative energy. The proposed order, which has been approved by a Committee of the House, substitutes for the present method of death by inanition the more scientific process of suspended animation, but with a sure and certain hope of re-awakening in the next session of the same Parliament. A member in charge of a measure which has reached, say, the Committee stage, and finds further progress hopeless, may, by giving proper notice, move "that further proceedings of such Bill be suspended until the next session." And no amendment would be permitted to such motion. If the motion is carried, the private member, relieved of further anxiety, would have leisure to attend to the needs of his party instead of saying hard things about the Government. In the ensuing session, any member whose name "backed" the Bill could claim to move "that the resolution of the previous session be read." Thereupon the Speaker would read the resolution and call upon the member to present the Bill in the form in which it stood when suspended. On the motion being carried, the Bill would be printed and would renew its Parliamentary course with increased prospects of ultimate success. Legislation on the instalment system does not perhaps strike one as being very dignified, and it may open the door to certain evils, but the formulation of such a scheme by a Committee of the House indicates the congested state of public business and the recognition of the need for some means of rescuing really good measures from an undeserved oblivion. Perhaps even a Pharmacy Bill might be possible if the proposed order becomes incorporated in the standing orders!

A WINTER SESSION.—Since the above scheme has been made public in the columns of the *Times*, another device for the conservation of parliamentary energies has emanated from the First Lord of the Treasury, and it has the advantage over all other proposals in that it has received official sanction, and will actually be put into practice. Briefly it may be summed up in the words "Winter Session." The Government intend to proceed steadily with official business till August 14, and to then suspend further proceedings till January 13, from which date till March, Parliament will sit to finish off (if possible) the Education Bill and other outstanding items of the Government programme. Such an arrangement must not be regarded as furnishing additional chances for the advancement of private members' Bills, or as rendering it possible that the House of Commons may be able to consider the Companies Bill from the Lords, but it is a distinct advance towards the "carrying-over" principle embodied in the embryo standing order above alluded to.

THE SELECT COMMITTEE of the House of Lords on the Companies Bill held its first meeting on Friday, 12th instant, when the Lord Chancellor was appointed Chairman, and preliminaries as to procedure were discussed. It was decided that the Committee should take evidence on the points dealt with in the Bill, but the question as to whether such evidence should be made public or not was deferred until the next meeting, which is fixed for Friday the 19th instant, at 12 noon.

THE REPORT OF THE ADULTERATION COMMITTEE is in draft, and will be considered at the Committee meeting on the 25th inst. Hence its communication to the House may be shortly expected. According to the *Times*, the report, when it does appear, will contain recommendations in favour of the establishment of a Board of Reference to decide such questions as food standards, and to which also would be referred all questions of adulteration. In fact, it will suggest the enlargement of the Court of Appeal at Somerset House, and not the setting up of a separate body. This announcement is not over-lucid, and one may be excused some anxiety as to the constitution of a Board which is apparently to exercise judicial as well as technical functions.

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PHARMACOPŒIA STANDARDS.

Now that the revision of the national Pharmacopœia is in progress and there is a probability that, in connection with that work, additional provision may be made for standardising drugs and medicinal preparations, a convenient opportunity is afforded for considering the suggestion that the official definitions of the British Pharmacopœia should be applied as standards for the purposes of the Sale of Food and Drugs Acts. A further reason for directing attention to this matter is to be found in the contemplated amendment of the law relating to adulteration which has been for some time past the subject of inquiry by a Select Committee of the House of Commons. The suggestion above mentioned appears to involve the assumption of analogy between the conditions under which drugs or medicinal preparations are supplied to the public and those obtaining in the sale of ordinary food commodities. It also ignores the fact that, while legislative provision had been made for securing the purity and fitness of drugs and medicines long before the passing of the Act relating to adulteration of food, the special qualification of persons engaged in pharmacy and the statutory obligations imposed upon them by the Pharmacy Act serve as guarantees for the articles they supply, which have no analogies in ordinary trade.

Bearing in mind the fact that the predominant object of the issue of a British Pharmacopœia was "to afford to the members of the medical profession and those engaged in the preparation of medicines throughout the British Empire one uniform standard and guide, whereby the nature and composition of substances to be used in medicine may be ascertained and determined," there can be no reasonable doubt as to the moral obligation binding pharmacists to observe the descriptions by which articles of the *materia medica* are officially defined and to be guided by the directions indicating what the medicines of the Pharmacopœia are intended to be. Any degree of uncertainty that may have existed as to the legal obligation in this respect was very positively removed by the Pharmacy Act, 1868, which defines the persons entitled to call themselves chemists and druggists and makes the compounding of medicines of the British Pharmacopœia—except according to the formularies

of the said Pharmacopœia—an offence punishable under the Act.

The obligation thus imposed upon pharmacists is so evident and so reasonably appropriate to the position they occupy that to question, from that point of view, the feasibility of maintaining Pharmacopœia standards would justly be considered a retrograde proceeding. Naturally no such attempt has been made; but, on the contrary, the prevailing tendency has been to extend and amplify the definition of medicines, in regard to their composition and strength, by introducing improved methods of preparation and testing. In this way pharmacists have contributed largely to advance the object of the Pharmacopœia, and within recent years the pages of this Journal have furnished abundant evidence of their endeavours to secure greater uniformity and precision. For these several reasons it appears generally unnecessary and undesirable that the procedure required for preventing adulteration of food materials should be extended to the supply of drugs and medicinal preparations. There are, moreover, special reasons for this conclusion. Certain Pharmacopœia articles present practical difficulties by their liability to undergo change, even when prepared in strict conformity with official formulæ. After some lapse of time the strength of such articles may fall more or less below the respective standards of the Pharmacopœia. In the case of other articles the adoption of high standards of quality may render their production impracticable or unnecessarily expensive.

The attempt to make Pharmacopœia standards the criterion of the nature, substance, and quality of articles in the administration of the Food and Drugs Acts appears therefore to be open to objection, for the adoption of that course, while likely to lead to harsh and even unjust application of the law in the case of articles subject to alteration, might be an obstacle to improvement in the official standards. Moreover, the decision of questions as to whether any deviations from Pharmacopœia standards are to be regarded and dealt with as offences, involving liability to fine and imprisonment, requires more special acquaintance with pharmaceutical matters than is to be expected from officials charged with administration of the law suitable for repressing the grosser forms of adulteration which are practised with articles of food.

The subject has recently been dealt with from this extra pharmaceutical point of view by Professor J. U. LLOYD in a paper read before the Philadelphia College of Pharmacy. Having regard to the conditions which have been called into existence by legislative enactments in regard to adulteration, he points out that if the Pharmacopœia standards for medicinal articles were adopted as legal standards for the purposes of those enactments the very thoroughness and precision of the United States Pharmacopœia—which is largely of the pharmacist's own making—might involve hardship on those it was intended to aid. He shows that while the purity of some Pharmacopœia articles is very minutely defined they are often administered by physicians in quantities measured by that arbitrary standard the teaspoonful, so that the dose may vary to the extent of fifty per cent., more or less than is intended. As examples of articles which begin to change immediately they are made and continue to alter with greater or less rapidity, according to circumstance, Professor LLOYD instances liquor sodæ chlorinatæ, liq. plumb. subacet., acidum sulphurosum, aqua ammon. fort., spiritus ammoniæ and aqua ammoniæ. He gives

analytical determinations of their rate of alteration, showing that these articles must necessarily deviate from the Pharmacopœia standards, and that the question as to permissible latitude requires to be considered by competent authorities. In the case of liq. ferri subsulph. and liq. ferri tersulph., the tests prescribed in the U.S.P. may be construed to demand the total absence of any excess of nitric acid and of ferrous salt—conditions which, if practicable, are not easy to secure. Chlorinated lime and sulphurated lime are mentioned as examples of commercial articles which are generally different in strength from the standards specified in the Pharmacopœia. Caustic potash and soda also in most instances contain less than the specified 90 per cent. of the Pharmacopœia.

In putting forward this view Professor LLOYD is careful to explain that he does not suggest any countenance of adulteration, sophistication, ignorance, or carelessness of manipulation, but merely a plea for liberality and confidence in the professional integrity of qualified pharmacists. He also urges as a matter of justice to the officers whose duty it is to enforce the adulteration law that they should not be required to apply it to medicines. In commenting upon the paper the Editor of the *American Journal of Pharmacy* remarks that, while it furnishes much food for thought, the author does not in any way exaggerate the difficulties which beset the pharmacist. The fact that laws regulating the practice of pharmacy have generally been found satisfactory when their administration has been in the hands of practical pharmacists is pointed out as furnishing the safest guide to a settlement of the question raised by Professor LLOYD.

INTERPRETATION OF THE PHARMACY ACT.

THE hearing of the appeal in the case of the Pharmaceutical Society *v.* Fox has not been long deferred, and Justices CAVE and WILLS seem to have been of opinion, when the case came before them on Saturday last, that the matter in dispute was not one requiring profound consideration. It will be remembered that the point raised was whether the owner of a medicinal preparation that has at one time been protected by Letters Patent retains his special privileges with regard to protection when the patent has been allowed to lapse. Mr. Fox, the nominal defendant and appellant in this case, argued that the preparation in question—Kay's Compound Essence of Linseed—having once been protected by Letters Patent, had thus been removed permanently from the scope of the Pharmacy Act, 1868. According to the appellant, the fact that the patent is no longer existent counts for nothing, since "once a patent always a patent." Justices CAVE and WILLS, however, showed little inclination to accept this view of the matter, and without calling upon counsel for the Pharmaceutical Society to reply to the arguments of Mr. BONSEY, they affirmed the decision of the County Court Judge, holding that a patented article is one for which Letters Patent still exist, and not one which has been the subject of an expired or lapsed patent. The *Standard* puts the whole matter in a nutshell by the pertinent suggestion that "when an ordinary article—not coming within the scope of the Pharmacy Act—ceases to be the subject of a patent, anyone may manufacture and, roughly speaking, sell it. If this rule were held to be applicable to medicines containing poisons, the results would be most undesirable. The

guarantees which the maintenance of the patent provided would be gone. It would be the easiest thing in the world for unqualified persons to pay the trifling preliminary fee for a patent on some popular medicine, containing poison, which they had invented, and then, on the earliest possible occasion, let the patent drop. In this way we should have the flood-gates opened to the very mischief which the Pharmacy Act was designed to prevent."

These remarks as well as those made by the Judges during the hearing of the appeal are indicative of a growing appreciation of the real object and public utility of the Pharmacy Act. They serve to show that the risks attending the unregulated sale of poisons and potent medicinal preparations by persons wholly ignorant of their nature and possible effects, are becoming so much better known and understood, that it may be expected there will be, in future, greater regard for the salutary provisions of the Act, and more consideration shown for the services rendered by properly qualified pharmacists. As an immediate result of the decision in the case of the Pharmaceutical Society *v.* Fox, Messrs. KAY BROTHERS, Limited, of Stockport, direct attention to the fact that Kay's Compound Essence of Linseed can only be sold by persons on the Register of Chemists and Druggists, and they request all unregistered vendors of proprietary medicines to return their unsold stocks of that preparation to the wholesale dealers from whom they were obtained. Wholesale dealers are also requested to return their stocks for re-labelling or exchange.

THE FUNCTION OF CALCIUM IN PLANTS.

IN 1875, J. BOEHM arrived at the conclusion that one of the functions of calcium in plants is to aid in the conduction of carbohydrates. Subsequently, A. F. W. SCHIMPER showed that oxalic acid is a bye-product in the building up of proteids in plants which normally contain crystals of calcium oxalate, and that, in the absence of calcium, acid potassium oxalate accumulates in the leaves and buds, and acts as a poison. He concluded, therefore, that the use of calcium is to combine with and neutralise this poisonous salt. Sugar, however, was proved to travel in leaves containing no appreciable amount of calcium, and carbohydrates were found sometimes to travel from the seeds up the stem of the seedling without any corresponding emigration of calcium. P. GROOM (*Annals of Botany*) now suggests that acid potassium oxalate retards the action of diastase on starch, and that the first effect of the salt on the assimilating tissues is the accumulation of starch, owing to an arrest of the change of the carbohydrate into sugar. The second effect, as the soluble oxalate accumulates, is the retardation of the manufacture of starch, and hence probably of the assimilation of carbon, whilst the last effect is the death of the protoplasm. GROOM's researches, therefore, confirm SCHIMPER's discovery, that the evil effects of a lack of calcium are to be attributed to the accumulation of acid potassium oxalate in plants which normally contain calcium oxalate. They may also be regarded as complementary in showing that, in the absence of calcium, there is a stoppage of the conduction of those carbohydrates only which have entered into the condition of starch. Part of the carbon assimilated by plants never enters into the starch condition, and it is clear, therefore, why growth is not at once arrested in shoots or seedlings deprived of calcium.

ANNOTATIONS.

THE KELVIN JUBILEE.—The ceremonials in commemoration of the jubilee of Lord Kelvin, as Professor of Natural Philosophy in Glasgow University, commenced on Monday last and have been a wonderful success. The presentation of addresses of congratulation was quite a serious business, so numerous were they, and the list of eminent guests was a very long one. At the banquet held on Tuesday evening, Lord Kelvin, in responding to the toast with which his name was coupled, said that he did not feel pride on the occasion, but rather he saw the great kindness of his scientific comrades and of all his friends in crediting him for so much. He thought the word "failure" characterised his most strenuous efforts for the advancement of science during fifty-five years, as he knew no more of electric and magnetic force, or of the relation between ether, electricity, and ponderable matter, or of chemical affinity, than he knew and tried to teach in his first session as professor. In the pursuit of science, however, inborn necessity to make the effort saves the naturalist from being wholly miserable, and there were splendid compensations for philosophical failures in the admirable discoveries by observation and experiment on the properties of matter, and also in the exquisitely beneficent applications of science to the use of mankind with which the past fifty years have so abounded.

AMERICAN PHARMACEUTICAL ASSOCIATION.—The ever-welcome bulky volume of the Proceedings of this Association has once more come to hand, the occasion of its publication being the forty-third annual meeting held at Denver, Colorado, last August. At the time of this meeting the Association numbered 1548 members, and its income for the year ending July 1, 1895, amounted to nearly \$7000. The report of the meeting occupies 468 pages, and the annual report on the progress of pharmacy, by Henry Kraemer, brings the number up to 1115; then there is the long list of members and an excellent index, followed by the latest revised edition of the 'National Formulary,' which alone fills more than 200 pages. The list of queries published by the Section on Scientific Papers (see p. 494) may prove useful in view of the approaching Conference of British pharmacists at Liverpool.

THE RÖNTGEN RAYS have now, it is stated, been proved of use for the purpose of medical diagnosis, experiments at Berlin with fluorescent screens having enabled Professors Du Bois Reymond and Grumnach to discern clearly the pathological conditions of the heart, lungs, stomach, etc., in living subjects. The shadow cast by the lungs of a man who had once suffered from pulmonary hæmorrhage revealed the presence of calcifications of formerly tuberculous parts as dark spots, and similar dark points indicated calcification in the heart of another person. Healthy tissues, on the other hand, were transparent to the rays.

'SCIENCE PROGRESS' for June begins with a long and comprehensive article on "The Growth of our Knowledge of Helium," by J. Norman Lockyer, C.B., F.R.S. Commencing with the discovery of the line D_3 , in 1868, and of other unknown lines in 1869, the author then proceeds to deal with Dr. Hillebrand's researches on uraninite, D_3 and other unknown lines in nebulae, photographic results during the solar eclipse of 1893, and the recent discovery of a terrestrial source of helium. Other communications are on "Insular Floras" (Part VI.A), by W. B. Hemsley, F.R.S.; "The Present Position of the Cell-Theory" (concluded), by G. C. Bourne, M.A.; and "The Hereditary Transmission of Micro-Organisms," by Dr. G. A. Buckmaster.

THE NEW NATIONAL FORMULARY.—The Committee responsible for the publication of this 'Formulary' complains that demands have been too common for the inclusion of working formulæ for preparations sold under fanciful trade names. It is satisfactory to note that the Committee did not consider it within the scope of its duties to devise and construct formulæ for such preparations. "On the other hand, preparations for which working formulas were suggested to the Committee were uniformly subjected to critical experiment, and their formulas embodied in the revised 'Formulary.'" The weights and measures of the metric system are exclusively used in this revised 'Formulary,' and they have been adjusted, whenever practicable, so as to make 1000 grammes or cubic centimetres of the finished product.

"PHOTOGRAPHING THOUGHT" is the heading given by the *Standard* to a letter from its Paris correspondent, which he begins by remarking that "it may be rash to pronounce that anything is beyond the photographer's art." It appears that a Dr. Baraduc has just made a communication to the Academy of Sciences, in which he affirms that he has succeeded in photographing thought, producing at the same time numerous photographs in proof of his assertion. The method of procedure is for a person to enter a dark-room, place his hand on a photographic plate, and think intently of the object the image of which he wishes to see produced. The photographs that were shown are described as being mostly very cloudy, though a few were comparatively distinct "representing the features of persons and the outlines of things." Dr. Baraduc is also said to claim the ability to produce a photographic image at a great distance. In support of this he relates how a Dr. Istrate, who was going to Campana, declared that a portrait of himself would appear on a photographic plate in the possession of a friend at Bucharest. The friend went to bed with sensitive plates at his head and feet, whilst Dr. Istrate, before going to sleep at Campana, "willed" that his image should appear on his friend's plate (whether at the head or foot of the bed is not stated). According to Dr. Baraduc the marvel was accomplished, the plate on development revealing "a kind of luminous spot" in the midst of which can be traced the profile of a man. Many people were inclined, at the outset, to doubt the early reports of Röntgen's discovery, but more will be sceptical on this occasion, and perhaps with better reason.

THE PROFITS OF PHARMACY.—Pharmaceutical chemists in London will doubtless be surprised to learn from the *Manchester Evening News* what enormous profits they have realised owing to the recent spell of hot weather. The London correspondent of the newspaper in question speaks of an extraordinary trade in drinks having been developed by pharmaceutical chemists, all the available assistants in many shops having been occupied without intermission during the hot weather of last week in dispensing "iced lemon syrup and saline" at the rate of twopence per glass. One chemist admitted to this trusting and doubtless veracious correspondent that his net profits on the week from this source alone exceeded £100. But whilst rejoicing in the presumed displacement of alcoholic liquors by chemists' draughts, the writer of this sensational paragraph sees possible evil in "the rage for acid drinks, even when nominally neutralised by an alkaline addition," and thinks "it is greatly to be desired that some simple and categorical pronouncement should be made by a physician of unimpeachable repute." The suggestion, however, that milk, corrected if necessary by the slightest admixture of lime or soda water, is the proper drink in any weather for people of any age, is hardly likely to meet with general acceptance in these days of microbe scares. Even pharmacists, with their special knowledge, are likely to prefer iced claret cup.

PHOTO-MICROGRAPHS OF IRON AND STEEL.—A series of very accurate photo-micrographs have been taken by Mr. F. Andrews, F.R.S., under a high magnifying power, to illustrate the minute flaws in iron, steel, and other metals and alloys. These flaws occur sometimes in very considerable numbers, sufficient to influence seriously the deterioration by fatigue of railway axles, tyres and rails, propeller shafts, and other parts of machinery subject to severe strains and performing important duties. These photo-micrographs are obtained by highly polishing and etching small sections, such as may be easily cut from spare portions of the article to be tested, and the photographs obtained form most reliable vouchers of the real quality of the material before final application to its intended purpose.

INVERNESS CHEMISTS AND THE COMPANIES BILL.—The Inverness Chemists' Association recently deputed Messrs. Macleod and Junor to prepare and send a memorial to Sir Robert Finlay, the Solicitor-General for England, expressing the views of the chemists and druggists of his constituency—the Inverness burghs—on the pharmaceutical aspect of the Companies Bill, and referring especially to Lord Herschell's amendment. In his reply the Solicitor-General speaks of the very important and influential memorial he has received, and assures the memorialists that, when the Bill reaches the House of Commons, their views will have his most careful consideration. He also states that the point raised is one which has long been familiar to him, and that he is thoroughly sensible of its importance.

ONE OF THE MISSING LINKS between man and the higher apes appears to have been discovered in Java by Dr. Eugène Dubois, when, some eighteen months ago, he found the remains of the creature to which he gave the name of *Pithecanthropus erectus*. Professor Virchow, Sir W. H. Flower, Sir W. Turner, and Professor O. C. Marsh have examined the specimens, and the result of careful study is summed up in the statement that the animal belonged to the Pliocene period, and represented a form intermediate between man and the higher apes. This discovery is described in the *American Journal of Science* as an event of the first importance to the world of science.

THE REMUNERATION OF DISPENSERS.—A Coventry correspondent directs attention to the fact that the Committee of a local hospital is advertising for a dispenser possessing the Minor qualification, who must be prepared to undertake the whole of the dispensing for both in and out patients, and to keep a register of patients, devoting his whole time to the duties of his office for the magnificent salary of seventy pounds per annum. If, as he suggests, the dispenser is not furnished with board and lodging in addition to the painfully inadequate salary mentioned, this is a much worse case than that referred to in the *Journal* recently (*ante*, p. 420), where the Asylums Committee of the London County Council offered a salary of one hundred pounds per annum for a qualified dispenser. But the question that naturally suggests itself, in connection with such scandalous evidence of non-appreciation of the value of pharmaceutical training, is—what are registered men about to accept positions at such salaries? The fact that small salaries are so openly and so frequently offered seems to indicate that they find ready acceptance, and so long as this is the case it is hopeless to expect the public estimate of a dispenser's duties to rank very high. The weeding-out of the numerous black sheep in Pharmacy seems a necessary as well as a desirable operation.

AMERICAN PHARMACEUTICAL ASSOCIATION.

SECTION ON SCIENTIFIC PAPERS.

Queries.

1. *Sanguinaria*.—The liquid preparations slowly deposit a precipitate upon the sides of the containers. Can a menstruum be devised which will hold permanently in solution the soluble constituents?

2. *Gelatin Capsules*.—What general rule should be adopted in compounding prescriptions ordering gelatin capsules? When should the ingredients be dispensed in dry powder, and when is it preferable to form them into a mass?

3. *Ichthyol*.—Ichthyol is now being used internally, dissolved in water and other media. A palatable form of administration is wanted.

4. *Salol and Acetanilid* are given usually in powder form. Cannot formulæ for therapeutically unobjectionable liquid preparations of the same be devised?

5. *Salicylic Acid*.—It has been alleged that the synthetic salicylic acid now in the market occasionally shows the presence of salol. Is this statement correct, and if so, to what extent?

6. *Formalin*.—A 40 per cent. solution of formaldehyde under that name is attracting much attention as an antiseptic and deodoriser. A good practical formula for its preparation by the retail pharmacists is wanted.

7. *Kamala*.—It is supposed that rosin is the active constituent. Investigation recommended. Is a tincture advisable?

8. <i>Pyrethrum Carneum</i> .	} Insect Powder. Can it not be used as a medicine? On what depend their insecticide properties?
" <i>Roseum</i> .	
" <i>Cinerariaefolium</i> .	

9. *Veronica Officinalis* is used largely as a house remedy for pectoral complaints and skin diseases. Is there any alkaloid or other active principle in the plant to warrant such use?

10. *Viscum Album (Mistletoe)* is used by practitioners to arrest post-partum and other uterine hemorrhages. Investigation invited.

11. *Pichurim Beans*.—What are they? Various descriptions of their oils are given by different investigators.

12. *Strophanthus Seeds*.—A determination of the active principles in the seeds of commerce, their nature, quantity, and mode of valuation.

13. *Pareira*.—Pareira is a valuable diuretic and tonic drug. Buxine has been found in it, but this can hardly be the important principle. What is it?

14. *Rhus*.—What is the really potent principle of the Rhus group? Is it a volatile acid as claimed by Maisch, or is it a substance resembling cardol?

15. *Tannin*.—At what season of the year should the tannin drugs be gathered? What relation does the amount of tannin present bear to that of starch? Does the tannin increase as the starch decreases? Or, is this true of some drugs but not of others?

16. *Cypripedium*.—There appears to be a poisonous principle producing effects similar to those of *Rhus toxicodendron*, in the glandular hairs of some cypripediums, particularly *C. spectabile*. What is this principle?

17. *Iris*.—The rhizomes of many species of iris abound in starch, as the species that furnish the orris root of commerce, but the rhizomes of *Iris versicolor* and of the *Iris pseudo-acorus* do not turn blue with iodine solution. What is the carbohydrate present?

18. *Veratrum*.—By what means may the rhizomes of *Veratrum album* best be distinguished from those of *Veratrum viride*? Some method is desirable by means of which this may be done easily and with certainty.

19. *Aconites*.—The different aconites are very liable to be confounded. In the case of drugs so potent it is exceedingly important that the structure of each specie liable to be gathered or sold for the officinal should be carefully described. Someone should undertake the task of the thorough investigation of the microscopical structure of all the species.

20. *Pepsin Test*.—A discussion of the variable results obtained in the tests.

21. *Cotton-seed Oil*.—A review of the tests for its presence as an adulterant in other fixed oils.

22. *Cod-liver Oil*.—Are the official tests sufficient to distinguish a pure cod-liver oil? If not, what additional ones should be adopted?

23. *Methyl Acetate*.—Write a paper on the possible use of methyl acetate as a solvent in pharmacy.

24. *Sodium Bisulphite*.—The sodium bisulphite of commerce is rarely found more than one-fourth the strength required by the U.S. Pharmacopœia. Is the official standard too high, or does this salt rapidly deteriorate on keeping?

25. *Terpeneless Volatile Oils* are now articles of commerce. Are they liable to deteriorate on keeping? How much stronger are they than ordinary volatile oils?

26. *Lard Oil*.—Lard oil appears to be grossly adulterated. Is it possible to obtain lard oil in the open market of the standard of purity of the U.S. Pharmacopœia?

27. *Guaiacol*.—Commercial guaiacol varies in purity from 50 to 90 per cent. according to Dr. Squibbs. Cannot some process be devised for its assay and purification, if necessary?

SCHOOL OF PHARMACY STUDENTS' ASSOCIATION.

A meeting was held on Thursday, June 11, Mr. H. A. D. Jowett, Vice-President, in the chair. After the minutes of the previous meeting had been read and confirmed, a paper on "Gold Mining in the Transvaal," by Mr. H. T. Durant, was read, in the author's absence, by the Secretary. The paper was commented on by Mr. Tunbridge and the Chairman, and the Secretary was asked to convey the thanks of the meeting to Mr. Durant.

A report on "Organic Chemistry" was then read by Mr. H. Brown, which dealt with Featon's work on a new dibasic acid obtained by the oxidation of tartaric acid, and with recent work on the celluloses. The report was followed by a discussion, to which Messrs. Henry, Tunbridge, and the Chairman contributed. Mr. Brown briefly replied, and the meeting then adjourned.

BOTANICAL EXCURSIONS.

SHEFFIELD COLLEGE OF PHARMACY.

On Monday, the 15th inst., the students of the Sheffield College of Pharmacy had a most interesting botanical excursion to Castleton. Train was taken to Hope, and thence the party walked through the pastures to Castleton. Some thirty or forty good specimens were obtained, illustrating the flora of the district. After a most enjoyable repast at the Bull's Head, the party left Hope by the 9.15 train for Sheffield. Castleton, which is situate sixteen miles from Sheffield, boasts not only of its Blue John mines and extraordinary caverns, but also the ruins of the old castle of the Peverils, so familiar to the readers of Sir W. Scott's 'Peveril of the Peak.'

GLASGOW AND WEST OF SCOTLAND SCHOOL OF PHARMACY STUDENTS' ASSOCIATION.

On Saturday the 13th inst., the students attending the Glasgow and West of Scotland School of Pharmacy, accompanied by the principal, had a botanical ramble to the Glasgow water reservoirs, about nine miles distant from the city. The party took 'bus to Milngavie and then proceeded round the reservoirs in search of wild flowers. A great number of plants were collected belonging to the following natural orders:—Ranunculaceæ, Caryophyllaceæ, Cruciferae, Umbelliferae, Rosaceæ, Leguminosæ, Compositæ, Labiatae, Scrophulariaceæ, Urticaceæ, Caprifoliaceæ, Plantaginaceæ, Ericaceæ, Boraginaceæ, Euphorbiaceæ, Polygonaceæ, and a number of Cryptogams.

LITHIUM BITARTRATE IN SUPPURATING GINGIVITIS.—This salt, known also as "tartarolithine," which exists as a white powder soluble in water, is employed by American physicians in the treatment of suppurating gingivitis of gouty origin. It is given in doses of 30 centigrammes, dissolved in aerated water (*Nov. Rem.*, xii. 205).

PROCEEDINGS UNDER THE PHARMACY ACT.

APPEAL IN THE KAY'S ESSENCE OF LINSEED CASE.

Pharmaceutical Society of Great Britain v. Fow.

In the High Court of Justice, Queen's Bench Division, on Saturday, June 13, 1896, before Mr. Justice Cave and Mr. Justice Wills, an appeal from a decision of His Honour Mr. Lumley Smith, Q.C., was heard.

Mr. Bonsey, in opening the case for the appellant, said: My Lords, I appear for the appellant in this case, which is an appeal by the defendant in an action brought in the Westminster County Court by the Pharmaceutical Society to recover a penalty of £5 under the Pharmacy Act for selling an article which contained poison, the defendant not being a chemist.

Mr. Justice Cave: Which is the Act.

Mr. Bonsey: It is the 31st and 32nd Vic. c. 131, the Pharmacy Act of 1868. Section 15 provides that every person who shall sell, etc. [Reads the Section.]

Mr. Justice Cave: What is the point here—whether the thing was a poison?

Mr. Bonsey: The point is simply whether this is a patent medicine within the meaning of Section 16, which confers an exemption in the making or dealing in patent medicines. [Reads the Section.] The question is whether the article which was sold was a patent medicine within the meaning of that Section. The facts are simply these: On May 31, 1873, Letters Patent were granted to a chemist at Stockport for the manufacture of a medicine which is called Kay's Compound Essence of Linseed, and ever since 1873 it has been manufactured by him, and sold by chemists and shopkeepers generally. In 1876, three years after the patent had been granted, the patent lapsed, in consequence of the fees not having been paid. As your Lordships know, certain fees have to be paid at stated times, and I think under the Act which was in force then a fee of £50 had to be paid at the expiration of three years; the not having been paid the patent lapsed. The question in this case really is whether the words "patent medicine" in Section 16 apply to a medicine for which a patent has been obtained, although the patent has expired. No distinction is drawn between a patent having lapsed and it having expired at the end of fourteen years, or the period for which the patent has been granted.

Mr. Justice Wills: Is this an ordinary patent under the Patent Act?

Mr. Bonsey: Yes, my Lord. The contention of my learned friend is this. I understand he will admit that during the three years before the patent lapsed this would have been protected by Section 16, but inasmuch as the patent is not now, so to speak, in force, Section 16 has no application at all. The result would be, if my friend's contention is correct, that Letters Patent might be granted to a man for the manufacture of a medicine like this, or of any other kind. He might for fourteen years manufacture that, and anybody might sell it; it need not be sold by a chemist. It could be sold without any restriction, but then the day after the expiration of that fourteen years it could not be sold by anyone but a registered chemist.

Mr. Justice Cave: The notion, of course, is to protect a patentee in the enjoyment of his patent rights. That is part of the inducement to take out a patent, by which it no longer becomes a trade secret, but the manufacture is known to the world, although they cannot manufacture it as long as the patent rights last, and inasmuch as that would be of little value if he could not also license other people to sell it, the protection is extended to his licencees too. But the moment that is over the reason is gone.

Mr. Bonsey: I submit not, my Lord.

Mr. Justice Cave: Anybody might manufacture and sell it. It is no longer confined to the patentee.

Mr. Bonsey: Yes, my Lord, anybody might manufacture and sell it, but having regard to the object of this Act, and other Acts to which I shall call attention, I submit that when the Act speaks here of a patent medicine it means a medicine for which a patent has at any time been granted.

Mr. Justice Wills: Why should a poison which enters into a patent medicine be sold by anybody and everybody when poison cannot generally be sold? I do not understand that at all.

Mr. Bonsey: My Lord, the object of the Pharmacy Act, 1868, as stated in the preamble, is this: "Whereas it is expedient for the safety of the public that persons keeping open shop," and so on. The

object is the safety of the public. Can it be said that for a period of fourteen years the Crown will grant a licence to a man to sell a thing which is a danger to the public; that as long as he pays his fees he may endanger the safety of the public and sell it?

Mr. Justice Wills: I do not understand the connection between the two—the fact of a dangerous thing being patented, and that rendering it not a source of danger to the public—I do not understand that theory of the Act.

Mr. Bonsey: The distinction, I think, is this, that if a medicine has been patented the public are protected, and they do not require to be protected by this Act—for this reason: before a patent can be granted it has to be examined—a specification has to be lodged, the proper authorities examine it and if they are of opinion that the article to be patented is dangerous or injurious to the public, the patent would be refused. And still further, the whole of the ingredients are disclosed in the specification, so that anybody, by paying a very small sum, can go and ascertain for himself what the ingredients of that particular compound may be. Therefore, where a medicine has once been the subject of Letters Patent, there is sufficient protection without the restriction imposed by this Act of Parliament. The Legislature has in different Statutes drawn a distinction between a patent and a patent in force, to use an expression which has been used by the Legislature in another Act; and even in the Patent Acts a distinction has been drawn between a thing which is the subject of an existing patent and a thing which is the subject of a patent that has expired. To illustrate what I mean, may I draw your Lordships' attention to an old Act which was in force up to the time of the last Patent Act of 1883, and was repealed by that Act, though the substance of it has been re-enacted in a section of a later Act. By 5 and 6 William IV. c. 83, sec. 7, there is a penalty of £5 imposed on persons who mark any goods with the word "patent," but the proviso to that section is in these words: "Provided always that nothing herein contained shall be construed to extend to subject any person to any penalty in respect of stamping or in any way marking the word 'patent' on anything, for the sole making or rendering of which a patent before obtained shall have expired." There the Legislature draws the distinction; a man may mark a thing and describe it as a patent, although the patent has expired, and he is not liable to any penalty at all. Therefore I contend my friend is wrong in saying, as probably he will say and as he said in the court below, that when you find the word "patent" in a Statute like that it means a patent in force.

Now, my Lords, I have a strong illustration of this distinction in a very recent case with regard to an Act analogous to this Pharmacy Act, viz., the Sale of Food and Drugs Act.

Mr. Justice Wills: An observation occurs to me that goes a good way against your argument—it is that so long as a thing really is a patent you know what it consists of, but the moment it ceases to be a patent there is no security whatever, that what is known under the name of the patented article is really the same thing.

Mr. Bonsey: With regard to that point, my Lord, there is in this case no evidence; in this case the facts are admitted.

Mr. Justice Wills; I assume it is in fact the same, but I say there is no security for it. It has been pointed out, in one of the cases, by one of the Lords Justices that there is some security to the public by reason of the patent—not, as you suggest, that the Crown would refuse to grant the patent if they thought it not a wise compound for a man's inside, but because the mode of compounding and so on was all known, and, therefore, there might be security. But the moment the patent has expired there is no security of that kind; anything might be sold under the name of the patent.

Mr. Bonsey: I cannot for the moment see the distinction, my Lord, for this reason; if during the fourteen years the patent is in force a man likes to be fraudulent and does not manufacture the article according to the specification, it would not be a medicine prepared according to that specification.

Mr. Justice Cave: He has an interest to prevent that.

Mr. Bonsey: You go and look at the specification, and you assume it is prepared according to it. If that is not done, it is not within his patent, and so if it is manufactured by anybody else afterwards, unless it is manufactured according to the specification, it would not be within the protection. Of course, a patent medicine is a somewhat complicated matter, but take the case of a very simple machine which might be the subject of a patent. If anybody manufactured that afterwards according to the specification of the original patent, there would be no difficulty whatever in seeing whether it was or was not still a machine or article under the particular patent which had some time before been

granted. With regard to this Section 6 of the Sale of Food and Drugs Act, it says no person shall sell to the prejudice of the purchaser certain articles of food or any drug which is not of the nature and substance demanded, and then there is the exception, "Where the drug or food is a proprietary medicine, or is the subject of a patent in force." There, my Lord, in a very similar Act the Legislature has used the words, "a patent in force," but there are no words of that kind in the Pharmacy Act, 1868.

Now, my Lord, although this point has not been decided it has been considered in two cases. The first case is *Pharmaceutical Society v. Piper* in 1893, Queen's Bench Division, 686, and the question was raised whether the words "patent medicine" in Section 16 include a proprietary medicine that is not a patent medicine at all, but is commonly termed a patent medicine by the public. There Mr. Justice Collins, at page 698, after drawing attention to the point and discussing the question whether a proprietary medicine was a patent medicine, says, "That mischief does not exist in the case of patent medicines, for anyone can find out the exact ingredients used in them. The case is altogether different to those which are merely the subject of some proprietary right." As I read the judgment of the learned judge, that is his view of the reason why there should be the exemption in Section 16; but it was more fully dealt with in a subsequent case in the Court of Appeal of the *Pharmaceutical Society v. Armson* in 1894, Q.B.D., 720. The same point was taken in that case, that a patent medicine in Section 16 includes a proprietary medicine. Lord Esher deals with it at page 724: "When we find the Act of Parliament, or Acts of Parliament, which have been dealing with this very subject matter distinguishing between proprietary medicines, secret medicines, and patent medicines, and when you come to this Pharmacy Act and find that it has in terms dealt with only one of those phraseologies, viz., patent medicines, it is clear to my mind that, construing this Act of Parliament according to ordinary canons of construction, you must say that it applies only to patent medicines, using the term in the sense of medicines which have procured a patent under the Great Seal." Then Lord Justice Kay, at page 726, says "The other argument was that it was excepted by Section 16 because it was a patent medicine." Then he says: "The reasons for that exemption seem to me very clear indeed. Where the medicine is, properly speaking, a patent medicine, that is to say, where the exclusive right to make or sell it has been granted to somebody under Letters Patent under the Great Seal, the condition of the patent always is that a specification is lodged in the Patent Office describing the whole of the ingredients and the process of manufacture. Without that no patent could be obtained: without that any patent would be void. Therefore, when people buy a patent medicine they have the means of ascertaining what ingredients are contained in that patent medicine, and that is one reason, no doubt, for the exemption." Then he gives another reason—"if, before this Act of Parliament which we have to construe, a patent of that kind had been granted, it would give to the patentee the exclusive right of making and selling the patented article and it would have been rather hard by this Act of Parliament to take away from him that which he had been exercising as a right (under the authority of the Great Seal) and to prevent him from further making or selling if he were not an authorised person under the Act." Now, my Lords, just to deal with that reason which has been given by the learned Lord Justice I would say that it would be hard to take away from a person that which had been granted to him. I should have thought if that had been the object of the exemption it would have been said that the Act did not apply to the dealing in patent medicines for which Letters Patent had at that time been granted. But I fail to understand why, while the Legislature in imposing restrictions on the sale of certain things for the protection of the public, should also permit, after that, any person to take out a patent and sell the same thing under letters patent for fourteen years without restriction, if it be a danger to the public. Therefore, with very great respect to the Lord Justice, I think the first reason which he gives for this exemption in Section 16, is the real one, because, if the object had been merely to prevent hardship accruing to persons who then had patents it could have been worded in a different way. Lord Justice Smith also deals with this point at page 728, and says: "The exemption must of course be read in the manner which the Queen's English dictates and when the legislation which has taken place, before and since this Act of 1868 which we are dealing with, is looked at, it is abundantly clear that for some express purpose the limitation and the exception were put in patent medicines, and only patent medicines, because if you begin

with the Statute of 25, Geo. III., sec. 4, and then take the next Act of 52, Geo. III., c. 150, sec. 2, both prior to this Act of 1868, there is a distinction between a patented medicine and what I should call a proprietary medicine, that is, a medicine which is compounded of secret nostrums. When you come to the Act of 1868, the sole exception made relates to patent medicines. Then a few years afterwards—seven years—another Act is passed, in which the exception is made where the food or drug is a proprietary medicine, which this Powell's balsam of aniseed is, or is the subject of, a patent in force." Now, my Lords, those Statutes to which the learned Judge refers are the Stamp Acts: the last Stamp Act is 52, Geo. III., c. 150 and certainly in that Act a large number of these proprietary medicines are set out in the Schedule, and then it goes on to say: "And also pills, powders, preparations, etc., which heretofore have been, now are, or shall hereafter be prepared, uttered, vended, or exposed for sale under the authority of Letters Patent under the Great Seal," so that any medicine which has at any time been the subject of Letters Patent is subject to the duty imposed by this Act: in point of fact and in practice stamp duty is always imposed and exacted after the expiration of Letters Patent, that is, after the expiration of fourteen years, and, my Lords, that provision in the Act of Geo. III. is very largely referred to and discussed in both these cases of Piper and Armson. I think it had great weight with the Court in both those cases, because where you had the Legislature providing that a medicine which has at any time been the subject of a patent should be liable to stamp duty, although that patent has expired, of course it deals with the patent both during the time of the fourteen years and after the expiration of the fourteen years exactly on the same footing. If a man is to suffer the burden imposed upon him by the Legislature of paying the stamp duty, one fails to see why he should not get the advantage that is also given to him as the owner of a patent medicine within the meaning of Section 16. There is no other case that I know of in which this question has been discussed at all, except those two. I contend that when the judgments in Armson's case are looked at, although it is true this exact point did not arise, yet the learned judges there have clearly expressed their opinion that the reason why this exemption occurs in Section 16 is because the public are perfectly protected as long as the medicine is prepared according to the Letters Patent. Your Lordships will observe that in the last case Lord Justice Kay used the expression: "When the medicine is, properly speaking, a patent medicine, that is to say, where the exclusive right to make or sell it has been granted to somebody." Therefore I submit that as long as the medicine is prepared according to the patent which has been granted, it is within the exception. In this case it is manufactured and prepared by Messrs. Kay, the original patentees. There is no question raised in this case upon that. It was put by my learned friend that there would be a difference in the case of the medicine being prepared not only by the original patentee, but also by any one after the patent had expired. I think that is the point which your Lordship referred to a few moments ago when your Lordship suggested that although the public might be protected during the fourteen years, they would not be protected after that, because anybody could manufacture. The question there would be in every case—was this prepared according to the specification; and in this case there being no question about it having been prepared by the original patentee under his Letters Patent, the only question here is, whether the fact that the patent lapsed in 1876 prevents him taking advantage of Section 16. As I pointed out at first, if my friend's contention be correct then this great hardship accrues to the person who is the owner of the patent. For fourteen years he manufactures this article and it gets into the hands of a large number of shopkeepers and storekeepers of all kinds throughout the country: then the day after the expiration of the fourteen years every one of these people commits an offence, and is liable to a penalty of £5, to be sued for by the Pharmaceutical Society if he happens to have one bottle of this medicine in his shop for sale and although he may know nothing whatever about the patent having lapsed. The sole object of the Pharmacy Act is the safety of the public; but these questions raised upon it are really trade questions. For twenty years this medicine has been manufactured by Messrs. Kay and sold without objection on the part of the Pharmaceutical Society. There has been every opportunity of ascertaining what it is made of from the specification, but now after twenty years the Society has thought fit to impeach the right to sell it. The object, of course, is that the sale of all these proprietary and patent medicines, of which there has been an enormous increase

within the last few years, should be kept in the hands of chemists and druggists. It would really be a disadvantage to the public if they were not able to obtain harmless preparations of this kind, which are useful and beneficial, at the grocers' and village stores or other convenient places. Having regard to the decisions, I cannot contend in this court that the fact of there being only one-third of a grain of morphia among the numerous ingredients in this bottle of medicine, suffices to remove it from within the Statute. I allude to it simply to point out that in interpreting this Act of Parliament the only thing to regard is the safety of the public, to see that the object of the Act is satisfied and that no undue restriction should be placed upon any trade, or no undue inconvenience imposed upon the poorer members of the community, who are not able always to consult a medical man and get prescriptions like those who are better off. When one sees that there is an exemption put in the Act itself, I respectfully contend that a very liberal interpretation, at any rate, ought to be put on that Section. It is perfectly apparent that more safeguards exist in the case of a patent medicine than in the case of a proprietary medicine that is sold by a chemist and druggist. It really is that when once a patent has been granted Section 16 applies.

Mr. Justice Wills: Your argument is, "once a patent always a patent" for the purpose of this Act.

Mr. Bonsey: Yes, my Lord.

Mr. Justice Wills: That statement seems to me almost to answer itself.

Mr. Bonsey: I submit not. There is no magic in or exclusive definition of the word "patent." You must deal with it having regard to the subject matter of the Act of Parliament.

Mr. Justice Wills: The thing is not a patent article after the patent has expired.

Mr. Bonsey: It is no misdescription to call it a patent. There are many cases in which it has been held that a person has a right to call a thing a patent even after the patent has expired. Those questions have arisen where actions have been brought to restrain manufacturers from infringing trademarks, or selling their goods so as to represent them as the goods of other people and the Courts have always said that as long as you do not represent that the patent is actually in force you have a perfect right to call a thing patent if letters patent have at one time been granted for it. If any authority is needed for that there is the case of *Chevin v. Walker* in 5 Ch. Div., p. 850. That was an action brought to obtain an injunction to restrain the defendant from describing a filter as patent; it appears that in 1862 a patent had been granted, but, exactly as in this case, it had lapsed at the expiration of three years by reason of the non-payment of the fees, and one of the questions there discussed was whether the plaintiff, who was the patentee, had any right to come and complain of the other party describing his filter as patent because his patent was not in force, and it was held that as long as the plaintiff merely described it as patent, but did not indicate that the patent was in force, there was no misdescription at all, and he had a perfect right to do what he did. Take as an illustration the case of patent leather. That is a term which is commonly used, and it is no misdescription to call a pair of boots "patent leather boots," although, as a matter of fact, no patent is existing at the present time. I contend that you cannot give merely one meaning to the word "patent" wherever you may happen to meet with it in any Act of Parliament, especially having regard to the fact that in two different Acts of Parliament you find it differently used and described. In the Sale of Food and Drugs Act it is dealt with as being during the time the patent is in force. I should merely like to add in connection with a matter I was referring to a few moments ago that, when you are considering whether the public are protected sufficiently, if the Letters Patent have once been granted, they are a great deal more protected than they are in the case of what is called a proprietary medicine—a secret preparation which may be sold by any chemist in this country, who does not know what it is composed of at all, while in this case any member of the public or any chemist can go and ascertain. Therefore I say in a case where Letters Patent have once been granted, although the patent may have lapsed, or may have expired in the ordinary way, there is far more protection to the public than there is in the case of a proprietary medicine of which no one knows what the ingredients are. To put my argument very shortly it is that in Section 16 the words "patent medicine" mean a medicine for which Letters Patent have been granted, because when you regard the object of the Act of Parliament adequate safeguard is provided for the public. That

could only have been the object for which it was put in. If not, then one must admit the Legislature to have said: That if you like to pay fees and take out a patent you may endanger the public by so doing for fourteen years, but we will not allow you to do it for any longer term than fourteen years. I cannot suggest that the Legislature should have enacted anything of that description, therefore I say that the fact of Letters Patent having been granted is apparently a sufficient protection to the public and that the 16th Section ought to be so construed. There is no other point raised in this case. We admitted the facts, but this point is of some importance, not only in this case, but in others, and we wish to have it decided.

Judgment.

Mr. Justice Cave: We need not trouble you, Mr. Grey. I am of opinion that the learned County Court Judge was clearly right in this case. The language of the Act is unmistakable. It speaks of making or dealing in patent medicines, and this preparation could not be said to be a patent medicine. The argument that Mr. Bonsey has addressed to us might properly be addressed to the Legislature, to induce them to make a change in the law; but cannot be accepted by the Court: as the Law now stands it is perfectly clear that the appeal must be dismissed.

Mr. Justice Wills: I am of the same opinion. I have no particular wish to enter into a speculation as to why patent medicines were excepted. The reasons which seem to have been suggested by the various Courts that have dealt with the matter are not perhaps altogether satisfactory. Perhaps no satisfactory reason can be given; but so far as has been suggested there seems to me no reason at all for departing from the obvious natural meaning to be attached to the words in the Act of Parliament. Two reasons have been suggested why patent medicines should be exempted from the provisions of the Act; one is that their composition can be ascertained. As long as the patent exists there is some sort of security as to that, but as soon as the patent is thrown open to the world the patented article, if it is of any value at all, is pretty sure to be produced in a cheaper form, and still go by the same name. Another reason given was that the patent having conferred upon the owner of the patent a right to sell unconditionally, and to be the sole vendor during the period of the patent, viz., fourteen years, it is not to be supposed that the patentee himself cannot sell because he is not a licensed chemist. If that is part of the reason for this enactment, it clearly does not apply to the case of a non-existing patent. Mr. Bonsey's argument may be summed up by saying, for the purposes of this Act, once a patent always a patent, but I think that statement answers itself. It seems to me a patent medicine is a medicine for which there is a patent, not one for which there has been a patent.

Mr. Grey: I understand, my Lords, the appeal will be dismissed with costs?

Mr. Justice Cave: Yes.

Mr. Bonsey: Will your Lordships give leave to appeal?

Mr. Justice Cave: No, Mr. Bonsey, it is too clear.

Mr. Bonsey: Does your Lordship think it is too clear, having regard to the way in which the point was discussed in the other case?

Mr. Justice Cave: We have heard this case argued, and decline to give leave to appeal.

SALE OF POISON BY AN UNREGISTERED ASSISTANT.

Pharmaceutical Society of Great Britain v. Sinclair.

At the Greenwich County Court, before His Honour Judge Bristowe, on the 12th instant, the defendant, John Sinclair, was sued for a penalty of £5 incurred by him in selling poison contrary to the provisions of the Pharmacy Act, 1868.

Mr. T. R. Grey, instructed by Messrs. Flux, Thompson and Flux, appeared for the Society, and defendant appeared in person.

Mr. Grey said it was an action for a penalty under Section 15 of the Pharmacy Act, 1868, which was an Act to regulate the sale of poison, and he referred to the Sections of the Statute bearing on the case. The authority which dealt with the question in this case was the case of the Pharmaceutical Society v. Wheeldon. In that case the defendant was not a chemist and druggist but simply an assistant to a registered chemist, and it was on all fours with the present case. The defendant was an unqualified man employed as an assistant at 85, Clifton Hill, New Cross, where he sold to a witness, who would be called, some laudanum, which was a poison included in the Schedule to the Act.

His Honour (to defendant): What is your defence?

Defendant: According to the Act I am not the seller.

His Honour: I will interpret that.

Mr. John Partridge, examined by Mr. Grey: On March 4 last I went to 85, Clifton Hill, New Cross. I purchased twopennyworth of laudanum and twopennyworth of soap liniment. I was served by defendant, who was alone in the shop.

Mr. E. J. Easles, examined by Mr. Grey: I am an analyst. I received the bottle produced from Mr. Partridge. I analysed its contents, and found it to contain a preparation of opium. I found half a grain of morphine to be present; that would be equivalent to rather more than one-seventh of an ounce of laudanum of British Pharmacopœia strength.

His Honour (to defendant): What have you got to say? Did you sell this poison?

Defendant: Yes, as an assistant.

His Honour: Here is a case in which it is decided that an unregistered chemist's assistant, who in the absence of his master sells any poison or preparation containing a poison, is liable to a penalty under Section 15 of the Pharmacy Act, notwithstanding that he effects such sale on behalf of his master, and that his master is duly registered.

Defendant: I did not sell apart from the jurisdiction of my master.

His Honour: I cannot help that.

Defendant: You will find in one section that the seller is defined to be the person on whose behalf the sale is made. I say that section clearly defines who is considered to be the seller.

Mr. Grey: Defendant is referring to Section 17, in which for the purposes of that section only a special definition is given—this action is under Section 15.

His Honour: The High Court has decided the point in a case on all fours with this. There is no defence. I must find a verdict for the plaintiffs.

Judgment for plaintiffs with costs.

ILLEGAL SALE OF WINSLOW'S SOOTHING SYRUP.

Pharmaceutical Society of Great Britain v. Brade.

At the Blackpool County Court, before His Honour Judge Coventry, on the 17th instant, the defendant, Thomas S. Brade, was sued for two penalties of £5 each, incurred by him in selling poison contrary to the provisions of the Pharmacy Act, 1868.

Mr. R. E. Vaughan Williams, instructed by Messrs. Flux, Thompson and Flux, appeared for the Society, and defendant did not appear.

Mr. Vaughan Williams stated that the action was brought by the Council of the Pharmaceutical Society, which was charged with enforcing the provisions of the Pharmacy Act, and the defendant, who was an unqualified person, was charged with having on two occasions sold Winslow's soothing syrup, a compound which contains morphine. The proceedings were taken with the object of stopping the sale of poisons by unqualified persons on behalf of limited companies. The penalties were incurred on January 18 and February 1 last by defendant, when he was an assistant to a company called Gaulter and Co., Limited, carrying on its business at 6, West Street, Fleetwood. Most of the shares in that company being held by Mrs. Gaulter, it might be termed a one-woman company. So far as could be ascertained, its business was carried on without any qualified chemist being engaged therein. It, therefore, became the Society's duty to enforce the law against the unregistered assistant, and there was authority supporting the present claim. He should prove the facts and, upon the Statute and decision in Wheeldon's case, ask for a conviction.

Arthur Foulds, examined by Mr. Vaughan Williams: On January 18 last I went to 6, West Street, Fleetwood. The name at the shop was Gaulter and Co., Limited. I purchased a bottle of Winslow's soothing syrup. I was served by Thomas Brade; he was the only

person in charge of the shop. I went again on February 1 last. Defendant sold to me another bottle of Winslow's soothing syrup.

Harry Moon, examined by Mr. Vaughan Williams: The bottles produced were handed to me by Mr. Foulds, enclosed in their wrappers and fastened up.

Ernest J. Eastes, examined by Mr. Vaughan Williams: I am an analyst and Fellow of the Institute of Chemistry. I analysed the contents of the two bottles produced; the one marked January 18 contained one-sixteenth of a grain of morphine and the other one-eleventh of a grain. Morphine is the chief toxic ingredient of opium, and is an exceedingly dangerous poison, especially to infants.

His Honour: Is it necessary to prove quantity?

Mr. Williams: No, I think not; any appreciable quantity is sufficient. I put in the Register, which by the Statute is made evidence, and the absence of defendant's name therefrom is evidence that he is not a chemist and druggist.

His Honour: You said that in the other case the person selling was the one liable.

Mr. Williams: Yes; that is the decision in Wheeldon's case.

His Honour: Then you say in effect that only qualified chemists may sell poison?

Mr. Williams: Yes.

His Honour: I have no option to inflict a smaller penalty.

Mr. Williams; No; and there is a further provision that provides for full costs.

His Honour: I give judgment for the plaintiffs for the two penalties and costs.

POISONING CASES AND INQUESTS.

DEATH FROM AN OVERDOSE OF MORPHINE.—Mr. Luxmore Drew held an inquest on Saturday last, at the Kensington Town Hall, with reference to the death of Professor John Henry Middleton, aged 49, the Director of Art at South Kensington Museum, who died from morphine poisoning. The evidence of the widow and others was to the effect that the deceased had suffered from nervousness during the past three years, and was greatly depressed because he thought he would never get well. He had not slept well for four months and his appetite was gone. He had been in the habit of taking hypodermic injections of morphine three times a day and death appeared to be due to an overdose.—Mr. T. H. Keer, a pharmaceutical chemist, of Bruton Street, said the deceased had bought morphine from him for twenty-two years, and witness had sold him as many as twenty-four bottles at a time. The jury were unanimously of opinion that death was due to misadventure.

A CORONER ON THE SALE OF LAUDANUM.—At an inquest held at Loughborough on May 27, before Mr. Deane, relative to the death of John Henry Smith, labourer, of Sibley, who had died from laudanum poisoning, the evidence revealed that Smith purchased sixpennyworth of laudanum from William Stevenson, chemist, Sheepshed, after having failed to purchase a shillingsworth from a grocer, and swallowed it.—The Coroner said if Mr. Stevenson put his name and address on the bottle, and also a label indicating its contents as poison, he complied with the law as it at present stood, though he and many other coroners who had dealt with cases of opium poisoning would be glad to see a change in that law. Laudanum was not in the list of poisons, purchasers of which had to state for what they were required, and to give their names and addresses; but he would be glad if the Legislature would transfer laudanum to that list, for he believed that those who wanted to use it for a legitimate purpose would not object to go through the formalities.—A verdict of death by poison taken while the deceased was of unsound mind, was returned.

SULPHURIC ACID IN MISTAKE FOR MEDICINE.—Mr. T. R. Finlay, editor of the *Paisley and Renfrewshire Gazette*, died in Paisley Infirmary on Saturday, June 6, under sad circumstances. Of late Mr. Finlay has been in bad health and was taking medicine. Before leaving his residence on Friday he went to take his medicine and accidentally drank some strong sulphuric acid. He was badly burned in the mouth and throat and the tissues of the stomach, and succumbed to his injuries.

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All Articles, Letters, Notices, and Reports intended for publication in the Journal, Books for Review, and communications respecting Editorial matters generally must be Addressed "Editor, 17, Bloomsbury Square, London," and not in any case to individuals supposed to be connected with the Editorial Staff. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

ANY INSTRUCTIONS from Members, Associates, and Students of the Pharmaceutical Society, with reference to the transmission of the Journal should be sent to the Secretary—Mr. Richard Bremridge,—17, Bloomsbury Square, London.

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

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

REPRINTS of articles cannot be supplied unless authors communicate with the Editor before publication.

A PHOTOGRAPHIC QUERY.

Sir,—I note in the *Ph. J.* "Annotations" for May 23 a reference to (p. 412) experiments recorded by Dr. Phipson in the *Chemical News* upon a white pigment containing zinc sulphide and barium sulphate, sunlight having darkened the compound and suggesting *x*-rays existing in ordinary sunlight. I had a curious experience. A lady in my dwelling house was being photographed sitting at a small round table in the act of pouring out a cup of tea from a large silver-plated teapot held steadily upwards directly in front of her. When the photograph was developed no trace of the teapot was visible, but the lace and ornaments on her dress, which were directly behind the teapot were as plainly seen in the photo as if no teapot had been held in front of them. The sun was strong, and the window opposite to which she was sitting had a southern aspect, and was receiving the full rays of the sun. This appears to me to be a case in point, where *x*-rays were existent in ordinary sunlight. I should be pleased if some of your chemical expert correspondents would explain this fact in your columns, as it seems extraordinary to me.

Edinburgh, June 10, 1896.

J. K. NICOL.

MURCELL'S SOLUTION.

Sir,—In your issue of the 13th inst. there appears under "Answers to Queries" (p. 480) a reference to "Murcell's solution." If it is *en règle* for a reader to contribute a suggestion, may I be permitted to instance "Monsel's solution" (liq. ferri persulph.), the hæmodynamic, as perhaps intended?

Liverpool, June 16, 1896.

GEORGE DANBURY.

THE PHARMACEUTICAL EXAMINATIONS.

Sir,—With regard to the personal matter between Mr. Coull and Mr. Anderson I have little to do, but in examinations I take a lively interest. In the first place, I think they might be re-arranged with advantage. I quite agree with Mr. Coull and the Edinburgh Executive that the present Preliminary is a delusion, and the sooner it is amended the better. The advice which you gave students in the educational number of the Journal to take the London Matriculation instead of the Pharmaceutical Preliminary is most sensible, and I advise all would-be apprentices to take either that or the science entrance examination of the nearest university or college. With regard to the second examination, I would have it purely theoretical, very much on the lines of the present Bell Scholarship examination, and to take place at the close of apprenticeship; the subjects to be (1) Latin, with special reference to pharmacy and medicine as contained in such books as Ince's 'Latin Grammar of Pharmacy,' and Pereira's 'Selecta à Prescriptis.' (2) The doses and

galenical preparations of the B.P. and the poisons law. (3) An elementary knowledge of chemistry, both inorganic and organic, botany and physics, such as the Science and Art Department's elementary courses cover. There ought to be no difficulty in getting up these without attendance at a school of pharmacy, as elementary science classes are scattered all over the country now. One cannot but notice the splendid start which his scholarship examination gives the Bell scholar over his less fortunate fellow students, many of whom begin the course without even the most rudimentary knowledge of chemistry, without admitting the advantage such an intermediate examination would have. The third examination to be passed at twenty-one, and to be the qualifying examination. The subjects to be practical dispensing and pharmacy, but no theoretical, the B.P. being allowed; materia medica and practical histology as at present for the Major; chemistry and botany, ditto, or on the lines of the Intermediate Science Examination.

With regard to the practical chemistry examination, I would strike out the nitrogen combustion and the preparation of the organic substances. No retail chemist ever determines the amount of nitrogen in his caffeine, or wishes to make aniline, unless for amusement. Such things form a necessary part in a course of organic chemistry, and the synthetic work done both in the inorganic and organic side is, in my opinion, one of the best features in the practical course at the "Square," but they ought not to form a necessary part of the exam. There are other things of more practical use to the retail chemist, and I venture to say that a thorough knowledge of analysis—gravimetric, volumetric and qualitative; the recognition by chemical means of all substances used in medicine and the thorough examination of the same (whether balsams, resins, or synthetic remedies), for impurities—both by official and unofficial methods, where the latter may possess distinct advantages—is of far more importance to the pharmacist and would of itself be a sufficient examination. Such a course would necessitate a year's attendance at a school of pharmacy. This ought to be the *ultima thule* of the pharmacist. If he wish to go farther let him take the B.Sc. degree. He would have passed the necessary preliminary, and his qualifying examination would enable him to take the Intermediate Science Examination with very little extra trouble. Another year at a recognised university or college would give him his B.Sc., and I venture to say there would be many chemists' assistants who would go on to that. There is only one other thing I wish to say, and that is to endorse the suggestion that a candidate who has obtained 70 per cent. in any subject be held to have passed in that subject. It seems really too hard to pluck a candidate in all the subjects because he fails to please in, say, botany, a subject which possibly he has no natural liking for. It is most disheartening, and I have on more than one occasion been touched to sympathy for a student who has been so treated after a conscientious session's work. The fee for his second appearance need not necessarily be altered. Hoping the above suggestions may help towards a thorough discussion of the subject,
London, June 15, 1896. MAJOR.

THE SOCIETY'S LIBRARY—A SUGGESTION.

Sir,—May I suggest the advisability of the Society having duplicates of certain works which are wanted for reference? For instance, I have been waiting since May 7 for a copy of Cripp's 'Pharmacy,' and am now informed by the Librarian that it will be another week before I can have it.

27, Great Tower Street, E.C., June 11, 1896. ISAAC HARTNESS.

ANSWERS TO QUERIES.

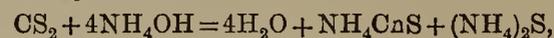
[Queries addressed to the "Editorial Department, 17, Bloomsbury Square, W.C.," will be replied to in the Journal as early as possible after receipt, but the Editor cannot undertake to reply to them through the post, nor is it always possible to publish answers the same week. Questions on different subjects should be written on separate slips of paper, each of which should bear the sender's name or initials. Readers requiring working formulæ for special preparations, and intimating their wants to the Editor, will be assisted as far as may be practicable. The word "parts," when used in formulæ, invariably indicates parts by weight.]

PREVENTIVE OF FERMENTATION.—Alcohol and chloroform are the best and safest preservatives of infusions. See Mr. Edmund White's paper on this subject, published in the *Pharmaceutical Journal* for February 24, 1894. In the same paper you will find a description of a method of preventing fermentation in infusions

and other preparations by a simple process of sterilisation. [Reply to APPRENTICE.]

AQUEOUS SOLUTION OF HYPO.—Sodium hyposulphite in a solution at all concentrated will keep good for months, but in hot weather, particularly if exposed to the air, it will begin to develop a growth of mycelium. [Reply to J. HICKING]

REDDENING OF AMMONIUM SULPHOCYANIDE.—R. E. Liesegang pointed out that a concentrated solution of ammonium sulphocyanide turns deep red on exposure to sunlight and air, but this colour is bleached again if the solution is placed in the dark ('Photo. Archiv., xxxiv.,' pp. 145, 177). He gives no reason for this, but as this salt can be prepared by direct union between carbon disulphide and ammonium hydroxide, thus



it is quite possible that the NH_4CnS splits up in the presence of air and moisture, forming a red salt of the same colour as the original solution. It is not fit to use for photographic work in this state. [Reply to J. HICKING.]

QUALIFICATION AS ANALYTICAL CHEMIST.—The best qualification for this purpose is that conferred by the Institute of Chemistry. Write to the Secretary, 30, Bloomsbury Square, London, W.C., for particulars regarding regulations for admission to membership. [Reply to R. WOOD.]

STRENGTH OF AMMONIA WATER.—There is no rule for determining this. The simplest plan is to refer to the tables in Watt's 'Dictionary of Chemistry,' and other standard works. Ammonia water of s.g. 0.979 at $\frac{15^\circ\text{C.}}{4^\circ\text{C.}}$ in air, contains 5 per cent. of NH_3 ; that of s.g. 0.959 = 10 per cent.; of s.g. 0.942 = 15 per cent.; of s.g. 0.925 = 20 per cent.; of s.g. 0.909 = 25 per cent.; and that of s.g. 0.895 = 30 per cent. of NH_3 .—[Reply to J. H. PEARCE.]

ACTION OF LYSIDINE.—This base is a powerful solvent of uric acid, and it has been recommended in cases of acute gout and uric acid diathesis generally. It has also been used in the treatment of Bright's disease. [Reply to W. B. HOILE.]

APPOINTMENT AS DISPENSER.—We are not aware that there is any demand for dispensers on passenger steamers or in the merchant service. [Reply to MARE.]

FILLING SYPHONS.—"The best way of filling siphons with Lithia Water, B.P.," or any other aerated water, is to use a machine specially made for the purpose. Instructions for using such machines are always supplied by the makers. [Reply to "H. S."]

TONING AND FIXING SOLUTION.—Yes, it was a printer's error. The correct formula is—

Sodium Hyposulphite	4 ozs.
Ammonium Sulphocyanide	30 grs.
Sodium Chloride.....	60 grs.
Gold Chloride	2½ grs.
Water	to 20 ozs.

We are making inquiries in the other matter you refer to. Meanwhile, have you seen Hardwick's 'Manual of Photographic Chemistry'? [Reply to HYDROQUINONE]

PUBLISHERS' NOTICE.

CASES FOR BINDING.

CASES for binding the half year's numbers (one volume) of the *Pharmaceutical Journal* are now ready. Cloth, gilt lettered, price 1/3, post free.

APPLICATIONS should be sent, accompanied by remittance, to the *Pharmaceutical Journal* Office, 5, Serle Street, Lincoln's Inn, W.C.

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs, Bennett, Bird, Blythe, Christy, Clague, Cottman, Coull, Danbury, Dyson, Ferrall, Foster, Greaves, Grier, Hardy, Heanley, Herman, Hill, Hoile, Hooper, Ingham, Jaffe, Junor, Mackie, MacHardy, Martindale, Morris, Newbury, Pattison, Pearce, Robb, Robson, Russell, Saunders, Shacklock, Shepperton, Slater, Street, Stroud, Summers, Tomlison, Turner, Wall, Wallace, Whitehead, Wood, and Wright.

“THE MONTH.”

Action of Diastase.

T. B. Osborne and G. F. Campbell have made several hundred trials with the object of determining precisely the influence of certain conditions upon the action of diastase, such as the age of the diastase solution and the presence of sodium chloride, disodium orthophosphate, tripotassium orthophosphate, orthophosphoric acid, acetic acid, or citric acid, in systematically varied quantities. In the case of citric acid, the minutest quantities always depressed or destroyed diastasic action, but in the majority of instances no such uniform results were attainable as would lead to safe conclusions in regard to the circumstances that insure a high degree of diastasic activity. The purer the diastase is made the more sensitive it appears to external conditions, so that the determination of the maltose-producing power of the ferment thus becomes of uncertain value, and perhaps fails to furnish a safe criterion of the purity of the enzyme. A great influence on the activity of the diastase appears to be exerted by the addition of various substances to its solution, and it would thus seem that the proteid is not the only factor involved in the amyolytic action of the ferment. It is not at all improbable, therefore, that attempts to purify diastase result in the removal of some substance that favours, or is essential to, its action, and that the enzyme itself may be feeble in its operation through the absence or deficiency of some accessory substance. Thus, in many cases, the presence of sodium chloride increases the diastasic action several fold, and the results of extended experience tend to strengthen the belief that albumin is an essential factor in such action. Of all the preparations made, none from which albumin was absent showed amyolytic power, and those containing most albumin were most active, whilst it has been found possible to judge of the diastasic power of a preparation by heating a portion of its solution to 65° C. and observing the amount of coagulum formed (*Journ. Am. Chem. Soc.*, xviii., 536).

Acetylene and Pyrophori.

H. Moissan and C. Moureu find that iron, nickel, and cobalt pyrophori, prepared by reducing the respective metals by hydrogen at the lowest temperature possible, will decompose acetylene in the cold with incandescence and the production of carbon, hydrogen, and carbides. The decomposition appears to be the result of a similar physical phenomenon to that observed in the case of platinum black, being due to the porosity of the metals (*Comp. rend.*, cxxii., 1240).

Glycero- Phosphoric Acid.

Delage and Gaillard recommend the following method of preparation: Phosphoric acid (60 per cent.) is mixed in a flask with one and a half parts of glycerin; the mixture produces a rise of temperature from 15° to 25° C. The flask is fitted with a thermometer and gas tube, and the contents very gradually heated up to 120° C., when the mixture begins to boil and acquires a yellow colour. On continuing the application of heat, the temperature rises rapidly; at 160° the liquid becomes brownish-yellow, and at 170°–190° dark brown and syrupy, acrolein vapour being given off. The flask is then allowed to cool, and the translucent gelatinous mass is rubbed in small portions with precipitated calcium carbonate and water until carbonic acid gas is no longer evolved. After neutralisation the mixture is left for six hours, and then filtered to separate calcium phosphate and a resinous substance. The filtrate, which is clear and slightly yellow, is next mixed with half its volume of alcohol (90 per cent.), which throws down a flocculent precipitate of calcium glycerophosphate. This is collected on a

filter, washed with alcohol, dissolved in water, again precipitated by addition of alcohol, collected and dried at a low temperature over quicklime or pumice stone saturated with oil of vitriol. The calcium salt thus obtained is a white crystalline powder, soluble in 10 parts of cold water, and less soluble in hot water. Another salt of glycerophosphoric acid is formed simultaneously, which is not precipitated by alcohol, and on evaporating its solution it separates as a flocculent gelatinous mass (*Nouv. Remèd.*, 1896, 8, p. 217).

Oxidising Soluble Ferments.

G. Bertrand states that the colour changes produced on exposure of the juice of beetroot, potato tubers, and other vegetables to the air are due to the oxidation of tyrosin under the influence of a soluble ferment, which he proposes to call “tyrosinase.” This ferment belongs to a class to which he has applied the generic name “oxydase,” and is found naturally associated with tyrosin in numerous instances, as in the beetroot, dahlia, etc., whilst also occurring in several fungi not containing tyrosin. The author compares it with laccase, the only oxidising soluble ferment previously known (see *Ph. J.* [3], xxv., 754), which causes the latex of the Tonquin lacquer tree to become insoluble when exposed to air, but is without effect on tyrosin (*Comp. rend.*, cxxii., 1215).

Galactochloral, Arabibromal, and Levulochloral.

In a further addition to his communications treating of the compounds of various sugars with chloral, to which he has applied the general name “chloraloses,” M. Hanriot states that galactose combines readily with chloral when the mixture is warmed for an hour at 100° C., in the presence of hydrochloric acid. On purification, by heating with water and subsequent cooling, β -galactochloral, $C_6H_{11}Cl_3O_6$, separated in crystals melting at 202°. The mother liquor retained a certain amount of the compound, together with a crystalline compound recognised as α -galactochloral, but the latter could not be isolated in a state of purity. The β -galactochloral is almost entirely insoluble in water and in ether, but soluble in methylic alcohol. When its potassic solution is treated with benzoyl chloride, tribenzoylgalactochloral, $C_6H_8Cl_3O_6(C_7H_5O)_3$, is formed, crystallising in long needles, which melt at 141° and are soluble in alcohol, methylic alcohol, or benzin, but only slightly soluble in ether. Bromal was found to give similar results to chloral, but the bromaloses are less stable and less easily obtained than the chloraloses. With arabinose, however, bromal yielded small crystals (m. p. 210°) of arabibromal, $C_7H_9Br_3O_5$, which is slightly soluble in boiling water, but otherwise insoluble, and is decomposed on prolonged boiling of the alcoholic solution. Levulochloral, $C_6H_{11}Cl_3O_6$, was obtained in crystals melting at 228°. It is soluble in cold water, more so in boiling water or alcohol, but only slightly soluble in ether (*Comp. rend.*, cxxii., 1127).

Uranium and its Properties.

H. Becquerel showed some months ago that the salts of uranium emit radiations possessing properties some of which are comparable to those of Röntgen's x -rays. In a recent paper he gives further details, and states that he has also experimented with metallic uranium, in the state of powder, and finds that it possesses the same power in a more marked degree, this being the first case recorded of a metal possessing what may be termed invisible phosphorescence. According to H. Moissan, uranium can easily be obtained in the metallic state by decomposing the double fluoride of uranium and sodium, either by means of metallic sodium or by electrolysis; or better, it may be readily produced by reducing uranium oxide by means of carbon, in the electric furnace. All three methods furnish good results, and as much as 15 Kg. of the metal has thus been prepared for recent

investigations. It is stated that uranium can be obtained in crystals, and that the pure metal has properties closely resembling those of iron, especially as regards filing, carbureting, tempering, and oxidising. It combines with oxygen, however, with even greater facility than iron, and in fine powder slowly decomposes water in the cold. The action of uranium upon the hydracids is also more energetic than is that of iron, and the metal possesses a great affinity for nitrogen, but does not affect the magnetic needle. Moreover, it is much more volatile than iron in the electric furnace (*Comp. rend.*, cxxii., 1086 and 1088).

This alkaloid, obtained from *Anhalonium williamsi* by Heffter, has recently been found useful as a soporific. Trials made by Jolly in one of the Berlin hospitals show that when administered in the dose of 6 centigrammes it rapidly produces sleep which lasts for several hours, and without producing any objectionable effects. When injected the dose is from 2 to 4 centigrammes. The composition of pellotine is represented by the formula $C_{13}H_{19}NO_3$.

T. B. Osborne and G. F. Campbell have examined the proteids of malt. The specimen examined contained "bynedestin," a globulin which is not precipitated by saturating its solutions with sodium chloride, and but partly precipitated by saturating with magnesium sulphate; "leucosin," an albumin identical in composition with the leucosin found in wheat, rye, and barley; a protoproteose readily precipitated from aqueous solutions by adding an equal weight of alcohol, and a similar compound which was less readily precipitated; also a deuteroproteose, a heteroproteose, and "bynin" and another proteid. Both of these proteids were insoluble in water and saline solutions, but only the last was insoluble in alcohol. The following table shows the proportions of the various proteids in the malt investigated:—

Proteid, insoluble in salt solution and in alcohol.....	3.80	per cent.
Bynin, soluble in dilute alcohol	1.25	"
Bynedestin, leucosin, and proteoses } soluble in water and salt solution. }	Coagulable .. 1.50 Uncoagulable 1.29	" "
	7.84	"

From the results of the investigation it is inferred that the proteids of barley undergo extensive changes during germination, without acquiring, or before acquiring, the properties of proteoses; also that hordein disappears, being replaced by an alcohol-soluble proteid of entirely different composition, whilst edestin is similarly replaced by a new globulin. The albumin, on the other hand, is unchanged in character and increased in quantity. It is further noted that the proteids replacing the hordein and edestin are much richer in carbon and poorer in nitrogen (*Journ. Am. Chem. Soc.*, xviii., 542).

This is the name of a very remarkable dye-stuff, which has been known for some years and has recently been examined by F. W. Richardson and H. E. Aykroyd. It is obtained by fusing organic substances—such as starch, cellulose, sawdust, blood, horn, feathers, etc.—with alkaline sulphides, sodium polysulphide being preferred; and it was believed by the inventors to constitute an organic sulphide. The dye occurs in black, porous, hygroscopic lumps, quickly alterable on exposure to the air, and it dissolves readily in cold water, giving a black solution which develops brownish colours by aerial oxidation. By using with it salt, sodium bisulphite, potassium bichromate, or copper and iron sulphates, shades of colour varying from pale grey to brownish-black may be obtained. On investigation, the pure dye-stuff was separated from the "cachou" as a black powder, insoluble in water, alcohol, ether, and acids, but soluble in hot

solutions of caustic soda or potash. Experiments proved that both furfurool and thiophene will yield the dye when heated with sodium polysulphide, and the authors therefore term the dye principle trithiophenic acid. Attention is directed to the fact that the reaction ensuing when polysulphides are fused with organic bodies serves as a distinctive test for tetramethenyl and other "cachou"-forming groups in compounds (*Journ. Soc. Chem. Ind.*, xv., 328).

M. Cazeneuve shows that these two fuchsines behave in a different manner in the presence of alcohol containing aldehydes. If a few cubic centimetres of an aqueous solution of a salt of rosaniline (1 in 1000) be decolorised by means of sulphurous acid, a violet coloration is produced on adding alcohol containing formal or ethylic aldehyde. In the case of acid fuchsine S., however, under similar conditions, the violet coloration is not produced, but a rose tint like that of the original solution diluted. This is more distinct in proportion as the alcohol contains less aldehyde. The addition of hydrochloric acid does not modify the result in the latter case, but it intensifies the coloration produced by the salts of ordinary rosaniline. To show the difference between the effects produced by the two compounds, it is suggested that the solutions used should be prepared as follows:—Solution of fuchsine or fuchsine S. (1 in 1000), 30 C.c.; solution of sodium bisulphite (34° B), 3 C.c.; water, 200 C.c. (*Journ. de Pharm.* [6], iii., 595).

C. H. La Wall has experimented with various methods for the assay of sanguinaria and its preparations, digesting them for a given length of time with certain solvents, in the presence of excess of ammonia, and subsequently separating the alkaloid by the use of an immiscible solvent. Thus, in experiments 1, 2, and 4, 10 grammes of the drug in No. 50 powder was macerated for four hours with 10 grammes of aqua ammonia and 100 grammes of (1) a mixture of ether, 3 vols., chloroform, 1 vol.; (2) ether; and (4) petroleum spirit. In experiment, No. 3, the same quantity of drug was treated with 100 C.c. of Prollius' fluid, by Lyon's general assay process. The results obtained were as represented in the following table:—

Process used.	Solvent used for Second Extraction.	Alkaloid obtained.	Colour.
No. 1	Chloroform, 3 vols.; ether, 1	4.86 per cent.	White
" 2	Ether	5.12 "	"
" 3	Chloroform, 3 vols.; ether, 1	6.06 "	Dark
" 4	Same as with No. 3	1.48 "	White

A combination of processes Nos. 1 and 4 was then tried, and it was thus found that the petroleum spirit exerts a solvent action upon a portion only of the alkaloid present, giving constant results with the same sample. Subsequent extraction of the residue with the light chloroform ether used in experiment No. 1 resulted in removal of the remaining alkaloid, and gave results for total extraction agreeing within a small fraction of 1 per cent. A careful assay of the drug by the petroleum spirit process yielded 1.68 per cent. of alkaloid, and as a fluid extract prepared from the same sample by the U.S.P. process was found to contain 1.67 per cent. of alkaloid when similarly assayed, it appears probable that the U.S.P. process thoroughly exhausts the drug. No difference could be observed in the alkaloid extracted by petroleum spirit and that subsequently extracted from the residue by chloroform ether, but the author is of opinion that the petroleum spirit process, since uniform results are given by it, may be used for standardisation. The average alkaloidal content of commercial sanguinaria by this process is given as 1.5 per cent. (*Am. Journ. Pharm.*, lxviii., 305).

**Opium
in
Japan.**

The British Consul at Tainan reports that the Japanese have now prohibited the importation of opium by foreigners, intending apparently to control the trade themselves. Only 1712 cwts. of foreign opium were imported during 1895, as against 2378 cwt. in the preceding year, and of the total import 94 per cent. was Persian. Chinese opium was imported to the extent of 57 cwts. only. With the object of preventing suffering and possible death, which might ensue in some cases were the supply of the drug to be suddenly cut off, the drug is still to be administered in limited quantities to confirmed smokers, but only when medical men certify that it is a necessity. The practical outcome of this Japanese legislation, it is pointed out, will probably be that the consumption of opium in Japan will be restricted in quantity, and the trade in the drug become a Government monopoly (*Foreign Office Annual Series*, No. 1733, p. 3).

**American
Beeswax.**

E. Dieterich publishes the results of his examination of several samples presenting marked deviation in character from normal beeswax. The specific gravity was in all instances higher than that of normal wax (0.960), and ranged from 0.9629 to 0.9677. The melting point was in most instances also higher than that of normal wax (63°·5 C.), ranging from 64° to 68°·5 C., that of one sample being 63° C. While the ratio of the acid number to the ester number in normal wax is 1:3.75, in the samples examined it ranged from 1:3.8 to 1:4.6, indicating an addition of Japan wax or Carnuba wax. Judging from the melting point of these samples, addition of paraffin appears to be excluded, as it would reduce the melting point below that of normal wax. The borax test also gave results indicating addition of vegetable wax. One of the samples also appeared to contain an artificial colouring ingredient (*Pharm. Centralh.*, xxxvii., 378).

**Prussic Acid
in
Plants.**

The results of Dr. M. Treub's investigation of the formation and distribution of hydrocyanic acid in *Pangium edule* show that the acid is one of the earliest nitrogenous products of assimilation in the plant. Both in the cortex and pith special cells rich in the acid were found, and it could also be detected in the pericycle, as well as in the parenchyma cells of the leaves, and in the flowers and fruits. The phloem provides the channel along which the acid is conveyed, after being formed in the leaves, and the special cells containing hydrocyanic acid in the young plant subsequently become proteid stores. The presence of carbohydrates and the supply of nitrates from the soil are essential conditions of the formation of the acid (*Annals of the Buitenzorg Bot. Garden*, xiii., i., and *Bot. Zeit.* 1896, 102).

**Röntgen Rays
in
Germination.**

A. Schober has experimented on the effect of the x -rays on the germination of the oat. He concludes that they differ from ordinary light-rays in this respect among others, that they have no power of producing heliotropic curvatures, even in organs so sensitive to light as the axis of a young seedling (*Ber. Deutsch. Bot. Gesellschaft*, 1896, p. 108).

G. Bertrand and A. Malèvre have found pectase in five species of Cryptogams examined, and in about forty species of flowering plants belonging to widely separated families; the only negative results obtained being with conifers. The amount of this diastase present varies with the species, and with the part of the plant. It was found in the root, stem, leaves, flowers, and fruit, but most abundantly in the leaves. A mode of obtaining pectase

in a pure state from the leaves of clover or lucerne is described, consisting essentially in dissolving in chloroform, and then precipitating by alcohol, when it separates as a white powder (*Morot's Journal de Botanique*, 1896, p. 37).

**The Acid
Excretion of
Roots.**

F. Czapek has investigated the nature of the acid substances contained in the fluid excreted from the roots of a number of plants. Among inorganic bases potassium was found to be invariably present, magnesium very often, calcium only rarely. Small quantities of chlorides were often found, phosphates invariably; and the acid reaction was due to the presence of primary potassium phosphate. Of organic acids, formic was often present in the form of potassium formate; oxalic acid occurred only in the hyacinth, and then only in the form of primary potassium phosphate. The corrosive action of the roots of plants on mineral substances is due, in all cases, to carbon dioxide (*Ber. Deutsch. Bot. Gesellschaft*, 1896, p. 29).

**Remarkable
Instance of
Proterandry.**

J. Daveau describes an example of proterandry extending over a whole year in the case of a palm belonging to the genus *Kentia* or *Howea* growing in the Botanic Garden at Lisbon. The flowers are grouped in clusters within the spadix, and each cluster consists of three flowers, two male and one female; but the female flower is only in a very rudimentary condition when the male flowers are mature and discharging their pollen. In this condition it remains through the autumn and winter, and expands only at the same period in the next summer, when it is pollinated by male flowers in other newly-formed inflorescences.

**Some New
Preservative
Solutions.**

J. Amaun recommends the use of the following preparations for the preservation of mosses and green Algæ:—1. *Lactophenol*; 20 grammes of crystallised phenol, 40 of lactic acid of sp. gr. 1.21, 40 of pure glycerin of sp. gr. 1.25, 20 of distilled water; this preparation combines the clearing properties of phenol and that of restoring the softness and turgescence of the tissues of dried algæ possessed by lactic acid. 2. *Cupric lactophenol*; 2 Gm. crystallised copper bichloride, 2 Gm. crystallised copper binacetate, 96 Gm. lactophenol; this may replace lactophenol where it is necessary to preserve the green colour of the specimen, and 10 per cent. of it added to the water in which the Algæ are found will serve as a fixing agent. 3. *Lactophenol cupric solution*; 0.2 Gm. crystallised copper bichloride, 0.2 Gm. crystallised copper binacetate, dissolve in 95 Gm. distilled water, and add 5 Gm. lactophenol; specially good for Desmidiæ, Palmellaceæ, and filamentous Algæ, which do not undergo any change of form or colour in it. 4. *Lactophenol gelatin*; 8 Gm. white gelatin, 44 Gm. distilled water, and after two hours add 38 Gm. pure glycerin of 1.25 sp. gr., then add 10 Gm. lactophenol; a very good substitute for Canada balsam, but must not be used for preparations coloured with aniline dyes, only with those coloured by hæmatoxylin or carmine. 5. *Cupric lactophenol gelatin* is like the last, but prepared with cupric lactophenol; in this the form and colour of the chromatophores are well preserved. 6. *Lactophenol gum*; 38 Gm. white gum arabic, wash rapidly in running water, and add 50 Gm. freshly-boiled distilled water, then add 6 Gm. glucose and 6 Gm. lactophenol, mix and filter; good for mounting rapidly all kinds of vegetable preparations, especially mosses. 7. *Styrasin*; dissolve 100 grammes of pure styrax in 200 C.c. of chloroform, filter, and transfer the solution in small quantities into a flask containing one litre of ordinary petroleum spirit, allow to deposit for twenty-four hours, decant, and evaporate the solution in the sun; a syrupy, resinous solution is thus obtained with the index of refraction 1.60–1.64 specially adapted for diatoms. 8. *Biniiodide of mercury*

glycerin; obtained by dissolving mercury biniodide in pure glycerin in the presence of potassium iodide; a liquid is obtained with the index of refraction 1.80. M. Amaun finds the best cement for preparation made with these media is amber or dammar varnish, to which 2 per cent. of boiled linseed oil has been added (*Morot's Journal de Botanique*, June 1, 1896).

G. Roux and A. Trillat have conducted experiments in disinfection under practical conditions, in enclosed spaces of capacity varying from 70 to 1400 cubic metres, with the fumes of formic aldehyde produced by a special oxidising apparatus or by the "autoclave formogène." They found that pathogenic germs could thus be absolutely destroyed when freely exposed to the aldehyde, and that the dust in the air and on the walls of rooms was at the same time thoroughly sterilised. The action of the aldehyde appears to be exercised immediately and simultaneously in all parts of an enclosed space. Care must be taken in employing this process to avoid the escape of the aldehydic fumes, on account of their irritating properties, but there is no risk from the formation of carbon monoxide. Dr. F. J. Bosc has experimented in the same direction, and fully confirms the above results, showing that even *Bacillus tuberculosis* can be destroyed, either in the dry or moist state, by the aldehyde fumes. He suggests that all objects to be disinfected should be as fully exposed to the fumes as possible, and that after disinfection free currents of air should be admitted for a quarter of an hour before the room is entered, and the windows then be left open. After thoroughly ventilating for two days, all traces of the formaldehyde odour will have disappeared, and it will be found that objects in the room are uninjured as regards their structure and colour (*Ann. de l'Inst. Pasteur*, x., 283 and 299).

It appears probable that the Röntgen *x*-rays will prove of greater use in dentistry than in surgery, indeed—as F. Harrison points out—the methods only need simplifying to enable dentists to observe in their patients what was only possible until recently in the dead subject. The genesis of the teeth, the construction of artificial crowns, the anomalies of roots, the difficult eruption of wisdom teeth, and many other conditions of organs which are enveloped in tissue that is opaque under ordinary conditions, are said to become visible by the illumination of the *x*-rays, and reproductions of photographs taken with a Newton's tube, which are used to illustrate the article, afford satisfactory proof of the statement. For practical purposes, of course, a cryptoscope will be found simpler in use and more generally satisfactory than the photographic process, and Mr. Harrison proposes to experiment with an apparatus of that description (*Journ. Brit. Dent. Assoc.*, xvii., 343).

C. F. Cross and E. J. Bevan have examined this product, the preparation of which from cotton takes place in the following stages: (1) The cotton is nitrated and dissolved in ether-alcohol; (2) the viscous solution of cellulose nitrate is drawn through fine orifices of glass, and precipitated by water or solidified by evaporation of the solvent, the process being continuous so that a fine thread is formed; (3) the threads having been thrown or twisted together to form the compound thread or textile yarn, this is next denitrated by resolving the nitric ester. The resulting cellulose thread retains its form and lustre, and constitutes the artificial silk known commercially as lustru-cellulose. Cross and Bevan have definitely proved that the denitration of the nitrate yarn is complete in regard to the removal of the nitric groups (NO_3), the lustru-cellulose containing only 0.19 per cent. of

nitrogen. They also find that the cellulose residue reverts to the normal molecular condition of the original on denitration, and that no oxy-cellulose results from the cycle of operations. The new artificial silk is therefore regarded as being substantially a normal cellulose, and its use involves no possible risk from explosion or excessive inflammability (*Journ. Soc. Chem. Ind.*, xv., 317).

Dr. Chas. Rice says the methods now almost exclusively employed in the principal public hospitals of New York city for sterilising catgut for surgical purposes, are the following three:—(1) Maceration in oil of juniper and subsequent boiling with alcohol of 94 per cent., then transferring to and keeping in chloroform saturated with mercury biniodide; (2) The same as No. 1, except that the maceration in oil of juniper is omitted; (3) Simple maceration for at least 48 hours in chloroform saturated with mercury biniodide, the strings being left in the solution until required for use. Chloroform is the most satisfactory solvent of the fatty matters in catgut, and complete sterility is effected by saturating the chloroform with mercury biniodide. The best, smooth musical strings should be used, and under ordinary circumstances five sizes are sufficient—violin D, A, and E, and first and second banjo strings. As an additional precaution, it is deemed advisable to subject them to a preliminary sterilisation, by boiling them with enough alcohol of 94 per cent. to keep them covered, in a large wide-mouthed Erlenmeyer flask. To the neck of the flask should be fitted an upright condenser, and the apparatus is set upon a steam bath and boiling maintained for an hour. Then, immediately on removing the strings, they must be transferred to the biniodised chloroform, which should be of the strength of 1 in 1000 (*Alumni Journal, New York College of Pharmacy*).

A new method of making and finishing wax-cells for microscopical purposes is described by M. Pflaum, who has found them answer every demand, whether for fluid or dry mounting, during several years that he has used them in his own work. Rings of asphalt and benzol cement are first drawn upon the cleaned glass slides, and allowed to set thoroughly. A mixture of equal parts of wax (? beeswax) and paraffin is then melted, and with this cells of the required depth are raised upon the asphalt rings by means of a turntable. The wax cell-walls are immediately well covered with asphalt cement, special care being taken to cover the inner and outer edges nearest the glass, so that the wax is entirely enclosed by the cement. Cells thus produced are said to be capable of resisting any change of temperature and to be especially suitable for glycerin mounts. When an object has been placed in position within one of the cells, a very thin ring of the melted wax is run round the edge and a cover-glass at once pressed firmly down on it. Fasten the cover-glass with a ring of shellac in alcohol, and after that is thoroughly dry finish with zinc white or other suitable varnish, being careful to avoid any in which benzol is the solvent (*Amer. Monthly Micros. Journ.*, xvii., 63).

At a recent meeting of the Liverpool Section of the Society of Chemical Industry, Mr. Douglas Herman drew attention to the beneficial effects of the administration of oxygen gas to persons suffering from the influence of noxious gases. This is an occurrence not infrequent in chemical factories where the workmen have to enter flues or chambers in which chemical processes have been carried out. As pointed out by the author, what is wanted in such cases is an immediate supply of fresh oxygen to the lungs, and this is most easily provided from a cylinder of compressed oxygen, either by a tube con-

Aseptic Surgical Catgut.

Wax-Cells for Micro. Slides.

Oxygen Gas as a Restorative.

veying a gentle stream being placed in the patient's mouth while the lips are held tightly round the tube, or by the tube being inserted in one nostril while the other is compressed. A respirator may also be used, covering both mouth and nose. Mr. Herman states that several lives have been saved at works where oxygen has been employed in this way at his suggestion, and he recommends that a cylinder of oxygen gas should always be kept in readiness at places where poisonous gases are likely to be produced and affect the workpeople. In the case of drowned persons, oxygen inhalation has also been found useful, and it might with advantage be kept in readiness at police stations, Royal Humane Society stations, etc., as is now done in France (*Journal Soc. Chem. Ind.*, xv., 247).

A satisfactory picro-carmine, yielding a solution

A Stable Picro-Carmine Solution. that has been proved to keep good for five years is made as follows:—Pure carmine is dissolved in a mixture of ammonia water, 1 part by volume and water, 4 parts, care being taken to keep the carmine in slight excess. After standing for two days, filter the solution and expose it until a precipitate begins to form, protecting it from dust meanwhile. Again filter, and add concentrated solution of picric acid (? to excess), then agitate and set aside for twenty-four hours, when a third filtration must be followed by the addition of 1 part of chloral hydrate to every 1000 parts of solution. At the end of a week filter for the last time and immediately bottle off in small glass-stoppered vials (*National Druggist*, xxvi., 176).

On the basis of experiments made for the

Pepsin Digestion. purpose of ascertaining in what manner the action of pepsin is retarded by wine, Hermann-Peters has come to the conclusion that wine is not a suitable medium for the administration of pepsin. The retarding effect is produced not only by the alcohol present in wine, but also by the acid tartrate present. Tartaric acid does not itself interfere with the action of pepsin, but it cannot be substituted in place of hydrochloric acid, the presence of which is an essential condition of digestion by pepsin, and the presence of acid tartrate in wine is prejudicial, because it neutralises hydrochloric acid, setting free tartaric, so that pepsin wine will contain no free hydrochloric acid (*Berichte der Pharm. Gesellsch.*, iv., 258).

According to *Engineering*, acetylene is being

Acetylene as a Tram-car Illuminant. tried as an illuminant on the Paris tram-cars. The generator, containing calcium carbide and water, is placed on the rear-platform under the steps, and weighs, when charged, only 27 lbs. It is said to be capable of producing 35 cubic feet of the gas, the illuminating power of which is estimated at fifteen times that of ordinary coal gas. The lighting is said to be very efficient, it being possible to read a paper in any part of the car, and the cost, so far as the experiments have yet gone, works out at less than that of lighting by petroleum, but as the car has only been in use a few weeks, it is not yet possible to give definite figures.

The use of sodium chloride as an aid to the

Sodium Chloride as an Iodine Solvent. solution of iodine in water is recommended by Muller (*Méd. Nouv.*), more particularly when the solution is intended for internal use. For example, to produce a local effect on the pharynx, he adds to the water used half to one per cent. of sodium chloride, and the following is suggested as a suitable prescription:—Tincture of iodine, 1 to 2 Gm.; sodium chloride, 2 Gm.; distilled water, 200 Gm. The tincture of iodine is that of the 'Codex Medicamentarius,' and is made by dissolving 10 Gm. of iodine in 120 Gm. of strong alcohol.

WILLIAM BUCKLAND.

Since Buckland's death in 1856, a new era of scientific thought and work has been in progress. Darwin's "Origin of Species," which ushered in the modern methods of biological research, appeared in 1859, and laid the foundation for a completely new series of generalisations, which have become so familiar to us that it is only by an effort that an approximately just estimate can be formed of the attainments and conclusions of the men who worked previous to that epoch.

Buckland was so commanding a figure in the science of his day that his biography can hardly fail to benefit the mind in assisting it to apprehend more clearly the evolution of scientific ideas. Mrs. Gordon, Dean Buckland's daughter, has recently written his life.* She gives, with an attempt at chronological order, an account of some of the most interesting facts in a life, which, while devoid of excitement, was full of incident and novelty. What purpose is served, however, by the long—the very long—excerpts from Buckland's writings, which have been incorporated with the biography proper, is not plain. The glimpses which are obtained of the man himself reveal him as full of buoyancy and good humour, but the impression produced by a first reading of this volume is a rather depressing one. The long quotations are dispiriting. If biographical details helped in any way to elucidate the writings, their quotation would be pardonable, but such is not the case. Having made this little protest, it is only just to add that in other respects the "Life" is admirable.

William Buckland was born at Axminster in 1784. From his early childhood his father was in the habit of taking him for walks in the lias quarries in the neighbourhood, collecting ammonites and other shells. When thirteen years of age he was sent to a grammar school at Tiverton, and a year later he was successful in obtaining a nomination to Winchester. Here as a boy, he says, he became familiar "with the chalk formation, from the fact of the pathway to the playground on St. Catherine's Hill passing close to large chalk pits, which abounded with sponges and other fossils, and from the practice of digging field-mice from their holes in the surface of the chalk."

He was elected scholar of Corpus Christi College, Oxford, in 1801, and he immediately turned his attention to the study of the science of which he was to become so masterly an exponent. "In my early residence at Oxford," he himself says, "I took my first lesson in field geology in a walk to Shotover Hill with Broderip, who knew much of fossil shells and sponges from Mr. Townsend, the friend and fellow-labourer of William Smith, 'The Father of English Geology.' The fruits of my first walk with Mr. Broderip formed the nucleus of my own collection for my own cabinet, which in forty years expanded into the large amount which I have placed in the Oxford geological museum." After taking his B.A. in 1804, he added to his income by giving tuition to private pupils. He was thus enabled to indulge in his favourite studies, and, with the aid of the income derived from his scholarship, continued them throughout his forty-five years' residence at Oxford.

In 1809 he was admitted into Holy Orders, and in the same year was elected Fellow of his college. It was not, however, until he was appointed to the Deanery of Westminster in 1845, that his connection with the Church resulted in work at all commensurate with his geological and agricultural labours.

The study of geology was undertaken in thorough earnest by Buckland when twenty-four years of age. He explored the chalk hills of Berks, Wilts, Dorset, and a large part of Devon. He made a tour through the centre and north of England, and in 1813 he

* 'The Life and Correspondence of William Buckland, D.D., F.R.S.' (John Murray, London, 1894).

accompanied his friend, W. Conybeare, into Ireland. The latter journey furnished the material for his first important paper, written in collaboration with Conybeare, "On the Coasts of the North of Ireland." His excursions were not confined to his native land, but were speedily extended to the Continent, the first being undertaken in 1816 into Germany with John Conybeare and Greenough. From Weimar he wrote, "We saw Goethe, and at Freyberg visited Werner, who gave us a grand supper, and talked learnedly of his books and music, and anything but geology."

Intense enthusiasm, keen observation, and unflinching good spirits were well-marked traits in Buckland's character. The two latter features are well exemplified in the following extract from a letter, which has a slight historical value for pharmacists, because it indicates how temporary mydriasis was produced by the use of belladonna before atropine had been isolated. He says, "I am sorry to inform you that all my movements have been deranged, and my plans thwarted by an accident that befell me a month ago near Sidmouth, from the falling of an ignited spark of iron from my hammer into the cornea of my eye, which I did not discover to be fixed there till some days after, when it began to oxydate. The result has been a series of five or six operations to cut out the minute rusty fragments, and a degree of inflammation which has prevented me from reading or writing during the last three weeks. I am happy to say the cause of injury is now totally removed, and in a few days I shall again take wing for Oxford. As I like always to extract all possible good out of the evil that befalls me, I have learned two curious facts in physiology from my oculist at Exeter. First, that he once drew a tooth out of a patient's eye (literally an eye-tooth), growing between the bony orbit and ball of the eye, and I have seen the specimen. Second, that the belladonna leaf has the singular and useful property, if laid on the eyelid, of causing a great expansion of the pupil and iris, which is of the highest service in cutting for cataracts, to render visible the inner chamber of the eye and, in cases of diseased pupils, by drawing the iris backwards in every direction, preserves it from contact with the central injury."

Buckland's enthusiastic geological labours were recognised at Oxford in 1813 in his appointment to the Readership of Mineralogy. Six years later he was appointed to the newly endowed chair of geology. He became a very popular lecturer, making use of every available means to impress his ideas upon his class. When he failed to obtain actual specimens for exhibition he made a free use of pictures. His genial good-humour invariably aroused the sympathy of his hearers, upon which he appears to have been somewhat dependent. He once observed that he felt nervous in addressing large assemblies till he had once made them laugh, and then he was entirely at his ease. Sir Henry Acland relates his first experience at one of Buckland's lectures:—"He lectured on the cavern at Torquay, the now famous Kent's Cavern. He paced like a Franciscan preacher up and down behind a long show-case, up two steps, in a room in the old Clarendon. He had in his hand a huge hyena's skull. He suddenly dashed down the steps, rushed, skull in hand, at the first undergraduate on the front bench, and shouted 'What rules the world?' The youth, terrified, threw himself against the next back seat and answered not a word. He rushed then on me, pointing the hyena full in my face, 'What rules the world?' 'Haven't an idea,' I said. 'The stomach, sir,' he cried (again mounting his rostrum), 'rules the world. The great ones eat the less, and the less the lesser still.'"

Buckland's sense of humour prevented him from attitudinising after the manner of professional scientists. He was free from the faintest taint of pedantry. A letter written by him when upon a French tour in 1820 so well exhibits his saving grace and his sharp

observation of human nature that a short extract from it may be quoted:—"Three days brought me from London to Paris, where my first business was to call on Cuvier, who after receiving me with the greatest cordiality, and saluting my cheeks with more than English familiarity, immediately made a dinner for me, inviting Humboldt, Biot, Cordier, Bowditch, the African traveller, Frederick Cuvier, and several others of the savants of Paris, and giving me admission to the entire establishment of the Jardin du Roy. . . . I admired exceedingly the French style of lecturing, the manner and matter are extremely good, but the classes as ill-looking and ungentlemanly a set of dirty vagabonds as ever I set eyes on, and not more numerous than my own at Oxford. I attended also a meeting of the Institute, at which was announced the death of poor Sir Joseph Banks, who is not less regretted in France than in our own country. I saw there Gay Lussac, Menard, Vauquelin, Henry Raymond, Brockard, Bindon, and most of the first scientific men of France, whose love of science, however, does not induce them to attend without receiving about eight shillings a head for their hour's work. . . . I find them (the geologists) all most deplorably deficient in knowledge of their country, as well as in general geology. Our Society would number at least thirty members that would beat the best of them, and never did I feel myself more highly gratified in the article of pride than I was by the manner in which they flocked round me to propose their difficulties, and the passive obedience with which they received my oracular decisions."

In 1818 Buckland was elected a Fellow of the Royal Society, and in 1822 he communicated to the Society his paper describing the Kirkdale Cave, which was the first fossil cave known in England. A complete description of it and numerous other similar caves appeared in his "Reliquiæ Diluvianæ," published in 1823. No pains were spared by the author to verify his conclusions before giving them a place in this important work. In order to satisfy himself that the bones found in Kirkdale Cave were really the remains of animals devoured by hyenas, he procured a Cape hyena and supplied it with shins of beef, and compared the teeth marks on the bones with those observed on the fossils. The book achieved such a remarkable success that a second edition was required before the end of the year. In acknowledgment of a presentation copy the Emperor of Russia gave the author a gold snuff-box set with mosaic.

Through the instrumentality of Buckland and a few of his friends the Geological Society was incorporated by Royal Charter in 1825. He was elected the first President, and Charles Lyell one of the secretaries.

In the same year Professor Buckland was appointed to a canonry at Christ Church, Oxford, and received the degree of Doctor of Divinity. It was also during this year that he married Miss Morland, a lady who was almost as enthusiastic a scientist as himself. Of the many anecdotes illuminating the different phases of Buckland's character, perhaps the best is the one which deals with an incident of his wedding tour. When at Palermo he visited the shrine of Rosalia, the patron saint of the city, in which her bones were deposited in such a manner as to be visible to the pilgrims. Upon seeing these sacred relics the Oxford professor exclaimed, "Those are the bones of a goat, not of a woman!" This bold statement caused so great a scandal that the priests forthwith had the precious relics enclosed in a casket to screen them alike from the adoring gaze of the faithful and the sceptical scrutiny of the heretic.

Brewster's notion that "a craft should be built wherein the united crew of British science could sail" was heartily supported by Buckland. He was, therefore, bitterly disappointed because he

was unable to attend the inaugural meeting of the British Association at York in 1831. In the following year, however, when it met at Oxford, he was elected president, and he exerted all his influence to ensure a successful meeting. On the last day of what proved to be a most memorable gathering he delivered his celebrated lecture on the megatherium, which called forth the encomiums of Sir Charles Lyell in his letter to Mantell on the following day:—"Buckland," he wrote, "was really powerful last night on the megatherium—a lecture of an hour before a crowded audience; only standing room for a third. Lots of anatomists there; paper by Clift; the gigantic bones exhibited, and still to be seen there, but likely to be removed by-and-by. Buckland made out that the beast lived on the ground by scratching for yams and potatoes, and was covered, like an armadillo, by a great coat of mail to keep the dirt from getting into his skin as he threw it up. As he was as big as an elephant, the notion of some that he burrowed underground must be abandoned. 'We may absolve him from the imputation of being a borough-monger; indeed, from what I before said, you will have concluded that he was rather a radical.' He concluded with pointing out that as the structure of the sloth was beautifully fitted for the purpose for which he was intended, so was the megatherium for his habits. 'Buffon, therefore, and Cuvier even, in describing the sloth, and Cuvier the megatherium' as awkward, erred. They are as admirably formed as the gazelle,' etc. It was the best thing I have ever heard Buckland do."

On the occasion of Agassiz's first visit to this country in 1834 he became Buckland's guest at Christchurch. This was the beginning of a friendship which not only gave intense satisfaction to the two friends, but conferred a lasting benefit upon natural science. The unselfishness and sincerity of the older man found expression in the unstinted trouble he took in introducing Agassiz to all the material in this country which was serviceable to him in the preparation of his work on fossil fishes and in the frankness with which he accepted Agassiz's glacial theory, when once he was satisfied with regard to the soundness of the arguments in its favour.

The services rendered by Buckland to agriculture were, perhaps, greater practically than those he rendered to geology. He was greatly interested in land drainage, especially as applied to the reclamation of bogs, being convinced that "there can be no question but that it would be a natural advantage to convert to the purposes of supplying food to man those bleak, barren and dreary wastes which now answer no other purpose than that of supplying fuel." In 1845, when the potato disease was rampant, he made a thorough study of the matter and delivered a lecture upon it before the Ashmolean Society. This lecture he afterwards printed and circulated throughout the whole of England. One of his most useful contributions to practical agriculture was his demonstration that coprolites were the fossil dung of extinct animals. He succeeded in convincing Liebig of the truth of this. Upon his return to Germany Liebig put the matter to the test by subjecting coprolites to analysis and found that they contained a large amount of phosphate of lime. "This was the origin," says Lord Playfair in a letter to Mrs. Gordon, "of the great industry of superphosphates which has done so much for agriculture."

The Bridgewater Trustees, in 1830, invited Professor Buckland to write one of the eight treatises to "justify the ways of God to man." The work—"Geology and Mineralogy Considered with Reference to Natural Theology"—occupied him six years and, when published, created no small stir among those whose thoughts had not been previously directed to the researches of the author and his fellow labourers. Buckland's reputation as a writer probably rests more largely upon this treatise than upon any other of his many publications.

When over sixty years of age (1845) he was appointed, on the advice of Sir Robert Peel, to the Deanery of Westminster. The enthusiasm with which Buckland entered upon his new duties never failed until the mysterious depression and the clouded gloom of evening settled upon him. He set about the reformation of Westminster School; he gave great attention to the repair of the Abbey and its monuments and made many improvements in the organ. Mrs. Buckland started a coffee house in Pye Street, which, however, did not benefit the class for which it was intended [and was, therefore, subsequently converted into an industrial school for street boys. In connection with this philanthropic work Mrs. Buckland received much good counsel from Dean Hook, in one of whose letters to her occurs this noteworthy exhortation: "Be thankful for your successes, ignore your failures and always be attempting something new."

Almost the last important occasion on which Dean Buckland appeared in public was when the Wollaston medal was presented to him in 1848. Shortly afterwards his strange illness attacked him and as it refused to yield to treatment, his medical advisers recommended his removal to the rectory at Islip, where he passed away in 1856, at the age of seventy-three.

Buckland had honours bestowed upon him by almost every scientific society of renown, both British and foreign. He was a Fellow of the Royal Society; he was a member of the council for twelve years and a vice-president for one year (1832-33). Twice he was president of the Geological Society. The Royal Society's catalogue of scientific papers enumerates fifty-two papers of which he was the author.

RECENT WORK IN ORGANIC CHEMISTRY.*

BY HAROLD BROWN.

It is impossible, within the limits of a short report, to give a connected account of recent work in organic chemistry. I have therefore selected two of the more interesting pieces of work, and propose to deal with them in some detail. The first is the discovery of a new dibasic acid, resulting from the oxidation of tartaric acid, communicated to the Chemical Society by H. J. H. Fenton, M.A.

A New Dibasic Acid

The discovery of this new acid resulted from the observation made some time ago by Mr. Fenton (*Chem. Soc. Proc.*, 1893, 113) that when tartaric acid is treated with certain oxidising agents in presence of ferrous iron, a solution is obtained which gives a beautiful violet coloration on the addition of caustic alkali. Out of a large number of organic acids examined, only tartaric behaved in this way, and the reaction was suggested as a test for this substance. To a solution of the acid is added a drop of FeSO_4 solution, then a drop of H_2O_2 , and the liquid made alkaline with KOH .

Other oxidising agents may be employed, but H_2O_2 was found to give the best results. The colour is destroyed by acids, but restored by alkalis, while excess of ferrous salt or oxidising agent prevent or destroy the effect.

It was found that the iron could be precipitated from the acid solution by $\text{K}_4\text{Fe}(\text{CN})_6$. The filtered liquid possessed powerful reducing properties, and gave with FeCl_3 and alkali a violet colour. From a series of experiments made with standard solutions of $\text{H}_2\text{C}_4\text{H}_4\text{O}_6$, FeSO_4 , and H_2O_2 , it was found that the maximum colour effect was produced when the $\text{H}_2\text{C}_4\text{H}_4\text{O}_6$ and H_2O_2 were present in the ratio of one molecule of the former to one atom, or rather more, of available O; and the colour completely disappeared when the

* Report on Organic Chemistry read before the School of Pharmacy Students' Association, on June 11, 1896.

ratio was one molecule of acid to five atoms of available O. The amount of ferrous salt present could be considerably varied without affecting the above ratios, and it appeared that only a very small quantity of FeSO_4 was necessary to determine the oxidation of a large quantity of $\text{H}_2\text{C}_4\text{H}_4\text{O}_6$ in this direction.

The isolation of the colour-giving substance was somewhat difficult to accomplish, owing to the instability of the solution. Several methods were tried, of which the following gave the best results.

Finely-divided iron (ferrum redactum) is added to a strong solution of $\text{H}_2\text{C}_4\text{H}_4\text{O}_6$, and the liquid boiled until the iron disappears. The liquid is filtered, cooled by being surrounded with ice, and the requisite quantity of H_2O_2 (20 vols.) added in small quantities at intervals of a few minutes. Nordhausen H_2SO_4 is then added through a thistle funnel in small quantities at a time, cooling between each addition.

This liquid, after standing surrounded by ice for a few hours deposits crystals—at first often small and discoloured, but the succeeding fractions beautifully white and pure. The crystals are washed with cold water and dried on filter paper exposed to the air. (For further details see *Chem. Soc. Trans.*, 1894, 899.)

The substance thus obtained is a shining crystalline mass with pearly lustre, undergoing no change on exposure to air at the ordinary temperature. It is sparingly soluble in cold water, ether, or acetic acid; more soluble in ethylic or methylic alcohol, warm water, or hot acetic acid.

The aqueous solution has an acid taste and gives acid reactions with indicators. It reduces silver, cupric and mercuric salts, etc. The solution in warm water is extremely unstable, splitting up almost quantitatively into glycollic aldehyde and CO_2 . The crystals give off water when heated or placed in vacuo over H_2SO_4 , a white amorphous powder being left.

Bromine in presence of water oxidises the acid quantitatively to dihydroxytartaric acid. Reduction with HI yields finally succinic acid, while if the action is limited racemic acid is formed. The acid also readily reacts with NH_2OH or $\text{N}_2\text{H}_3\text{C}_6\text{H}_5$ to form crystalline products. FeCl_3 gives a blackish colour with the free acid, changing to the characteristic violet colour on addition of caustic alkali.

To determine the composition of the acid—

- I. Analyses were made of the crystals, thoroughly air-dried.
- II. The water present in the crystals was determined,
 - a. By standing in vacuo over H_2SO_4 until the weight was constant.
 - β . By heating in dry H until of constant weight.

These experiments proved that the substance cannot be completely dehydrated in vacuo over H_2SO_4 .

- III. Analyses were made of the dehydrated substance.

The results of these analyses gave the empirical formula $\text{C}_2\text{H}_2\text{O}_3$ for the dehydrated acid, and $\text{C}_2\text{H}_2\text{O}_3 \cdot \text{H}_2\text{O}$ for the crystals.

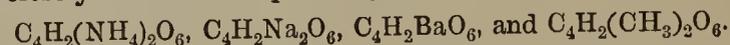
The next point to determine was the molecular weight of the acid. Attempts were made to take the vapour density of the methylic salt, using both Hoffmann's and Dumas' method. These, however, were unsuccessful. The next experiments were made by the vapour-pressure method of Ostwald, using absolute alcohol as the solvent. Owing to difficulties in manipulation the results obtained were not very satisfactory, and values for the molecular weight were obtained, varying from 232 to 131. The mean value, however, indicated the molecular formula $\text{C}_4\text{H}_4\text{O}_6 = 148$.

Freezing-point determinations could not be made with the acid itself, owing to its sparing solubility in all the usual solvents. The boiling-point method was therefore tried, using a solution of the dried acid in absolute alcohol. The values found for the mole-

cular weight varied from 205 to 126, the mean again indicating the formula $\text{C}_4\text{H}_4\text{O}_6$.

The most satisfactory results were obtained by using the methylic salt of the acid. This dissolves fairly well in melted phenol or naphthalene, so that its molecular weight can be determined by the freezing-point method. The values obtained varied from 209 to 179. The molecular weight of $\text{C}_4\text{H}_2(\text{CH}_3)_2\text{O}_6 = 176$.

The ammonium, sodium, barium, and methylic salts of the acid were prepared and analysed. The numbers obtained corresponded very closely with those required by the following formulæ:—



The free acid was also titrated with a standard solution of NaOH , and the amount of the latter used in neutralisation agreed very closely with the theoretical required for a dibasic acid of formula $\text{C}_4\text{H}_4\text{O}_6$.

These results prove that the acid is dibasic, and that the molecular formula of the dehydrated acid is $\text{C}_4\text{H}_4\text{O}_6$, that of the crystals being $\text{C}_4\text{H}_4\text{O}_6 \cdot 2\text{H}_2\text{O}$.

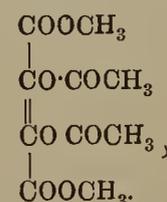
Constitution of the Acid.—Taking the foregoing facts into consideration, it is evident that only two formulæ can be suggested for the acid:—



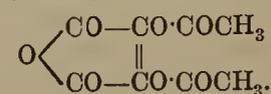
The first represents it as a ketone acid, containing one alcoholic hydroxyl group, and formed from tartaric acid by the oxidation of one CHOH group to CO . The second represents it as an unsaturated acid, containing two alcoholic hydroxyl groups, and formed by the removal of the two non-hydroxylic H atoms from the two CHOH groups in tartaric acid. The readiness with which the acid reacts with $\text{N}_2\text{H}_3\cdot\text{C}_6\text{H}_5$ and NH_2OH seemed to favour the ketone formula. On examination of the crystalline products of these actions, however, it was found that they were not the hydrazone and oxime but the normal phenyl-hydrazine and hydroxylamine salts of formula $\text{C}_4\text{H}_4\text{O}_6 \cdot 2\text{N}_2\text{H}_3\text{C}_6\text{H}_5$ and $\text{C}_4\text{H}_4\text{O}_6 \cdot 2\text{NH}_2\text{OH}$. The absence of a ketone group was further indicated by the fact that neither $\text{N}_2\text{H}_3\text{C}_6\text{H}_5$ or NH_2OH had any action upon the methylic or ethylic salt of the acid.

To determine the number of alcoholic hydroxyl groups present, the action of acetyl chloride on the free acid and its methylic salt was carefully examined, as well as the action of acetic anhydride and benzoyl chloride on the free acid.

By treating the methylic salt of the acid with acetyl chloride a crystalline product was obtained, which after purification by recrystallisation from hot water was analysed, and gave numbers corresponding to a di-acetyl derivative of formula—



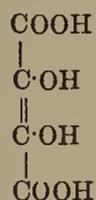
By acting upon the free acid with acetyl chloride or acetic anhydride, the di-acetyl anhydride was obtained—



Benzoyl chloride and the free acid gave a corresponding di-benzoyl anhydride.

From these results it is clear that the acid contains two alcoholic hydroxyl groups.

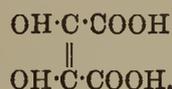
Taking all these points into consideration it is evident that the formula of the acid must be represented as—



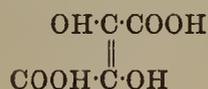
and that it is therefore dihydroxymaleic or dihydroxyfumaric acid.

The readiness with which the acid yields anhydrides on treatment with acetyl chloride, etc., is evidence in favour of the maleinoid constitution. This was further supported by the instability of its aniline salts. It has been shown that the aniline salts of acids of the maleic series are much less stable than those of the isomeric acids of the fumaric series.

The acid, therefore, appears to be dihydroxymaleic, and its formula must be further written—



The isomeric form of the acid, *i.e.*, dihydroxyfumaric of formula—



has been obtained by Mr. Fenton (*Chem. Soc. Trans.*, 1896, 560).

Recent Work on the Celluloses.

The second investigation to which I should like to direct your attention is the recent work upon the celluloses, which has been carried out by a number of workers, chief among whom are Messrs. Cross, Bevan, and Beadle.

At the present time we know very little indeed of the constitution of the celluloses, or of their relationships to the simpler carbohydrates. Much progress has been made recently, however, and it is hoped that the investigations now being conducted will throw considerable light on these problems. The investigation is a very wide one, and I can only indicate the main lines upon which it is proceeding.

The celluloses are divided into two main groups, according to their behaviour with hydrolytic agents:—

I. Celluloses resisting hydrolysis (chiefly fibrous celluloses).

II. Celluloses easily hydrolysed (chiefly cellular celluloses).

The latter group are celluloses of the starch type of aggregation, and yield, upon hydrolysis, hexoses and pentoses. They are known as hemicellulins. The first group is divided into three sub-groups, as follows:—

	A. Cotton Sub-group.	B. Wood Cellulose Sub-group.	C. Cereal Cellulose Sub-group.
Type	Cotton	Jute cellulose	Straw cellulose
Percentage { C	44-44.5	43-43.5	41-42
{ O	50	51	53
Yield of furfural on treatment with dilute acid	1-4 p. c.	3-5 p. c.	12-15 p. c.
Other characters ..	Quantitative regen- eration from solu- tion as xanthate	Partly hydrolysed by xanthate pro- cess	Considerably hy- drolysed by xan- thate process

The above is the classification adopted by Messrs. Cross, Bevan, and Beadle (*Chem. Soc. Trans.*, 1895, 439). It must be remembered that cellulose rarely occurs in plants in a perfectly pure condition,

usually containing other bodies mechanically bound up with it or chemically combined. The latter class are known as the compound celluloses, and occur in lignified and cuticularised tissue, etc.

Hydrolysis of Cellulose.—Cellulose, *i.e.*, typical cellulose as represented by cotton, shows a marked difference from starch in its resistance to hydrolysis. The problem of the hydrolysis of cellulose has great importance from a constitutional standpoint and has been attacked by various methods. Chief among these is the cycle of changes involved in what is known as the thio-carbonate reaction. When cellulose interacts with alkaline hydroxides in strong aqueous solution combination takes place in the ratio $\text{C}_6\text{H}_{10}\text{O}_5 : 2\text{NaOH}$ —the product being known as alkali-cellulose. This compound is decomposed by treatment with water and the cellulose is regenerated in a hydrated form, its composition changing to $2\text{C}_6\text{H}_{10}\text{O}_5\cdot\text{H}_2\text{O}$.

If the alkali cellulose is exposed to the action of CS_2 vapour, action occurs, and after an hour or two a yellow mass is obtained which swells up on treatment with water and finally completely dissolves. This soluble compound is a cellulose thio-carbonate, having the formula $\text{CS} < \begin{array}{l} \text{OX} \\ \text{SNa} \end{array}$, where X is the acting cellulose unit. This, however, is not a normal cellulose but an alkali-cellulose; hence we may write the formula $\text{CS} < \begin{array}{l} \text{O} \\ \text{SNa} \end{array} (\text{X}\cdot\text{ONa})$ which would represent the compound as the sodium salt of alkali-cellulose xanthic acid.

This product can be easily purified and on dissolving in water again a solution of extraordinary viscosity is obtained. The solution coagulates on standing or on heating, a hydrated cellulose separating. This is due to a dissociation of the substance into its constituents, *i.e.*, hydrated cellulose, NaOH and CS_2 . Coagulation may also be brought about by various reagents.

By putting celluloses belonging to the different groups through these changes and examining the regenerated celluloses the following facts have been ascertained:—

I. Celluloses of the cotton group pass through this cycle of changes without undergoing hydrolysis to form soluble derivatives.

The cellulose regenerated by this process from Swedish filter papers indicated an increase in weight of 1.1 per cent. From analyses of the regenerated substance its formula was found to be $4\text{C}_6\text{H}_{10}\text{O}_5\cdot\text{H}_2\text{O}$. The calculated increase in weight for this formula is 2.7 per cent. Slight hydrolysis to soluble products appears therefore to occur—falling no doubt on the oxy-celluloses invariably present. This, however, takes place to such a small extent that the normal celluloses may be said to be quantitatively regenerated from the xanthate solution—

II. Celluloses of the other two groups are partially hydrolysed, and the regenerated cellulose is different from the original, chiefly in respect of furfural yielding groups.

Specimens of these two groups were put through the xanthate process, and the regenerated cellulose examined for furfural yielding groups. These were found to be present in greatly diminished proportion—

		Furfural from original cellulose.	Furfural from regenerated cellulose.
(1) Cellulose from Pinus	B.	5.5	2.0
(2) " " Esparto	C.	13.5	5.0

The furfural yielding groups appear, therefore, to undergo hydrolysis in the process of conversion into xanthate, forming soluble derivatives.

In addition to which the cellulose undergoes change—probably deoxidation—which considerably diminishes the total yield of furfural. Thus

Esparto Cellulose (100)

dissolved as xanthate gives, on decomposition,

Insoluble cellulose (80) Soluble derivatives (20)
Yielding furfural 2 per cent. Yielding furfural 26.2 per cent.

The total amount of furfural from the products formed is, therefore, 6.84 per cent. The amount of furfural yielded by the cellulose in original state was 13.6 per cent.

Acid Hydrolysis.—In behaviour with acids typical cellulose again exhibits a marked difference from starch. Dilute acids have scarcely any action upon the cotton celluloses, the yield of furfural by this treatment being only .1 to .4 per cent. This slight hydrolysis is probably due to the oxy-celluloses present. Concentrated H_2SO_4 dissolves the cotton celluloses, forming a colourless solution. The products of this action depend upon the temperature and duration of the experiment. Stated briefly, they are sulphates of a series of compounds, of which celluloses and the dextrins are the extreme terms. By long-continued action the cellulose undergoes hydrolysis with the formation of dextrose.

The celluloses of groups B and C undergo partial hydrolysis with formation of soluble derivatives on treatment with dilute acids. The action is most pronounced in the case of the cereal celluloses, which yield by this process 12 to 15 per cent. of furfural.

In a recent paper communicated to the Chemical Society, but, unfortunately, not yet published, Messrs. Cross, Bevan, and Beadle have shown that by treatment with dilute acids the cereal celluloses may be resolved into soluble derivatives of their furfuroid constituents, leaving a residue of normal cellulose. The best method of effecting this is to treat with 1 per cent. H_2SO_4 for fifteen minutes at a pressure of three atmospheres.

The furfuroid produced was examined and shown to be a pentose mono-formal— $C_5H_8O_3 \left\langle \begin{array}{c} O \\ \diagup \quad \diagdown \\ O \end{array} \right\rangle CH_2$. The formaldehyde residue is not split off, but remains united by oxygen with the pentose residue which is simultaneously formed. Such a compound has the empirical formula of a normal cellulose, and could arise within a cellulose complex by transformation of the terminal CH_2OH group of a hexose molecule.

The Esters of Cellulose.—The determination of the number of OH groups in the cellulose unit is a matter of great importance in attacking its constitution. For a long time it was held that the unit formula was $C_6H_7O_2(OH)_3$, the highest known esters being the tri-nitrate and the tri-acetate.

Recently, however, Cross and his associates have shown that a tetracetate of formula $C_6H_6O(OAc)_4$ can easily be obtained. The substance possesses the characteristic properties of a cellulose compound, and it therefore appears that the special configuration of cellulose is maintained when four OH groups in the unit formula are replaced by negative radicles. The unit group of cellulose must therefore be written $C_6H_6O(OH)_4$, and if the remaining oxygen is present as a CO group, cellulose cannot be a polyaldose.

The following conclusions may be drawn from our present knowledge of the subject:—

I. Cellulose is differentiated in a most marked way from starch, and has the characteristics of a homogeneous compound rather than an aggregation of aldose groups.

II. Since it forms derivatives of general formula $n(C_6H_6O(OH)_4)$ without loss of any of the characteristic properties of cellulose compounds, it is probable that the synthesis of the individual C_6 -groups takes place by carbon and not by oxygen linkings.

III. The reactions of cellulose cannot at present be expressed by any constitutional formula. It has been shown, however, that of the four OH groups in the C_6 -unit two are basic and two acidic.

PARLIAMENTARY NOTES AND NEWS.

THE HOUSE OF LORDS Select Committee on the Companies Bill has quickly set to work, and at its meeting on the 19th instant, took the evidence of Mr. Budd, the President of the Incorporated Law Society, who, on behalf of his Society, objected to a number of clauses in the Bill as being likely to act prejudicially to *bona-fide* private companies. The evidence, as was natural, was of a very technical nature, and for the most part without interest to pharmacists. One or two things, however, transpired which are significant as showing the trend of opinion in commercial circles. Mr. Budd's objection to the compulsory publication of balance-sheets, for instance, on the ground that it would involve the disclosure of trade secrets and business details to rival traders, may be expected to have considerable weight with a committee including so many members of private companies. Mr. Budd may also be regarded as expressing the opinion of a large number of influential persons when he said that it would not be a bad thing to stop rotten companies altogether, but the difficulty is how to do it. In fact there appears to be a disposition to allow the tares to flourish for fear of spoiling one or two ears of wheat. Mr. Budd's examination is to be continued on the 25th instant.

EVIDENCE BEFORE THE COMMITTEE.—It is satisfactory to notice that the evidence to be taken before the above Committee will be quite open, and that the minutes will be printed for the use of the members of the House of Lords. Copies will not, however, be delivered except to members of the Committee, or to such other persons as the Committee may think fit. It will probably be of especial interest to chemists to learn that the President of the Pharmaceutical Society (Mr. Walter Hills) and Mr. Carteighe were among those present in the Committee Room during the examination of the Law Society's representative.

THE COURSE OF BUSINESS.—The uncertainty of things Parliamentary is almost proverbial, in fact, there is no department of human activity in which it is so unsafe to prophesy. Last week, on the public announcement of Mr. A. J. Balfour, we referred to the "winter session" which was to be utilised for the disposal of Government remanets. It now appears, however, that the finely-laid scheme of the First Lord of the Treasury has, like the Education Bill, been ruthlessly sacrificed upon the altar of expediency, and that there will be no supplementary sitting of the present session in January next. One would imagine that with Agricultural Rating, Finance, Light Railways, Irish Land, and other big measures there would be plenty of material for a supplementary sitting, even without taking into account the time which must be consumed in voting supplies.

POPPY CULTIVATION.—Replying to Sir W. Lawson (Cockermouth), who asked the question on behalf of Mr. H. J. Wilson (Holmfirth Div.), the Secretary of State for India (Lord G. Hamilton) stated in the House of Commons on Thursday last, that the total area under poppy cultivation in Behar and Benares during the last three seasons was:—1893-4, 458,181 acres; 1894-5, 513,804 acres; 1895-6, 519,072 acres. These figures show an increase of more than 60,000 acres during the past two years.

EARLY CLOSING.—As an item of news it may be noted that the Shops (Early Closing) Bill, which was fixed for consideration on the 16th inst. and deferred to the 17th, then further deferred till the 24th, was again put off till Thursday, the 25th inst. The Shop Assistants Bill has been deferred from time to time, and is now down for second reading on Monday, 29th inst.

COPPER IN PEAS.—Mr. G. Whiteley, who represents Stockport, has directed attention to the official condemnation of preserved peas by the London County Council, and to the fact that grocers are subject to prosecution for selling preserved peas, in the preparation of which sulphate of copper has been used. This he considers unfair, seeing that in France, the United States, and other countries, the amount of sulphate of copper used for the purpose is regarded as harmless, and that the Glasgow justices are apparently of the same opinion. The honourable member is hoping to get the views of the Home Department on the subject, and it is certainly one which should be settled with due regard to all concerned.

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A CHAPTER OF HORRORS.

THE annual report of the Chief Inspector of Factories and Workshops is a veritable "olla-podrida," with its numerous selections from the communications of inspectors under the Factories Acts, embodying suggestions of more and worse horrors than could well be imagined by the average middle-class individual who is not connected with any of the trades affected by the Acts. Moreover, the report shows clearly that the risk of poisoning is not confined to the substances retailed by chemists and scheduled as poisons in accordance with the provisions of the Pharmacy Act, 1868, but that it is of much wider extent. The reader puts down the bulky volume with a feeling that the very fact of such matters as are dealt with being recorded in a Blue-Book is satisfactory, inasmuch as proof is thus afforded that attention has been officially directed to the sources of danger indicated, and that in those instances where powers do not already exist to enforce a remedy, such powers are likely to be sought and received in the immediate future. In many cases where special machinery is concerned, it is, unfortunately, impossible at present to guard absolutely against risk of accident and death, whatever precautions may be taken and regulations enforced. Everything for the moment seems to depend upon the individual in those cases, and the least loss of self-control and relaxation of the watchful care that tends to become so habitual as to lead the uninitiated to regard it as non-existent, may only too often prove the sure precursor of maimed limbs or the oblivion that puts an end to toil and watchfulness alike. Inventive ingenuity must come to the rescue here before the repetition of mishaps that hardly bear description can cease to be common, and, no doubt, in the course of time, either unsafe machinery and processes will be replaced by others without the attendant risks, or means will be devised whereby those risks can be minimised without undue interference with industry. Meanwhile, the Juggernaut of commerce is insatiable, and human sacrifices seem an inevitable accompaniment of the fulfilment of certain requirements of civilisation.

To descend to details, we find that the carbonising of rags is held to be responsible for softening of gums, dropping out of teeth, general debility, chest and bronchial complaints;

wool sorting may carry anthrax in its train; the brimstone used in blanket stoving produces sickness and loss of appetite, and affects the chest; whilst French chalk, used in warp-dressing, is alleged to cause disease. In connection with the carbonising of rags, it is stated that the shaking of such rags before washing has been the cause of terrible explosions and loss of life. The process of dry cleaning may also be accompanied by explosions and conflagrations, escaping benzine fumes, centrifugal machines, or electricity induced by rubbing well-dried stuffs being the responsible agents. It is difficult to comprehend what is meant by the following extract on this subject from a lady inspector's report dealing with German factories:—

"If cleansing-benzine (*wasch benzin*), to which *anti benzin pyrin* is added, is replaced by sulphuric acid, the stream of electricity is stopped, because a separation of stearin acid takes place under the action of soluble sulphuret of magnesium. Since water is a good conductor of electricity, it is to be recommended that the air of the workrooms should be kept as damp as possible.

This may be intelligible to factory inspectors, and doubtless the advice given is sound, but the scientific and technical details appear to be somewhat at fault, and the only conclusion one can arrive at is that this must be an imperfect translation of a passage in a German report, by a person not thoroughly familiar with the terms employed.

Severe cases of mercurial poisoning have been caused by a sole-stitching machine, owing to the volatilisation of mercury, employed to ensure a gas-tight joint, by the heat of a little gas flame used in connection with the machine. Lead poisoning may result from inhalation and absorption of the metal during the polishing of flint glass, or the manufacture of glass-headed pins, and also whilst files are being cut, a block of lead being used to support the files during the operation. Violent headaches, nausea, paralysis, and even insanity are possible consequences of the constant inhalation of carbon bisulphide in india-rubber works; metallic poisoning may follow long-continued work with bronze dust; and swollen glands in the neck have occurred as the result of licking adhesive labels with the tongue instead of using proper dampers, even though pure gum alone was used on the labels. That aerated water bottles may burst and cause serious injury to operators is common knowledge, as are also the noxious effects of arsenic in dyes, phosphorus in matches, and the handling of white lead during the manufacturing process. Less is known, however, about the injurious effects of the inhalation of basic slag dust, and the particles of quartz and steel thrown off by grindstones. These inevitably set up chronic irritation of the lungs and the mucous membrane of the air passages, unless suitable respirators are worn, bronchitis and pneumonia being but the natural consequences. In conclusion, it is satisfactory to read the statement made by Mr. SPRAGUE ORAM—in this, his last, report as Chief Inspector, prior to retirement from the public service—that the favourable reception by manufacturers of the various alterations in the law has been greatly facilitated by the patient and unobtrusive efforts of the inspectors, and that the present sympathetic attitude of employers of labour has been earned by the quiet work of inspectors and their avoidance of undue friction. That this state of affairs may continue, and employers come in time to anticipate, instead of waiting for, suggestions of improvements tending to protect health and life, must be the fervent wish of everyone who peruses this painful, and yet hopeful, record.

CHINESE OPIUM.

FOR some years past the annual reports forwarded by British Consuls in China have recorded a steady decrease in the imports of foreign opium, and an equally steady increase in the supplies of the native drug. The reports for the past year show that the change indicated is progressing more rapidly than ever, and it seems not unlikely that Chinese opium may before long find a regular place on the London market. Thus, whilst at Swatow, there has been an enormous decrease in the imports of foreign opium during 1895 as compared with 1894, at Chungking and Ichang increasing quantities of the native drug—Szechuen and Yünnan—have been exported, the quantities and values being as represented in the following table :—

Port.	Year.	Imports.		Exports.	
		Quantity.	Value.	Quantity.	Value.
Swatow	{ 1894	772,276 lbs.	£473,839	—	—
	{ 1895	549,645 lbs.	£392,214	—	—
Chungking..	{ 1894	—	—	802,533 lbs.	£263,744
	{ 1895	—	—	1,570,533 lbs.	£478,410
Ichang.....	{ 1894	—	—	680,533 lbs.	£178,079
	{ 1895	—	—	1,544,000 lbs.	£394,532

The enhanced cost of Indian opium appears to be the cause of the steady falling-off in the import of that drug, the native article being used in increasing quantities to mix with it. There is no evidence that less opium is used in China, for though only 21,132 lbs. of native opium was imported by sea into Swatow during 1895, as against 7237 lbs. in 1894, it is estimated that the equivalent of 1000 chests (=about 150,000 lbs.) now annually reaches Chia Ying Chow, the great distributing centre for the Swatow district. Further, "whilst in former years more than 1000 chests were imported viâ Swatow for conveyance to Chia Ying Chow, and thence on to Kanchow and other places in Kiangsi and Hunan, none goes by that route now, supplies being shipped direct from Hong-Kong to Hankow, whilst in the opposite direction the requirements of the Hin Chow Prefecture are now supplied through Canton." The decrease has occurred in all kinds of the drug imported at Swatow, as shown by the following table :—

Year.	Quantity.				Total.
	Malwa.	Patna.	Benares.	Persian.	
1894.....	Chests. 2520	Chests. 2001	Chests. 498	Chests. 94	Chests. 5113
1895.....	1922	1257	433	29	3641
Decrease..	598	744	65	65	1472

At the same place the costliness of the foreign drug has recently led to experiments having for their object the assimilation in flavour of native and foreign opium. A coarse and rank flavour is imparted to the former by the presence of oil, but on undergoing treatment by processes in which Barbados aloes (*sic*) is understood to play an important part, "this objectionable taste is entirely removed, and the native-grown opium is worked up into a close semblance of the foreign article, the flavour of the new product being said to be equally good though it is less satisfying to the consumer." As showing that this business is being seriously taken up, it is stated that three skilled Indian workmen have been imported from Calcutta. It is worthy of note (*vide* page 510), that though Indian opium is gradually being ousted in China, its production seems to be on the increase in certain

districts, if we may judge from the fact that the area under poppy cultivation in Behar and Benares has been extended by more than sixty thousand acres during the past two years.

The Consul at Chungking speaks of native opium as having been the great feature in the export trade of 1895, since it was responsible for no less than £214,626 of the £233,176 representing the increase of exports over 1894. The upward tendency is best shown by the following comparative table, the figures in which, however, represent only the quantities passing through the foreign customs :—

Description.	Quantity.			
	1892.	1893.	1894.	1895.
Opium, Szechuen ..	332,533 lbs.	335,066 lbs.	704,000 lbs.	1,438,800 lbs.
„ Yunnan....	12,266 lbs.	11,333 lbs.	98,533 lbs.	131,733 lbs.

The crop of 1895 was an excellent one, and the demand was so great that difficulty was experienced at times in getting enough junks for transport. The merchants made very large profits, and there is said to be every probability that the opium-growing area will be further extended as time goes on. Both climate and soil seem to favour the cultivation of the poppy, and rice is not displaced by the crop, but wheat, beans, etc., are displaced, the balance of profit to the farmer of opium over wheat being about 80 per cent.

Finally, at Ichang, where opium is the chief staple of the export trade, the Consul shows that there has been a startling increase in the amount re-exported, being double what it was in 1894 and nearly twenty-eight times the amount recorded for 1891. The Szechuen opium is stated to be cutting out the more expensive Indian drug in markets further and further removed from the Yangtze valley, being heard of as far as the Canton province and also extending to the province of Fukien. Last year a few balls of Patna opium arrived at Ichang "for the private consumption of a few *gourmets* who could afford it, but the import of foreign opium is practically *nil*." The three local kinds of opium are Yünnan, Hupei, and Szechuen, their respective values being in the order stated.

PRESCRIPTIONS FOR POISONS.

THE *Lancet*, in reporting the circumstances connected with a recent case of poisoning by an overdose of morphine, remarks that they draw attention to "the very dangerous state of matters in regard to the supply of poison by prescription." It appears that the deceased person had been for a long time in the habit of using morphine, and was regularly supplied with a solution of morphine made up from a medical man's prescription. What the *Lancet* takes exception to is that the supply of this powerful drug should have been continued on the authority of a prescription presumably written many years ago. It is admitted that according to the present state of the law the druggist who supplied the morphine "was perfectly within his rights," but it is contended that the law ought to be altered in order to prevent such a prescription from being dispensed more than once without a fresh signature being attached. It may, however, be suggested that to ensure such a restriction no alteration of the law is requisite. The prescriber can attach such a direction as would effectively protect his patient from the consequences of misuse, and by this simple means danger may be averted so far as the obtaining of poisons or potent articles is effected by the aid of a physician's prescription.

ANNOTATIONS.

ANALYSTS AND THEIR OPINIONS.—The too common practice amongst public analysts of expressing opinions in the certificates they supply in connection with cases under the Sale of Food and Drugs Acts, received another check at Dartford Police Court on Saturday, June 13. Mr. Frank Cox, chemist and druggist, Swanley, Kent, was summoned for selling spirit of nitrous ether, alleged to be deficient in strength, but it was successfully contended on his behalf that the analyst, Dr. Adams, had prejudged the case without giving in his certificate materials on which the Bench could come to a decision. The certificate appears to have simply stated that the preparation was deficient in nitrous ether to the extent of 65·8 per cent., according to the B.P. standard, and the Bench therefore dismissed the case.

MR. J. H. MAIDEN, a corresponding member of the Pharmaceutical Society of Great Britain, and Curator of the Technological Museum, Sydney, has been appointed Government Botanist and Director of the Botanic Gardens at Sydney, in succession to Mr. Charles Moore, who has recently retired after a service, in those capacities, of nearly half a century. Mr. Maiden is well known as an indefatigable worker in economic botany, and it may be anticipated that the wider field now opened to him will be rendered very productive at his hands.

INTERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE.—The approaching International Conference, arranged by the Royal Society to consider proposals for an International Catalogue of Scientific Literature, will be formally opened at the apartments of the Society in Burlington House on Tuesday, July 14. A reception of the delegates will be held by the President of the Royal Society on the previous evening at Burlington House, and they will be entertained at dinner by the Society on the evening of the 14th at the Hotel Métropole. On July 15 the delegates will be received by the Lord Mayor at the Mansion House, and on the afternoon of the 16th they will be entertained by Dr. Ludwig Mond, F.R.S., at a garden party at his house in Avenue Road, London.

SIR JOSEPH PRESTWICH, the eminent geologist, died at Sevenoaks, on Tuesday last. He was educated at Paris and at University College, London, published his first geological paper at the age of twenty-three, and was the first to demonstrate the certainty of man's existence contemporaneously with the extinct mammalia. He was awarded the Royal Society's gold medal for his investigations on flint implements, and became Vice-President of that Society in 1870, as well as President of the Geological Society. Until a few years ago he was Professor of Geology at Oxford, and he was an honorary D.C.L. of that University.

"THE PROFITS OF PHARMACY."—A correspondent, referring to the paragraph published last week under the above heading, observes that it is enough to take away the breath of an ordinary layman, let alone a chemist who is supposed to steal his drugs and buy his bottles for nothing! He says: £100 is just 2000 shillings or 24,000 pence. This covers 12,000 (twelve thousand) twopenny drinks weekly, or in a working day of ten hours 200 per hour. And this is only yielding a weekly profit of £100! What must have been the size of the shop, the number of assistants, and the width of the several tills to take in all this money? "London correspondents should be a bit more careful, or they may make their illiterate and less-experienced provincial contemporaries laugh at their 'greenness' in asking us to take all this in at one gulp."

FATAL CASES OF POISONING WITH SORREL LEAVES.—Dr. Flemyng records in the *Lancet* two fatal cases of sorrel poisoning, in which two little girls succumbed to the effects of oxalic acid poisoning after eating sorrel leaves. The leaves were eaten in the afternoon of the day previous to that on which the children were brought for treatment, which consisted in the administration of chalk suspended in milk, with lime-water and castor oil. Both died, one eighteen and the other twenty hours after taking the poison. Post-mortem examination revealed no noteworthy appearances except slight congestion of the small intestine in one case. Toxicological examination indicated the presence of a small quantity of oxalic acid in each case. An exploration of the fields which the children visited gave no indication of any poisonous plants but arum and conium, besides the sorrel, and no trace of the two former was found in the stomach.

OLD-WORLD PHARMACY.—In a collection of documents preserved by the Marquis of Salisbury at Hatfield House, the Historical Manuscripts Commission has found the details of a curious mixture which was administered to Sir Henry Unton who was sent on a mission to the French King in Paris towards the end of the sixteenth century, and whilst there fell ill. The "Confectio Alcarmas," as it was named, was costly if not efficacious, for it was compounded of "musk, amber, gold, pearl, and unicorn's horn." The patient also had "pigeons applied to his side, and all other means that art could devise, sufficient to expel the strongest poison, and he be not bewitched withall," and yet he died, his end being probably hastened by irritation caused by the strange medicaments and crude treatment to which he was subjected.

BRITISH TRADE IN 1896.—According to the monthly trade supplement of the *Economist*, the quantity of alkali exported from this country during the five months that ended May 31 last was less by 464,272 cwts. than for the corresponding months of 1895. On the other hand, the value of the drugs and medicinal preparations exported showed an increase of £52,473 for the five months, and the total value of chemicals, chemical preparations, and medicinal preparations exported was greater by £270,508. During the same period imports of chemicals, dye-stuffs, and tanning substances increased in value by £446,724; oils imported were worth £261,318 more; and drugs (unenumerated) showed an increase of £31,310 over the corresponding period of the previous year.

A CHEMISTS' EXHIBITION, the second such organised in connection with the *British and Colonial Druggist*, will be held from August 24 to 28 next, at the National Skating Palace, Argyll Street, W. This is a commodious hall, very massively built in the form of a modern theatre, and the entire place will be well appointed, richly furnished, and decorated in a manner not usual in trade exhibitions. Music will be supplied every afternoon and evening by a special orchestra, and on one day medical men and nurses will be specially invited. Due notice of this will be given to exhibitors in order that they may specially display the articles in which the members of those professions are likely to be more immediately interested.

MORALITY AND NATURAL HISTORY.—The bearing of morality upon natural history constitutes a problem that few men of the world would care to be obliged to solve, but several members of the Haslemere Microscopic and Natural History Society seem to think they hold the necessary clue. After vainly opposing Mr. Grant Allen's election as President of that body, in succession to Mr. Jonathan Hutchinson, F.R.S., they have expressed their determination to resign, the cause of their dissatisfaction being "The Woman who Did," her code of sexual morality being strongly reprobated.

PHARMACEUTICAL SOCIETY

NORTH BRITISH BRANCH.

ELECTION OF EXECUTIVE.

A meeting of members and associates in business residing in Scotland was held in the Society's House, 36, York Place, Edinburgh, on Friday, June 19, at 11 a.m., Mr. J. Laidlaw Ewing in the chair.

The minutes of last meeting were read and approved.

Apologies for absence were intimated from Messrs. Dunlop, Glasgow; Lunan, Edinburgh; Maben, Hawick; and Storrar, Kirkcaldy.

Address by the Chairman.

The CHAIRMAN said: From the number of voting papers issued this year (400) it is gratifying to observe that the steady increase in the number of those connected with the Society in Scotland continues. This year shows an increase of 17 over last year (400 as compared with 383), and during the past five years there has been an increase of 76 (400 as compared with 324 five years ago). There is nothing in these figures to boast about. It is of the utmost importance in the interests of the pharmaceutical craft that every graduate in pharmacy should be a supporter of the Society, which has been invested with legislative and executive powers for the promotion and protection of those interests which come within the sphere of our Charter and the Pharmacy Acts by which it has been confirmed and extended. The interests of the Pharmaceutical Society are the interests of every member of the pharmaceutical craft, and only when the craft and the Society are practically co-extensive can the state of affairs as regards membership be considered satisfactory. That day has not yet come but, nevertheless, we are moving, perhaps too slowly, towards that goal. We have now in Scotland 96 pharmaceutical chemists, 52 chemist and druggist members and 252 associates in business connected with the Society. One notable feature in this year's increase is that it is largely the result of an effort made in Dundee by the local secretary there. On looking over the Benevolent Fund returns one also notes with satisfaction that the local secretary at Airdrie has secured a number of new subscribers in his district. The example set by these officers shows what can be done by a little local effort, and we all possess some influence which may be used with good effect.

From the number of voting papers returned on this occasion it does not seem that there is anything to cause special interest in the election—a result due, perhaps, to the absence of any special appeals on the part of those who have agreed to give their services, and also, perhaps, to a feeling that the present members are fairly representative of Scottish electors.

This year two well-known names are not found in the list of those willing to serve as members of Executive. Mr. Gibson retires after several years' service, and Mr. Nesbit, who has been for many years connected with the Executive, and who has occupied the highest position in it, retires; from a feeling that, seeing he is a member of the Board of Examiners, it may be well that others should take up the duties of the Executive. We will, I am sure, heartily thank both gentlemen for the work they have so cheerfully done, and we hope we may have the help and valued counsel of both at some future time.

You are probably already all acquainted with the work that has engaged the attention of the Executive during the last year, as it is described in the annual report submitted to the Council in May, and published in the *Pharmaceutical Journal* of May 8 last. You will have observed that there has been a considerable increase in the number of candidates presenting themselves for examination in Edinburgh. It would have been impossible to overtake the work in reasonable time or with any comfort in the old premises, but it has been found that the work can be done easily and speedily in the new premises, which have proved themselves admirably adapted for examination purposes. One unsatisfactory feature is the large percentage of failures in these examinations, and that is due for the most part to the want of thorough systematic training, especially in practical work. The failures in practical pharmacy seem more numerous than they should be if our system of apprenticeship is all that it ought to be. Since last meeting two members who have done excellent work as members of the Board have retired, for a time at least, namely, Messrs. Dott and Maben.

We in Scotland have reason to feel grateful to the Council for the generous way in which they have met the call for money demanded by the recent extension of buildings for the Society in Edinburgh, and the Council has not been slow to express the view which seems to be general—that the money has been expended by the Executive judiciously and to good purpose. There has been some delay in going on with some rearrangement of the Society's premises, now set free from examination work. This delay has been chiefly due to some negotiations, which have now proceeded so far that I may, without breach of confidence, refer to them. The Executive was approached some time ago by the Royal College of Physicians of Edinburgh, which generously proposed that its *Materia Medica* Museum should be transferred to the custody of the Pharmaceutical Society for preservation in the Society's house here. We have been in consultation with the authorities in London, and the transaction is now virtually completed, though it may be next year or near it before the actual transfer can be effected. Till this matter is completed, it will be necessary to delay the scheme which the Executive has been considering.

In this connection also it may be mentioned that we are at present considering a plan by which it may be possible to acquire an interesting collection of *materia medica*, made partly by Sir Douglas Maclagan, by Dr. Scoresby Jackson, and Dr. T. A. G. Balfour, all well-known Scottish pharmacologists. When these additions have been made our museum of *materia medica* will be one of the most interesting and extensive collections in Scotland.

During the year two interesting additions to our collection of paintings have been made. By the kindness of Dr. John Duncan, we have secured a portrait of his grandfather, Mr. John Duncan, the first President of the North British Branch, and just this week a portrait of Baillie J. F. Macfarlan has been presented by his daughters. He was the first member of the Council of the Society from Scotland. If we go on in this way we shall accomplish what would be a very desirable thing, and get together a representative gallery of distinguished Scottish pharmacists. There is no reason why we should be limited to Edinburgh or the East of Scotland, and any help in this direction would be very welcome.

During the year two law cases of the highest importance to all pharmacists have been decided in the Scottish Supreme Court. I refer to the prosecution of Messrs. Hume and Turnbull for the use of the title "chemist" in connection with the business of dealers in photographic and scientific apparatus and chemicals. It was not suggested that they had done so in wanton defiance of the law, and they pleaded that the use of a qualifying word obviated any objection to their use of the protected title. In our view the admission of such a claim would have been in the highest degree dangerous and prejudicial to the interests of registered and duly qualified chemists, and would practically have nullified those provisions of the Act which secure competent skill and knowledge on the part of those who undertake the responsible duty of dispensing physicians' prescriptions. The Council, therefore, wisely decided to contest the claim at all hazards, and we all rejoiced that, after a keen and persistent fight, they came out of the conflict completely victorious, and, after some grumbling, all parties seem now to have accepted the decision.

There is one feature of these cases in Scotland that we cannot regard as satisfactory. I refer to the great difficulty in recovering reasonable penalties and such decisions as shall really effect the manifest purpose of the law. But the Society, as has been said, has really had to educate the judges, and the evil is one which may be expected to grow less in course of time. As it is, these proceedings, which are undertaken in the interest of every registered chemist, have entailed a heavy expenditure, and all who participate in the benefit should in justice bear a helping hand. Another recent event which has an interest for Scottish pharmacists is the election of Professor I. Bayley Balfour as an honorary member of our Society in place of the late Dr. Cleghorn. The professor's father, Professor J. H. Balfour, was also an honorary member, and took a great interest in the work of the North British Branch. Sir Douglas Maclagan is now the oldest honorary member of the Society. It must be gratifying to all Scotch pharmacists to observe the handsome way in which the electors have returned our two Scotch members again to the Council of the Society, and we all feel glad that our interests should be watched over by two gentlemen in whom we have so much confidence, and who have already served us so well. They would all have observed, as the result of last Council, that the man who had for many years been head and shoulders above all his fellows, and who had excelled all his predecessors in the amount of time and

energy which he had so ungrudgingly devoted to the work of the Society, was no longer President. When Mr. Carteighe first came to Scotland he was regarded with something like suspicion, and for a time there was something like misunderstanding and antagonism. But as time passed and opportunities for personal intercourse were multiplied, all such ideas vanished. His sincerity and unexampled ability won their admiration, and now he felt sure Mr. Carteighe had no warmer friends anywhere than in Scotland, and, speaking for Scottish pharmacists, he could assure him of their grateful and affectionate esteem. In Mr. Walter Hills, the new President, they had a man who not only worthily represented a historic house, but one whose experience and personal qualities admirably fitted him for the high office to which he had been appointed. He felt sure that the interests of the Society would be safe in his hands, and it would be a great pleasure to Scottish pharmacists and to the Executive in Scotland to co-operate with him in promoting the work of the Society.

Scrutineers' Report.

The ASSISTANT-SECRETARY then read the report of the Scrutineers, as follows:—

"At a meeting held on April 17, 1896, the Executive appointed June 19, 1896, as the date of the election for the ensuing year.

"Four hundred nomination papers were issued by the Assistant-Secretary on May 25.

"The nomination papers returned showed that fifty-eight members and associates in business had been nominated, of whom the following twenty-three signified their willingness to act if elected:—

- Aitken, Robert, 73, Princes Street, Edinburgh.
- Baker, William Charles, 13, Dundas Street, Edinburgh.
- Bowman, John, 3, Duke Street, Leith.
- Coull, George, 17, Smith's Place, Leith Walk, Edinburgh.
- Currie, William Little, 223, Byres Road, Dowanhill, Glasgow.
- Davidson, Alexander, 172, High Street, Montrose.
- Dunlop, Thomas, 181, Albert Road, Pollokshields, Glasgow.
- Ewing, James Laidlaw, 9, Princes Street, Edinburgh.
- Fisher, John Hutchison, 66, High Street, Dunfermline.
- Hardie, James Miller, 68, High Street, Dundee.
- Henry, Claude Francis, 1, Brandon Terrace, Edinburgh.
- Kermath, William Ramsay, 1, North Bell Street, St. Andrews.
- Kerr, Charles, 56, Nethergate, Dundee.
- Lunan, George, 20, Queensferry Street, Edinburgh.
- M'Adam, Robert, 34, Virginia Street, Glasgow.
- M'Kellar, Arthur, 69, South Portland Street, Glasgow.
- Mackenzie, James, 45, Forrest Road, Edinburgh.
- M'Laren, David, 42, South Clerk Street, Edinburgh.
- Macpherson, Colin Allen, 97, Dalry Road, Edinburgh.
- Mitchell, Donald, 30, Union Street, Inverness.
- Moir, James, 447, Victoria Road, Crosshill, Glasgow.
- Paterson, James, 15, Regent Quay, Aberdeen.
- Strachan, Alexander, 138, Rosemount Place, Aberdeen.

"A voting list was accordingly drawn up, and on June 10 four hundred voting papers were issued.

"The Scrutineers met last night at 7 o'clock, and proceeded to examine the voting papers. The result was found to be as follows:—

Voting Papers issued	400
" returned	198
" informal	1

"There were thus 197 votes to be recorded. The following gentlemen have a majority of votes:—

- Bowman, John, 3, Duke Street, Leith.
- Coull, George, 17, Smith's Place, Leith Walk, Edinburgh.
- Currie, William Little, 223, Byres Road, Dowanhill, Glasgow.
- Davidson, Alexander, 172, High Street, Montrose.
- Ewing, James Laidlaw, 9, Princes Street, Edinburgh.
- Fisher, John Hutchison, 66, High Street, Dunfermline.
- Hardie, James Miller, 68, High Street, Dundee.
- Henry, Claude Francis, 1, Brandon Terrace, Edinburgh.
- Kermath, William Ramsay, 1, North Bell Street, St. Andrews.
- Kerr, Charles, 56, Nethergate, Dundee.
- Lunan, George, 20, Queensferry Street, Edinburgh.
- M'Adam, Robert, 34, Virginia Street, Glasgow.
- M'Laren, David, 42, South Clerk Street, Edinburgh.
- Mitchell, Donald, 30, Union Street, Inverness.
- Moir, James, 447, Victoria Road, Crosshill, Glasgow.
- Paterson, James, 15, Regent Quay, Aberdeen.
- Strachan, Alexander, 138, Rosemount Place, Aberdeen.

"The voting papers and all other documents connected with the election are submitted herewith.

"J. LAIDLAW EWING, Chairman.

William Burley.
Robert L. Hendry.

James Paton.
John Robertson.

"The actual result of the poll was as follows:—

Currie	172	Coull	131
Ewing	168	M'Adam	130
Kerr	168	Moir	13
Davidson	165	Mitchell	123
Strachan	164	M'Laren	83
Henry	160		
Kermath	159	M'Kellar	78
Hardie	156	Dunlop	73
Lunan	148	Aitken	70
Bowman	145	Mackenzie	70
Fisher	144	Macpherson	44
Paterson	136	Baker	26

"Four voting papers were received too late for the enumeration."

Mr. NESBIT, Portobello, moved the adoption of the report, and in doing so referred to the comparatively small number of those who took the trouble to record their votes. He thought it was a pity that the members and associates of the Society did not take a greater interest in its proceedings.

Mr. KERMATH, in seconding the adoption of the report, expressed disappointment at the small attendance at the meeting. He thought those connected with the Society in the city might have endeavoured to spare a short time from business to attend the meeting and support the Chairman. They were much indebted to the Scrutineers for the trouble they had taken in preparing the report.

The report having been unanimously adopted, the Chairman declared that the first seventeen names on the list given by the Scrutineers—together with the President of the Society (Mr. Walter Hills), the Vice-President of the Society (Mr. John Harrison), Messrs. John Johnston (Aberdeen), and David Storrar (Kirkcaldy), as *ex-officio* members—would form the Executive for 1896-7.

On the motion of the Chairman, seconded by Mr. Nesbit, a vote of thanks was awarded to the Scrutineers.

Mr. W. L. CURRIE, Glasgow, said he wished to call attention to one little matter which had been mentioned by the Chairman, that was the very high position which the Scottish candidates occupied at the recent election of Council. He was present at the election, and he was very much disappointed at seeing so many papers returned to London with every name scored out with the exception of their two Scottish candidates. It was a matter of comment amongst the members that a hundred papers from Scotland came back to London with all the names scored out except the two Scottish candidates. Sometimes there would be one vote for Mr. Carteighe or some other gentleman, but, with very few exceptions, there was not more than four or five names. It was pointed out to him that this might have a very adverse influence on future elections, and he was instructed by the Chairman of the Scrutineers to ask the Scottish members to remember that more members of Council were required than two, and that the two Scottish members could not constitute the London Council. He thought it most natural that they should support the Scottish candidates, but it might not be so very marked by going *en masse* for one or two men. If Englishmen got to know that English candidates were scored out year after year they would retaliate and score out every Scottish candidate, and so prevent their return.

Mr. W. R. KERMATH said he questioned whether the Scrutineers were in order in sending a message like that. As a matter of honour, and as a matter of statutory enactment, he thought they must not tell what they saw. He was very glad that Mr. Currie should make his remarks as a hint to them, but he submitted that the Scrutineers were not acting quite on the square in telling what they saw. He did not know whether they were actually sworn in, but surely they should understand that it was a private transaction in which they were taking part. If their English friends got to know that the Scottish papers had that appearance, it would be the Scrutineers who were to blame. He did not want to speak too strongly, but it was a very great breach of faith to say what the papers were like.

Mr. JOHN NESBIT said he very much agreed with the remarks made by Mr. Currie. He himself always voted for the full number. They must have the proper number of Councillors in London, and unless they voted they had no share in the election. He liked to

select the men who took an interest in the work of the Society. There might have been something in Mr. Kermath's remarks if names had been mentioned, but when it was put generally, as it had been done, he did not think there was any breach of faith. He hoped Mr. Currie's remarks would have a good effect there.

Mr. C. F. HENRY said he approved of what Mr. Kermath had said. The same system should be adopted in electing the Council as they followed in electing the Executive. It should be done by ballot.

Mr. BURLEY also said the Scrutineers had no right to tell what they saw. They should keep it to themselves.

The CHAIRMAN said he did not wish to take part in this discussion. It was, perhaps, unfortunate that this subject had been raised just now. He wondered if the Chairman of the Scrutineers was quite sure that all the plumpers were Scottish voters. He happened to know that the convener of the Committee for the election of Scottish candidates received a communication from an English voter stating that he intended to vote only for the two Scottish representatives. He felt sure that if any number of Scottish electors had voted in the way alleged it must have been from mere inadvertence, and he was quite sure they had no desire to act unfairly towards the English members of Council.

Mr. MACLAREN said he observed in the report that the question of the circulation of the Journal was referred to, and he would like to know if anything had been done in regard in that matter.

The CHAIRMAN said the reference to the Journal was in the minutes of last meeting, and the subject had been dealt with by the Executive.

A vote of thanks to the Chairman, proposed by Mr. Coull, and a vote of thanks to the retiring Executive, proposed by Mr. Burley, were cordially passed, and the meeting then closed.

CHEMICAL SOCIETY.

The last meeting of the present session was held on May 18, Mr. A. G. Vernon Harcourt, F.R.S., President, in the chair.

The large audience which had assembled was doubtless attracted by an unusually varied programme. There were ten papers published for reading, and these were supplemented by about ten more, which had been added to the list hanging up in the hall. Being also a ballot night, there was every prospect of an exciting finish to the work of the session. No one, of course, expected that all the papers would be read, but it really seemed at one time as if the President were endeavouring to establish a record, so quickly did one paper succeed another.

At the very commencement of the evening's business, however, there was a hitch in the proceedings. Mr. Cassal stood up and requested that the certificates of certain candidates be read to the meeting in full. This was immediately objected to by a gentleman who was present evidently on behalf of one of the candidates, who was a medical man. His objection was that there was a systematic blackballing, by a certain clique in the Society, of all candidates who were medical men. He himself had been rejected, although he held a senior qualification of London University. Whether this qualification was at all connected with chemical science was not quite clear, but the President thought there was something invidious in picking out certificates, and Mr. MacEwan reminded the Fellows that it had been ruled on a former occasion that on a definite motion of the meeting certificates might be read. The President thereupon decided to take a show of hands, and it was at once evident that the meeting had no wish to have them read. Nevertheless, the result of the ballot showed that all the medical candidates had been rejected.

The address which had been presented to Lord Kelvin on the occasion of his jubilee as Professor of Natural Philosophy in the University of Glasgow was then read by Professor Dunstan.

The first paper was by Professor Tilden, F.R.S., on "The Action of Bromine on Pinene in Reference to the Question of its Constitution." This is simply a question as to whether pinene is capable of fixing four atoms of bromine, or only two. Some years ago in a former paper Professor Tilden stated that four atoms are combined, but Professor Wallach has since endeavoured to show that a dibromide is formed. Professor Tilden thinks that a tetrabromide or a dibromide is formed according to the manner in which the bromine is added to the hydrocarbon. In some respects he regards the dibromide as an accidental impurity.

The author mentioned that in the course of his investigations an acid had been isolated, having the composition $C_{10}H_{16}O_3$, a peculiar property of which being that it forms a remarkably insoluble sodium salt. He is not yet sure of its identity.

One gentleman present asked if the action of light had been studied in connection with the action of bromine on pinene, especially with reference to the rate at which combination takes place, to which Professor Tilden replied that he had experiments of that kind going on.

At this juncture the President stood up and announced to the meeting that M. Henri Moissan was present. The distinguished savant, however, did not make a speech.

The next paper was entitled "An Apparatus for Showing Experiments with Ozone," by G. S. Newth. This is a fragile and somewhat-elaborate piece of apparatus, designed to show the change of volume or contraction which takes place when oxygen to be ozonised is electrolysed in the usual way. Mr. Newth was at considerable trouble to show on the screen in front of the electric lantern the contraction taking place in an actual experiment, but at the critical moment something unfortunately went wrong, and the demonstration failed.

The President expressed his regrets at Mr. Newth's failure, and endeavoured to console him in a few words of encouragement.

"Note on Santalol and Some of its Derivatives," by A. C. Chapman and H. E. Burgess, the paper postponed from the last meeting, was now read. This Mr. Chapman did at lightning speed, and it was extremely difficult to follow him. It appears that two substances have been isolated by the authors from sandal wood oil, viz., santalal and santalol, having respectively the compositions $C_{15}H_{24}O$ and $C_{15}H_{26}O$. A considerable quantity of santalal, which is an aldehyde, is obtained when the oil is subjected to fractional distillation. When this aldehyde is oxidised it yields a white-crystalline acid, which melts at $76^\circ C$. The boiling point of this acid ($C_{15}H_{24}O_2$) is 140° to $145^\circ C$.

Professor McLeod, F.R.S., followed with his paper on "Further Observations on the Production of Chlorine by Heating a Mixture of Manganese Dioxide and Potassium Chlorate." In a former paper, in 1889, the author had shown that chlorine was one of the products of this reaction, but a certain German worker, Dr. Brunck, says that chlorine is not given off, but ozone, and maintains that potassium chloride is mechanically carried over. Professor McLeod handed round two photographs of the apparatus he employed. Manganese dioxide and potassium chlorate are heated in a bath of mercury vapour in a test-tube, and the gas evolved led into a suitable flask. On examining the gas in the flask by a beam of converged light, it was seen to be full of suspended matter. This was put aside until the solid matter had subsided and the clear gas passed into a solution of silver nitrate. The solution was acidified with nitric acid and a precipitate of silver chloride obtained, hence Professor McLeod concludes that chlorine, and not ozone, is the gas in question. Referring to the residue in the flask, the author mentioned that it was alkaline, but that it could not be estimated very well. On adding water to this residue there was an effervescence. The gas collected from this measured 16 C.c., and was entirely absorbed by pyrogallol.

The President said that all would agree that Professor McLeod had proved his point.

The next paper was a remarkable one, and of great interest, viz., "The Thermo-Chemical Peculiarities of Chloral and Bromal Hydrates," by W. J. Pope. Mr. Pope brought the lantern and screen to his aid to show by micro-photographs the progressive changes in crystalline structure which took place when fused chloral and bromal hydrates and menthol have been allowed to solidify. His interesting results had been brought about in trying to explain the abnormal thermo-chemical behaviour of these substances.

Professor Clower, D.Sc., was the next contributor. His paper was entitled, "Acetylene: Its Detection and Ignition in the Air." The author is well known as an expert on the explosion of combustible gases, and the present paper is another addition to the many he has already written. He shows that the percentage of combustible gas present in a maximum quantity prevents explosion.

Of hydrogen the minimum percentage is 5; maximum, 72. There is an explosion when 72 per cent. is present, but with 73 per cent. it ceases to explode.

CO	Min., 13 p.c.	Max., 75 p.c.
CH ₄	" 5 "	" 13 "
C ₂ H ₄	" 4 "	" 22 "
Acetylene	" 3 "	" 82 "

It will be seen that the explosive limit of acetylene is wider even than that of hydrogen.

Professor Clowes' method of detecting acetylene in the air is by the application of the hydrogen flame. When a hydrogen flame is brought into air containing a combustible gas there appears a flame-cap or halo, larger or smaller according to the percentage of gas present. By applying this method to air containing acetylene it is easy to detect minute proportions of the latter. For quantitative work the hydrogen flame is always of the same dimension; 0.25 per cent. of acetylene gives a flame-cap 77 millimetres in height; 0.5 per cent. gives a flame-cap 28 millimetres in height, and so on.

This brought the summer session to a close, and the President announced that the next meeting would take place on November 5.

The following papers were taken as read:—

"Absorption of Dilute Acids by Silk," by Professor Walker, D.Sc., and J. R. Appleyard.

"Double Sulphides of Gold and Other Metals: The Action of Sulphur at a Red Heat on Gold when alloyed with Other Metals," by J. S. Maclaurin, B.Sc.

"The Relative Weights of Gold and Silver Dissolved by Potassium Cyanide Solutions from Alloys of those Metals," by J. S. Maclaurin, B.Sc.

"Condensation of Chloral with Resorcinol," by J. T. Hewitt, M.D., D.Sc., and F. G. Pope.

"Synthesis of Pentacarbon Rings, Part III.; Condensation of Benzil with Lævulic Acid," by Professor Japp, F.R.S., and J. S. Murray, D.Sc.

"The Three Chlorobenzeneazosalicyclic Acids," by J. T. Hewitt, M.D., D.Sc. and H. E. Stevenson.

"The Rotation of Aspartic Acid," by B. M. C. Marshall.

"On the Occurrence of Quercetin in the Outer Skins of the Bulb of the Onion (*Allium cepa*)" by A. G. Perkin and J. J. Hummell.

"On the Colouring Matter contained in the Bark of the *Myrica nagi*," by A. G. Perkin and J. J. Hummell.

"Note on Some New Derivatives from Camphoroxime," by Dr. M. O. Forster,

SCHOOL OF PHARMACY STUDENTS' ASSOCIATION.

The annual general meeting was held on Thursday, June 18, Mr. E. J. Eastes, Vice-President, in the chair. After the minutes of the previous meeting had been read and confirmed, the following report was read by the Secretary (Mr. E. Goulding):—

ANNUAL REPORT OF EXECUTIVE COMMITTEE.

At the commencement of the session, in consequence of the resignation of Mr. F. W. Short, the School of Pharmacy Students' Association was left without a secretary. Mr. E. J. Eastes kindly stood in the breach and undertook the secretarial duties until after the election of the officers.

At the opening meeting on December 5, Professor Attfield resigned the office of President, which position he had held for twenty-one years, and Professor Reynolds Green was unanimously elected to fill his place, the late President accepting the appointment of Hon. Treasurer. The other officers elected were:—

Vice-Presidents: Messrs. E. J. Eastes and H. A. D. Jowett.

Secretaries: Messrs. T. Tickle and E. Goulding.

Committee: Messrs. Senter, Spurge, Stamp, and Umney.

The Executive Committee thus elected by the members has met seven times, and transacted business as follows:—

At a meeting on December 12, 1895, the Committee appointed the following gentlemen as reporters to the Association on subjects allied to pharmacy:—

Pharmacy	Mr. W. Moore.
Botany	Mr. C. E. Ashby.
Materia Medica	Mr. T. A. Henry.
Physics	Mr. H. T. Durant.
Organic Chemistry	Mr. H. Brown.
Inorganic Chemistry	Mr. H. Read.
Analytical Chemistry	Mr. J. R. Walker.

At a meeting of the Committee, held on January 30, 1896, the duties of the gentlemen appointed to report on physics and materia medica were at their request re-arranged, Mr. T. A. Henry electing to report on physics, and Mr. H. T. Durant on materia medica.

At a meeting on January 7, the Committee discussed the existing rules of the Association, and formulated certain amendments thereto,

which, together with certain additional amendments proposed by Messrs. T. A. Henry and H. Brown, were read at the meeting of the Association on January 9. These amendments were discussed seriatim at a meeting of the Association on January 23, and in each case carried *nem. con.*; they were then submitted to the Council of the Pharmaceutical Society, whose sanction they received.

On February 13 the Committee, in accordance with the revised rules, elected Messrs. H. Brown and H. Wilson as two additional members of Committee. At a meeting of the Committee on April 20, a letter was read from Mr. Tickle, addressed to the President, and announcing his resignation of the office of joint hon. sec. At the same meeting a grant of 8s. was made to Mr. H. A. D. Jowett to defray expenses incurred in connection with the demonstration of some effects of the Röntgen rays, given at a meeting of the Association on March 26.

The numerical strength of the Association has very slightly decreased, there being 45 ordinary and 14 life members, as against 52 ordinary and 10 life members last year. The number of meetings held, including to-night, has been 11, and the total attendance 242, making an average of 22 at each meeting, as against an average attendance of 15 last year. By kind permission of the Council of the Pharmaceutical Society the meetings have been held in the Hanbury Library.

The following eleven communications have been read:

Introductory Address.....	Prof. Attfield.
Antiquity of Man.....	Mr. R. Payne.
Flowers and their Visitors	Mr. A. Lander.
Report on Inorganic Chemistry	Mr. H. Read.
Report on Pharmacy	Mr. W. Moore.
Report on Analytical Chemistry	Mr. J. R. Walker.
Life and Work of Darwin	Miss Harrison.
Report on Botany	Mr. C. E. Ashby.
Report on Physics.....	Mr. T. A. Henry.
Gold-Mining in the Transvaal	Mr. H. T. Durant.
Report on Organic Chemistry	Mr. H. Brown.

The meeting on February 13 was devoted to a discussion on "A Students' Union for the School of Pharmacy," opened by Mr. T. A. Henry.

We have, for the first time in the history of the Association, introduced meetings of a social character, and, apparently, with great success. Two social evenings have been held; at one, on February 27, Prof. Greenish gave a most interesting and diverting account of "A Tour in Spain"; and at the other, held on May 7, we were favoured with a very instructive talk about "Fossil Plants," by Mr. A. C. Seward; on both occasions the subjects being illustrated by lantern slides. These meetings were of a more informal character than usual, smoking being permitted and refreshments provided at the close.

The Treasurer's accounts, to be presently audited, show that the receipts from members' subscriptions amount to £7 14s. 6d., and the total expenditure to £10 1s. 11d., leaving a balance of £22 0s. 4d.

Messrs. Fothergill and Tunbridge were appointed to audit the Treasurer's accounts, which they reported to be correct.

The report was then, on the motion of the Chairman, seconded by Mr. T. A. Henry, adopted by the meeting.

The proceedings then terminated.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.

On Thursday, June 25, there was a good attendance of the Junior Section of this Association at the headquarters, Plymouth Octagon, and Mr. J. R. Johnson read an interesting paper entitled "Outlines of Chemical Philosophy." After discussing the molecular and kinetic theories, the author proceeded to explain the fusion of solids, the taking of melting-points and their value as a test of purity, solution and the selective power of solvents, liquid diffusion and dialysis, the conditions of, and difference between, evaporation and ebullition, the precautions necessary in taking boiling points, and the method and utility of fractional distillation. The properties of gases with regard to temperature and pressure were next treated of, the law of Boyle and the reason why it is not absolutely obeyed defined; atmospheric pressure, with description of principles and construction of the barometer, and the expansibility of gases and the law of Charles demonstrated. Continuing with the statement that

Avogadro's law was the outcome of his investigations on the behaviour of gases under similar conditions, molecules, atoms, and elements were then defined, and chemical affinity and the various theories to account for it discussed, the paper concluding with the explanation of the laws of combination of Dalton and Gay-Lussac, and the causes which led up to the revival in a modified form of the Epicurean theory of the constitution of matter. During the evening the principles and construction of the air-pump were described, and several experiments performed by the aid of the air-pump kindly presented to the Association by Messrs. Barclay and Sons.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION.

The first botanical excursion of the season, which had been arranged for June 5 to the Blackford Hill, was, unfortunately, made impossible by heavy rainfall. Mr. W. B. Cowie, who was to conduct the party, was the only person who turned out. A week afterwards, on Friday, June 12, the second summer meeting was held in the Pharmaceutical Society's House, 36, York Place, Mr. George Sinclair, Vice-President, in the chair. There was a good attendance, and a large collection of plants had been got together by Messrs. Center from Blackford Hill; Hill, Murray, and Sinclair from Colinton Dell; McBain, from Union Canal; and Syme, from Craigerook. An interesting collection, including *Viola tricolor*, *Potentilla tormentilla*, *Polygala vulgaris*, *Menyanthes trifoliata*, *Cardamine pratensis*, *Equisetum palustre* and *E. limosum*, *Pedicularis palustris*, *Ranunculus acris*, *Lotus corniculatus*, *Galium uliginosum*, *Armeria vulgaris*, *Cerastium vulgatum*, *Orchis maculata* and *O. mascula*, *Lychnis durna*, *Myosotis hirsutus*, *Primula vulgaris*, and a fine specimen of *Scilla verna* were sent by Mr. Alexander Sutherland, ex-President, from the island of Unst, the most northern of the Shetland group. The specimens were described by Mr. Hill, and the meeting concluded with votes of thanks to those who had collected specimens, to Mr. Hill and to the Chairman.

The second botanical excursion, conducted by Mr. William Duncan, took place to Colinton Dell, on Friday, June 19. About forty members left the Caledonian Station by train, at 8.30 p.m., and returned through the Dell, and then by Redhall to Slateford, where some took train back to town, while others walked in marching to the strains of popular choruses, led by Mr. Rowland. At present there is a proposal to have the paths in the Dell put in a better state, and at the opening of the Dell the party was intercepted by a collector, and 5s. 10d. collected towards the Improvement Fund. A large number of plants was collected, and the outing, notwithstanding the threatening character of the weather at the start, was greatly enjoyed.

EDINBURGH DISTRICT CHEMISTS' TRADE ASSOCIATION.

The third annual excursion of this Association took place on Wednesday, June 17, to Loch Long and Loch Lomond. About 100 members and friends started from the Waverley Station at 8.50 a.m. for Craighendran, where they were joined by a contingent of about forty from the Glasgow and West of Scotland Pharmaceutical Association. At Craighendran the company embarked on the steamer "Lady Rowena" and sailed by Dunoon, past the Holy Loch and Loch Goil, and up Loch Long to Arrochar, from which they drove to Tarbet, Loch Lomond. Most unfortunately, this part of the trip was seriously marred by foggy weather and a very heavy and continuous rainfall. Arrived at Tarbet a sumptuous luncheon in the Tarbet Hotel was done full justice to, and while it was in progress the heavy clouds rolled away, and the sun shone out brightly. At luncheon the chair was occupied by Mr. John Bowman, President of the Association, and among others present were Messrs. Storrar, Kirkcaldy; Laidlaw Ewing, Edinburgh; Boa, Edinburgh; Currie, Glasgow; McAdam, Glasgow; Nesbit, Portobello; Moir, Glasgow; Foster, Glasgow; Murdoch, Falkirk; D. Mackenzie, Edinburgh; D. Maclaren, Edinburgh; Lunan, Edinburgh; Rutherford Hill, Edinburgh; W. B. Cowie, C. F. Henry, Edinburgh, etc. Mr. W. L. Currie proposed "Success to the Annual Gathering and Prosperity to the Association," and said it was a great pleasure to the Glasgow pharmacists to join their

Edinburgh *confrères* on this occasion, and he trusted it was by no means the last time they would meet together on such a happy occasion. Some of them would have observed that they in Glasgow were likely to have a busy time of it next year in connection with the expected visit of the British Pharmaceutical Conference, at which they hoped to meet many pharmacists from the east of Scotland. He had great pleasure in coupling the toast with the name of Mr. John Bowman, the President of the Association. The toast having been enthusiastically responded to, Mr. Bowman in reply said they were now all impatient to get outside to enjoy the sunshine and the scenery of the Loch, and he would content himself by warmly thanking Mr. Currie for the eloquent way in which he had proposed the toast, and the company for the enthusiasm with which they had responded to it. He cordially reciprocated the kindly feeling expressed by Mr. Currie on behalf of Glasgow pharmacists, whom it was a great pleasure to meet on this occasion. The company then proceeded to the bowling-green, where they were photographed by Mr. James MacGlashan. After a short ramble the party returned to the hotel, where tea was served, and the company then embarked on the steamer at Tarbet Pier, and sailed down Loch Lomond to Balloch, which was reached about 6.30. With the exception of a short shower, this part of the journey was favoured with sunshine, and the mist having lifted from the hills and the summit of Ben Lomond, the glorious scenery of the Loch and its surroundings was revealed in all its beauty. An additional charm was given to the scene by the previous heavy rain, which brought down innumerable foaming torrents, which could be traced far up the mountain sides. Edinburgh was reached about 9.30 p.m., and in spite of the adverse weather every one seemed to have enjoyed the day's holiday. This was due in no small degree to the admirable travelling and hotel arrangements, which left nothing to be desired, and for which hearty thanks are due to Mr. Henry, the Hon. Secretary, and his Committee.

LEGAL REPORT.

ALLEGED BREACH OF CONTRACT.

Gibson v. Anderson.

A discussion took place last week before Lord Kincairney in the Court of Session, Edinburgh, in the action by Gibson and Co., chemists, Nicolson Street and Clerk Street, Edinburgh, against Anderson and Co., wholesale chemists, Leith, for payment of £500 as damages for breach of contract. Plaintiffs alleged that the defendants agreed to stop proceedings in an action raised in the Edinburgh Debts Recovery Court for payment of an account of £43 if they paid £25 in cash, and that they would give the plaintiffs time to pay the balance. The £25 was paid but the case went on and decree was obtained in absence, the result being that their name was published in the black-list. When the issue to be submitted to the jury was before His Lordship for adjustment, counsel for the defendants argued that there was no relevant case to set before the jury, there being no averment of malice and no averment of damage. For the plaintiffs it was argued that malice did not need to be averred in an action for breach of agreement. His Lordship held that the precedents quoted by defendants' counsel did not apply in this case. Deferring to a supposed case which had been stated by Lord McLaren in a previous action, the supposed circumstances being exactly similar to the present, he sustained the relevancy, holding that there need be no averment of malice. The question of damage was for the jury to decide.

OBITUARY.

- JARY.—On May 31, Jas. J. Jary, Chemist and Druggist, late of South Shields. (Aged 34.)
 BURTON.—On June 11, M. C. Barton, Pharmaceutical Chemist, late of Llandudno. (Aged 29.)
 WILLIAMS.—On June 11, John Williams, Chemist and Druggist, late of Wrexham.
 CAMPBELL.—On June 11, J. Campbell, Junr., Chemist and Druggist, late of Glasgow.
 COLE.—On June 13, Joseph Cole, Chemist and Druggist, late of Barton. (Aged 49.)
 CAMPBELL.—On June 22, Colin Campbell, Chemist and Druggist, late of Auchtermuchty. (Aged 42.)

CORRESPONDENCE.

All Articles, Letters, Notices, and Reports intended for publication in the Journal, Books for Review, and communications respecting Editorial matters generally must be Addressed "Editor, 17, Bloomsbury Square, London," and not in any case to individuals supposed to be connected with the Editorial Staff. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

ANY INSTRUCTIONS from Members, Associates, and Students of the Pharmaceutical Society, with reference to the transmission of the Journal should be sent to the Secretary.—Mr. Richard Bremridge,—17, Bloomsbury Square, London.

BUSINESS communications—including advertisements, orders for copies of the JOURNAL, and instructions from Subscribers respecting transmission of same—must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London. Cheques and money orders should be made payable to "Street Brothers."

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

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

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

REPRINTS of articles cannot be supplied unless authors communicate with the Editor before publication.

A PHOTOGRAPHIC QUERY.

Sir,—The suggestion that the darkening of a pigment containing zinc sulphide is due in any way to, or can be proof of, the existence of x -rays in sunlight is surely on a par with the statement that the darkening of silver chloride is due to x -rays. The light sensitiveness of some zinc salts have been known since 1801, when Professor H. F. Link, of Bost. ck, discovered the darkening of zinc oxide ('Ueber die Natur des Lichtes,' St. Petersburg, 1808). This was ascribed by Phipson (*Chem. News.*, vol. 43, p. 283; vol. 44, p. 73), to a new element "Actinum," the sulphide of which was darkened in sunlight, being reduced, but again became bright by oxidation in the dark. The light sensitiveness of zinc sulphide has also been confirmed within the last two years, although I am at present unable to lay my hand upon the exact reference, in consequence of having lent several books.

With regard to Mr. Nicol's curious experience, it is a little difficult to see how this can be a proof of the existence of x -rays in ordinary sunlight, unless they have the power of destroying the reflective properties of electro-plate on ordinary daylight, because one would naturally suppose that the teapot was polished, and therefore would be in the proper condition to reflect ordinary light. Surely, too, the conditions are not such as to allow us to assume for one minute that the absence of the teapot is a proof of x -rays, for presumably the camera must have been between the sitter and the light, which is the reverse to the usual way of obtaining radiographs.

The facts are these, a lady sits at a table brilliantly illuminated, and holding an electro-plated teapot, the camera must have been facing her either directly or at an angle. The lens saw through the teapot, therefore the x -rays must have proceeded from the lace and ornaments. One naturally asks was the hand visible? In the first place x -rays can only be very faintly reflected from brilliantly polished mirrors, therefore, the x -rays in the sunlight could not presumably have been reflected from the lace and ornaments. Further the x -rays cannot be reflected, hence they could not form an image of the lace and ornaments.

Your correspondent asks for an explanation, but it is impossible to hazard a guess without seeing a print.

London, June 15, 1896.

E. J. WALL.

THE SOCIETY AND ITS MEMBERS.

Sir,—You would have heard from me earlier but that I have been on holiday. Confirmatory evidence of the need for members of the Society to study procedure in the conduct of public business is supplied by the second letter of Mr. Coull (*ante*, p. 479). I am sorry our friend should have regarded my letter as a personal attack upon himself, which was not so intended, and that he should have retaliated under the impulse of passion, as his letter but too plainly

indicates. Under the circumstances it is easy to pass over what is personal and offensive in his and to dismiss altogether the idea of a "personal squabble."

I would point out that the North British Executive is neither more nor less than an assistant to the Council in conducting its North British Branch concern, and also that the "extraordinary question" I referred to is the one contained in Mr. Coull's former letter to you.

The subject he is driving at is that which he describes as "a manifest injustice" to Minor candidates in London. There is no suggestion of the injustice having been extended to candidates in Edinburgh. Not being in possession of evidence of facts in this case of "manifest injustice," I naturally have refrained from expressing any opinion upon it. Notwithstanding all Mr. Coull has said, it cannot be permissible for an assistant in a branch to interfere with a principal in his management of the affairs at headquarters, and in like manner it would be altogether out of place for the North British Executive to interfere with affairs of the Council in London. Since it is now known by members of Council that a grievance is alleged, we may expect it to be properly investigated and the wrong righted, if wrong there be. Since the allegation has been publicly made, it is to be hoped the result will also be made public.

Each one has his own ideas as to the reason for the Society being less popular and less effective than it might be, and people, as a rule, prefer to think themselves right and others wrong. In reality there must be many reasons to account for the condition, and there may be truth in the reason of each. Probably, one great reason for lack of interest is the great labour it takes to move our brethren in the direction we wish, and consequently comes inertia, the result of despair.

Members are babbling over with complaints, but get disgusted because the evils they complain of are not remedied. But do they use the proper means of remedy? In ordinary walking we take step after step towards where we would be at, and go by the most direct route, if time be a consideration and we mean business. Steps are not the end, but only means to the end in view. A company with baggage moves more slowly and requires a broader road. So with the Society's affairs. Discussion and its accompaniments are steps, but not necessarily steps in the right direction. Running to and fro or even backward movements are likely enough where folks do not know their way. Are even the functions of the Council, of the Executive, of District Secretaries, and of officials generally understood by the Society's members? Most emphatically I say no! And, if unable to define functions, need there be surprise at the blundering and nothingness resulting from the blind strugglings to get these somethings set in motion towards acquiring their desires? Indeed, sir, I would that members were lashed with lectures upon procedure and the means at their disposal to help themselves. Most of their brilliant ideas are lost for want of being directed aright. Every one of the members could be of real service, especially at particular times as, for instance, when a measure in which we are interested is before Parliament. It might easily be made possible not only for a circular letter to be sent to every Member of Parliament but for each to receive private letters from every chemist in his constituency at crucial moments on the signal being given by Council. Local Associations are right enough and should be fully used, but to the Society we look for full organisation of the pharmaceutical forces.

In the past the Society has been woefully weak in this respect, and though it may be uphill work, I appeal to members of Council to make it their immediate and earnest purpose to train the Society's members and to organise the body so as to make it an influence which can be brought to bear all over the country on the word being given.

Glasgow, June 22, 1896.

J. ANDERSON RUSSELL.

LIQUOR BISMUTHI ET AMMONIÆ CITRATIS.

Sir,—Although attention has already been called to the fact that the official solution of bismuth behaves differently with sodium bicarbonate to that of the 1867 Pharmacopœia, I think a little more may be said with advantage.

Quite recently a good deal of trouble was caused by a mixture containing liquor bismuthi et ammon. cit., with sodii bicarb., acid. hydrocyan. dilut., sp. chloroformi, and water, sent to a lady by her medical man in London from his own surgery. It was perfectly clear and the medical man declared that her chemist here ought to be able to make it the same. The injurious imputation upon the chemist's milky mixture was that his drugs were impure. Obtain

ing the doctor's address through the kindness of the patient's husband, I respectfully asked his ruling on the subject, submitting samples of mixtures made with liquor bismuthi—my own make—and with Schacht's—both milky. He courteously replied, sending a sample of his mixture—quite clear—and naming the source from which his drugs were obtained.

I asked the further favour of a small quantity of the liquor he used, saying that I attributed the difference to that ingredient. A two-ounce vial reached me, with an explanation that he always had it mixed for him with 3 drops of acid. hydrocyanic dil. to the fluid drachm. This may account for the sp. gr. 1.115 being slightly lower than that of the B.P. 1867, viz, 1.122, but I have no doubt that it was prepared by that formula. Comparing the two ounces of citric acid then used to the pint of liquor, with the 380 grains contained in the 800 grains of citrate of bismuth which are used to make a like quantity in the present Pharmacopœia, it will appear that 130 per cent. more citrate of ammonium exists in the older preparation. And I found that by adding $3\frac{1}{2}$ fluid drachms of liquor ammoniæ citr. to 1 fluid ounce of liq. bismuthi et ammonii cit., a liquor was obtained which, used in proper proportions, gave a perfectly clear mixture. Of course, a fourth of that quantity of the liq. am. cit. fortior would answer. The Pharmacopœia records as an alteration of name—ammonii *vice* ammoniæ citratis, but omits the change of composition, which is, perhaps, of more practical importance.

It is curious that no such precipitation occurs with potassium bicarbonate as with the sodium salt. My correspondence with the prescriber closed as follows:—"What I wish to press upon your attention is that while a medical man is perfectly unfettered in his choice of remedies, a dispensing chemist has no alternative but to dispense the official preparations in filling a prescription; unless the prescriber will be good enough to indicate the particular kind which he desires to employ."

Dover, June 23, 1896.

J. F. BROWN.

LEMON SYRUP—A CAUTION!

Sir,—In last week's *Success* is a receipt for lemon syrup. The ingredients include lump sugar and "oxalic" acid. Lest there should be any mistake about it, oxalic acid is repeated in the directions for mixing. This is in a prize competition, too! *Caveat lector!* This is the "prize" of many of those amateur recipes in weekly papers.

Lowestoft, June 22, 1896.

A. H. HINDE.

ANSWERS TO QUERIES.

[Queries addressed to the "Editorial Department, 17, Bloomsbury Square, W.C.," will be replied to in the Journal as early as possible after receipt, but the Editor cannot undertake to reply to them through the post, nor is it always possible to publish answers the same week. Questions on different subjects should be written on separate slips of paper, each of which should bear the sender's name or initials. Readers requiring working formulæ for special preparations, and intimating their wants to the Editor, will be assisted as far as may be practicable. The word "parts," when used in formulæ, invariably indicates parts by weight.]

ELEMENTARY PHOTOGRAPHY.—There is no work on elementary photography which treats it from a chemical standpoint and explains the various reactions. The best book on the chemistry of the subject is Meldola's 'Chemistry of Photography'; a careful study of this, backed up by Leaper's 'First Principles of Photography,' and his 'Materia Photographica,' should make anyone thoroughly *au fait* on the subject. [Reply to HYDROQUINONE.]

INSOLUBLE COLOURED GELATIN.—There would be considerable difficulty in chromatising gelatin coloured with coal-tar colours, because the colour is in many cases discharged or altered by exposure to light in the presence of a chromate salt. On the other hand it is very easy to try the effect by immersion of a slip of the coloured gelatin in a 3 per cent. solution of potassium bichromate, rendered alkaline with liq. ammoniæ for three minutes, then drying and exposing to light. There is the difficulty that the long washing required to remove the chromate salts would probably remove the colour also. It would be preferable to chromatise plain gelatin, expose to light, well wash, and then soak in solution of the desired colour and dry, or even better than this would be to

try the addition of some formic aldehyde—about 5 per cent. of the commercial 40 per cent. formalin—to the gelatin and colour, and then allow to dry. Gelatin treated with formalin will resist boiling water, but whether the formic aldehyde would attack the various colours is a question we cannot answer. [Reply to J. ROBB.]

POWDER MEASURING APPARATUS.—The apparatus described and illustrated in the Journal for February 1, page 90, is supplied by Fr. Hausmann, Hechtapotheke, Goliathgasse, St. Gallen, Switzerland. [Reply to J. A.]

PLANTS IDENTIFIED.—The specimens are (1) *Ranunculus flammula*, (2) *Linum cathartica*, (3) *Galium saxatile*, (4) *Veronica officinalis*, (5) *Vicia cracca*. [Reply to "SECUNDUS."]

LITHIA WATER IN SYPHONS.—The best method is to put the lithium carbonate in the water before aerating it. The exact method of doing this depends upon the kind of machine employed. Another way, if only a few syphons are required, is to make a solution of the carbonate in the least possible quantity of water, and inject the required quantity of solution into each syphon before filling with aerated water. Special hand syringes to do this are supplied by makers of aerated water machinery. They can be obtained to hold about $3\frac{1}{2}$ ozs. of solution, which is sufficient to take up the 15 grs. of lithium carbonate required for an ordinary 30 oz. syphon of B.P. lithia water. [Reply to H. S.]

STORAGE OF BENZINE.—The Petroleum Acts require benzine to be kept in separate glass, earthenware, or metal vessels, each of which contains not more than one pint, and is securely stopped. The aggregate amount so kept must not exceed three gallons. If these conditions are observed no licence is required. It is not permissible to retail the spirit "loose" in small quantities, but there does not appear to be any objection to putting up small bottles for retail sale so long as you leave none in bottles that are not securely stopped. [Reply to F. B.]

THE SO-CALLED "WIDOW'S" CLAUSE.—No mention is made of widows in Section xvi. of the Pharmacy Act, 1868, which simply specifies that upon the decease of any pharmaceutical chemist or chemist and druggist, actually in business at the time of his death, it shall be lawful for any executor, administrator, or trustee of the estate to conduct such business, if and so long only as such business shall be *bond fide* conducted by a duly qualified assistant. [Reply to J. N. F.]

SPECIMENS OF CAREX.—These are (1) *Carex binervis*; (2) *C. vesicaria*; (3 and 4) *C. glauca*; (5) *C. remota*; (6) *C. flava*; (7) *C. stellulata*. [Reply to "ASSOCIATE."]

NAME OF PLANT.—It is apparently a specimen of *Galega orientalis*, but please send a specimen in fruit. [Reply to I. F. J. RODGERS.]

MORPHINE SOLUTIONS.—We cannot spare further space for your communications on this subject, but have handed them over to the Editor of the 'British Pharmacopœia.' [Reply to G. W. BLYTHE.]

"ONE OF THEM."—Please supply your correct name and address, as a letter sent to the address given has been returned, marked "not known."

PUBLISHERS' NOTICE.

COVERS FOR BINDING.

CLOTH gilt lettered covers for binding the half-yearly volumes of the *Pharmaceutical Journal* are supplied by the Publishers.

THE charge, including postage, is 1s. 6d. each, and should be re-mitted to the Publishers, 5, Serle Street, London, W.C.

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs. Allen, Atkinson, Blythe, Botham, Brodribb, Brown, Bussemer, Clay, Faulkner, Gippen, Harrison, Heanley, Hinde, Holt, Hooper, Hudson, Lancaster, Maiden, Martindale, Naylor, Parker, Price, Reeve, Rodgers, Russell, Salter, Saunders, Schneider, Umney, White, Whitehead, and Wright.

SUPPLEMENT

TO THE

PHARMACEUTICAL JOURNAL.

ROYAL INSTITUTION.

SOUND, HEARING, AND SPEECH.

On December 31, Mr. J. Gray M'Kendrick gave an address at the Royal Institution on "Some of the Phenomena of Sound." He described, and illustrated by means of scientific apparatus, Graham's mode of adapting the use of the microphone to enlarged telephones, and showed how, by means of electrical arrangements, musical sounds were capable of being produced. He then pointed out that the results thus educed contained the germs of a possible musical electrical instrument, which might be made entirely independent of any of the mechanical methods ordinarily applicable to the musical instruments at present known to the world. The conception of sound was, he explained, very much like the conception of pressure, the ear being actuated by the vibratory motion of the air, in the same way as the sense of touch was affected by contact with a definite and solid object. In the case of sound, it was, he stated, the rapidity of the vibratory movement which determined the loudness or otherwise of what sensation was received by the ear, the delicacy of which natural organ enabled it to record the impressions made by the wave sounds of the telephonic diaphragm to the extent of only two-millionths of an inch. One of the great peculiarities of sound was to be found in the character of its pitch, which was governed (as the lecturer showed by experiments) by the number of vibrations per second, the lowest audible note to be obtained from any instrument giving 32 vibrations per second; whilst the highest, which was that of the organ, gave 32,000. The lowest pitch of the human voice was put at 45 vibrations per second, while the highest soprano note yielded 720 vibrations. It was a fact well known to musicians that each instrument had its own pitch. The uses and powers of the micro-telephone were illustrated at the close of the lecture by the production of a number of pieces of concerted and vocal music, and the audience seemed to be listening to orchestras and human voices in the immediate vicinity of the lecture-hall.

TRADE NOTES AND NEWS.

APOLLINARIS WATER AT OSBORNE—In an article published in the *St. James's Gazette*, entitled "Yule-Tide at Osborne," one of the Royal Christmas menus is given. At the end of the wine list, it is stated that Balmoral whisky and Apollinaris are provided for the use of Her Majesty the Queen, "who takes nothing else."

THE LIQUOR CARNIS COMPANY has just published for the use of travellers selling the firm's goods a folding cloth case containing illustrations of the different foods manufactured at Aston Clinton, Bucks. Any reader requiring one should apply to the

Company. Another recent publication is 'Our Treasures and How to Keep Them,' dealing mainly with the value of fat as represented by "Virol," in infant feeding. Copies of this booklet are also sent free on application.

KEITH LONGSTAFF, of Fulham, S.W., sends specimens of his advertising literature, which seem well adapted to serve the desired purpose. Especially attractive to many readers will be the small book in which are recorded the impressions of a visit to Munster House, Fulham, formerly a hunting seat of Charles II., but now a private lunatic asylum, Nell Gwynne's Bower in the garden being converted into a mortuary.

Mr. DONALD WATSON, who for thirty-five years was connected with the firm of Johnson and Sons, the well-known makers of silver nitrate and other fine chemicals, has now joined Messrs. Fuerst Brothers, Philpot Lane, E.C.

THE CHEMICAL TRADE ON TEESIDE.—The negotiations by which Messrs. Brunner, Mond, and Co. acquire the soda works of Messrs. Bell Bros. (Limited) have been completed. The purchase includes a considerable tract of land, upon which Messrs. Brunner, Mond, and Co. will erect an extensive plant for the manufacture of soda. It is anticipated that the new works may be in operation by the end of 1896, or early in 1897. Some little time may elapse before they take actual possession of the soda works at Clarence, but for practical purposes the property becomes theirs tomorrow. It is stated that Alderman Hugh Bell joins the board of Messrs. Brunner, Mond, and Co.

THE ELEMENT OF LUCK IN PHOTOGRAPHY.*

Undoubtedly, the element of chance plays a more important part in the making of pictures by photography than it does in any other artistic pursuit. And herein lies a certain encouragement for the beginner and for the amateur.

If the untrained man is to play against the expert, he will obviously stand a better chance of holding his own in the throwing of dice or in the whirling of the rouge et noir wheel, than he will at such games, let us say, as billiards or chess. Similar comparisons may be made in respect to the formative arts. A happy combination of line or of mass may present itself to our view at an unexpected moment, and be portrayed and perpetuated by a single touch upon the button of the hand camera. On the other hand the painter and the sculptor labour for the attainment of their ideals with much less hope of assistance from the Goddess of Fortune. Hence it follows that, whilst but few of us can be even tolerable painters, most of us can become excellent photographers.

In landscape, for instance, Nature displays her beauties in an altogether impartial way, and dresses up her scenic effects of sunset and storm, of cloud-wreathed mountain and glittering sea, for all who will trouble them-

selves to give her their attention. These effects are always more or less fleeting; they may last but a few moments, and they may present themselves from but a single point of view. Now, before putting hand to work, the painter is obliged to absorb, as it were, all this into his very being. It is from the depths of his own inner consciousness that, as he stands for days before his easel, he laboriously transfers his impressions to canvas. In the sweep of the brush there is but little left to chance—and what little in the way of luck there may be is rather liable to frustrate than to further the intentions of the artist. "Alas," says the painter in Emilia Galotti, "that we cannot paint with our eyes, without intermediation! On that long way, from the eye, through the arm, to the brush, how much is there not lost?"

The more fortunate photographer, though his subjective impressions need not in themselves be so deep or so enduring, may secure his picture complete and perfect at the instant of exposure. The wreathed clouds, the shifting of the light and shade, even the uplifted waves of the sea, stand still for him, for that instant in which the shutter is passed before the lens. During the century which has elapsed since Lessing wrote, the desire of the poet's dream has become in great measure a reality.

That hard-headed collective wisdom of experience which manifests itself as public opinion and popular tendency knows this well. It is owing to a recognition of the fact that even the duffer may, by sheer chance, do an admirable thing in the photographic way that thousands and thousands take up with photography where but tens resort to sketching in water colours.

Art in photography is, indeed, almost entirely a matter of selection of subject. And, as he that goes farthest afield will see the most, so will he that is always accompanied by his camera, as by an artistic note book, secure, together with the most numerous, the most beautiful pictures, as well as the most interesting records. It is here that the veriest beginner will stand an almost equal chance with the most experienced professional. Let him but select with taste; in the way of accurate delineation his Kodak will do the rest.

What better proof could we desire of the fact that photography is largely a matter of luck than the constant complaints which the amateur makes against his camera, putting the fault of everything gone wrong upon that willing servant, who never retaliates, and who with half-way decent treatment, will do so much for him. It is merely the old story of the gambler cursing his luck—in our case a good, black, one-eyed genius "clothed all in leather."

There is, curiously enough, a decided element of favourable chance even in those often unpredictable transmutations to which photography subjects actinic values. The eminent photographer who so lately won the exhibition gold medal with his poetical "Moonlight on the Skedunk River," has confessed to his intimates that the negative was one of two careless snap-shots, decidedly under-exposed, made rather late in the afternoon, as the clouds were balling together after a rain, and the sun was making a discouraged attempt to shine on the dripping banks. After all, it does not detract from the beauty or the attractiveness of such pic-

* From *The Kodak News*.

tures to know that they were flukes, or that they were made first and named afterwards.

It is, however, in the portrayal of the fleeting emotions of the human face that luck—or if one prefer so to call it, opportunity—is well-nigh everything. In this field the home photographer has the real chances. His favourite subjects are depicted amidst their wonted-surroundings; in their everyday garb and characteristic postures. The shutter of his Kodak is kept set, for days if need be, until the opportune moment can be seized. And then, when years have gone by, appreciative ones say: "What a piece of luck to have caught just that expression!"

MARKET REPORT.

[Specially compiled for the *Pharmaceutical Journal*.]

[The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.]

LONDON, JANUARY 2, 1895.

There is but little to report in the chemical market this week, and the holidays have naturally interfered considerably with the course of business. The carbolic acid market remain very firm, and the prices of crystals and crude acid have again advanced. On the other hand, benzole has declined considerably. The makers of citric acid have lowered their prices, whilst tartaric acid is firm. Cream of tartar is unchanged on the spot, but for shipment to-day's quotations are firmer. Acetanilide is very firm, whilst the position of phenacetin is now attracting a good deal of attention, but it is extremely unlikely that the rumours of high prices will come to anything. Of other fine chemicals, chrysophanic acid is very firm, quinine is quiet, and sugar of milk and santolin are firm. In the drug market gentian root is very scarce. Full prices have been paid for galangal root, and Peruvian balsam is dearer. A good business continues to be done in most grades of Turkey opium, whilst Persian is firmly held. In the essential oil market star anise and cassia oils are firm. Japan peppermint oils are quiet, and cinnamon leaf oil is firmly held. Full details will be found below:—

ACACIA.—In *Persian* so-called insoluble gum a moderate business only has been done, but the market is steady. Fair sorts quote at 12s. 6d. to 13s. 6d., and fine pale at 20s. per cwt.

ACETANILIDE.—The market remains very firm. The prices generally quoted are 1s. 3d. to 1s. 4d. per lb., although it would still be possible to buy at 1s. 2d. per lb.

ACID, CARBOLIC.—The market is very firm and, a good demand for *Crystals* continuing, prices have been further advanced. The current quotations are now as follows:—*Crystals*: 34° to 35° C., 6½d.; 39° to 40° C., 7¼d.; 39° to 40° C. (*detached crystals*), 8¼d. per

lb. *Crude*: Dearer. 60 per cent. is now quoted at 1s. 9d. and 75 per cent. at 2s. 1d. per gallon. *Liquefied* and *creosylic* are unchanged at 1s. 1d., and 11½d. per gallon.

ACID CHRYSOPHANIC.—Continues very firmly held. For small quantities one of the *English* makers asks 24s. per lb. There is little or none to be had under 22s. for quantities of 28 lbs. The scarcity of good quality *Goa powder* continues.

ACID, CITRIC.—Since our last report the makers of *English* acid have lowered their price in consequence of second-hand cutting. They now quote 1s. 2½d. per lb., whilst second-hand holders offer at 1s. 2d. *Concentrated juice* still offers at £13 5s. to £13 10s. per pipe *f.o.b.*

ACID, TARTARIC.—Quiet, with but little inquiry. For *English* brands of acid in makers' hands, the spot price is still 1s. 2d. per lb., whilst for second-hand, 1s. 1¾d. would be accepted. *Foreign* brands of acid (not guaranteed B.P.) quote at 1s. 1¾d. for both *powder* and *crystals*, and for delivery, 1s. 1¾d. per lb. *c.i.f.* terms.

AMMONIA SALTS.—*Sulphate*: Rather firmer, although quotations are unchanged, £8 12s. 6d. being the price for grey 24 per cent. on the spot; £8 11s. 3d. for *Hull*, and £9 for *Berkton*. *Carbonate*: 3½d. to 3¾d. per lb. *Liquor*: 3¾d. to 3½d. per lb., less 5 per cent. *Sal ammoniac*: Firsts, 39s.; seconds, 37s.

ARSENIC.—Very firm at £15 15s. to £16 per ton for best white *powder*, landed terms.

CAFFEINE.—There is no change to record in the position of this article, which is quoted at 18s. to 19s. per lb., according to quantity.

CAMPHOR (CRUDE).—There has been little or no business doing, and quotations are nominally 177s. 6d. for *China*, and 185s. for *Japan*, *c.i.f.* terms.

CAMPHOR (REFINED).—During the last few days it has been expected that an advance would take place in *German* camphor, but nothing has yet transpired, although it may occur at any time. At present *German* refiners quote bells in quantities of one ton or more, 2s. 1½d.; half to one ton, 2s. 2d.; and 5 to 10 cwt., 2s. 2½d. per lb., with second-hand quotations ½d. per lb. less.

CASCARA SAGRADA.—Rather firmer. The current spot quotation is 18s. to 20s. per cwt.

COAL DISTILLATION PRODUCTS.—*Benzole*: Much easier. For 50 per cent. 1s. 11d. per gallon would now be accepted, and for 90 per cent. 2s. 3d. *Toluol*: Unchanged at 2s. 4d. per gallon for *pure*. *Creosote*: Steady at 1½d. per gallon. *Crude Naphtha*: 30 per cent. at 120° C. quotes at 9d. per gallon. *Solvent Naphtha*: Easier. 95 per cent. at 160° C. at 1s. 7d., 90 per cent. at 160° C. at 1s. 2½d., and 90 per cent. at 190° C. at 1s. 0½d. per gallon. *Anthracene*: 13A, 11½d.; B, 10d. per unit. *Pitch*: 37s. per ton *f.o.b.* *Tar*: 12s. 9d. per barrel for *refined*.

COPPER SULPHATE.—Continues to tend lower. On the spot, £15 5s. to £16 10s. is now quoted, the latter price being for the *Anchor* brand.

CREAM OF TARTAR.—Firm. *German* brands of powder are now quoted on the spot at 95s. to 97s. per cwt., whilst best white *French* crystals offer at 92s. 6d. For shipment the market is firmer, and 89s. to 90s. per cwt., *f.o.b.*, Bordeaux, is asked.

GALANGAL.—The supply of good quality root on the spot is very small. Since our last report 22s. 6d. per cwt. has been paid privately for root from *Hong Kong*.

GENTIAN ROOT.—There is very little to be had on the spot, and the supplies to come forward are very small. The nearest spot price is 16s. to 17s. per cwt.

MENTHOL.—Quiet. The spot price is 14s. 3d. to 14s. 6d. per lb. for good white *crystals*, whilst for shipment 14s., *c.i.f.*, is quoted.

OIL (COD LIVER).—The market remains very firm. The current quotations for fine non-congealing *Norwegian* oil is 180s. to 200s. per barrel. *Newfoundland* oil sells at 5s. to 5s. 3d. per gallon.

OILS (ESSENTIAL).—Reports from *China* state that the essential oil market continues very firm. *Star Anise* oil is still very scarce, whilst the supplies of *cassia* oil, which are only small, are said to be of somewhat better quality than those received recently. On the spot *Star Anise* oil is firm at 10s. 3d. per lb. During the past week bids of 10s. 1½d. per lb. have been refused. *Cassia* oil is also firm, 82 per cent. aldehyde strength oil being held for 11s. 6d., whilst 10s. is quoted for oil testing 65 per cent. *Lemon-grass* oil is firm at 2¼d. per oz. on the spot, whilst 2s. 1d. is now asked for *citronella* oil. Of *Peppermint* oils, *H. G. Hotchkiss'* brand is steady at 10s. 1½d. to 10s. 3d., on the other hand, *Japanese* oil is easier, 40 per cent. oil being offered at 8s. 6d., and *dementholised* at 6s. 6d. per lb. *Cinnamon leaf* oil is held for 5½d. per oz., whilst *Russian aniseed* oil is held for 9s. per lb.

OILS (FIXED) AND SPIRITS.—*Castor*: *Italian* oil is very firm at 30s. to 30s. 6d. per cwt., *c.i.f.*, for fine tasteless oil. *French medicinal* oil quotes at 3½d. to 3¾d. per lb. in tins (packed in cases), and *Calcutta* at 2¾d. to 2½d. for firsts and 2¾d. to 2½d. for seconds. *Cotton*: Slow of sale at a decline. *Refined* oil now quotes at £16 10s. to £17 5s., according to brand and package. *Coco nut*. The market is very firm, Ceylon being fully steady at £22 15s., whilst *Cochin* is dearer at £25 10s. *Linseed*: The market is very firm, and prices have advanced, oil in barrels being now quoted at £20 5s. *Olive*; *Syrian* quotes at £33; *Spanish*, £34. *Palm*: *Lagos* quotes at £22 10s. on the spot. *Turpentine*: Rather quiet and easier in price. *American* spirit being now quoted at 20s. 6d. on the spot. *Petroleum*: Slow of sale at a fall, *American* oil being now quoted at 6¼d. to 6½d.; *water white*, 8d. to 8¼d., and *Russian* at 6½d. to 6¾d. per gallon.

OPIUM ALKALOIDS.—The market is very firm, but no further change has occurred in the quotations. *Morphine* quotes at 4s. 3d. per oz. for *powder* in 10,000 oz. lots, whilst 2d. per oz. more is asked for *crystals*. *Codeine* quotes at 10s. 6d. per oz. in 100 oz. lots.

OPIUM.—The market continues very firm, and a good all-round inquiry is still shown, the following being the current quotations:—*Turkish*: *Soft shipping*, 10s. 9d. to 12s. 9d.; *Symrna*, 8s. to 9s.; *Constantinople*, 8s. 6d. to 9s. 6d.; *Druggists' Seconds*, 7s. 6d. to 8s. 6d. The market in *Persian* opium continues very firm, and fine *bricks* are held for 13s. 6d. per lb., but little or no business has been done. *Ordinary ball* quotes at 11s. to 12s. 6d. per lb.

PHENACETIN.—This article is attracting a good deal of attention at present, and all sorts of rumours are flying about concerning it. These seem to be due to the action taken by the Elberfeld manufacturers, who have registered the name in Germany, and a strong attempt is being made to run the price up, but whether it will come to anything is very uncertain. *Bayer's*, whose brand of phenacetin is one which has a strong hold, have recently issued three circulars concerning the position of this article, to the trade.

QUICKSILVER.—*Importers'* still quote £7 7s. 6d. per bottle, whilst in second-hand £7 5s. 6d. is asked.

QUININE SULPHATE.—The market remains quiet, with little or no business doing. Quotations for *B. & S.* and *Brunswick* remain 1s. 1½d. per oz.

SENEGA ROOT.—The current spot quotation is 1s. 3d. per lb. for good sound root.

SPERMACEITI.—The market is firm, and good refined *American* is quoted at 1s. 9d. per lb. on the spot.

WAX (JAPAN)—Very firm. Privately 30s. has been paid for good pale *squares*, and 32s. per cwt. is now asked.

SNAP SHOTS AND THE HAND CAMERA.

BY GORDON PARKER, WOBURN, MASS.

All dust-covered and neglected, the implements used in early efforts mark the course of advancement in our chosen lines of work and pleasure. The advanced amateur has forgotten the hand camera of his first steps in photography, or only remembers it to remark, "I did that once," as he meets the snap-shotting fiend everywhere wandering up and down the land.

But great strides have been taken in the manufacture of hand cameras and all the accessories, and the work that is possible, and the results that are obtained by the successful snap-shotter of to-day are alike a credit to him and his instrument and a wonder to all.

A hand camera should be a part of every amateur's outfit. Such an instrument could have been used to advantage the day of the Knights Templar parade in Boston, where a large tripod camera was useless and heavy baggage.

The qualifications necessary in the successful use of the camera are, a quick eye, judgment of distance, some idea of composition, courage, and a steady nerve. Possessed of these you can go anywhere it is right to go, and come away with good proof of your trip.

The film, a bugbear to many, is really the meat of the hand camera. You can do nothing with plates that can not be duplicated with the film. You can carry more of them, make the changes quicker, and consequently get more exposures. The small universal-focus, film and plate carrying cameras of recent manufacture answer all requirements and have many advantages.

We dress our windows to attract attention, and while our wares are capable of arrangements pleasing to the eye, the novelty wears away with repetition. It must have been observed how quickly pictures catch the eye and stop the feet. People are interested, study the display, smile, stop again as they return your way, and ask their friends if they have seen the pictures in

your window. It is something your neighbour cannot exactly duplicate. The negatives, the prints, the display is wholly your own, and a little intelligent talk, when the customer comes in, about the pictures, and the making of pictures, interests and pleases him.

Now the hand camera and snap-shot make this nearer and easier to you than the tripod and the larger box, because a larger variety can be shown. Some of the pictures can only be obtained that way; you come nearer to the great majority of picture takers. You can send your clerk, your family, your out-of-work friend off for what will interest them in obtaining and profit you in having; it will make trade for you in photographic material, and it comes nearest to the desired result of all window display by attracting favourable attention to your store and your goods.—*Spatula.*

PAINTING IRONWORK.

Considering the immense quantity of steel work now erected, the question of the best paint and the best method of applying the same is one of very great importance. In this country the choice usually lies between an iron oxide or a lead paint, both having a good record. Some links in the anchorage of the old Hammersmith suspension bridge were found in a perfect state of preservation when removed to the Forth Bridge, where they were employed for some of the temporary work. The pigment in this case was white lead, though ordinarily this has a bad reputation for this class of work. In America so-called asphaltum paints have also come largely into use, and in a recent communication to the American Society of Civil Engineers, Mr. E. Gerber gives the results of a careful investigation into the present state of a number of bridges which had been painted with one of the above three classes of paint. In all cases rust was found to a greater or less extent, occurring always in spots in the centre of clean metal. Most of this was thin, and was as bad in new structures as in old. It was, however, found that the iron oxide paints adhered more firmly to the metal than the lead paints, only one case being found in which the latter adhered well and was tough. It is suggested that much of this brittleness was due to adulteration of the oil by turpentine, benzene, or other petroleum products. There is more likelihood of such adulteration with lead paints than with iron oxide, as they are more difficult to spread, and there is thus more temptation to dilute the oil. In some cases, bridges coated with iron oxide eleven or twelve years ago were still in good condition, without having been repainted. Only two of the bridges examined had been painted with carbon or asphaltum paints, but the condition of things in these two cases was found to be not altogether satisfactory, as in neither case was the coating tough and adherent. The metal had, however been protected by them. Mr. Gerber considers that too little attention has, in the past, been paid to thoroughly cleaning the metal before the first coat of paint is applied. Most of the rust spots found had apparently been there from the outset, and had done no harm so long as not too far advanced. The best plan of securing clean surfaces, in

Mr. Gerber's opinion, would be to coat the metal with linseed oil as it left the rolls.—*Engineering.*

PATENT OFFICE BUSINESS.

APPLICATIONS FOR PATENTS.

[From the *Illustrated Official Journal.*]

No. 17,336.—Improvements relating to bottle stoppers, medicine time indicators and measures, and temperature charts. September 17.

No. 17,338.—Improvements in truss pads. September 17.

No. 17,351.—A process for the preparation of camphor in the condition of powder. September 17.

No. 17,353.—Improvements in tooth brushes. September 17.

No. 17,417.—The manufacture or production of pharmaceutical compounds. September 18.

No. 17,429.—An improved arm bandage, more particularly for children. September 18.

No. 17,517.—Improvements in medicinal washes and lotions. September 19.

NEW BOOKS AND NEW EDITIONS.

[Publishers are requested to send particulars of new publications, addressed "Editor, 17, Bloomsbury Square, W.C."]

A MANUAL OF PHYSICS: being an Introduction to the Study of Physical Science. Designed for the use of University Students and Advanced Classes in Secondary Schools. By W. PEDDIE. 2nd edit. Revised and enlarged. Cr. 8vo., pp. 590. Price 7s. 6d. (University Series.) (Baillière, Tindall and Cox, London.)

EVENINGS AT THE MICROSCOPE; or, Researches Among the Minuter Organs and Forms of Animal Life. By P. H. GOSSE. A new edition revised by T. Jeffrey Bell. Cr. 8vo., pp. 448. Price 5s. (S.P.C.K., London.)

PRACTICAL INORGANIC CHEMISTRY. By G. S. TURPIN. Cr. 8vo., pp. 164. Price 2s. 6d. (Macmillan and Co., London.)

A CODE OF MEDICAL ETHICS: with General and Special Rules for the Guidance of the Faculty and the Public. By J. DE STYRAP. 4th ed., revised and enlarged, 8vo., pp. 104. Price 3s. 6d. net. (H. K. Lewis, London.)

A SYSTEM OF LEGAL MEDICINE. By A. McL. HAMILTON, L. GODKIN, and J. F. BABCOCK. Illustrated. 2 vols., 8vo. Price 60s. (Rebman, London.)

A SMALLER ATLAS OF ILLUSTRATIONS OF CLINICAL SURGERY, consisting of 136 plates with descriptive letterpress. By J. HUTCHINSON. 8vo., pp. 552. Price 31s. 6d. net. (West and N.)

MOLECULES AND THE MOLECULAR THEORY OF MATTER. By A. D. RISTEEN. Illustrated. 8vo. (Boston). Price 9s. (Sampson Low and Co., London.)

METHODS OF MICROSCOPICAL RESEARCH: a Practical Guide to Microscopical Manipulation. 2nd edit., much enlarged and in great part rewritten. By ARTHUR C. COLE. 8vo., pp. 216. Price 6s. (Baillière, Tindall and Cox., London.)

THE STRUCTURE AND DEVELOPMENT OF THE MOSES AND FERNS (ARCHEGONIAE.) By D. H. CAMPBELL. 8vo., pp. 552. Price 14s. net. (Macmillan and Co., London.)

THE STUDENT'S GUIDE TO PRACTICAL THERAPEUTICS. By A. WHEELER. Cr. 8vo. (Bryce, Edinburgh). Pp. 254. Price 5s. net. (Simpkin, Marshall and Co., London.)

LIVERPOOL MARKET REPORT.

[From our own Correspondent.]

JANUARY 1, 1896.

CANARY SEED: *Turkish* in slight demand at 33s. LINSEED: *Turkish*, 34s. 6d. to 35s. 6d. KOLA NUTS: 17 packages dried sold at 6d. to 7d. COCHINEAL: *Teneriffe* black sold at late rates. CARNAUBA WAX: 20 bags at 15s. 6d. CASTOR OIL: *Calcutta*, good seconds, 2½d.; *French*, 1st pressure, 2½d. to 2¾d.; *Madras*, 2 7/32d. to 2¼d. OLIVE OIL: Held for recent rates. LINSEED OIL: 20s. 6d. to 21s. 6d. for *Liverpool* makes. COTTON-SEED OIL: 17s. 3d. to 17s. 9d. for *Liverpool* refined. SPIRIT OF TURPENTINE: 21s. 9d. to 22s. for spot parcels. PETROLEUM: *Russian* refined, 7d.; *American*, 7¾d. to 8½d. CREAM OF TARTAR: 93s. spot. POTASH: 21s. 9d. PEARLASH: 37s. 6d. SODA NITRATE: 7s. 7½d. to 7s. 10½d.

PATENT SPECIFICATIONS PUBLISHED.

Vaginal douche (Rains, R. H.).—The instrument consists of a bulbous syringe having a small passage for the injection of the water, etc., into the vagina, and a number of openings passing into a large passage, through which the washings escape to a waste pipe. A clamp is fastened upon the waste pipe during the injection, but is opened when sufficient liquid has been forced in. An inflated annulus round the waste pipe closes the entrance to the vagina, and prevents escape of the waste outside the syringe. No. 20,821 of 1894.

Beverage (Christensen, H., and Hamann, R.).—Skimmed milk or whey is concentrated in vacuo or otherwise, and the firm mass obtained is moulded into pieces similar to coffee beans, followed by drying or roasting in an oven and powdering. The beverage is made from this powder "similarly to coffee." No. 13,886 of 1895.

Oxygen (Lapointe, H. L. A.).—The invention consists in preparing oxygen by the well-known process of alternately heating an alkaline manganate, such as that of soda, in presence of superheated steam and in presence of air. The action of steam on the manganate results in the evolution of oxygen and the reduction of the manganate to a mixture of manganese peroxide and soda, while the heating in air re-oxidises the mixture and reproduces the manganate. The invention refers to improved arrangements by which the action is said to be rendered more efficient, and by which the presence of nitrogen in the oxygen produced is obviated. No. 13,959 of 1895.

Feeding bottles (Woodmancy, W. S.).—Relates to a strap for securing the bottle to the dress of the child. No. 23,914 of 1894.

Crutches (Ward, R. A.).—The pad which comes beneath the wearer's arm is an india-rubber cushion inflated with air, and a solid indiarubber sphere is fitted in a socket at the foot of the crutch. No. 2391 of 1895.

Surgical bandages (Bingler, F.).—A gauze or other fabric is coated with warm glue or gelatine, and when nearly set, is covered with a layer of gypsum or "plaster." It is prepared for use by dipping in hot water. No. 14,601 of 1895.

EXCHANGE.

[For the convenience of readers, suitable notices, not exceeding thirty words in length, are inserted free in this column, if they do not partake of the nature of ordinary advertisements. They must relate to books, apparatus, shop fittings, etc., and arrive not later than Wednesday, addressed "Editorial Department, 17, Bloomsbury Square, W.C."]

OFFERED.

Thomé's 'Botany,' Brown's 'Manual of Assaying,' Taylor on 'Poisons,' Ganot's 'Philosophy,' all new. Muter's 'Analysis.' Will exchange for Green's or Oliver's 'Systematic Botany,' or Vines'—Dixon, 164, Aigburth Road, Liverpool.

Unused Portable Assay Balance, with rider to carry 2 grammes each pan, and turn with 0.1 milligramme, fitted in mahogany case. Price £4 4s.—J. Allen, 1, George Street, Plymouth.

Dispensing scales, new, glass case with sliding front; new hypodermic case containing graduated syringe, three needle-holders, three tubes, screw-stoppered for solutions. Particulars from—Adamson, 12, Russell Street, Southsea.

'Year-Book of Pharmacy,' 1874 to 1892 inclusive, new. What offers.—T. Spencer, Villetta, Drayton Park, Hanwell, London, W.

Blackie's 'Household Physician,' in 14 parts, excellent condition. Cost 28s. What offers?—E. S., 36, Eley Road, Wisbech.

Splendid Complete Mahogany Chemist's Fixtures, with good mirrors and mirrored backs to shelves, recessed labelled bottles and jars (pink). In perfect condition.—Bentley, Chemist, Goole.

Wright's 'Poultry Book,' 18s. 6d.; Orfila's 'Treatment of Persons Who Have Taken Poison,' 2s. 6d.; Liebig's 'Organic and Animal Chemistry,' 2 vols. (published 19s.), 5s. All free.—Davis, "Chestnuts," Gordon Hill, Enfield.

'Euripidis Tragediæ,' Greek, 6 vols., 3s. 6d.; 'Œuvres de Racine,' 4 vols., 2s. 6d.; Heyne's 'Homer,' Greek, 2s. 6d.; Dr. Johnson's 'Dictionary,' 1st octavo edition, 2 vols., 1756.—Davies, 33, Eglinton Road, Bow.

Microscope, 30s.; Minor and other books cheap; Microscopic Slides. Send for list or call and inspect any time.—Burge, 2, Fernhead Road, Harrow Road, W.

'Pharmacographia,' 10s.; 'U.S. Dispensatory,' unbound, in 7 parts, 25s.; Watts' 'Inorganic,' 4s. 6d. All new and latest editions. Carriage paid.—Solazzi, 21, Queen Street, Louth, Lincs.

WANTED.

Green's 'Botany,' Part I. 1895. Lowest offers to Robert L. Morris, care of John H. Fisher, Esq., Chemist, 74, High Street, Dunfermline.

Muter's 'Analytical Chemistry,' 6th edit.; Watts (Tilden) 'Inorganic Chemistry,' last edit.; Wills' 'Volumetric Analysis,' last edit.; Remsen's 'Organic Chemistry,' last edit.; Thorpe's 'Organic Chemistry.'—Smith, 3, Alma Cottages, Plymouth.

Cheap Galvanic Battery and Coil in case, with handles and electrodes; state how long used, kind, and lowest price, carriage paid, to—W., care of Mr. Plattin, chemist, Fakenham, Norfolk.

Second-hand Apparatus for Electrical Experiments. Lowest price to—A. H. Price, 32, Shaftesbury Road, Brighton.

London Pharmacopœia, 1851; 'Proceedings of British Pharmaceutical Conference,' 1864 and 1867.—Liverseege, 292, Rotton Park Road, Birmingham.

Attfield's 'Chemistry,' good condition, lowest price.—Jeffs, Lyddington, Uppingham.

** The attention of readers is directed to the conditions printed at the head of this column. Notices cannot be inserted unless they are in accordance with those conditions.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

SUNDAY, JANUARY 5.

LIVERPOOL SUNDAY SOCIETY, at 3 p.m.

"A Trip to the Austrian Tyrol" (The Dolomites), by Paul Lange.

MONDAY, JANUARY 6.

SOCIETY OF CHEMICAL INDUSTRY (LONDON SECTION), at 8 p.m.

"A Technological Study of Comparative Affinities in the Case of Certain Salts of Ammonia," by Watson Smith.

"Colour Effect of Lime Salts on Hops in Brewing," by J. W. Lovibond.

ROYAL GEOGRAPHICAL SOCIETY, at 8 30 p.m.

"A Journey South Through Somaliland to Lakes Rudolf and Stefanie, and thence to Lamu by the Tana River," by Dr. Donaldson Smith.

TUESDAY, JANUARY 7.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

Benevolent Fund Committee.

Finance Committee.

General Purposes Committee.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.

"Sound, Hearing, and Speech" (experimentally illustrated), by Professor J. G. McKendrick.

WEDNESDAY, JANUARY 8.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

Council Meeting.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION, at 9 p.m.

"Ferments," by F. Casson.

SOCIETY OF ARTS (JUVENILE LECTURES), at 7 p.m.

"Earthquakes, Earth Movements, and Volcanoes," by Professor John Milne.

GEOLOGICAL SOCIETY OF LONDON.

"A Description of the Cenomanian in Western France and the South-West of England," by A. J. Jukes-Browne and William Hill.

"The Llandovery and Associated Rocks of Con-way," by Miss G. L. Elles and Miss M. R. Wood.

"The Gypsum Deposits of Nottinghamshire and Derbyshire," by A. T. Metcalfe.

THURSDAY, JANUARY 9.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.

"Sound, Hearing, and Speech" (experimentally illustrated), by Professor J. G. McKendrick.

CHEMISTS' ASSISTANTS' ASSOCIATION, at 8 p.m.

Smoking Concert at the Frascati Restaurant, Oxford Street, W.

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY.

Annual Dinner.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.

"An Essay on the Microscope," by W. S. Tavener.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION, at 9.15 p.m.

Social Meeting.

FRIDAY, JANUARY 10.

ROYAL ASTRONOMICAL SOCIETY, at 8 p.m.

Ordinary Meeting.

CAMBRIDGE PHARMACEUTICAL ASSOCIATION.

Annual Dinner.

SHEFFIELD MICROSCOPICAL SOCIETY, at 8 p.m.

"Filamentous Algae," by R. B. Greaves.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION, at 9.15 p.m.

"Pharmacy Notes," by W. Lyon.

"Random Notes from Macquer's Chemistry," by J. McBain.

ABERDEEN JUNIOR CHEMISTS' ASSOCIATION, at 9.30 p.m.

Questions.

Late Advertisement.

Assistant Wanted.

ASSISTANT, qualified, for dispensing business, at once. About 25. Out-door. State age, salary required, &c. MILLER, Chemist, 30, Tranquil Vale, Blackheath.

SUPPLEMENT

TO THE

PHARMACEUTICAL JOURNAL.

MISCELLANEOUS NEWS.

THE MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.—The first musical and social evening of the above Association was held at the Exchange Rooms, on Wednesday, January 1, under the chairmanship of the President (Mr. T. C. Clarke). The arrangements were under the control of Mr. P. C. Arblaster, to whom hearty thanks were expressed for providing a most successful and enjoyable entertainment. The following gentlemen contributed to the evening's enjoyment:—Messrs. Thompson, Frost, Williams, Phillips, Hunt, Martin, Weaver, and Wilson.

ROYAL INSTITUTION.—On Tuesday next (January 14) Professor Charles Stewart, M.R.C.S., Fullerian Professor of Physiology, R.I., will begin a course of lectures at the Royal Institution on "The External Covering of Plants and Animals: Its Structure and Functions." On Thursday next (January 16) Mr. Phillip H. Wicksteed, M.A., will deliver the first of a course of lectures on "Dante," and on Saturday (January 18) Dr. A. Donaldson Smith, F.R.C.S., will deliver a lecture on "To the North of Lake Rudolf and Among the Gallas." The Friday evening meetings will begin on January 17, when the Right Hon. Lord Rayleigh, F.R.S., will deliver a discourse on "More About Argon."

DEATH OF A WELL-KNOWN SHEFFIELD CHEMIST.—The announcement of the death of Mr. Albert Archer, which took place on January 2, has come as a surprise to the members of the profession in Sheffield, as it was not generally known that he was seriously ill. A native of that city, Mr. Archer was apprenticed with Mr. Hill, a predecessor of Mr. C. O. Morrison's in West Street. At a later period Mr. Archer purchased the business at Steel Bank, which had been carried on by Mr. Taylor. While there he opened a branch at Woodhouse, a place some seven miles from Sheffield. Owing to indifferent health he was advised to go south, and after some delay he obtained a business at Torquay, and went to live there, but not receiving permanent benefit he returned to his native city, and in October, 1895, took a business in Abbeydale Road.

DEFECTIVE DRUGS IN YORKSHIRE.—Mr. A. H. Allen, the public analyst, in his quarterly report to the West Riding County Council, says some of the drugs received have been seriously deficient in the proportions of active ingredients. Thus tincture of rhubarb has been found deficient in alcohol and destitute, or nearly destitute, of saffron, which two ingredients are the most expensive of those used in its preparation. Quinine has been found with only one-half of the proper quantity of quinine; compound liquorice powder has been met with deficient in sulphur; beeswax containing no more than

25 per cent. of real beeswax, the remainder being resin, fatty matters, and paraffin wax. It is noteworthy that in this district, of which Sheffield is the centre, there is a very large number of dealers in drugs who are not registered chemists and druggists.

THE SUICIDE OF A TORQUAY CHEMIST'S ASSISTANT.—An inquest was held on Tuesday, January 7, by Dr. Fraser, of Totnes, deputy coroner, at the Upton Parochial Rooms, Torquay, touching the death of Charles Albert Snow, 19, chemist's assistant, in the employ of Mr. Bathe, chemist, of Fleet, who was found dead in his shop on Monday afternoon (see this week's Journal, p. 35).

Mr. Bathe, chemist, stated that the deceased was in his usual health and spirits on Monday morning. Witness left him at 1.30 to dine at his private house, and on his return at 2.30 he found several customers in the shop waiting to be served. He called the deceased, but there was no answer. On going upstairs he found the deceased lying dead upon the floor of the store-room. Beside him were three bottles labelled "prussic acid" and a glass measure. The atmosphere was impregnated with the poison.—Dr. Gardner said a post-mortem examination confirmed the opinion that deceased had taken prussic acid.—The jury returned a verdict of "Suicide whilst temporarily insane."

THE SALE OF LAUDANUM TO CHILDREN.—An inquest was held on January 6, at Preston, on the body of Samuel Ellithorne, hairdresser, whose death occurred on January 4, under peculiar circumstances.—Septimus Ellithorne, nine, son of the deceased, said his father had sent him to the druggist's shop for a pennyworth of laudanum on four occasions on Saturday night. He had seen his father drink laudanum each time that he went for it.—William Forrest Livesey, chemist, said he had supplied the boy once, and his assistant had supplied him three times.—The Coroner: Don't you think you ought to be very careful in supplying poisons openly in a glass without any further precaution?—Mr. Livesey: The precaution I took was to label the glass "poison."—The Coroner: But in the case of a child, do you think that sufficient?—Mr. Livesey: I told the boy to be careful, and that it was poison, and I thought that was sufficient.—The Coroner: I don't agree with you, and I don't think the jury will either.—Mr. Livesey, in reply to further questions, said a fatal dose of laudanum consisted of four drachms.—After further evidence had been taken the jury found that Ellithorne had met his death by misadventure, being of opinion that he had taken laudanum to induce sleep.—At the request of the jury the Coroner called Mr. Livesey into the room, and told him the jury was unanimously of opinion that he ought not to supply laudanum in an open glass, especially to young children. The practice was most reprehensible and objectionable.

DEFICIENT TINCTURE OF RHUBARB.—At the Wakefield Petty Sessions (West Riding Court) on December 30, Walter Batty, grocer, Warmfield, was charged with selling

adulterated tincture of rhubarb containing only two-fifths of the quantity of alcohol specified in the British Pharmacopœia, whilst it was altogether destitute of saffron.—Mr. Lodge, in defence, said defendant had bought a small bottle of tincture of rhubarb, for which he paid 2s., and he had sold it just as he bought it. The Bench imposed a penalty of £1, and expenses amounting to £1 12s. 6d. The Chairman observing that it seemed impossible for the adulteration to have arisen in any other way than by the deliberate addition of water.

SOCIETY OF PUBLIC ANALYSTS.—The twenty-first anniversary dinner of the Society of Public Analysts was held on Wednesday evening at the Criterion Restaurant. Dr. T. Stevenson presided, and among those present were Mr. Kearley, M.P., Mr. T. H. Elliott (Board of Agriculture), Dr. Thorne Thorne (Local Government Board), Professor Thorpe, Mr. A. Vernon Harcourt (President of the Chemical Society), Dr. Dupré, Mr. M. Carteighe (President of the Pharmaceutical Society), Mr. Tyrer (President of the Society of Chemical Industry), Dr. J. A. Voelcker, Mr. Otto Hehner, Dr. Adams, Mr. Allen, Mr. Cassal, Mr. Pattinson, Mr. E. W. Voelcker (Hon. Treasurer), and Dr. Bernard Dyer, and Mr. E. J. Bevan (Hon. Secretaries).

Mr. Helmer gave the toast of "The Houses of Parliament," which was responded to by Mr. Kearley, M.P.

Dr. Voelcker proposed "The Local Government Board and the Board of Agriculture," claiming that the post of public analyst could not now be held by anybody, but that a man required a special training before he could occupy it.

Dr. Thorne Thorne, in reply, assured the company that the aim of the Department at Whitehall was to raise the standard and status of the public analyst in the estimation of the public and in its scientific value.

"The Learned Societies," proposed by the President, was acknowledged by Mr. A. G. Vernon Harcourt; "The Society of Public Analyst," given by Mr. Carteighe, was responded to by the President; and other toasts followed.

THE CHEMISTS' CLUB.—Particulars will be found on page vii. of this week's advertisement pages of the proposed arrangements in connection with the establishment of a proprietary club in London. It is intended to provide a place in a central part of the metropolis where chemists may meet for social intercourse or for the transaction of business, and the premises may also be made use of as a place of call when visiting London. The subscription is merely nominal, and chemists wishing to join should send their names to the secretaries of Barclay and Sons, Ltd., or "Camwal."

MARRIAGE.

LEE—RENNIE.—On January 1, 1896, at Whitby Parish Church, J. Arthur R. Lee, Pharmaceutical Chemist, Guiseley, to Dorothy Elizabeth Rennie, eldest daughter of Mr. Thos. E. Rennie, Khyber House, Whitby.

MARKET REPORT.

[Specially compiled for the *Pharmaceutical Journal*.]

[The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.]

LONDON, JANUARY 9, 1896.

Business in the produce markets has hardly yet recovered itself after the holidays, and there are few changes to report this week. In the chemical market citric acid is firm, whilst tartaric is very strong and promises to advance. Carbolic acid is firm, but unchanged. Cream of tartar has advanced in price considerably, and seem likely to go higher. Of fine chemicals camphor is slow of sale at a weakening price, quinine is fully steady, and opium alkaloids very strong. In the drug market, we have to report an advance in Florentine orris root and Rio ipecacuanha, but on the other hand the Columbian root has declined. At to-day's sales Cape aloes, Kola nuts, dill seed, copaiba balsam, sold at full rates, whilst senna leaves are also firmer for better grades. Full details will be found below.

ACACIA.—At to-day's sales a total of 299 packages were catalogued. The majority of the *Trieste* gum was bought in, but 2 cases of medium yellow sold without reserve at 87s. 6d. per cwt. Pale grain was bought in at £5 10s. to £6, and medium grey at £7 10s. *Soudan* sorts were all bought in. Good ambery at 60s., and sorts at 40s. up to 58s., whilst brown gum from *Bombay* was held for 33s., and bold ambery from *Aden* for 40s. Privately the market is steady for *Persian*, so-called insoluble gum, being quoted at 12s. to 14s. for fair sorts, and 18s. to 22s. for pale selected.

ACID, CARBOLIC.—The market is firm, but quotations are practically unchanged as follows:—*Crystals*, 34° to 35° C., 6½d.; 39° to 40° C., 7¼d.; 39° to 40° C. (*detached crystals*), 8¼d. per lb. *Crude*: Unchanged, 60 per cent. being quoted at 1s. 9d., and 75 per cent. at 2s. 2d. per gallon. *Liquefied* and *creosylic* are quoted at 1s. 1d., and 11½d. per gallon respectively.

ACID, CITRIC.—Steady. *English* manufacturers still quote at 1s. 2½d. per lb., whilst second-hand holders are unchanged at 1s. 2d. per lb. *Concentrated juice* quotes at £14 5s. to £14 10s. per pipe *f.o.b.*

ACID, TARTARIC.—Very firm. The quotation for *English* brands of acid in manufacturers' hands is still 1s. 2d. per lb., but there is every likelihood of an advance. *Foreign* makes are dearer, and 1s. 2d. is now asked on the spot for both *powder* and *crystals*. In auction to-day 42 bags *Cape argol* were bought in at 57s. to 57s. 6d. per cwt.

ACONITE.—At to-day's sales 27 bags of *Japanese* root from *Hiogo* were bought in at 23s. per cwt.

ALOES.—*Cape* aloes was in unusually large supply to-day, being represented by 109 packages, and the rates paid show a fully steady market. Good bright hard was held for 23s. 6d. to 24s.; fair seconds sold at 22s. to 22s. 6d.; ordinary to medium ditto, part drossy, at 20s. to 21s. 6d.; dull mixed seconds at 18s. to 19s. 6d., down to 15s. for very drossy mixed with sand. *Curaçoa* aloes, of which 292 packages were shown, sold at 31s. to 35s. for medium livery, 15s. to 15s. 6d. for ordinary capey, and 8s. down to 6s. 6d. for drossy common grades. Twenty-two kegs of hard *Socotrine* aloes were bought in at 80s. to 90s. per cwt.

AMBERGRIS.—The large supply of 261 ounces was catalogued to-day, but none was sold in auction although a bid of 24s. per ounce was submitted for two tins of very ordinary quality.

AMMONIACUM.—Only 10 packages were offered in auction, and of these 25s. per cwt. was paid for fair almondy block, whilst very seedy lump was bought in at the same figure.

ANNATTO SEED.—In auction fair quality *Madras* seed was bought in at 3d., and small, rather dull, ditto at 2d per lb.

ASAFOETIDA.—Out of 102 cases offered, 5 cases medium greyish block, part pinky, sold at 50s. to 57s. per cwt.

BAEL FRUIT.—Forty bags of this drug, which is but seldom seen in public sale, sold at 2d. per lb.

BENZOIN.—A total of 288 cases were offered to-day, and fair inquiry was shown. *Sumatra* gum of which 123 packages were shown, sold at £11 10s. to £11 15s., for good almondy gum; £8 for almondy seconds, good centres, slightly false packed sides, and £5 15s. to £6 15s. for ordinary to medium seconds, fair centres, false packed sides. Of the *Siam* gum, £22 5s. was paid for a case of very nice pale, loose almonds, £15 for small loose, pale ditto. and £10 for medium bright almonds in brown block. Siftings in block were bought in at 65s. to 70s. per cwt.. Ordinary *Palembang* seconds sold at 32s. to 34s. 6d., whilst good almondy gum was bought in at 105s. per cwt. *Penang* gum, after an absence from the sales for some time, was represented by 34 packages, and bought in at 32s. 6d. to 38s. per cwt.

BUCHU.—Dull of sale. No business was done to-day, although some nice parcels were shown. Good *round* green leaves were held for 5d. per lb., whilst dull *long* narrow leaves were held for 6d. per lb.

CALUMBA.—No enquiry was shown in auction, and ordinary sorts, rather wormy, were bought in at 9s. to 9s. 6d. per cwt.

CANNABIS INDICA.—At to-day's sales the unusually large supply of 132 packages was offered but no sales were effected, greenish stalky tops being bought in at 4d. per lb. Privately brownish tops sell at 2½d., and greenish ditto at 3¼d. per lb.

CANADA BALSAM.—A cask of good bright balsam was bought in to-day at 1s. 6d. per lb.

CANTHARIDES.—At the drug sale 10 cases of medium *Chinese* flies were bought in at 1s. per lb.

CARDAMOMS.—The moderate supply of 141 packages was offered to-day, and met with a good demand, especially for seed. Of *Ceylon-Mysore* cardamoms some fine lots were shown, and the prices paid were as

follows:—Fine pale plump, 3s. 3d.; medium pale ditto, 2s. 10d.; medium to bold palish, 2s. 4d. to 2s. 6d.; small to medium plump and yellow, 1s. 11d. to 2s. 2d.; small to medium yellow, partly split, 1s. 7d. to 1s. 10d.; and 1s. 6d. down to 1s. for ordinary small and brown, part split and speckled. *Ceylon-Malabar*: For small to medium brown shrivelled, 1s. 5d. to 1s. 7d. per lb. was paid. *Seed*, which was in large supply, sold at an advance of 1d. per lb., 2s. 2d. to 2s. 3d. per lb. being paid.

CASCARA SAGRADA.—Since our last report there has been a good demand privately for this drug, and prices have advanced considerably. There is now but little good quality bark on the spot, and stocks in America are said to be low. On the spot 20s. has been paid earlier in the week for sound bark, and 25s. is now asked. In auction 15 bales of damaged quality bark from *San Francisco* sold at 18s. to 20s. per cwt.

CASCARILLA.—Very firmly held. In auction only 10 bales were offered. These consisted of good sound silvery quill, and were bought in at 55s. per cwt., after 48s. had been bid.

CINCHONA.—The opening sale of the year was held on Tuesday, when 1761 packages were offered, against 1071 at the previous sale. *Ceylon* bark was only represented by 43 packages, whilst Indian amounted to 1000 bales, the majority of which was good renewed *officinalis* bark, and sold at full rates. The average unit of rates remained unaltered at fully ½d. per lb. The prices paid were as follows:—*Ceylon*: Fair stem chips, 2½d. per lb. *Indian*: Red chips, 1½d.; *officinalis*, 2d. to 3¼d.; Ledger chips, 1½d. to 3¼d.; ditto brand, 1½d. to 2¾d.; ditto renewed chips, 2½d. per lb. *Java*: 2¾d. for natural stem chips. *South American*: Cultivated *Calisaya* galls, 3d. to 4½d. *Cuprea*: Old import, ½d. to ¾d. per lb. In auction to-day flat *Calisaya* bark was in good demand, and 159 bales sold at prices ranging from 8½d. for fair down to 4½d. for ordinary, whilst 1d. to 4d. was paid for damaged grades. Of *Crown* bark two serons from *Payta* sold at 5d., whilst 20 bales of long *Lowa* bark sold at 10d. to 1s. 1d. for fair quality, and 7d. to 9d. for ordinary to medium ditto.

COAL-DISTILLATION PRODUCTS.—*Benzole*: Rather firmer. For 50 per cent. 2s. per gallon in now asked, whilst 90 per cent. is unchanged at 2s. 3d. *Toluol*: Rather easier at 2s. 3d. per gallon for *pure*. *Crude Naphtha*: Firmer at 10d. per gallon for 30 per cent. at 120°.

COLOCYNTH.—Largely offered to-day, but no business was done. For fair *Turkish* apple, 2s. 4d. to 2s. 6d. per lb. was asked, whilst 1s. to 1s. 6d. was the price for broken *Spanish*. A parcel of *Almerian* colocynth was bought in at 7d. to 11d. per lb.

COPAIBA (BALSAM).—33 packages were offered, but the only lot sold was a cask of good bright *Maranham*, which realised 1s. 11d. per lb., whilst clear thin *Para* was bought in at the same figure.

CREAM OF TARTAR.—A very strong market at a considerable advance in price, both *crystals* and *powder* being fully 3s. per cwt. dearer than when last reported. *German* brands of powder are now quoted at 98s. to 100s. per cwt. on the spot, whilst 96s. is asked for best white *French* crystals. For

shipment from Bordeaux there are now no sellers under 90s. *f.o.b.*

CUBEBS.—This drug was only represented by 24 bags at to-day's sales, and the majority was bought in at 35s. for fair *Singapore* berries. The same quality sold previous to the auctions at 32s. 6d. per cwt.

CUTTLEFISH.—In auction 3 cases of fair bold, whole quality, realised 2d. per lb.

DRAGON'S BLOOD.—None was sold out of about 50 cases. Good finger in reeds from *Singapore* was bought in at £10, ditto mostly broken and separated from the covering, from *Shanghai*, at £8, whilst fair to good *Singapore* block was bought in at £9 to £10, and saucers at £6.

ELEMI.—Little inquiry is shown for this article in auction, and to-day 25 cases of clean pale *Singapore* gum were bought in at 30s. per cwt.

ERGOT.—A fair inquiry was shown to-day, and of 59 packages 7½d. per lb. was paid for dry mixed ergot, offered as "of the new crop," and 6¼d. for 8 bags of very wormy old ergot. The new crop of *Russian* ergot was represented by 18 bags, which were bought in at 10d. per lb.

GALANGAL.—22s. 6d. is the price asked for good bold root from *Hong Kong*.

GAMBOGE.—Rather slow of sale. The better grades were bought in to-day at £12 for good clean *Singapore* pipe. Two cases of ordinary mixed *Singapore* block sold at £9 5s., whilst £8 12s. 6d. was paid for bold pipe.

GUAIACUM GUM.—Out of 16 cases offered in auction, 1s. 9d. to 2s. 2d. was paid for 2 cases of fair glassy block, and 6d. for 6 cases of ordinary rather drossy lump.

GUARANA.—In auction to-day three cases of fair sausage were bought in at 2s. 9d. per lb.

GUINEA GRAINS.—In auction 78 bags from the West Coast of Africa were bought in at 20s. per cwt.

HONEY.—Very slow of sale, and but little business was done. Four cases of dark, rather foul *Jamaica* honey sold without reserve at 20s. per cwt., whilst 30s. was paid for 5 cases of *Honolulu* honey. *New Zealand* was bought in at 25s., and *Californian* was held for 42s.

INSECT FLOWERS.—The inquiry for this article has not been very brisk recently, but the quotations show little change. Wild closed flowers are quoted at 120s.; half-closed at 112s. 6d., and open at 79s. 6d. per cwt. *c.i.f.* terms. In auction to-day nine kegs of *insect powder* were bought in at 60s. per cwt.

IPECACUANHA.—A total [of 58 packages was offered, of which the *Brazilian* root comprised 31 packages. The prices paid show a marked advance of about 4d. per lb., 5s. 2d. to 5s. 5d. being paid for fair to good sound annulated, and 5s. to 5s. 2d. for damaged ditto. *Carthagena* root sold at a decline of 2d. per lb., 4s. to 4s. 1d. being paid for fair damaged quality.

JABORANDI.—Fair greyish mixed leaves were bought in to-day at 6d. to 8d. per lb.

JALAP.—Some good lots of *Vera Cruz* root were offered in auction, and a fair inquiry was shown, 8½d. to 9d. being paid for sound quality, 7½d. for damaged ditto.

JUNIPER BERRIES.—In auction 20 bags out of a parcel of 100 from *Leghorn* sold at 7s. 6d. per cwt.

KINO.—A box of astringent gum offered

under this name was bought in at 20s. per cwt.

KOLA.—In very moderate supply. Out of 16 bags shown to-day 11d. to 1s. was paid for good bright *West Indian* nuts, and 10½d. for good sound chips.

LIQUORICE ROOT.—At the sales 208 bags of rough *Bussorah* root were bought in at 8s. 6d. per cwt.

LIME JUICE.—Steady. To-day 11d. per gallon was paid for 12 barrels of *Barbados* juice.

MASTIC.—Little inquiry is shown for this drug in auction, except when offered without reserve. In the latter instance, 1s. 5d. to 1s. 6½d. was paid for five cases of pale gum. Ordinary pale to ambery drop was bought in at 1s. 8d. to 1s. 9d. per lb.

MENTHOL.—Still very slow of sale. The spot price is nominally 14s. per lb. for good white *crystals*, but it would be quite possible to buy under this figure. To-day 2 cases of the *Kobayashi* brand were bought in at 14s.

MYRRH GUM.—Very slow of sale. Out of 133 packages only 12 were apparently sold, 50s. being paid, subject to approval, for ordinary sorts. Fine picked gum was bought in 110s., ordinary sorts at 50s. to 55s., and pickings at 30s. per cwt.

NUX VOMICA.—No inquiry was shown to-day, and fair *Bombay* nuts were bought in at 6s. 6d., *Calcutta* at 4s. 6d., and *Cochin* at 7s. per cwt.

OIL (COD-LIVER).—In auction 10 casks of old *Norwegian* oil were bought in at 180s. per barrel, and *Newfoundland* oil at 6s. per gallon. The spot quotations for *Norwegian* oil are 185s. to 190s. for fine and 170s. for old ditto.

OILS (ESSENTIAL).—*Star Anise* oil is firm without much business doing at the moment. On the spot 10s. 3d. is generally asked, and 2 cases were bought in at the drug sales to-day at this figure. *Cassia*: Several parcels were offered to-day, and were all bought in at prices ranging from 11s. down to 8s. *Eucalyptus* oil was bought in at 1s. 10d. for *Globulus* oil, 1s. 8d. for *Native bear* ("Padlock brand"), and 2s. for *B. & Co.'s* oil. *Peppermint* oil was bought in at 8s. 6d. for 40 per cent. *Japan* oil, and 6s. 6d. for *dementholised*. For *Sassafras* oil ("P. and Co.'s") 9½d. was bid; *rose-oil* settlings sold at 1d. per oz.; *wood* oil at 1½d. per lb., and *nutmeg* oil at 1¼d. to 1½d. per oz. *Citronella* oil is held for 1s. 10d. to 2s. per lb. on the spot.

ORRIS ROOT.—The market is firmer, and prices are slightly advanced. Privately 71s. is asked for best *Florentine*, and 68s. per cwt. for good seconds *c.i.f.* terms. At the drug sales to-day fine *Florentine* root was bought in at 80s., and *Veronese* at 67s. 6d. per cwt., whilst *East Indian* root in dark lean pieces from *Aden*, sells privately at 35s.

PHENACETIN. One of the principal holders quoted *Bayers'* make at 9s. 6d. per lb. net at the beginning of the week, but 10s. is now generally asked. Other brands can be bought at 5s. per lb.

QUILLAI BARK.—£13 12s. 6d. per ton was the price asked at to-day's sales, when 4 tons were offered.

QUININE SULPHATE.—The market is quiet but steady. Business has been done to the extent of a few thousand ounces in the best *German* makes at 1s. 1¼d. to 1s. 1½d., closing at the latter figure.

RHUBARB.—Of 128 cases offered to-day, only about 10 sold. *Shensi*: Five cases of small to bold flat, three-fourths pinky and one-fourth dark fracture sold at 1s. 6d. per lb. *Canton*: Small trimmings, even pinky fracture sold at 1s. 2d., fair medium flat, grey fracture, at 11d., and good sound pickings, even pinky fracture but spongy, at 11d. per lb. *High dried*: Fine mixed even pinky fracture sold at 11d. per lb.

SANDALWOOD.—*Logs* were bought in to-day at £42 10s. per ton. *Chips* sold without reserve at 20s. per ton.

SARSAPARILLA.—Steady. A good business was done to-day in *Jamaica* root, which sold at 1s. 3d. to 1s. 4d. for sound, and 1s. 1d. to 1s. 2d. for damaged grades. *Lima-Jamaica* sold at 10½d. to 11d. per lb., whilst *Honduras* was bought in at 1s. 2d. per lb.

SEEDS (VARIOUS).—*Dill*. Ten bags of *Bombay* seed sold at 10s. 6d. per cwt. *Coriander* ordinary coarse *Calcutta* and *Bombay* seed sold at 3s. per cwt. For *Spanish Aniseed* 30s. per cwt. is asked. *Cumin* seed sold at 30s.

SENNA.—Of 507 packages of *Tinevelly* leaves the majority sold at higher prices, especially for the better qualities. The bulk of the catalogue was composed of ordinary small leaves. *Alexandrian* senna was all bought in.

SHELLAC.—At Tuesday's sale 1377 cases were offered, and a good competition was shown, but the prices showed at first a decline of 10s. to 15s. per cwt. on last week's rates for *Second Orange*, increasing to as much as 15s. and 20s. in some cases.

STROPHANTHUS SEED.—In auction 2 bags of good quality *Kombé* seed sold at 3s. per lb.

TURMERIC.—Remains dull of sale, and in auction on Tuesday the majority of the catalogue was bought in, *Madras* at 7s. 6d. to 8s. for wormy bulb and finger, and 6s. 6d. to 7s. for whole bulb. A few bags of lean finger *Cochin* sold at 5s. 9d. per cwt. None was sold at the drug sales.

WAX (BEES).—A fair demand was shown at fully steady rates as follows:—*Jamaica*. £7 17s. 6d. to £8; *Madagascar*, £6 12s. 6d. to £6 17s. 6d.; *Bombay*, £6 7s. 6d.; *Australian*, £6 17s. 6d. to £7; and *New Zealand* at £6 15s. per cwt.

WAX (JAPAN).—A good demand is shewn privately, with sales at full rates. To-day 30s. per cwt was paid for 50 cases of pale squares, and 25s. for ordinary quality offered without reserve.

THE DRUG SALES.—A meeting will be held on Monday next, the 13th inst., at 2 o'clock, in No. 2 Room of the Commercial Sale Rooms, to discuss the question of the drug sales being held fortnightly or monthly. Merchants, brokers, and all interested are invited to attend.

MESSRS. JOHN WRIGHT AND Co., of Bristol, publish a new chart holder with imperishable nickel-plated corners and eyelets, which pharmacists may find it useful to introduce to their medical friends and to hospitals. The holder can be made to suit charts of any size, with the name of the hospital stamped in gold over the chart. The prices range from 1s. each, for quantities. Single holders are supplied at 1s. 6d. each.

LIVERPOOL MARKET REPORT.

[From our own Correspondent.]

JANUARY 8, 1896.

LINSEED: 1000 bags of *Turkish* sold at 34s. CANARY SEED: 33s. to 34s. for spot parcels of *Turkish*. KOLA NUTS: 21 bags of dried sold at 6d. to 7d. BEESWAX: 19 bags *Chilian* at £7 7s. 6d., 4 lots of *Gambia* at £7 2s. 6d. CASTOR OIL: *Madras*, 2½d.; *Calcutta*, good seconds, 2½d.; *French*, 1st pressure, 2¾d. OLIVE OIL: Quiet, and tendency to become easier. LINSEED OIL: *Liverpool* pressed, 20s. 6d. to 21s. COTTON-SEED OIL: *Liverpool* refined, 17s. to 17s. 6d. SPIRIT OF TURPENTINE: 21s. 9d. PETROLEUM: *American*, 7¾d. to 8½d.; *Russian*, 7d. SAL AMMONIAC, "firsts," 39s.; "seconds," 37s. CARBONATE OF AMMONIA: 3½d. to 3¾d. SULPHATE OF AMMONIA: £8 13s. 9d. for good grey. BLEACHING POWDER: Hard, £7 to £7 10s. COPPERAS: *Lancashire*, 37s. 6d. COPPER SULPHATE: £15 17s. 6d. PHOSPHORUS: *Wedges*, 2s.; *sticks*, 2s. 1d.; *amorphous*, 2s. 8½d. POTASHES: 21s. 9d. PEARLASHES: 37s. 6d. SALTPETRE, 23s. 6d., kegs; 23s., barrels. PRUSSIAN OF POTASH: 8d. BICHROMATE OF POTASH: 4¾d. CREAM OF TARTAR: 93s. CAUSTIC SODA: 70 per cent., £7 10s.; 60 per cent., £6 10s. BICARBONATE OF SODA: £6 15s. SODA CRYSTALS: £2 7s. 6d. NITRATE OF SODA: 7s. 7½d. to 7s. 10½d. HYPOSULPHITE OF SODA: £7 5s. to £7 10s. BORAX: £19 10s., *lump*; £20 10s., *powder*.

NEWCASTLE CHEMICAL REPORT.

[From our own Correspondent.]

JANUARY 7, 1896.

The business in chemicals is opening out slowly, and the uncertain future, judged through present prospects, is making the contracting line a slow one. Although some of the articles are found to be scarce for prompt orders, values are little changed. Sulphate of ammonia remains quiet. Salt-cake steady. The annual exports from the Tyne are now published, and show decreases to be on the ascendant. Such are as follows:—

	1894.	1895.	Increase.	Decrease.
	Tons.	Tons.	Tons.	Tons.
Alkali and soda ash	9052	8715	—	337
Bleaching powder	17,822	16,148	—	1674
Caustic soda	11,894	11,040	—	854
Manure	23,994	15,799	—	8195
Soda crystals	8748	8543	—	205
Sulphate of soda	6611	9992	3381	—
Sulphur	8847	8860	13	—
Other chemicals	9923	10,163	240	—
Coal tar and pitch	272	119	—	153

Present prices are:—BLEACHING POWDER, £6 10s. to £7, according to market and packages. SODA CRYSTALS, 36s. to 42s. 6d., according to packages. SODA ASH: 48 to 50 per cent., £3 15s. to £4 15s. WHITE ALKALI, 48 to 52 per cent., £4 15s. to £5. LUMP ALUM, £5 10s. to £5 15s. nett. CAUSTIC SODA: 70 per cent., £7 5s. to £7 15s.; 76 per cent., £9 5s. SALTCAKE: 27s. 6d. SULPHUR: £3 17s. 6d. to £4. SULPHATE OF AMMONIA: £8 12s. 6d. PITCH: 37s. HYPOSULPHITE: £6 10s. to £7 5s., according to packages. SILICATE: £2 12s. 6d. to £3 7s. 6d., according to strength. ALUMINATE: £33 15s. per ton in small parcels; £28 10s. in 5-ton lots.

EXCHANGE.

[For the convenience of readers, suitable notices, not exceeding thirty words in length, are inserted free in this column, if they do not partake of the nature of ordinary advertisements. They must relate to books, apparatus, shop fittings, etc., and arrive not later than Wednesday, addressed "Editorial Department, 17, Bloomsbury Square, W.C."]

OFFERED.

Lavoisier's 'Elements of Chemistry,' translated by Robert Kerr, 3rd edition, 1796; also Foucroy's 'Chemistry,' 11 vols., translated by Nicholson, 1804. What offers. B. Knight, Torquay.

A B Daylight Kodak, takes 24, leather case, and spare film, 50s.; a lot of photo. annuals; Amateur Photographer and Photography, 10s. Exchange microscope.—Pike, 3, Hincley Road, Leicester.

Beard's Safety Regulator, new, 25s., cost 30s.; bamboo screen stand, 10 ft., will also make 4 ft., 6 ft., and 8 ft. square, 28s., cost 39s.—Cammack, Fulham.

'Lexicon Medicum' (Hooper), 7th edition, fair condition; Kelly's 'Chemists' Directory,' 3rd edition, good condition. Show jar for window, decorated inside, marked rhubarb, gilt top and stand complete.—Blukhorn, Chemist, Salisbury.

'Obstetrical Transactions,' 7 vols., 1887 to 1893, condition as new, 3s. 6d., or exchange microscopic slides, etc.—W. Pardoc, Westminster Union, Poland Street, W.

Curtis' 'Flora Londinensis,' in two volumes, good condition, leather bound, price £5 5s.—Stainer, 17, Cambridge Gardens, Folkestone.

Taylor on 'Poisons'; Thomé's 'Botany'; Ganot's 'Philosophy.' Will exchange for Maisch's 'Mat. Medica,' Vines' or Oliver's 'Systematic Botany'; Green's 'Botany,' or Strasburger. Must be latest.—Dixon, 164, Aigburth Road, Liverpool.

Lancaster's "Mulum in Parvo" enlarging camera, 12 by 10; portrait lens, by Lerebour et Secretan, Paris, 8½ focus, cost £4. What offers.—E. W. Male, Chemist, The Cross, Gloucester.

Gray's 'Supplement,' scarce, 7s. 6d.; Newman's 'British Ferns,' cost 12s., 5s.; Scoresby-Jackson's 'Materia Medica,' 3rd, published, 12s. 6d., 5s.; Bradbury's 'Nature Printed Ferns,' 50s., free.—Davis, "Chestnuts," Gordon Hill, Enfield.

Microscope, 30s.; Minor and other books cheap; Send for list or call and inspect any time. Dental Forceps wanted.—Burge, 2, Fernhead Road, Harrow Road, W.

Six 60-candle-power incandescent gas burners, complete and new, 7s. each, nett cash; also six with bye-passes, 9s. each, nett cash.—J. Hughes, 54, Beaumont Street, Liverpool.

Sowerby's 'English Botany,' 12 vols., good condition, cost £24; price £12.—Hudson, chemist, Cranbrook.

'Euripidis Tragediæ,' Greek, 6 vols., 3s. 6d.; 'Œuvres de Racine,' 4 vols., 2s. 6d.; Heyne's 'Homer,' Greek, 2s. 6d.; Johnson's 'Dictionary,' 1st octavo edition, 7s. 6d. All free.—Davies, 33, Eglinton Road, Bow.

Squire's 'Companion,' latest edition, never been used, 6s.; Proctor's 'Lectures on Practical Pharmacy,' 2s. 6d.; Balfour's 'Botany,' 2s. 6d.—Holmes, chemist, High Road, Upper Clapton, N.E.

WANTED.

Gray's 'Anatomy,' apply with price.—T. Richards, Chemist, Porth.

Apparatus for volumetric analysis and specific gravity bottle.—Johnson, 35, High Street, Leominster.

Green's 'Botany,' Part I., latest edition; Attfield's 'Chemistry,' latest edition, lowest prices to—W. H. R., 3, High Street, Iuvernness.

Copper furnace pan, in good condition, capacity from 10 to 30 gallons. State lowest price.—Pearson, Chemist, 15, Market Street, Ulverston.

Wanted latest editions, cheap, Bentley's 'Materia Medica,' Bentley's 'Structural Botany,' and Muter's Analytical Chemistry.—Dewar, Guildford House, Harrogate.

Vines' 'Text-Book of Botany,' Carpenter's 'Revelations of Microscope,' edited by Dr. Dallinger: state lowest cash price to—A. J. Callaway, "Cartref," St. Mark's Road, Salisbury.

Nitrous oxide gas apparatus, with Cattlin's bag and steel bottle, must be in perfect order.—Walker, Chemist, Bowes Park, N.

* * * The attention of readers is directed to the conditions printed at the head of this column. Notices cannot be inserted unless they are in accordance with those conditions.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

SATURDAY, JANUARY 11.

PHARMACEUTICAL FOOTBALL CLUB v. Templars, at Wormholt Farm, Shepherd's Bush.

SUNDAY, JANUARY 12.

LIVERPOOL SUNDAY SOCIETY, at 3 p.m.

"Fairy Tales," by Professor Windle.

TUESDAY, JANUARY 14.

ROYAL PHOTOCGRAPHIC SOCIETY, at 8 p.m.

"Astigmatism and a New 'Stigmatic' Portrait Lens," by H. L. Aldis.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.

"The External Covering of Plants and Animals: Its Structure and Functions," by Professor Charles Stewart.

SOCIETY OF ARTS (APPLIED ART SECTION), at 8 p.m.

"The Poster, and its Artistic Possibilities," by Gleeson White.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY.

Sixth Annual Ball at Royal Pavilion.

MIDLAND PHARMACEUTICAL ASSOCIATION, at 8 p.m.

"The Sun and His Attendant Family," by F. Smith.

WEDNESDAY, JANUARY 15.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

Library, Museum, School, and House Committee.

CHEMISTS' BALL, at 9 p.m.

At the Portman Rooms, Baker Street, W.

SOCIETY OF ARTS, at 8 p.m.

"The Making of a Great University for London," by Professor Silvanus P. Thompson.

ROYAL MICROSCOPICAL SOCIETY, at 8 p.m.

Annual Meeting: Presidential Address by Mr. A. D. Michael.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION, at 9 p.m.

"Coal—in Relation to Pharmacy," by H. Jessop.

MANCHESTER PHARMACEUTICAL ASSOCIATION, at 7.30.

"The Sale of Poisons and of Poisonous Preparations," by Wm. Lane.

THURSDAY, JANUARY 16.

SOCIETY OF ARTS (INDIAN SECTION), at 4.30 p.m.

"The Shan Hills; their Peoples and Products," by Colonel R. G. Woodthorpe.

LINNEAN SOCIETY OF LONDON, at 8 p.m.

"On the Fistulose Polymorphinæ and the Ramulina," by Professor T. Rupert Jones and F. Chapman.

CHEMICAL SOCIETY, at 8 p.m.

"The Acetylene Theory of the Luminosity of Hydrocarbon Flames," by Professor Vivian B. Lewes.

CHEMISTS' ASSISTANTS' ASSOCIATION, at 8.30 p.m.

"Miscellaneous Notes," by W. Elborne.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.

"Dante," by Philip H. Wicksteed.

FRIDAY, JANUARY 17.

ROYAL INSTITUTION OF GREAT BRITAIN, at 9 p.m.

"More About Argon," by Lord Rayleigh.

SATURDAY, JANUARY 18.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.

"To the North of Lake Rudolf and Among the Gallas," by Dr. A. Donaldson Smith.

LATE ADVERTISEMENTS.

Assistant Wanted.

ASSISTANT, about 25, with some knowledge of French. MELLIN'S, 48, Regent's St., London, W.

Business for Disposal.

OLD-ESTABLISHED Retail, Dispensing and Prescribing BUSINESS for disposal, also Dental Practice (together or separately), situated in London, S.E. Long lease. Low rent. Every investigation allowed. Chance seldom met with. Particulars to FIDES, "Pharm. Journal" Office, 5, Serle St., London, W.C.

SUPPLEMENT

TO THE

PHARMACEUTICAL JOURNAL.

NOTES,

OLD-TIME PHARMACIES.—The request for information respecting the past history of premises where a drug business has been carried on for a prolonged period, has been responded to by several readers, who are cordially thanked for their offers of assistance. Further communications on the same subject will be gladly received.

THE USE OF FOOD PRESERVATIVES.—A case of considerable importance in regard to the preservation of food-stuffs was heard at Southwark Police Court on Wednesday last, the offence charged under the Sale of Food and Drugs Act being the coloration of green peas with an infinitesimal quantity of sulphate of copper. A report of the proceedings will be found on page 59 of this week's Journal. The case was not decided, but adjourned until next week.

LATE NEWS.

CLELAND VERSUS PHARMACEUTICAL SOCIETY OF IRELAND.—On Wednesday, the 15th inst., in the Queen's Bench Divisional Court, Dublin, judgment was given on the application of Mr. Cleland for a mandamus to compel the Irish Pharmaceutical Society to admit him to their examination for the licence.

Mr. Justice O'Brien, in giving judgment, said there was no doubt a great evil required to be checked by law, occurring chiefly in England, and consisting of the excessive increase of chemists' shops for the sale of comparatively valueless materials of mysterious virtues, and ministering to the infirmities, delusions, vanities, and gullibilities of a large portion of the population, and sometimes even to vicious and criminal tendencies, and affording a large sphere for charlatanism and negligence. This gave rise to the Irish Pharmacy Act of 1875, which was the first step in the creation of the monopoly of the sale of drugs, the bonds of which the Society had been tightening every day. The whole matter in the present case appeared to turn on the construction of the words in the regulations of the Society that an apprentice should serve his term with "a firm of pharmaceutical chemists." It was impossible in his opinion by any strain of reasoning to raise any question as to the meaning of those words. They meant individual pharmaceutical chemists. They could not be taken to mean a body including pharmaceutical chemists or a company. The word "firm" in the present case could not have its original commercial meaning, which was merely signature or authentication. He was therefore compelled to come to the conclusion that it was impossible to assist the applicant on the present occasion by granting a mandamus.

Mr. Justice Johnson concurred. This case appeared to him to be a very hard one. The applicant was apparently misled by being admitted to the Preliminary examination. He had no doubt the Council would see its way out of the difficulty in this exceptional case, but the Society was contesting the matter, as he understood, on principle, and he thought its contention was right. In his opinion the conditional order must be discharged on the ground that the applicant did not produce a statutory declaration signed by a pharmaceutical chemist, declaring that the candidate had served the prescribed period in the sole employment of such pharmaceutical chemist, or of a firm of duly qualified pharmaceutical chemists of which the person making the declaration was a member.

Mr. Justice Holmes, in the course of his judgment, said he was obliged to decide against the applicant in the present case. The regulation required a statutory declaration which the applicant had not made, and could not truthfully be made in the present case, as the applicant was apprenticed neither to an individual nor to a firm, all the members of which were qualified pharmaceutical chemists. The case was a hard one, so hard as to tempt a court to make bad law. He was against the applicant on the question that had been argued by his counsel. He was sure the Council of the Pharmaceutical Society was anxious to uphold the standard of a profession which was of great value to the country. If the Council had the power, as he was assured it had, irrespective of its regulations, to allow the applicant to be examined, the case was surely a fit one for the exercise of that power. Might he not ask why should this controversy between the limited company and the individual be fought out at all? The contest was hardly consistent with the dignity or even the interests of the Pharmaceutical Society. As far as the public was concerned, an assistant in the employ of a joint stock company with a properly qualified manager was just as likely to be well trained as any other. Surely it would be prudent for the Council to reconsider the matter before they engaged in a crusade against bodies that for more than twenty years had been permitted to carry on business, never, as far as he was aware, to the injury of the public.

Mr. Justice Gibson concurred.

Mr. Day, on the part of the Society, said he was instructed by the President of the Council to state that after the remarks which had fallen from their Lordships the Council would, if it was in its power to do so, admit Mr. Cleland to examination, but his case should not be taken as in any way applying to similar cases afterwards.

SOCIAL MEETING AT EDINBURGH.—The annual assembly of the staff of Messrs. T. and H. Smith and Co., Edinburgh, took place on Friday, January 10, in the "Lodge of Edinburgh," Masonic Hall, Hill Street. Messrs. Anderson and Dey acted as stewards, and the duties of M.C. were efficiently discharged by Mr. W. R. Cunningham. A very pleasant evening was spent, and the proceedings were diversified with songs at intervals.

TRADE NOTES AND NEWS.

MR. ERNEST STAPEL says his attention has just been called to Messrs. Kennedy and Co.'s statement in the *Supplement* for November 30 last, that "a Mr. Spence is trading under the style of Stapel and Co." In reply he explains that he is the sole proprietor of the business in question. He also holds "Spence's Patent" to be good, and claims that Mr. Kennedy's so-called registered shield is an infringement.

MESSRS. THOMAS CHRISTY AND CO. announce that the *Farbenfabriken vorm. Friederich Bayer and Co.* has asked the firm to continue the agency for Analgen (Dr. Vis) in Great Britain, to which the London firm has agreed. This substance, originally manufactured by Messrs. Dahl and Co., of Barmen, was introduced here by Messrs. Christy successfully, and the rights for it have been purchased by the *Farbenfabriken vorm. Friederich Bayer and Co.*, who will manufacture it for the future. It has recently proved very successful in the treatment of gout and of malarial fever, for which it is now being extensively tried.

MR. B. KÜHN, of 36, St. Mary-at-Hill, Eastcheap, London, E.C., has submitted samples of a new antiseptic and disinfectant, which he is just introducing. "CHINOSOL," as the substance is named, is claimed to be non-poisonous, non-corrosive, readily soluble in cold water in any proportion, and a deodoriser. It does not coagulate albumin, and has only a slight and not disagreeable odour.

MESSRS. EVANS, GADD, AND CO., of Exeter, do an extensive business in packed goods, etc., and their new nett price list, which they are now issuing together with their monthly price current of drugs, chemicals, and pharmaceutical preparations, will be sent free to any chemist in business on application.

MESSRS. D. AND W. GIBBS, of the City Soap Works, London, E.C., refer to a recently-published paragraph stating that their business has been converted into a limited liability company. This is said to be correct, but it omits to state the most important factor in the case, viz., that no shares are offered to the public, the entire share capital being taken up by the present partners. As the necessary formalities are not yet completed, the firm has deferred advising its many friends and customers of this change.

MESSRS. SAVORY AND MOORE call attention to *Café Zylak*—their new preparation of coffee with peptonised milk. It has been frequently suggested to them that a preparation of the kind would meet a largely-felt want in the case of invalids and delicate people, and the matter has engaged their attention for some considerable time. There were many practical difficulties in the way of obtaining a preparation which sufficiently conserved the aroma of coffee, but after continued experiment and the use of specially devised machinery, these have been successfully overcome. The resulting preparation will be found a most valuable

addition to the condensed peptonised milk foods which have met with such complete approval from the medical profession. It is sold in tins at 1s. 6d. and 2s. 6d.

MESSRS. PARKE, DAVIS AND Co. submit samples of "TAKA-DIASTASE," a ferment prepared by a process based upon the investigations of Mr. Jokichi Takamine, a Japanese chemist, and obtained by the cultivation of a fungus growth on wheat bran, the method being similar to malting. From the cultivated fungus an extract is produced, and the exceedingly powerful diastase separated by subsequent manipulation. It is claimed that taka-diastase will convert at least 100 times its weight of dry starch by proper tests, and that it is absolutely permanent. Taka-diastase is concentrated in form, requiring a dose of from 1 to 5 grains, and, being an isolated ferment, is free from sugar. It is perfectly soluble and is compatible with other medicaments, in neutral or slightly alkaline medium. It is also economical, owing to its small dosage.

THE IMPERIAL EAU DE COLOGNE COMPANY, LIMITED, was registered on January 1 by Ewbank and Co., 3, South Square, Gray's Inn, with a capital of £4500 in £1 shares. Objects: To enter into an agreement, made December 16, with E. Cox, and to carry on business as manufacturers of and dealers in eau de Cologne, lavender water, etc., and as chemists and druggists generally. The directors are L. Campbell-Johnston, A. J. Beaumont, and S. H. W. Heron-Maxwell. Qualification, £100. Remuneration to be fixed by the company.

THE DRUG SALES.

A meeting of those interested in the question of holding the drug sales fortnightly—as at the present time—or once a month, was held on Monday last in the London Commercial Sale Rooms, and naturally was largely attended by a representative gathering of merchants, brokers, and others. Mr. Hovill, of the firm of King and Hovill, President of the Brokers' Association, having taken the chair, Mr. Ziegler, on behalf of the exporters, formally moved that the sales should be held monthly, and this proposition was seconded by Mr. Blum. A lively discussion followed, in the course of which, Mr. Richard Barron, on behalf of the wholesale druggists, stated that the members of the Drug Club would not vote, as they had already decided against the proposed innovation. A strong protest was made by several of the exporters, Messrs. Ziegler, Blum, and Ashworth amongst others, against the brokers being allowed to vote on the motion, but the attempt fell through after a lengthy discussion, in which Messrs. Andrew Devitt, R. Dalton, and others joined.

As the result of Mr. Ziegler's motion being put to the vote, it was found that, excluding the brokers, there was a slight majority in favour of monthly sales, but when their votes were added the balance of opinion was in favour of continuing the sales as at present.

Mr. Price then suggested that a representative committee should be appointed to

consider the whole question of the days for holding the drug sales, but Mr. Dunlop, in forcible language, expressed the opinion that it was absurd to recommend this step, seeing that a motion had only just been passed to decide the matter, and that the reconsideration of all the interests connected with the matter would be necessitated.

The outcome of the meeting seems to be that the drug sales will continue to be held as heretofore, but it is not improbable that steps will be taken to prevent any single lot being offered in public sale which is not of the value of £25 or thereabouts. If this should be adopted, it will affect a good many rather seriously, but of course the sales would be got through in about half the time. It has again been suggested that the Vanilla sales should be held on some other day than the drugs, seeing that the persons interested are in many cases not directly connected with the drug trade.

MARKET REPORT.

[Specially compiled for the *Pharmaceutical Journal*.]

[The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.]

LONDON, JANUARY 16, 1896.

Business in the produce markets directly and indirectly connected with the drug trade has continued to drag considerably since our last report, and the amount of business done has but been very extensive. In the chemical market continued attention has been paid to cream of tartar, which is considerably dearer, closes firm, and promises to go higher. Tartaric acid is also a very strong market, and the English manufacturers' quotations have been twice advanced since our last report. Citric acid is firm, and the same remark to carbolic acid and all other varieties of coal distillation products. Amongst fine chemicals, quinine is in good demand, and closes very firm. Opium alkaloids are very steady, pilocarpine is scarce and dear, whilst caffeine and camphor are dull of sale and neglected. Santonin seems likely to go higher, sugar of milk is much dearer, and tannic acid is very firm. In the drug market proper there is not much to report. Gentian root continues to advance in price, and is very firmly held, whilst business has been done in cascara sagrada and orris root at an advance. The new season's cod-liver oil is now on the market, and reports indicate every probability of another year of high prices. In the heavy oil market castor oil is very strong, whilst linseed, rape, and cotton oils are lower. Shellac has recovered considerably in price and closes firm after a brisk demand in auction. Spices generally

are unchanged, whilst the essential oil market is quite devoid of interest. Full details will be found below:—

ACETANILIDE.—This article is reported likely to advance, owing to the price of benzole. At the present time 1s. 3d. to 1s. 4d. per lb. is the spot quotation, according to holder.

ACID, CARBOLIC.—The market is firm, and quotations are as follows:—*Crystals*, 34° to 35° C., 6½d.; 30° to 40° C., 7¼d.; 39° to 40° C. (*detached crystals*), 8¼d. per lb. *Crude*: Unchanged, 60 per cent. is quoted at 1s. 9d., and 75 per cent. at 2s. 2d. per gallon. *Liquefied* and *creylic* are unchanged at 1s. 1d., and 11½d. per gallon respectively.

ACID, CITRIC.—Firm. *English* manufacturers still quote 1s. 2½d. per lb., whilst second-hand holders are unchanged at 1s. 2d. per lb. *Concentrated juice* quotes at £14 5s. to £14 10s. per pipe, *f.o.b.*

ACID, TANNIC.—One of the makers has advanced his prices ¼d. per lb. for ordinary qualities, and for *B. P. Lewis's* ½d. per lb., but the change has not been a general one. The market is firm.

ACID, TARTARIC.—A very firm market. The spot quotation for *Kemball's* and *Lawes'* brands has been advanced 1d. per lb., 1s. 3d. being now asked. *Foreign* brands both in *crystal* and *powder* are also held for 1s. 2½d. on the spot, and 1s. 3d. per lb. for forward delivery.

AMMONIA SALTS.—*Sulphate* is quiet at £8 12s. 6d. for grey 24 per cent. on the spot, whilst *Hull* quotes at £8 10s. and *Beckton* at £8 12s. 6d. *Carbonate*: 3½d. to 3¾d. per lb. *Liquor*: 3¼d. to 3½d. per lb., less 5 per cent. *Sal ammoniac*: Firsts, 39s.; seconds, 37s.

ARSENIC.—Rather firmer at £15 15s. to £16 per ton, bonded terms, for best white powder.

BORAX.—The *Convention* price is still 21s. for powder and 20s. for crystals, whilst second-hand holders offer at 20s. 6d. and 19s. 6d. respectively.

CASCARA SAGRADA.—Business has been done during the week in good quality bark at 22s. per cwt., and holders now ask 23s. There seems every likelihood of higher prices.

COAL-DISTILLATION PRODUCTS.—*Benzole* is firm. For 50 per cent. 2s. per gallon is still asked, and for 90 per cent. 2s. 3d. *Toluol* is steady at 2s. 3d. per gallon for pure. *Creosote*, 1½d. per gallon. *Crude Naphtha*: 30 per cent. at 120° C. quotes at 10d. per gallon. *Solvent Naphtha*: 95 per cent. at 160° C. quotes at 1s. 6d.; 90 per cent. at 160° C. at 1s. 3½d.; and 90 per cent. at 190° C. at 1s. 2d. per gallon. *Anthracene*: 13A, 11½d.; B, 10d. per unit. *Pitch*: 37s. 6d. per ton *f.o.b.* *Tar*: *Refined* and *crude* quote at 12s. 6d. and 12s. per barrel respectively.

COPAIBA (BALSAM).—*Maranhã* sells privately at 1s. 11d. per lb. for good bright quality. During the week business has been done in thick, cloudy balsam, imported *vid* Hamburg, at 1s. per lb.

CREAM OF TARTAR.—Continues to advance steadily in price, and the market closes very strong with a probability of higher prices. *German* brands of powder are now quoted at 101s. to 102s. per cwt. on the spot, whilst 99s. is asked for fine white *French* crystals, both prices showing an advance of 2s. to 3s. on last week's quotations. For shipment

from Bordeaux the last price we heard was 95s. *f.o.b.*

GALLS.—The market in *Chinese* galls remains unchanged, with but little business doing. On the other hand, a good demand continues to be shown for *Persian*, with sales of *blues* at 55s. per cwt. There are also inquiries for *greens* and *whites*, but in the absence of sellers little has been done.

GENTIAN ROOT.—Continues to advance in price. A day or two ago 20s. was accepted, but yesterday 21s. was bid and refused, 22s. per cwt. being the lowest figure. For arrival the last quotation we heard was 19s. per cwt. *f.o.b.*

GLYCERIN.—No change is reported in the prices of this article. Second-hand holders quote 70s. per cwt. for prompt delivery.

GUARANA.—Sells privately at steady rates, 2s. 3d. per lb. having been paid during the week for fair quality.

MANNA.—Reports from Messina state that the market is firm, and prices are higher. The current quotations are as follows:—Large flake in 20 lb. boxes, 1s. 9d.; medium, 1s. 4d.; small, 8d., down to 6½d. per lb. for sorts, *f.o.b.*

MENTHOL.—Very slow of sale. Nominally, 14s. 3d. to 14s. 6d. per lb. is quoted on the spot, but this price would have to be shaded in order to lead to business.

OIL (COD-LIVER).—Reports from Bergen go to show that another season of high prices may be expected. One of the first consignments of new oil has arrived in Bergen, and the holders ask from 180s. per barrel upwards. On the spot old oil quotes at 165s. to 175s. per barrel, whilst for *Newfoundland* oil, 5s. 3d. to 5s. 6d. per gallon is asked.

OIL OF MYSBANE.—Tending higher; 7d. per lb. is now the current quotation.

OILS (ESSENTIAL).—This market is exceedingly quiet at present, but there are no changes in price to report. *Star Anise* oil is held for 10s. 3d. per lb. on the spot, 10s. 1½d. having been refused during the week. *Cassia* oil is unchanged and nominally quoted, better grades continuing firmly held. *Peppermint* oil is unchanged at 10s. to 10s. 3d. for *H. G. Hotchkiss'* oil. *Japan* oil containing 40 per cent. of menthol is quiet at 8s. 6d. to 9s., and *dementholised* at 6s. 9d. to 7s. 9d. The *Italian* market is firm, oils of guaranteed purity being quoted at 4s. 6d. for *Lemon*, 6s. 9d. for *Sweet Orange*, and 9s. 10d. for *Bergamot*, all *f.o.b.*, Messina. Varying reports are to hand with regard to the price of *lemon*, on the one hand an early advance being expected, whilst on the other it is said that no change is probable.

OILS (FIXED) AND SPIRITS.—*Castor*: The market is very firm for *Italian* oil, and quotations seem likely to advance. At present 30s. to 30s. 6d. *c.i.f.* is quoted for best tasteless quality. *Cotton* has declined still further since our last report, but closes firm. On the spot £16 10s. to £17 5s. is quoted for *refined* oil, according to brand and package. *Coco-nut* is firm, and *Ceylon* is now quoted at £22 10s. to £22 15s., whilst *Cochin* is steady at £25 10s. on the spot. *Linseed*: Quiet. Oil in barrels is quoted at £20 on the spot. *Rape* oil is again dearer, and £24 15s. to £25 is now quoted for *refined* oil. *Olive*: Reports from Messina state that the yield of olives in Gioja and East Calabria will be less than last season,

although this diminution will probably be compensated for by good yields in other parts of Southern Italy and Sicily. The current quotations are: *Messina*, £29 7s. 6d.; *Gioja*, £33 12s. 6d.; *Gallipoli*, £32 12s. 6d. *Palm*: Lagos oil quotes at £22 10s. on the spot. *Turpentine* is firm at 21s. 1½d. to 21s. 3d. for *American* spirit on the spot. *Petroleum* oil is firm, but quiet, at 6½d. to 6¾d. on the spot for *American* spirit. *Water white* at 8d. to 8½d., and *Russian* at 6½d. to 6¾d. per gallon.

OPIUM.—The London market continues very firm, with a good inquiry shown, especially for *druggists'* and *soft shipping* varieties. The current quotations are:—*Turkish*: *Soft shipping*, 10s. 9d. to 12s. 9d.; *Smyrna*, 8s. to 9s.; *Constantinople*, 8s. 9d. to 9s. 6d.; *Druggists' seconds*, 7s. 6d. to 8s. 6d. per lb. The market in *Persian* opium continues very strong, but business is restricted, owing to the small supplies. Fine *bricks* are held for 13s. 6d., and *balls* from 11s. to 12s. 6d. per lb.

ORRIS ROOT.—Continues very firm, but there is no appreciable change in price to note. On the spot holders ask 72s. 6d. to 75s. for fine *Florentine* root, whilst for delivery 71s. per cwt. *c.i.f.* is still quoted. *Veronese* root is scarce on the spot, and firmly held. Privately 67s. 6d. has been paid during the week for good quality.

PHENACETIN.—There is nothing fresh to report in the position of this article, although some holders have advanced their quotations to 7s. per lb. *Bayer's* make could be bought in second hand at 10s. per lb., whilst there are sellers of other makes at as little as 6s.

PILOCARPINE.—Very scarce and dearer, and there is little or none to be had under 9s. 6d. to 10s. per gramme for nitrate.

QUININE SULPHATE.—Very firm. A brisk business has been done during the week in the best *German* brands at 1s. 1½d., and to-day 1s. 1½d. has been paid. The market closes strong.

SANTONINE.—is reported rather firmer, but no absolute change has occurred in the price. The makers' quotation is still 7s. 6d. per lb., whilst in second-hand 7s. 3d. would buy.

SEEDS (VARIOUS).—*Anise*: Good quality has sold during the week at 31s. per cwt. for *Spanish*. *Cumin*: The spot price is now 36s. per cwt for *Mogador* seed. *Stavesacre* seeds are held for 95s. per cwt. on the spot for good quality.

SHELLAC.—A reaction appears to have commenced in this article after last week's "slump," and a decidedly firm tone is shown in all positions. On the spot there have been sales of *TN Orange* on a basis of 95s., whilst *AC Garnet* is quiet, but firm, at 90s. A fair business has been done for arrival, including *TN Orange* at 83s. 6d. to 85s., *c.i.f.* (February–April, and March–May shipment), and *AC Garnet*, same shipment, at 85s., *c.i.f.* At the weekly auctions, a moderate catalogue only was offered, but a good demand was shown, and the bulk was disposed of at prices showing an advance of 4s. to 10s. for *Second Orange*, which closed at 94s. to 95s. for *TN* quality. All the *Button* was bought in, and no *Garnet* was offered. Since the auctions, a further advance has occurred, and *TN Orange* has sold at 96s. per cwt., whilst the arrival market is very firm.

SODA COMPOUNDS.—*Nitrate* is slow of sale at £7 12s. 6d. per ton for *ordinary* and £8 5s. for *refined* on the spot. *Bicarbonate*: Still quoted at £7 5s. per ton on the spot, landed terms, and £6 15s. in Liverpool. *Crystals*: 42s. 6d. *ex ship* or wharf. The Liverpool price is 50s. *f.o.b.* *Caustic*: Steady at £7 15s. for 70 per cent. white on the spot, with 60 per cent. £1 less. The Liverpool prices are £7 10s. and £6 10s. respectively, *f.o.b.* *Hyposulphite*: Scarce and firm at 8s. 3d. to 8s. 6d. per cwt. in kegs on the spot.

SOY.—*Chinese* soy is quiet, but steady. Fair quality still quotes at 1s. 1d. per gallon.

SPERMACELE.—Firmly held at 1s. 9d. on the spot for *refined American*.

SPICES (VARIOUS).—*Cloves* are steady. In auction about half the catalogue sold at 2d. for good fair *Zanzibar*, fair ditto, 1½d., medium dark, 1¾d., and ordinary ditto at 1¾d. *Cassia lignea*: Medium good sound quality was bought in at 32s., and common to fair broken at 18s. 6d. to 24s. per cwt. *Cinnamon chips*: Fine quillings sold in auction at 7½d. per lb. *Ginger*: *Jamaica* sold at a further advance in auction, 80s. per cwt. being paid for ordinary medium, dull quality. *Cochin* is still dull of sale. Medium to small washed rough sold at 33s. per cwt. without reserve. *Chillies*: *Zanzibar* was bought in at 50s. for good red. Fine damaged *Japan* sold at 41s. per cwt. *Arrowroot* is dull and in large supply. In auction *St. Vincent* sold at steady rates, ranging from 1½d. for ordinary up to 1¾d. for good. *Pimento* sold slowly at 2¾d. for medium, and 2½d. for fair quality.

SUGAR OF MILK.—Dearer. The price for this article continues to advance steadily, and holders now ask 87s. 6d. for good brands of *crystals*, and 89s. for *powder*.

TOLU (BALSAM).—The demand for this article has slackened off, and 2s. 6d. per lb. is now accepted for genuine balsam on the spot. For shipment from New York the last quotation was 2s. 1d. per lb., *c.i.f.* terms.

TRAGACANTH (GUM).—The market remains very firm, although few sales are reported. The current quotations are now as follows:—*Firsts* (fine pale "druggists'" gum), £15; *seconds*, £13 to £14 10s.; *thirds*, £11 10s. to £13; *fourths*, £9 to £11; yellow and pinky, £7 10s. to £8 10s.; and other grades, £2 to £7 per cwt.

TURMERIC.—Prices are fairly steady in spite of a quiet market. Privately sales of *Bengal* have been made during the week at 7s. 3d. per cwt. In auction on Tuesday 20 bags were bought in at 7s. 6d. per cwt.

WAX (JAPAN).—There is none to be had on the spot under 30s. for pale *squares*, and as much as 35s. is in some cases asked. For delivery 40s. per cwt. *c.i.f.* is quoted.

NEW BOOKS AND NEW EDITIONS.

[Publishers are requested to send particulars of new publications, addressed "Editor, 17, Bloomsbury Square, W.C."]

A LABORATORY COURSE IN EXPERIMENTAL PHYSICS. By W. J. LOUDON and J. C. McLENNAN. 8vo., pp. 310. Price 8s. 6d. (Macmillan and Co., London.)

A MANUAL OF INORGANIC CHEMISTRY. By T. E. THORPE. New edit. Vol. 1, The Non-Metals; Vol. 2, The Metals. Cr. 8vo. Price 5s. 6d. each. (Wm. Collins, Sons, and Co., Ltd, London.)

NEWCASTLE CHEMICAL REPORT.

[From our own Correspondent.]

JANUARY 14, 1896.

The chemical trade on this market does not as yet give out signs of much new immediate business. The usual annual contracting goes on very slowly. Home orders keep dropping in, but not to that material extent to prevent stocks from accumulating. Sulphur and salt-cake continue scarce; other articles fairly plentiful. Prices, however, go pretty much without change. Prices are:—BLEACHING POWDER: £6 10s. to £7 5s., according to market and packages. SODA CRYSTALS: 37s. 6d. to 45s. according to market and packages. CAUSTIC SODA: 70 per cent., £7 10s. to £7 15s. RECOVERED SULPHUR: £3 17s. 6d. to £4. SODA ASH: 48 per cent., £3 15s. to £4; 52 per cent., £3 17s. 6d. to £4 2s. 6d. ALKALI: 48 per cent., £4 10s. HYPOSULPHITE: £6 5s. to £7, according to packages. SILICATE: £2 12s. 6d. to £3 7s. 6d., according to packages. SULPHATE OF AMMONIA: Leith, £8 10s. PITCH: 37s. SALTCAKE: 27s. 6d. to 30s. ALUM: In lump, Glasgow, £5 10s. nett.

LIVERPOOL MARKET REPORT.

[From our own Correspondent.]

JANUARY 15, 1896.

LINSEED: *Turkish*, 35s. 3d. to 35s. 6d. per 416 lbs.; *Trebizonde*, 32s. 6d. CANARY SEED: *Turkish*, 33s. to 34s. per 464 lbs. CARNAUBA WAX: Yellow, 135s.; grey, 120s. HONEY: *Chilian*, 21s. 3d. KOLA NUTS: Fresh, 8d.; dried, 7d. COCHINEAL: Small amounts of black *Teneriffe* have changed hands at recent rates. OLIVE OIL: *Seville*, £30 10s. per tun. CASTOR OIL: *Calcutta*, good seconds, 2½d.; *Madras*, 2¾d. *ex quay*, 2½d. *ex store*; *French*, 1st pressure, 2¾d. LINSEED OIL: 20s. 6d. to 21s. for *Liverpool* makes. COTTONSEED OIL: *Liverpool* refined, 17s. to 17s. 6d. in export barrels. SPIRIT OF TURPENTINE: 21s. 9d. PETROLEUM: *Russian*, 7d.; *American*, 7¾d. to 8¾d. SAL AMMONIAC: "firsts," 39s.; "seconds," 37s. per ton. ARSENIC: Powder, 16s. per cwt.; lump, 27s. BLEACHING POWDER: £7 per ton for hard in casks, *f.o.b.*, *Liverpool*. COPPERAS: 38s. per ton, *Lancashire*. CHLORATE OF POTASH: 4½d. per lb. PRUSSIAN OF POTASH: 8d. per lb. CREAM OF TARTAR: 100s. to 102s. 6d. for best white. CAUSTIC SODA: 70 per cent., £7 15s. to £8 per ton; 60 per cent., £6 15s. to £7. SODA CRYSTALS: £2 10s. per ton. BICARBONATE OF SODA: £7 per ton. BORAX: lump, 19s. 6d. per cwt.; powder, 20s. 6d. NITRATE OF SODA: Quiet at 7s. 7½d. to 7s. 10½d. per cwt.

LATE ADVERTISEMENTS.

Assistant Wanted.

CHEMIST'S.—Smart active JUNIOR for front counter and occasional dispensing. Out-door. Address, with full particulars, MANAGER, Palmeira House, Hove, Brighton.

Business for Disposal.

TWO Chemists and Druggists.—The BUSINESS for many years carried on by the late Mr. Love, in Launceston, is now for disposal, for which no goodwill is required, the incoming being the value of the drugs, &c. Full particulars of Messrs. BOWEN & Co., Auctioneers and Valuers, 9, Frankfort St., Plymouth.

EXCHANGE.

[For the convenience of readers, suitable notices, not exceeding thirty words in length, are inserted free in this column, if they do not partake of the nature of ordinary advertisements. They must relate to books, apparatus, shop fittings, etc., and arrive not later than Wednesday, addressed "Editorial Department, 17, Bloomsbury Square, W.C."]

OFFERED.

Thorpe's 'Chemistry' (2 vols.), good as new, 3s. 6d., post free.—Robinson, 125, South Lambeth Road, S.W.

Poncet's 'History of Drugs,' done into English from the original, fourth edition, 1748, bound in leather, and in good condition, with many woodcuts.—J. Howorth, Thorne Road, Doncaster.

Abel and Bloxam's 'Handbook of Chemistry,' 1854; Royle's 'Materia Medica,' 1856; Garrod's 'Materia Medica,' 1864; 'Pharmaceutical Journal,' last ten years. Any fair offer.—Owles, 3, Queen Street, Portsea.

What offers, 'Chemist and Druggist,' 1895; 'British and Colonial Druggist,' and 'Pharm. Journal,' 1892, to present time; also 'B. and C. D.,' and 'Chemist and Druggist' Diaries for last six years.—Ross, Chemist, Castlegate, Aberdeen.

Wills' 'Flowers and Fruits,' 'Materia Medica,' and 'Elements of Pharmacy'; all latest editions, new. What Offers?—F. Charnock, Cornhill, Bury St. Edmunds.

Two plates ruby glass, lettered in white, Jones, chemist, as Maw's Fig. 21; will fit ordinary street lamp. What offers?—Faraday, Saffron Walden.

Prantl and Vines' 'Botany,' new, 5s. 6d.; Holmes' 'Botanical Note-Book,' 2s.; Hayward's 'Botanist's Pocket-Book,' new, 3s.; Thorpe's 'Chemistry,' 'Metals and Non-Metals,' 3s. 6d. the two.—Burge, Fernhead Road, St. Peter's Park, W.

Free. Holden's 'Manual of Dissections,' 6s., published 16s.; Cooper's 'Dictionary of Surgery,' 5s., published 30s.; Quain's 'Anatomy,' 3rd. ed., 6s.—Davies, 33, Eglinton Road, Bow.

Gray's 'Supplement,' scarce, 10s. 6d.; Newman's 'British Ferns,' cost 12s., 5s.; Scoresby-Jackson's 'Materia Medica,' 3rd. published, 12s. 6d., 5s.; Bradbury's 'Nature Printed Ferns,' 50s., free.—Davis, "Chestnuts," Gordon Hill, Enfield.

Best Pale, Norwegian Cod-Liver Oil. One gallon, 9s. 6d.; two gallon lots, 9s. Cash with order.—Wood, chemist, Oldham.

Prantl and Vines' 'Botany,' Remson's 'Organic Chemistry,' Armstrong's 'Organic Chemistry,' Tilden's 'Chemical Philosophy.' All half price, carriage paid. Exchange for apparatus or dental forceps.—"Spigelia," 33, Lower Kennington Lane, S.E.

WANTED.

Gray's 'Anatomy,' recent edition. Price to D. M. Macdonald, 124, Crown Street, Aberdeen.

'Pharmaceutical Journal' offered for 'Chemist and Druggist,' posted on Mondays.—Griffin, Chemist, 139, Monument Road, Birmingham.

One-twelfth inch Oil Immersion Lens and Condenser Leitz or other good make; also bacteriological apparatus.—Broom, Houghton-le Spring.

Plain dental chair. Price to Smith, chemist, Workington.

Green's 'Botany,' Bentley's 'Systematic Pharmacographia,' Holmes' 'Botanical Note-Book,' Meyers' 'Outlines' Thorpe's 'Metals and Non-metals,' Perkin and Kipping's 'Organic Chemistry' (Part II.), latest editions.—Morrell, Norton Road, Stockton, Durham.

** The attention of readers is directed to the conditions printed at the head of this column. Notices cannot be inserted unless they are in accordance with those conditions.

MARRIAGE.

FAIRHURST — GARLAND. — At Chapel Street Congregational Church, Blackburn, on Tuesday, December 31, Mr. Harry S. Fairhurst, architect, of Manchester and Blackburn, to Miss Garland, daughter of Mr. A. P. Garland, pharmaceutical chemist, Blackburn.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

MONDAY, JANUARY 20.

SOCIETY OF ARTS (CANTOR LECTURES), at 8 p.m.
"Alternate Current Transformers," by Dr. J. A. Fleming.

TUESDAY, JANUARY 21.

MIDLAND PHARMACEUTICAL ASSOCIATION, at 8.30 p.m.

"The Sun and his Attendant Family," by Mr. F. Smith.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.
"External Covering of Plants and Animals" (II.), by Professor C. Stewart.

ROYAL PHOTOGRAPHIC SOCIETY, at 8 p.m.
"On Irregular Grained Screens," by E. Sanger Shepherd.

GRESHAM COLLEGE, at 6 p.m.
"The Climate of the South of England: The South Coast," by Professor E. Symes Thompson.

WEDNESDAY, JANUARY 22.

WESTERN CHEMISTS' ASSOCIATION.
Smoking Concert at the Westbourne Restaurant, 1, Craven Road, W., at 8.30 p.m. precisely.

SOCIETY OF ARTS, at 8 p.m.
"Supply of Sea-water to London," by Frank W. Gricson.

GRESHAM COLLEGE, at 6 p.m.
"The Channel Islands" (II.), by E. Symes Thompson.

MANCHESTER PHARMACEUTICAL ASSOCIATION.
Annual Ball and Musical Promenade at the Hulme Town Hall.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION, at 9 p.m.
Description: "My Experiences of the Minor," by T. C. Clarke.

THURSDAY, JANUARY 23.

CHEMICAL SOCIETY, at 8 p.m.
"Helmholtz Memorial Lecture," by Professor G. F. Fitzgerald.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.
"Dante," by P. H. Wicksteed.

IMPERIAL INSTITUTE, at 4.30 p.m.
"Co-operation as applied to Agriculture," by R. H. Rew.

GRESHAM COLLEGE, at 6 p.m.
"Health Resorts of South Coast" (III.), by E. Symes Thompson.

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY, at 8.30 p.m.
"Albumin and its Allies" (Illustrated), by J. R. Logan.

SCHOOL OF PHARMACY STUDENTS' ASSOCIATION, at 6 p.m.
"Flowers and Their Visitors," by A. Lander. Amendment of Rules.

LIVERPOOL CHEMISTS' ASSOCIATION, at 7 p.m.
"The Illuminating Powers of Hydrocarbons" (Illustrated), by Edward Davies. Election of Council.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION, at 9.15 p.m.
Short Papers by Members.

CHEMISTS' ASSISTANTS' ASSOCIATION, at 8.30 p.m.
"The Structure of the Human Eye, and the Action of Certain Drugs upon it," by Dr. Juler.

FRIDAY, JANUARY 24.

ROYAL INSTITUTION OF GREAT BRITAIN, at 9 p.m.
"Ludwig and Vitalism," by Professor Burdon Sanderson.

GRESHAM COLLEGE, at 6 p.m.
"Choice of Southern Climates" (IV.), by E. Symes Thompson.

SHEFFIELD MICROSCOPICAL SOCIETY, at 8 p.m.
Practical Night.

EDINBURGH CHEMISTS' ASSISTANTS' AND APPRENTICES' ASSOCIATION, at 9.15 p.m.
"The Irreducible Minimum: A Study," by Alex. Sutherland.

ABERDEEN JUNIOR CHEMISTS' ASSOCIATION, at 9.30 p.m.
"The Chemist's Apprentice—His Origin, Life, History, and Final Transformation," by W. Pennie.

SATURDAY, JANUARY 25.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.
"The Valley of Kashmir," by Walter R. Lawrence.

SUPPLEMENT

TO THE

PHARMACEUTICAL JOURNAL.

TRADE NOTES AND NEWS.

MESSRS. REYNOLDS and BRANSON, of Leeds, have added one more to their list of useful novelties, in the enema syringe cupboard. The almost universal adoption of indiarubber enema syringes by the medical profession and the public makes an improved method of storage a matter of considerable importance. If folded and shut up in their boxes, they will suffer more from the tubes remaining bent than from any wear when in use. The cupboard suspends enemas in the only position in which they should be stored, as shown in the illustration, keeps them free from dust, saves any mess from drip, and provides that proper place for them which is consistent with forethought and good order. The cupboard is made of stout pasteboard, and is fitted with a rack to suspend the syringe from, whilst a vial is fixed at the lower end to catch any drip. The price is 1s. only, or post free, 1s. 3d. If with lock and key, 6d. extra.

Dimensions 26 inches long by 2½ wide.



THE BRITISH MEDICINAL CAPSULES COMPANY, LIMITED, was registered on January 1, by Harris and Chethani, 35, Finsbury Circus, E.C., with a capital of £1,500 in £1 shares. Objects: To acquire and carry on the business of manufacturers of gelatine capsules, suspensory bandages, and indiarubber goods, as now carried on by Frances E. Lewin, of 37, Theobald's Road, Holborn, as the British Medicinal Capsules Company, and the similar business carried on by the said Frances E. Lewin, at 10, Wharf Road, Pritchard's Road, Hackney Road, Bethnal Green, as the British Surgical Rubber Company, and to enter into an agreement with the said vendor and Maurice Lewin, her husband. The regulations of Table A mainly apply.

MR. W. SHEPPERSON, the principal of the Liquor Carnis Co., is on the Riviera making a business survey, and letters should be addressed up to the 5th prox. to the Grand Hotel, Nice. Chemists in the Riviera desirous of opening business relations are specially invited to write.

MESSRS. FLETCHER, FLETCHER AND Co. reproduce clinical reports upon the administration of cinchona in the form of their special preparations, as an elegant booklet, special prominence being given to "Vibrona," a combination of hydrobromic extract of cinchona with port wine.

MR. D. M. C. REIMERS, of Aarhus, Denmark, has published a historical account of his firm, which dates from the year 1596, and has, therefore, been established 300

years. The book contains a brief history of each of the successive owners, with copies of some legal documents of considerable antiquarian interest, and a large amount of domestic history as to births, deaths, and marriages, which can only be of interest to genealogists. The present appearance of the shop as shown in the illustration, indicates that it is fitted up in a manner worthy of its ancient reputation, *i.e.*, it is quite up to date.

MESSRS. KENNEDY AND Co. write as follows:—"Referring to Mr. Ernest Stapel's statement to which you allude in your valuable journal, dated 18th inst., we beg to call the attention of your readers to the specification of Letters Patent No. 2463, of 1873; in that specification your readers will find every feature that Mr. Spence can possibly claim, or even show in his shields. As this patent has long lapsed, no exclusive right in the shields exists, and it is preposterous to say that any later patent can be upheld. Why does not Mr. Stapel or Spence sue us—if he dare? Thanking you in anticipation for publishing this letter."

MISCELLANEOUS NEWS.

THE WESTERN CHEMISTS' ASSOCIATION (OF LONDON).—During the interval at the smoking concert held by this Association on Wednesday evening, the President, Mr. Hyslop, briefly alluded to the manner in which the administration of the Food and Drugs Act is at present being carried out. He was of opinion that in view of the seidlitz powder prosecution (*vide* p. 77 of this week's Journal), it was advisable that a discussion should take place at the next monthly meeting of the Association in regard to the extent to which a chemist was responsible for the quality of factory-made articles, and he would be glad if some members would volunteer to initiate a debate on the subject. Proceeding, he warned chemists in the district to be on the look-out for wax prosecutions next. He himself had attempted to obtain pure beeswax with a guarantee from a well-known wholesale house, but without success, and he was informed that there was none to be had at the present time. He believed that the matter was at present engaging the attention of the Food and Drugs inspectors.

JARVIS.—At Pau, Basses Pyrenees, France, on January 8, Anna Maria Paulina, the beloved wife of John Jarvis, English chemist, died in her fifty-third year.

PHOTOGRAPHY UP TO DATE.—THE current issue of the *Amateur Photographer* contains two instructive articles:—(1) The first public communication respecting Professor Herkomer's new black and white process, and (2) an efficient and lucid explanation of the much-talked-of discovery of Professor Röntgen of Vienna.

SOUTHAMPTON WINTER EXHIBITION OF ARTS AND CRAFTS.—Messrs. W. Bates and Co. here exhibit three very handsome cases of surgical, optical, and pharmaceutical goods, and there was no other stand that attracted so much notice or was so worthy of inspection. The majority of the local medical men visited the exhibition. In the

centre case were displayed the special surgical manufactures, for which the firm have distinguished themselves. Here was to be seen Mr. Bates' patent truss, an improved abdominal support, and some exquisitely made orthopaedic instruments, spinal supports, as well as several new pessaries which have been made for a local surgeon: in the upper part of the case were displayed surgical instruments, hypodermic syringes, some new oil and water sprays, some aluminium instruments, and several new intra-uterine instruments, catheters, specula, etc. In the optical case were displayed ophthalmic test cases, large specimens of uncut pebbles, ophthalmoscopes, some new clips and spectacles made in aluminium alloy, also Mr. Bates' easy-fitting folder, field and marine glasses, process tools used in the manufacture of cylindrical and spherical lenses, cameras, kodaks, kodets, Frenas and Mr. Bates' exhibition hand camera. There were also some interesting scientific instruments shown, made by Mr. Jas. Hicks, including the Watkin aneroid. The third case was devoted to a very elaborate exhibit of the specialties of Messrs. Burroughs, Wellcome, and Co., special prominence being given to their tabloid pocket cases and chests, the Stanley and Yacht chests being much admired.

Advertisement.

EDWIN APPLGATE, Deceased.

PURSUANT to the Statute 22nd and 23rd Vic., chapter 35, intituled "An act to further amend the law of Property and to relieve Trustees," Notice is hereby given that all creditors and other persons having any debts, claims or demands against the estate of Edwin Applegate, formerly of 506, Holloway Road, but late of 46, Tufnell Park Road and 84, West Green Road, South Tottenham, all in the County of Middlesex, Pharmaceutical Chemist (trading at the latter place as Collett & Co.), who died at No. 15, Tufnell Park Road, aforesaid, on the 1st of January, 1896, and to whose Estate Letters of Administration, with the Will annexed, were granted by Her Majesty's High Court of Justice at the Principal Probate Registry, on the 17th day of January, 1896, to John William Applegate, of Dewsbury, in the County of York, Surgeon, the son of the deceased, are hereby required to send the particulars in writing of their claims or demands, to me the undersigned, Alfred Armstrong, of 115, Chancery Lane, W.C., Solicitor, on or before the 28th of February next, after which date the administrator will proceed to distribute the assets of the said deceased among the parties entitled thereto, having regard only to such debts, claims, or demands, of which they shall have then had notice. And that the said Administrator will not be liable for the assets or any part thereof so distributed to any person, or persons of whose claim or demand he shall not have had notice at the time of the distribution.

Dated 23rd day of January, 1896.

ALFRED ARMSTRONG,

115, Chancery Lane, W.C.

Solicitor for John William Applegate,
re Administrator.

MARKET REPORT.

[Specially compiled for the *Pharmaceutical Journal*.]

LONDON, JANUARY 23, 1896.

Business in the produce markets have been generally slow this week, with few changes of importance to report. The drug sales to-day were unusually short, and little of importance transpired. Aloes were in small supply, no East Indian or Cape varieties being shown. Gum benzoin however, was well represented, and sold at full rates for Sumatra, whilst the Siam gum was all bought in. Copaiba balsam sold at firm rates for Maranham, whilst, on the other hand, tolu balsam is declining in value. Buchu leaves are firm, but guarana sold at lower rates than those paid privately. Cascara sagrada bark is fully steady, whilst ipecacuanha is firmly held for both varieties of root. Of other drugs, gentian root, Peruvian balsam, and Jamaican honey are steady, whilst nux vomica sold at an advance. There is little to report in the essential oil market, but the heavy oil market has been very active, and nearly everyone has advanced during the week. Shellac is firming up, whilst spices generally are unchanged. In the chemical market the most notable feature is the continued advance in cream of tartar. Full details will be found below of the various articles:—

ACID, CARBOLIC.—The market is firm^r current quotations being as follows:—*Cry-stals*: 34° to 35° C., 6½d.; 39° to 40° C., 7¼d.; 39° to 40° C. (detached crystals), 8¼d. per lb. *Crude*: 60 per cent. is rather firmer, and now quoted at 1s. 10d., with 75 per cent. at 2s. 2d. per gallon. *Liquefied* and *oresylic* are unchanged at 1s. 1d. and 11½d. per gallon respectively.

ACID, CITRIC.—Firm. The *English* manufacturers' spot price is 1s. 2½d. per lb. on the spot, whilst it can still be bought in second-hand at 1s. 2d. *Concentrated juice* offers at £13 15s. to £14 per pipe *f.o.b.*

ACID, TARTARIC.—Very strong. The *English* manufacturers' quotation is still 1s. 3d. per lb. on the spot. *Foreign* brands of acid (not guaranteed B.P.), both in crystal and powder are still quoted at 1s. 2½d. per lb. on the spot, and 1s. 3d. for forward delivery.

ACACIA.—At to-day's drug sales a moderate supply only was catalogued, and little inquiry was shown. Two cases of medium yellowish *Trieste* gum sold without reserve at 94s. per cwt., the remainder being bought in at prices ranging from £12 10s. for good hard medium to bold grey, £6 for fair grain, down to £5 for medium yellow. *Soudan* sorts were bought in at 60s. for bold ambery, and 70s. for medium to bold yellow. Privately the demand for *Bushire* so-called insoluble gum, has fallen off considerably, but quotations remain unchanged, fair sorts being quoted at 10s. to 14s., and pale selected at 18s. to 22s. per cwt.

ALOES were in exceptionally small supply to-day, there being no *Cape* nor *Socotrine* in the catalogue. The stock of the latter was increased by an arrival of 50 kegs on Wednesday, bringing the total amount on the spot up to about 70 packages. To-day several parcels of *Curacao* also were offered, but the majority was bought in. For good

livery 35s. was paid, and for ordinary water damaged, 9s. 6d. per cwt.

AMBERGRIS.—The supply offered to-day only amounted to about 18 ozs., of which 7s. 6d. per oz. was paid for 7¼ ozs. of very low common quality, whilst the remainder was bought in at 60s. per oz.

AMMONIA SULPHATE is 2s. 6d. lower than last week, but at the close is firmer. Grey 24 per cent. being quoted at £8 10s. on the spot. *Hull* is worth £8 8s. 9d., and *Beckton*, £8 10s.

ARECA NUTS.—Steady. In auction 4 bags of good quality *Colombo* nuts sold without reserve at 11s. 6d. per cwt.

BAEL FRUIT.—Two cases of this drug imported from *Bombay* were bought in at 2d. per lb. for fair quality.

BENZOIN.—A moderate supply was offered to-day. *Sumatra* gum was in good supply, and £8 to £8 5s. was paid for good, small to medium pale almony seconds slightly false packed, whilst fair seconds rather false packed realised £6 to £6 15s. per cwt. *Siam* gum was in moderate supply, and was all bought in, good medium to small loose almonds at £17, and small pale almonds part loose and part block at £10 per cwt. *Palem-bang* gum sold at 29s. for fair seconds offered without reserve, and 15s. for drossy thirds, whilst fine almony quality was bought in at 60s. per cwt. *Penang* gum, of which the supply at present is very small, was bought in at 90s. for good seconds (after 80s. had been bid), and 105s. for fine ditto.

BUCHU.—Steady. An average supply was shown to-day, but the demand was only moderate. For fine bright green *round* leaves 5d. was paid, whilst 4¼d. was accepted for medium greenish, and 3d. for yellowish leaves. No *long* leaves were shown.

CALAMUS ROOT.—To-day sixteen bales offered without reserve sold at 16s. per cwt.

CALUMRA.—No inquiry was shown for this article to-day, and ordinary wormy sorts from *Zanzibar* were bought in at 9s. per cwt., and mixed ditto at the same figure.

CAMPHOR.—The market continues very quiet, and prices are lower, although the business done has been more or less nominal. *Formosan* camphor is quoted at 162s. 6d. per cwt., *c.i.f.*, January to March shipment, whilst *Japan* is nominally at 187s. 6d. for the same shipment. At the drug sales to-day 45 tubs of *Japan* camphor were bought in at 195s. per cwt., and 12 cases of *refined Japan* camphor, in squares of 2 lbs. each at 2s. per lb.

CANTHARADES.—The spot price for fair *Chinese* flies is, 1s. per lb. To-day 12 cases were held for this figure.

CARDAMOMS.—A very moderate supply was shown to-day, and the catalogue did not include any very fine qualities. In spite of this a good demand was shown especially for *seed* which sold at an advance of fully 2d. per lb. The prices paid were as follow:—*Ceylon-Mysore*: Medium pale, 2s. 10d.; fair to medium palish, 2s. 7d. to 2s. 8d.; good pale small to medium, 2s. 3d. to 2s. 5d.; medium yellowish, 1s. 9d. to 2s.; mall yellowish, 1s. 7d., down to 1s. 4d. for lean brownish. *Seed* sold at 2s. 6d. per lb.

CASCARA SAGRADA.—Very firm. The spot price for good quality bark is 22s. per cwt., and this price has been paid during the week. At to-day's sales 25s. was the limit for good sound quill from *San Fran-*

cisco, whilst 20s. was paid for ordinary quality.

CASCARILLA.—To-day 28 bales of bark from *New York* were offered, and met with a good inquiry, all being sold at 40s. to 41s. for good silvery, and 35s. to 39s. for rather thin grey ditto.

CHIRETTA.—Fourteen bales were bought in to-day at 4d. per lb.

CINCHONA.—At the drug sales a parcel of flat *Calisaya* bark from *Antifogasta* met with a good demand, all being sold at prices ranging from 1s. 4d. to 1s. 6d. for sound, 11d. for damaged, down to 3d. per lb. for bad damaged. *Maracaibo* bark was bought in at 9d. per lb. The exports from Java to all ports from October 1 to December 31, 1895, were 3,002,800 Amsterdam pounds, against 2,417,849 in 1894, and 1,788,194 in 1893.

COAL-DISTILLATION PRODUCTS.—*Toluol* is still quoted at 2s. 3d. per gallon for *pure*. *Benzole* is rather easier at 1s. 11d. per gallon for 50 per cent., whilst 90 per cent. is still quoted at 2s. 3d. per gallon. *Creosote*: 1½d. per gallon. *Crude naphtha*: 30 per cent. at 120° C., 10d. per gallon.

COLOCYNTH.—A large supply was offered, but no business was done. Of *Turkey*, 16 cases were offered and bought in at 3s. per lb. for good apple. The price asked is 2s. 10d. per lb. The supply to come forward is said to be very small. *Spanish* colocynth was bought in at 1s. 2d. for good quality, and 10d. for very seedy ditto.

COPAIBA.—In auction 5 casks of bright pale *Maranhm* balsam were shown. Of these, one sold at 1s. 11d.; the remainder was bought in at 2s. per lb.

CREAM OF TARTAR.—Continues to advance rapidly in price, and on the spot best white *French* crystals are now quoted at 105s., with *German* brands of powder at 107s. 6d. per cwt., showing an advance of about 6s. on last week's closing price. For shipment from *Bordeaux* 100s. *f.o.b.* is now asked.

DRAGON'S-BLOOD.—Out of an average supply offered, £6 was paid for 6 cases of very seedy lump, but of fair bright colour, offered without reserve, whilst £9 10s. was accepted for 3 cases of good bright gum imported *via* Hamburg. Dark saucers were bought in at £6, and small gum in reeds at the same figure.

ELEMI (GUM).—Tending rather lower. To-day 25 cases of fair pale *Singapore* gum were bought in at 28s. per cwt.

ERGOT OF RYE.—The only parcel sold in auction consisted of 8 bags of very wormy old ergot, which fetched 5½d. to 5¼d. per lb. A parcel of new *Spanish* ergot was bought in, and another parcel of small old *Russian* at 8d. per lb.

EUPHORBIVM.—The stock of this article at present in London is said to be very low. To-day 6 serons from *Las Palmas* were bought in at 35s. per cwt.

GALLS.—The position of *Persian* galls is practically unchanged, *blues* being firmly held for 55s. per cwt., whilst there are no *greens* and *whites* offering. *China* galls are quiet, but firm. In auction, good small plum-shaped were bought in at 65s., whilst business has been done for arrival at 57s. 6d., *c.i.f.*, per cwt. At the drug sales, 23 cases of *China* galls were bought in at 65s., whilst 3 bags of *Turkey* sold at 44s. per cwt.

GAMBOGE.—An average supply was offered in auction, and met with an improved

inquiry, £10 to £10 2s. 6d. being paid for mixed broken pipe and block, £9 10s. for dull hard, and £9 2s. 6d. for soft small *Singapore* gum, whilst £8 5s. was accepted for broken pipe. A parcel of fine bright gum of clean fracture had been disposed of previous to the sale.

GENTIAN ROOT is still advancing in price. During the last few days 22s. per cwt. has been paid on the spot, and 22s. 6d. would probably be the lowest figure now. The stock on the spot is very low. At the drug sales to-day two bags of powder were held for 18s. per cwt.

GUARANA—Lower. To-day 2s. per lb. was accepted for a case of fair sausage showing a decline of 3d. per lb. on the rates paid privately recently.

GUINEA GRAINS.—In auction, 78 bags from the West Coast of Africa all sold at 16s. to 16s. 6d. per cwt.

HONEY.—In small supply and very slow of sale. In auction 24s. per cwt. was paid for 10 cases of nice clean mixed, and 19s. 6d. for dark foul quality. *Brisbane* honey was bought in at 25s. (after 21s. had been bid), and *Chilian* at 26s. per cwt.

IPECACUANHA.—An average supply was offered to-day, and was very firmly held. All the *Carthagenia* (*Columbian*) root was held for 4s. 4d. per lb., and this price has been paid privately during the week. *Rio* (*Brazilian*) root was mostly bought in, but a few bales of damaged root sold at 5s. to 5s. 3d. per lb., according to condition, whilst fine picked was held for 6s. 6d. per lb.

KAMALA.—Rather firmer. To-day 2 cases from *Cannopore* (*via* Bombay), sold at 9½d. per lb. for good quality.

KOLA NUTS.—Fully steady. At the spice sales on Wednesday, 5 bags of *Grenada* small to bold brown and dark sold at 9½d. to 10½d. per lb. To-day the supply offered was only moderate, and good bright *West Indian* were bought in at 1s. 1d., fair ditto at 11d., whilst a 16 lb. box of *Grenada* nuts rather mouldy, sold at 7d. per lb.

LIME JUICE.—No business was done in this article. Seven barrels of *Antiguan* juice were bought in at 1s. per gallon.

LIQUORICE ROOT.—The stock on the spot has been increased by an arrival of *Bussorah* root during the last few days, but the amount of business being done is very small, and ordinary rough quality still quotes at 7s. to 7s. 6d. for ordinary rough quality.

MUSK SEEDS.—1s. 6d. per lb. is the price asked for this article, of which 2 bales were bought in at to-day's sales.

MYRRH (GUM).—To-day clean native-picked gum was bought in at £5 10s., whilst 23s. per cwt. was paid for 17 bales of low drossy sorts.

NUX VOMICA.—To-day 51 bags of *Bombay* sold at 7s. per cwt. for sound and 6s. for oil damaged quality, whilst another parcel from *Madras* and *Calcutta* were bought in at 4s. 6d. per cwt. A parcel consisting of 80 bags from *Cochin* sold without reserve at 6s. 1d. per cwt.

OIL (COD LIVER).—During the week business has been done in the new season's cod liver oil, at 185s. per barrel of 25 gallons for fine non-congealing *Lototen* oil, but the supply is very small, and prices are likely to advance. Old oil is quoted at 165s., whilst *Newfoundland* sells privately at 5s. 6d. to 6s. per gallon.

OILS (ESSENTIAL).—*Star Anise* oil is quiet

but steady. During the week 10s. 2d. has been bid and refused on the spot, and holders still ask 10s. 3d. *Cassia* oil is also very firm, with little good quality oil available. At the drug sales 2 leads of oil testing 76 per cent. of cinnamic aldehyde were bought in at 11s. per lb. *Eucalyptus*. *Dawson's* brand was bought in to-day at 1s. 6d. per lb. Privately 1s. 9d. per lb. has been paid for *Ammydalina* oil. *Sweet Orange*: Eight bottles sold in auction at 4s. 5d. per lb. *Citranello* oil (in drums) is held for 1s. 11d. per lb. on the spot. *Cinnomon leaf* oil sold at 5d. per oz.

OILS (FIXED) AND SPIRITS.—*Castor*: The market for *Italian* oil remains very firm at late rates, 30s. to 30s. 6d., *c.i.f.*, per cwt. being quoted for best quality tasteless oil. *Marseilles* oil is quoted at the full rates of 3½d. to 3¾d. per lb. in tins (packed in cases). *Cotton* is a very strong market, and likely to advance further. The closing price of *refined* oil is £17 to £17 10s. on the spot, according to brand and package. *Coco-nut* is also very firm, and *Cochin* has advanced in price £1 since our last report, closing at £26 10s., whilst *Ceylon* is quoted at £22 15s. *Linseed*: Dearer by 2s. 6d. to 5s., and oil in barrels is now quoted at £20 2s. 6d. to £20 5s. *Rape*: Has advanced in price 10s., refined oil being now worth £25 5s. to £25 10s. *Olive*: *Tunis*, £32; *Spanish*, £32; *Palm*: *Lagos* quotes at £22 on the spot. *Turpentine*: Quiet at a decline, *American* spirit being now worth 20s. 9d. to 20s. 10½d. *Petroleum* oil is also weaker, and lower in price at 6¾d. for *American*, 7¾d. to 7¼d. for *Water white*, and 6½d. to 6¼d. for *Russian* on the spot. *Petroleum Spirit*: *American* spirit quotes at 9d. to 9¼d., and *deodorised* at 9¼d. to 9¾d. per gallon.

OPIUM.—A fair inquiry for *druggists'* opium is still shown, and the market is firm. The current quotations are:—*Turkish*, soft shipping, 10s. 9d. to 12s. 9d.; *Smyrna*, 8s. to 9s.; *Constantinople*, 8s. 6d. to 9s. 6d.; and *Druggists' seconds* at 7s. 3d. to 8s. 3d. The market in *Persian* opium is rather easier, owing to fresh consignments being near at hand. Fine "bricks" offer at 13s. per lb., and "ball" at 12s. 3d. to 12s. 6d.

ORRIS ROOT.—Fine *Florentine* root was bought in to-day at 80s. per cwt., and pale cuttings at 50s. *Veronese* is quoted at 67s. 6d. per cwt. for good sorts.

PERU (BALSAM).—There has not been much inquiry for this article lately, but the market is firm. During the week 9s. has been paid privately for genuine balsam of direct import.

QUASSIA CHIPS.—3 tons were bought in to-day at £8 per ton.

QUILLAIA BARK.—13s. 6d. is the price asked on the spot for this article. Two tons was bought in at the sales to-day.

QUININE SULPHATE—Remains very dull, with little business doing. The best *German* brands are offering at 1s. 1½d. for *B. & S.* and *Brunswick*.

SEEDS (VARIOUS).—*Coriander*: At the spice sales small *Madras* seed was bought in at 18s. per cwt., whilst ordinary coarse *Coconada* sold at 4s. 6d. To-day 40 bags of ordinary *Bombay* seed sold at 4s. 6d. per cwt. *Canary*: In auction fine *Spanish* seed sold at 47s. per quarter, of 464 lbs. *Cumin*.—*Maltese* seed was bought in to-day at 35s. *Aniseed*.—*Russian* was bought in at 25s. *Star Aniseed*.—Genuine *Chinese* were

held for 95s. per cwt. *Dill*.—*Bombay* seed was bought in at 13s. *Fennel*.—Ordinary mixed quality from *Bombay* was held for the same figure.

SARSPARILLA—Steady. Sound *Jamaica* root sold at 1s. 4d. per lb. to-day, whilst 1s. 2d. was accepted for slightly damaged ditto. For *Lima-Jamaica*, 1s. per lb. was paid, showing an advance of fully 1d. per lb. *Honduras* was bought in at 1s. per lb.

SENNA.—Only a few bales of *Tinnivelly* leaves were shown to-day, and the prices paid were only nominal, including small yellowish at 1½d. to 2½d., and damaged brownish at ½d. to ¾d. per lb.

SHELLAC.—A moderate business has been done privately since our last report at steady rates, including *TN* basis at 94s., whilst *Button* has sold at an advance of about 5s. on the last auction rates, including cakey *BL 1* at 91s. to 92s. The arrival market is firm, with sales of *TN Orange* at 78s. *c.i.f.* for April to June steamer, and 82s. *c.i.f.* for January to March ditto. At the weekly sales held on Tuesday only 664 cases were actually offered, and a brisk competition was shown, although the prices realised were irregular, *Second Orange* at the outset selling at a decline of 3s. to 4s., but afterwards firming up, closed at a slight advance on the last sale rates. *Garnet* was all bought in, whilst resinous *Button* sold at a decline.

SPICES (VARIOUS).—*Cloves* are quiet, but steady. In auction good bright *Zanzibar* sold at 2½d.; medium dark at 1½d.; and ordinary at 1¼d. per lb., whilst picked *Penang* was bought in at 6¾d. *Ginger*: *Cochin* is still slow of sale. At the sales on Wednesday, small to medium washed rough sold at 33s., and small to bold brown ditto at 34s. to 35s. per cwt. Of *Bengal* 100 bags sold at 16s. 6d., whilst limed *Japan* was bought in at 24s. *Cassia lignea*: In auction ordinary mixed sold at 16s. 6d. per cwt. *Chillies*: Fair quality *Zanzibar* sold at 33s. *Capsicums*: Dull red *East Indian* sold at 19s., and good long red and yellowish *Japan* at 20s. to 22s. per cwt. *Pepper*: Good bright washed *Singapore* sold in auction at 2¼d. per lb. *White pepper*: The demand is only moderate, but prices are firming. On Wednesday, fine bold *Singapore* sold at 5¼d. per lb. *Arrow-root*: The supplies continue far in excess of the demand, and all the *St. Vincent* was bought in at the sales except 20 barrels which sold at 3d. for very good, and 4¼d. for fine *W. Indian*.

SQUILLS.—In auction yellowish seconds sold at 1d. per lb., and ordinary brownish at ½d. (without reserve).

TOLU (BALSAM).—Tending lower. To-day several parcels were offered in auction, and 1s. 10d. was accepted for two cases offered without reserve, whilst 3½d. was accepted for three cases of so-called tolu balsam. The quotation for shipment from New York is still 2s. 3d. per lb., *c.i.f.*

WAX (BEES).—*Jamaica* wax was in good demand, and sold at an advance of 2s. 6d. per cwt., £7 15s. to £8 2s. 6d. being paid for fair to good quality. *Mozambique* cold at £6 12s. 6d. *Madras* at £6 7s. 6d. *Australian* at £7, and *Madagascar* at £6 5s. to £6 12s. 6d.

WAX (JAPAN).—Very firmly held. Fair pale squares are held for 34s. on the spot. Several parcels were bought in to-day.

NEWCASTLE CHEMICAL REPORT.

[From our own Correspondent.]

JANUARY 21, 1896.

Over-sea business continues quiet, but home orders, which keep dropping in with regularity, prevent stocks from increasing to any material extent. Sulphur is still very scarce. Prices are little changed, and are:—
BLEACHING POWDER: £6 5s. to £7 5s., according to market and packages. SODA CRYSTALS: 36s. to 42s. 6d. CAUSTIC SODA: 70 per cent., £7 5s. to £7 15s. SODA ASH: 52 per cent., £4. ALKALI: 52 per cent., £4 15s. SULPHUR: £3 17s. 6d. to £4. SOUTH DURHAM SALT: 9s. 6d. per ton.

LIVERPOOL MARKET REPORT.

[From our own Correspondent.]

JANUARY 22, 1896.

CANARY SEED is in but little demand; price remains at or about 33s. 6d. per 464 lbs. for *Turkish*, at which figure 50 bags were sold yesterday. GUM ARABIC meets with fair inquiry, and is selling at very steady rates. BEESWAX: 14 barrels of *St. Domingo* sold at £6 10s. per cwt. HONEY: At auction *Chilian* Pile 3 brought 21s. 6d. per cwt., and Pile 2 22s. 3d. *ex quay*. CASTOR OIL remains steady at recent rates, with moderate business passing; good seconds, *Calcutta*, 2½d. per lb.; *Madras*, 2¾d. to 2½d.; *French*, 1st pressure, 2¾d. OLIVE OIL is dull at recent rates. *Spanish* oils are easier; *Seville*, £30 to £30 10s. per tun; *Malaga*, £31 per tun. COTTONSEED OIL has advanced to 17s. 6d. to 18s. per cwt. for *Liverpool* refined in export barrels. LINSEED OIL remains at last week's rates, 20s. 6d. to 21s. per cwt. *Liverpool* pressed. SPIRIT OF TURPENTINE has become a little easier in price, and stands at 21s. 6d. per cwt. PETROLEUM: *Russian*, 6½d. per gallon; *American*, 7d. to 8¼d. per gallon. AMMONIA CARBONATE: 3½d. to 3¾d. per lb. AMMONIA SULPHATE: £8 12s. 6d. spot price for good grey. SAL AMMONIAC: "First," 39s.; "second," 37s. per cwt. BLEACHING POWDER: *Hard f.o.b.*, £7 to £7 10s. per ton. BORATE OF LIME: 560 bags sold here *ex quay* at £10 per ton. COPPERAS: *Lancashire*, in good demand at 37s. 6d. per ton. SULPHATE OF COPPER: £15 7s. 6d. to £15 10s. per ton. CHLORATE OF POTASH: 4¾d. per lb. SALT-PETRE: 23s. 6d., kegs; 23s. per cwt., barrels. PRUSSIAN OF POTASH: 8d. per lb. CREAM OF TARTAR: Remains very firm at recent advance, 100s. per cwt. is about the price for 1st white cream. BICARBONATE OF SODA: £6 15s. per ton. SODA CRYSTALS: £2 7s. 6d. to £2 10s. per ton. CAUSTIC SODA: 70 per cent., £7 10s.; 60 per cent., £6 10s. per ton in 5 ton lots. HYPOSULPHITE OF SODA: £7 to £7 10s. per ton. SULPHATE OF SODA: Refined, £2 7s. 6d. to £2 10s. per ton. BORAX: £19 10s. crystals, £20 10s. for powder. SULPHUR: Flour, £7 10s. per ton; roll, £5 5s.; recovered, £3 17s. 6d., in bags; £4 5s., in barrels. PHOSPHORUS. Wedges, 2s.; sticks, 2s. 1d. per lb.; amorphous, 2s. 8½d. per lb.

EXCHANGE.

[For the convenience of readers, suitable notices, not exceeding thirty words in length, are inserted free in this column, if they do not partake of the nature of ordinary advertisements. They must relate to books, apparatus, shop fittings, etc., and arrive not later than Wednesday, addressed "Editorial Department, 17, Bloomsbury Square, W.C."]

OFFERED.

Day's Patent Air-Tight Covers; cost £2 2s.; take £1 1s.—Dyer, Pharmacist, Honiton.

Unused Portable Assay Balance, with rider to carry 2 grammes each pan, and turn with 0.1 milligramme, fitted in mahogany case. Price £4 4s.—J. Allen, 1, George Street, Plymouth.

Edward I. or II. and Henry III. Silver Pennies, guaranteed genuine specimens, 1s. each, post free; some others.—Arthur Graeme, 54, Fremantle Road, Kingsdown, Bristol.

Martindale's 'Extra Pharmacopoeia,' good as new, seventh edition, 6s.; Squire's 'Pharmacopoeia,' fifteenth edition, 6s., good condition.—Chemist, 141, Upton Lane, Forest Gate, E.

Apparatus for Minor, complete. Attfield's, Bernay's, and Wills' 'Chemistries'; Prantl and Vines' 'Botany'; Wills' 'Materia Medica'; Muter's 'Analytical Chemistry'; recent books.—Bienvenu, Andover, Hants.

Zucatto's Typograph, note size, gives any number of copies of circulars, etc., in black, full supply of materials, in box, complete, 15s., cost 31s. 6d.—Elliott, Chemist, Southport.

'Pharmaceutical Journal,' complete, January, 1873, to December, 1895, unbound, cash or exchange.—J. Hearn, 38, Southwark Street, London, S.E.

Surplus Stock. Two Doz. Holloway's Pills in half dozens at 8s. 3d.; Pot. Permang. in 4 and 7 lb. parcels at 6d.; cash with order, carriage forward.—Eastman, Forest Lane, Stratford.

Two sheets plate glass, embossed pattern, 2 by 6 feet each. Accept offer, or exchange for useful galenical apparatus, as large percolator, etc.—Smith, Chemist, Archer Street, Bayswater.

'Pharmaceutical Journal' and 'Chemist and Druggist' offered in exchange for 'Science Gossip' or a church monthly.—Holmes, Brill.

Arnott's 'Physics,' 2 vols., published £1 11s. 6d., 6s.; Kirby and Spence's 'Entomology,' 4 vols., published £3, 10s. 6d.; Faraday's 'Chemical Manipulation,' scarce, 6s. 6d. free.—Davies, 33, Eglinton Road, Bow.

Hall's Six-Guinea Typewriter in perfect condition, sell or exchange for anything useful in trade.—Bentley, Chemist, Limehurst, Goole.

Ganot's 'Physics,' 5s.; Martindale's 4th edition, 2s. 6d.; Squire's 'Pharmacopoeia London Hospital,' 5th edition, 2s. 6d.; Royle's 'Materia Medica,' 6th edition, 2s. 6d.; Brunton's 'Materia Medica,' tabulated, 2s.—Burge, 2, Fernhead Road, Harrow Road, W.

B.P., equal to new, containing recent Minor notes, 5s. 6d.; Wills' 'Volumetric,' 1s. 8d.; post free.—Dispenser, 23, Fulham Road, S.W.

Hooper's 'Lexicon Medicum,' 7th edition, fair condition; Kelly's 'Chemists' Directory,' 3rd edition, good condition; Show Jar for window, decorated inside, marked rhubarb, gilt top and stand, complete.—Blinkhorn, Chemist, Salisbury.

Surplus Stock. Finest Norwegian Cod-Liver Oil, three Winchester, 4s. 6d. each, cash with order.—Ellis, Chemist, Kingscliff, Northamptonshire.

Pomet's 'History of Drugs,' done into English from the original, fourth edition, 1748, bound in leather, and in good condition, with many woodcuts.—J. Howorth, Thorne Road, Doncaster.

Books on 'Microscope,' by Hogg, Cole, Lankester, Slack, Gosse, Griffith and Henfrey, etc. Returnable list.—Apply to Davis, "Chestnuts," Gordon Hill, Enfield.

'American Dispensatory,' unbound, 7 parts, 21s.; Watts' 'Inorganic,' 4s. 6d.; Bentley's 'Students' Botany,' 3s. 6d. New; latest editions. Carriage paid.—"Solazzi," 21, Queen Street, Louth, Lincs.

Wills' 'Pharmacy' (soiled), 3s.; Wills' 'Practical Botany,' 2s. 6d.; Wright's 'Physics,' 2s.; Davis' 'Microscopical Botany,' 1s. 6d.; Davis' 'Volumetric Analysis,' 1s.—"Minor," 4, Maclise Road, West Kensington, W.

WANTED.

Kelly's 'Directory of Chemists and Druggists.'—Tully, Chemist, Hastings.

Gray's 'Anatomy' latest edition. Price to J. E. Thomas, 7, Station Street, Porth, Glam.

A pair of large second-hand swan-necked window carbos. State size and lowest price.—Randall and Son, Chemists, Wareham, Dorset.

Paraffin Oil Pump.—Ellis, Chemist, Kingscliff, Northamptonshire.

Dr. Muter's 'Analytical Chemistry,' fifth edition.—O. T. W., 6, The Drapery, Northampton.

Latest edition Green's 'Botany,' Part I. Lowest price to—J. L.R., 23, Treherne Road, North Brixton.

* * * The attention of readers is directed to the conditions printed at the head of the previous column. Notices cannot be inserted unless they are in accordance with those conditions.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

SATURDAY, JANUARY 25.

PHARMACEUTICAL FOOTBALL CLUB v. Mount View, at East Finchley.

SUNDAY, JANUARY 26.

LIVERPOOL SUNDAY SOCIETY, at 3 p.m.

"Stageland: its Lights and Shadows," by T. H. Hardman.

MONDAY, JANUARY 27.

SOCIETY OF ARTS (CANTOR LECTURES), at 8 p.m.

"Alternate Current Transformers" (II.), by Dr. J. A. Fleming.

ROYAL GEOGRAPHICAL SOCIETY, at 8 p.m.

"The First Crossing of the Southern Alps of New Zealand," by E. A. Fitzgerald.

TUESDAY, JANUARY 28.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.

"External Covering of Plants and Animals" (III.), by Professor C. Stewart.

ROYAL PHOTOGRAPHIC SOCIETY.

"Dr. Rudolph's Method of Lens-Testing, and Some of his Results," by J. H. Agar Baugh.

"Stereo-Micrography with New Colour-tone Effects," by F. Iles.

CHEMISTS' ASSISTANTS' ASSOCIATION, at 8.30 p.m.

Cinderella Dance at the Portman Rooms.

SOCIETY OF ARTS (FOREIGN AND COLONIAL SECTION), at 8 p.m.

"Stamboul: Old and New," by R. Davy.

EDINBURGH DISTRICT CHEMISTS' TRADE ASSOCIATION, at 9 p.m.

Continuation of discussion on "Some Relations between Prescriber and Dispenser." Consideration of letter from Edinburgh Decimal Association.

WEDNESDAY, JANUARY 29.

SOCIETY OF ARTS, at 8 p.m.

"Standards of Light," by W. J. Dibdin.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION, at 9 p.m.

"Chemistry, Past and Present," by A. L. Taylor.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY, at 9 p.m.

"The Pharmaceutical Society." Debate introduced by T. F. Grindley and C. A. Blamey.

SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY, at 8.30 p.m.

"The Swiss Alps," by W. L. Howie.

THURSDAY, JANUARY 30.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.

"Dante" (III.), by P. H. Wickstead.

IMPERIAL INSTITUTE, at 5.30 p.m.

"The Fish and Fisheries of Australia," by W. S. Kent.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.

"Dispensing Notes, Pill Coating, etc.," by J. Cocks.

FRIDAY, JANUARY 31.

ROYAL INSTITUTION OF GREAT BRITAIN, at 9 p.m.

"National Biography," by S. Lee.

SATURDAY, FEBRUARY 1.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.

"Realism and Idealism in Musical Art," by Professor C. H. H. Parry.

SUPPLEMENT
TO THE
PHARMACEUTICAL JOURNAL.

SPECIAL ISSUE of the JOURNAL

THE
PHARMACEUTICAL JOURNAL

Of February 29, 1896,

will be sent to

EVERY CHEMIST & DRUGGIST whose name appears on the New Register (1896), whether residing in **THIS COUNTRY, THE COLONIES, OR ABROAD.**

The object is to increase the interest of the Trade in the Benevolent Fund.

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THE "PUBLISHERS," 5, SERLE STREET, LINCOLN'S INN, LONDON, W.C.

ASSOCIATION OF MANUFACTURERS AND DISTRIBUTORS OF PROPRIETARY ARTICLES.

A General Meeting of the Association of Manufacturers and Distributors of Proprietary Articles was held at Anderton's Hotel, Fleet Street, on Wednesday, January 29, 1896. The meeting was a large one—between fifty and sixty being present. Amongst those who attended were the following:—Messrs. G. R. Barclay (Barclay and Sons, Ltd.), F. J. Hanbury (Allen and Hanburys, Ltd.), J. Shorrock (Bovril, Ltd.), C. H. Barstow (Powell's Balsam of Aniseed), Brandreth (Homocea Co.), Neave and Co., A. Hayman and Co., F. W. Nelson (Nelson, Dale and Co.), C. H. McLean (Allcock's Corn Shields), M. E. Swan (Whelpton and Sons), J. Thompson (Maw, Son, and Thompson), S. Roberts (May, Roberts and Co.), H. S. Norris (Condal Water Co.), S. W. Rowland (A. Rowland and Sons), S. Sainsbury, W. Owen

(Chemists' Association), B. Hirst (Hirst, Brooke and Hirst), J. Sanger and Sons, B. Cadbury (Cadbury Bros.), Tebbutt (W. Sutton and Co.), Gilligan (Liebig's Co.), Coleman, Ltd., of Norwich, A. Bird, of Birmingham, J. W. Lee (Frame Food Co., Ltd.), W. Edwards, jun. (W. Edwards and Sons), J. Morris (Morris and Jones, Liverpool), C. Wilkes (W. T. Owbridge, Hull), Petty, Wood, and Co., J. Barrett (Mandrake), C. E. Garman, Albert Cooper, and W. Johnson.

Mr. Barclay was called upon to take the chair.

Letters apologising for absence were received from Messrs. Elliman, Sons, and Co., and Mr. Gade, of Exeter.

The Secretary (Mr. W. S. Glyn-Jones) read a report of what had transpired since the previous meeting, and said that the following firms had already joined the Association:—Messrs. Allen and Hanburys, Barclay and Sons, Thos. Beecham, Bovril, Brandreth (Homocea Co.), Burroughs, Wellcome, and Co., Butler and Crispe, Cadbury, Chemists' Association, Coleman, Ltd., Norwich, Condal Water Co., Corneille, David and Co. (Liebig Co.), W. Edwards and Sons (Frame Food Co.), Hirst, Brooke and Hirst, C. H. McLean (Allcock's), May, Roberts and Co., Maw, Son and Thompson, Morris and Jones, A. Rowland and Son, W. Sutton and Co., J. Sanger and Son, Whelpton and Sons.

The minutes of the past meeting were read and confirmed.

The meeting then proceeded to discuss the rules submitted to it by the Committee, which had been appointed to draw them up.

A letter was read from the Trade Committee of the Birmingham Pharmaceutical Association offering several suggestions in regard to the rules, several of which were ultimately accepted by the meeting.

The following are the rules as finally passed:—

Title.—"The Proprietary Articles Trades Association."

2. Objects.—That the following be the objects of the Association:—

- (a) The discussion of matters of common interest to the branches of the trades represented, with a view to decision, and, if necessary, concerted action.
- (b) To take such steps as the Association may be advised are legal to deal with extreme cutting of prices, and to give advice and render assistance to its members in preventing substitution.
- (c) To do all such other things as may appear to be of benefit to the Trade.

3. Constitution.—That the Association shall consist of Manufacturers of Proprietary Articles, and of Wholesale and Retail Vendors of the same, who give evidence of their being in sympathy with the objects of the Association.

4. Government.—That the affairs of the Association shall be under the entire management and control of a Council consisting of thirty members.

That the Council shall comprise ten owners of proprietary articles, ten wholesale, and ten retail vendors; each section of the Council to be elected by the members of the Association belonging to the three respective branches of the trade.

That members of the wholesale or retail trade be not eligible to sit on the Council as representatives of "owners."

That the election of the Council shall take place annually.

That the three sections of the Council constitute three Committees, to whom matters particularly affecting either branch of the trade be referred; but any decision arrived at by such Committee to be subject to the ratification of the Council.

That the meetings of the Council shall be held monthly, at such time and place as the Council may direct.

That all questions before the meetings of the Association, Council, or Committees shall be decided by vote, and that in the case of equality the Chairman shall have a second or casting vote.

That the Council be authorised to make rules and regulations for its own government and that of the Association, and to annul or alter the same from time to time as occasion may require, but any alteration of rules to be subject to the ratification of subscribers of £5 5s.

5. Officers. That the Council be empowered to elect the officers of the Association and to decide what shall constitute the various duties, privileges, and emoluments in connection with such offices. That the officers shall retire from office each year, but shall be eligible for re-election.

6. Subscription. That the following be the annual subscriptions to the Association:—Owners of Proprietary Articles, five guineas; Wholesale Vendors, five guineas; Retail Vendors, five shillings.

That the above subscriptions be due in January of each year, and if remaining unpaid after March 31, that the defaulting member's name be removed from the register of the Association.

The meeting decided that as it was very probable many firms would join during the coming few months, it was desirable that the Council to be elected at that meeting should act for three months only, and after some discussion it was decided that this preliminary Council should consist of all £5 5s. subscribers, and of ten representatives of the retail subscribers.

Mr. Brandreth laid before the meeting a scheme which it is the intention of the Homocea Company to introduce at an early date, in which they propose to insure the distributors of their articles a very fair profit. Some discussion took place on the details of this scheme, and several representatives of the wholesale trade pointed out that some of these details were unworkable, so far as they were concerned. The Secretary pointed out, however, that the scheme which Mr. Brandreth had described to the meeting, good as it was, had not been adopted by the Association. He said that the object of the Association was to devise some scheme or schemes by which the trouble entailed in carrying out several of the anti-cutting schemes already in force would be, if not altogether avoided, to a great extent minimised, and Mr. Brandreth told the meeting that they were prepared to consider any scheme the Association suggested, and, if possible, to adopt it. Mr. Brandreth's declarations of the intention of his firm to protect the distributors was very cordially received by the meeting. He pointed out

that they recognised that the distributors of their articles had a perfect right to expect a fair remuneration for such work, and that therefore it was their intention to ensure a good working profit to everyone who was prepared to deal fairly with their articles.

The date of the next meeting of the Council was fixed to take place at Anderson's Hotel on February 12 next at 3 p.m.

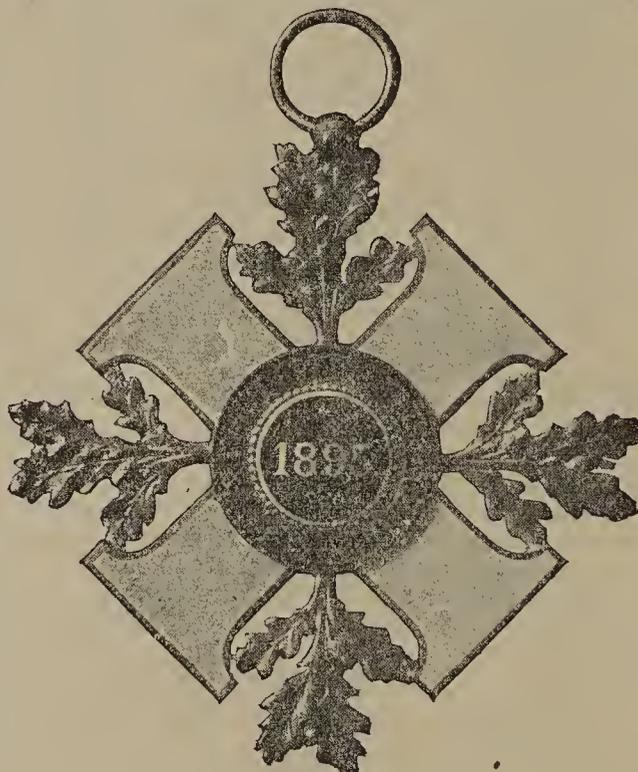
We have since learned from the Secretary that he omitted to state in his report that Mr. Elliman had subscribed £100 to the funds of the Association, and Mr. H. J. Hall, of Stephen Smith and Co., the proprietors of Hall's Coca Wine, £10.

TRADE NOTES AND NEWS.

ICKRINGILL'S PATENT HYGIENIC AND ELASTIC CLOTH is a distinct novelty, and should find a wide application for many purposes. Its construction is such as to allow free play to the natural tendency of the wool or hair employed to stand on end, thus permitting a large quantity of air to remain within its open spaces and keep a constant supply of warm air on the surface of the skin, besides allowing the free evaporation of perspiration. Vests, belts, bandages, etc., made from the cloth retain their elasticity and the stability of the structure of the fibre is not impaired after repeated washing with warm water and soap. Further, the yielding character of the material enables it to adapt itself to every movement of the body or limb enclosed. Efficiency, economy, and comfort are thus alike secured. Perhaps the abdominal and other supporting belts best display the advantages of the cloth, but the elastic stockings and kneecaps, chest and lung protectors, under vests, and bandages all appear to possess advantages over similar articles made from ordinary materials. They are also less expensive than the india-rubber and silk elastic appliances usually sold. The claim of the makers that their elastic cloth is hygienically the most perfect covering for the human body receives support from the fact that, in the limited time it has been on the market, they have received a very large number of repeat orders from medical men. The cloth belt bandages and other articles have been exhibited at the Montreal and Central Canada (Ottawa) Exhibitions, September, 1895, and although exhibited in classes where no awards were usually made, they gained special diplomas. As has been stated, the possibilities of the fabric are wide, but it may be added that it can be used for all kinds of compressive appliances, including ladies' belt and corset combinations, but particularly for lady cyclists' supporting corsets which are intended to be worn next to the skin, for which their soft and velvety texture well adapts them. The ICKRINGILL'S PATENT HYGIENIC AND ELASTIC CLOTH SYNDICATE, LIMITED, is at present desirous of securing a wider representation in their agency department, and chemists and druggists in the provinces and colonies where not already represented are invited to apply to the Secretary, Mr. E. J. Pryse, 35, Devonshire Street, Keighley, for agency terms, catalogues, descriptive pamphlets, etc., etc.

MESSRS. S. MAW, SON, AND THOMPSON intimate that the management of their surgical instrument department, formerly in the hands of the late Mr. John Banks, will be taken over by Mr. Henry Trentham Maw, second son of Mr. Charles Maw, senior partner in the firm, assisted by the present staff, most of whom have been for many years employed in the department. Mr. Henry Trentham Maw was educated at Cambridge and St. Bartholomew's Hospital. He took his degrees of M. A. and M.B. at Cambridge University, is a member of the Royal College of Surgeons, and has had considerable experience in London and other hospitals.

MESSRS. BURROUGHS, WELLCOME AND Co. have been granted three gold medals for the varied exhibit of their preparations at the Atlanta Exposition. The accompanying illustration is a fac-simile repro-



duction of the Grand Cross of Honour recently granted for the same firm's preparations by the committee of the Amsterdam Exhibition of 1895. This was accompanied by a very artistic diploma of quaint design, colouring, and lettering, signed for the Exhibition authorities by the Burgomaster of Amsterdam (the President of the Exhibition), the Chairman of the International Jury, and other officials.

THE THORNTON-PICKARD MANUFACTURING COMPANY has published an attractive book of photographs, showing the different departments of their works, and also a finely-printed new illustrated catalogue for 1896. In the latter all the firm's specialties are fully described, including the well-known Thornton-Pickard time and instantaneous shutter, which is now universally acknowledged to be the simplest and most reliable shutter for all-round work. The "Ruby" camera has been improved in several details, and is now made so that it can be used either as a hand camera or on a tripod. The camera is so constructed that the half-plate (as well as the larger sizes) can be used for stereoscopic work, in addition to ordinary pictures, if desired.

MESSRS. PARKE, DAVIS, AND Co. send a copy of their new price-list for 1896. It contains more than two hundred pages, and is published in a very handy form, giving full details of all the firm's preparations.

MESSRS. A. AND M. ZIMMERMANN refer to the suggestion in last week's *British Medical Journal* (*vide*, p. 237) that science has not yet found a better remedy for malaria than quinine sulphate. As refuting this assumption, they point out that in the *Rassegna Medica*, Dr. Gino Righi, of Padua, gives a tabular statement which shows that of 274 cases of malaria treated with "Phenocoll," only 70 (or 26 per cent.) resisted the effects of that drug.

MISCELLANEOUS NEWS.

THE NEW PHOTOGRAPHY: INTERESTING EXPERIMENTS AT CHARD.—Mr. J. W. Gifford, Fellow of the Royal Photographic Society of Chard, who, a short time since, had the distinction of exhibiting in London the results of some experiments he had made in connection with Professor Röntgen's discovery, has been prosecuting further results in the matter, with some curious and interesting results. A photograph of a foot which had been obtained showed an osseous protuberance of the metatarsus, causing a deformity of the great toe, and the defect had been supposed to be due to an enlarged great toe-joint. This photograph, together with other results of experiments made by Mr. Gifford, are on view at the rooms of the Royal Photographic Society. By means of a metal plate perforated by a hole and placed over the cardboard box containing the sensitive film, and between the Crookes' tube and the box, a distinctly recognisable image of the tube has been obtained. Mr. Gifford has also made experiments which show that the supposed polarisation effects obtained between the discs when using the Crookes' tube in Professor Röntgen's way have been produced by using a Harty radiator of recognised form instead of the Crookes' tube.

CLAIM FOR DAMAGES AT NORWICH ASSIZES.—The case of *Wells v. Annett* has been heard, being a claim for damages brought by Mr. A. J. Wells, late Young and Co., Ramsgate, against Mr. A. G. Annett, late Beedzler and Co., Norton Folgate, for misrepresentation in sale of a business in Yarmouth, was settled by solicitors before going into court; defendant agreeing to pay substantial damages and all expenses. Mr. Murphy, Q.C., was briefed as leader for plaintiff, and Mr. Kemp, Q.C., for defendant.

OFFENCES UNDER THE MEDICINE STAMP ACT.—At Dundee, on January 27, Thomas Morrison, medical herbalist, Hawkhill, was charged with three contraventions of the Medicine Stamp Act. The complaint set forth that on October 24 last, Morrison, in his premises at Hawkhill, vended to an officer of Inland Revenue a bottle containing "concentrated extract for indigestion," a box containing "aperient pills," and a packet of powders, all of which were preparations within the meaning of the Act, and liable to the stamp duty charged in respect of medicines without the necessary

labels denoting the duty charged upon the articles. He pleaded guilty, remarking that he was ignorant of the law relating to stamp duty. A fine of 18s., with the alternative of five days' imprisonment, was imposed. Morrison afterwards pleaded guilty to another contravention of the Stamp Act, in so far as he sold a bottle of "concentrated extract for indigestion" without having taken out a licence as required by the Stamp Act. He was ordered to pay a fine of 6s., or suffer five days in goal.—William Kershaw, Crumbles Street, Leeds, described as a chemist, though no such name appears on the Register of Chemists and Druggists with that address, was accused of having sold a box of Beecham's pills in premises in Lochee Road, Dundee, occupied by him, on October 24 last, without being possessed of the necessary licence. Accused failed to appear, but evidence was led, and the charge was found proved. A fine of £2, or ten days' imprisonment, was imposed.

INVERNESS CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION.—On Friday, January 24, this Association held its first "At Home," at the Palace Hotel, Inverness. Mr. Lewis Macleod presided at the concert preceding the dance, and acted in a similar capacity at the supper, which was served shortly after midnight. The concert programme was sustained by Mrs. Bethune and Miss Madge Martin, who contributed pianoforte selections with great taste and precision; and by Messrs. R. Macleod, D. Shaw, J. Michie, and Wm. Turnbull, who rendered songs with much acceptance. The attendance of ladies and gentlemen was large, and the meeting was a decided success. Mr. and Mrs. Black were commended for the manner in which they catered for the company. Mr. Tuff and his band supplied excellent music, the secretary for the arrangements being Mr. J. Michie.

EDINBURGH DISTRICT CHEMISTS' TRADE ASSOCIATION.—At the meeting of this Association, held on Tuesday, January 28, Mr. Peter Boa, President, took the chair, and the Secretary intimated the receipt of a cheque for £27 from Mr. D. Maclaren, being the balance handed to the Association by the Edinburgh Chemists' Ball Committee. The discussion, opened by Mr. Boa at the previous meeting and reported at the time (see *Ph. J.*, December 7, 1895, p. 486), was then resumed and continued at considerable length, Messrs. Lunan, Dewar, Macpherson, Bowman, Hill, Boa, and Hendry taking part. A letter from the Edinburgh Decimal Association was next read, the Association being requested to send a memorial to the Government in favour of the legalisation and subsequent compulsory enforcement of the metric system of weights and measures for all purposes in this country. Consideration of this latter was deferred until next meeting, Mr. McGlashan giving notice that he would then move a resolution in favour of the proposal.

CAMBRIDGE PHARMACEUTICAL ASSOCIATION.—The annual dinner of the above Association took place on Friday, January 10, at the Prince of Wales Hotel, Cambridge. The President, Alderman Deck, F.C.S., occupied the chair, and there were about thirty members and friends present. The

toast of the "Pharmaceutical Society" was proposed by Mr. A. Sidney Campkin, J.P., and responded to by Mr. Deck, local secretary for Cambridge. Other toasts were the "Town and University of Cambridge," the "Cambridge Pharmaceutical Association," and the "Chairman." Songs were rendered during the evening by Messrs. Dennis Greenwood, Plumb, and Church.

A LEEDS GIRL'S SUICIDE.—On January 27 the Leeds City Coroner (Mr. J. C. Malcolm) held an inquest at the Hyde Park Hotel, Leeds, on the body of May Greison, 14, the daughter of a gardener residing at Victoria Road, Leeds, who had committed suicide by poisoning. The mother of the girl said that on Sunday afternoon she saw her go into a bedroom at home, and afterwards heard her call for help. On going to her, she found her suffering from dreadful agonies, and in reply to questions she said she had taken poison. She said she had got it at a chemist's shop in King's Road. She sent for a doctor at once. The mother's evidence further showed that on Saturday last the girl had been sent for groceries to the Co-operative Stores, off Brudenell Road; that she had been charged with stealing some chocolates while in the shop, and that her father had been communicated with. The girl had denied that she intended to steal the chocolate. Witness identified a letter, in which the girl said:—"My dear mother,—I am tired of life, so I want to confess I am poisoning myself. I thought people might think you or dear father had done it, and so I write this asking you to forget and forgive me. I am sorry for the wrong I have done, and God has forgiven me."—Mr. Howard, chemist, King's Road, said that on Sunday afternoon the deceased came to his shop and said her father had sent her for some vermin-killer, as there was a rat in the shed.—Dr. Newstead said that when called in he found in the child all the symptoms of strychnine poisoning, and she died soon afterwards. He was directed by the Coroner to conduct a post-mortem examination of the body.—The jury returned a verdict of "Suicide whilst of unsound mind."

CHEMISTS' ASSISTANTS' ASSOCIATION (LONDON).—At the meeting of this Association on Thursday, January 23, a paper was read on "The Structure of the Human Eye, and the Action of Certain Drugs upon it," by Dr. Juler. Mr. Joseph Ince is announced to read a paper on "British and Foreign Syrups," at the meeting on Thursday next, February 6.

MESSRS. IDRIS AND CO.'S NEW YEAR'S ENTERTAINMENT TO THEIR EMPLOYÉS.—Messrs. Idris and Co., the well-known mineral water manufacturers of Camden Town, have for a number of years past allowed their workpeople to share in the profits of their business, and during the past week the employés' share of the profits for the past year have been handed to them. The circumstances under which the distribution was made were publicly referred to by the founder of the firm, Mr. T. H. W. Idris, L.C.C. for North St. Pancras, at an enthusiastic gathering of the employés, some 500 in number, who in response to the invitation of the directors, assembled at the works on Friday the 17th

ult. for the annual New Year's entertainment given by the firm to all their workpeople. In the earlier part of the evening the guests were regaled with a substantial and excellent tea, provided by the firm, and this was followed by an entertainment, also of excellent quality, arranged by Mr. Maldwyn Humphreys.

It was in the interval between the two parts of the entertainment that Mr. Idris, who was supported by his co-directors, Mr. Deputy Hughes, Mr. Adpar Jones, and Mr. Bishop, made the statement in reference to the division of the profits. Addressing his auditors as "fellow workers in the firm of Idris and Co.," he said that the report he had to make to them would be more satisfactory to the employés than any he had been able to make before, and it was more satisfactory to the proprietors. They all recognised that every one connected with the firm did, more or less, push forward the interests of Idris and Co., and the result of their united endeavours was that the firm had prospered very well in the past. Their last season, in particular, was an exceptionally good one, and the firm felt justified in taking the step they had. In the distribution of shares they had had some regard for what the employés had done with their profits in past years, for there had been some workers who, because the money was obtained easily, thought it should be spent just as easily. The firm was, therefore, prepared to take the money from their employés; of the security there could be no question, and they would give the employés 5 per cent. interest for their money as an inducement to the workers to continue to take an interest in the business. The firm had placed £500 to the profit-sharing fund, which would be distributed to the workers, and no boy or girl who had been in the employ of the firm for twelve consecutive months would receive less than £1, while many would receive more.

Mr. Idris and his partners desired that the best of everything should be provided for the entertainment of their workpeople, this desire extending to the musical "fare," and Mr. Humphreys secured the co-operation of Miss Rose Williams, Mr. Tom Phisick, Mr. D. Hughes, Mr. George Pritchard, Mr. R. B. Hopkins, and Mr. Will Edwards.

THE SALE OF BEESWAX.—At Ashford Police Court, last week, Harold Kay, manager of the Ashford Co-operative Society's stores in High St., was summoned for selling as beeswax a substance which was not of the nature and quality demanded. The analyst's certificate showed that it was adulterated with 50 per cent. of paraffin which was put in. The price given for the wax was 6d. for the quarter pound.—Dr. M. A. Adams, the public analyst, was called in support of the case, and he stated that he was a medical man, and had been analyst for many years. He had no hesitation whatever in describing beeswax as a drug according to the definition given in the Act of Parliament. That Act defined a drug as a medicine used for internal or external application. The British Pharmacopœia mentioned yellow wax as entering directly into the composition of no fewer than twelve articles, and indirectly into that of eight more. It was the fundamental substance in the preparation of no less than twenty separate things for medicine

mentioned in the British Pharmacopœia. It was used in making pills (particularly phosphorus pills) and plasters, and was undoubtedly a drug. The Bench decided that beeswax must be considered a drug, and imposed a fine of 10s. and £1 18s. 8d. costs.

THE ILLEGAL USE OF MEDICAL TITLES.—At Marlborough Street Police Court, on January 28, Albert Bell, 175, Wardour Street, Oxford Street, was summoned for using the title of M.D. and Doctor without being a duly-qualified medical practitioner. There was also a second summons against Bell under the same Act. Mr. Muir Mackenzie, barrister, prosecuted, and Mr. Bernard Abrahams, solicitor, defended. On the defendant's name being called, there was no answer. Mr. Hannay: Is the defendant here? Mr. Abrahams: No, Sir, he has been dead several years. The fact is, my client bought the business from Bell. Mr. Lyell (the Chief Clerk). Then the summonses must be amended. Mr. Abrahams: I am quite willing that they should be. The summonses were then amended, the name Bell being struck out, and that of Henry Walters inserted. Mr. Abrahams said to save the time of the court, he would mention that his client had removed the letters objected to that had been on a plate outside his door. The business of "Dr. Bell" had been carried on for many years, and consisted of the selling of patent belts invented by Dr. Bell. His client did not prescribe medicine to those who went to him, all he did being to recommend them to use of his belts, "which would cure anything and everything in a month." Evidence having been given in support of the prosecution, Mr. Hannay imposed a fine of £20, with £6 6s. cost, with an alternative in default of distress of two month's imprisonment.

DEATH FROM AN OVERDOSE OF CHLORODYNE.—An inquest was held at Eastbourne on January 24 concerning the death of Colonel William Western Taylor, fifty-one years of age, late of the 87th Regiment. The deceased was wintering at Eastbourne. He had not been well since an attack of influenza last February, and was suffering from sleeplessness. He was in the habit of taking large sleeping draughts. He recently consulted a specialist about his eyesight, which was failing, and though told that he might go blind, he was not troubled or depressed. The deceased was found dead in bed, a glass and bottle which had contained chlorodyne being in the room.—The medical evidence showed that death was due to an overdose of chlorodyne.—The jury were of opinion that the deceased administered a dose to induce sleep, and returned a verdict of "Misadventure."

DENTISTRY AT THE SHEFFIELD HOSPITAL.—At a meeting of the Governors of the Sheffield Royal Hospital on Tuesday a new code of rules was adopted, which provide for the establishment of a dental department in connection with the institution. It has been found that there is a widespread need for dental treatment among the poor of Sheffield, and hitherto it has been impossible to make efficient provision for it at

the hospital. Now, however, a new and convenient out-patient department makes the scheme feasible. A staff of honorary dental surgeons is to be appointed, one of whom will attend each morning to give his services to dental treatment, which lies beyond the scope of that which is now attended to by the house surgeon.

MESSRS. J. AND A. CHURCHILL, the well-known medical publishers, intimate that the lease being about to expire of the house—No. 11, New Burlington Street—so long associated with their business, they have taken advantage of the opportunity to secure more commodious premises at No. 7, Great Marlborough Street, London.

Trade Correspondence.

ANTI-CUTTING—AN APPEAL.

Sir,—There is to be a meeting of the Council of the Association of Manufacturers and Distributors of Proprietary Articles to arrange a *modus operandi*. It is almost certain that one of the rules which will then be made will throttle substitution in handling Association articles. With that proposal I have no fault to find, seeing that I was the framer of it (in circular issued five or six years ago); but there is a danger in connection with it at the present juncture which it is most desirable should be averted. In the agreement, in circular referred to, about 25 per cent. profit was the limit below which there was to be no anti-substitution clause; and it was on that understanding that the hundreds of retailers consulted agreed to endure the restriction.

What I fear is that those in the Association who assure only 15 or 20 per cent. will also want to share the benefit of the anti-substitution clause—a proposition which cannot be too strongly condemned. May I earnestly appeal to those of your readers who sympathise with the anti-cutting movement, but have not yet joined the Association, to lose not a day in doing so? The retail section of the Council is not yet elected, and those who join at once will have a voice in the election. I hope only those who will uphold the 25 per cent. minimum will be elected. Readers who take this advice might intimate their wishes as plainly as possible to the Secretary, Mr. Glyn-Jones, 2, Stonecutter Street, London, E.C., when forwarding their subscriptions. The Association is not strong enough yet in the retail element, and I sincerely hope that the subscription payable (5s. for retail members) will not be considered a bar to many more chemists lending a helping hand at this critical time. It is even worth the while of poor chemists, with few five-shilling pieces to spare, to make a little sacrifice for once.

At the meeting this afternoon gratifying evidence was forthcoming that anti-cutting will presently be introduced into the business of some more of the large makers. Who they are will appear in due time. What is wanted at present is more hearty assistance from the retail trade in keeping the ball rolling, and keeping it rolling straight.

Brixton, S.W. WILLIAM JOHNSTON.
January 29, 1896.

IRISH NEWS.

SIR JAMES HASLETT, a leading light of the North of Ireland druggists, has been elected Member of Parliament for North Belfast.

DR. RODOLPH BURNES, formerly a Pharmaceutical Councillor, has been suffering from an attack of blood poisoning, occasioning the temporary disablement of his right hand, but not otherwise interfering with his professional duties.

MESSRS. FANNIN AND COMPANY, LIMITED, have, it is reported, notified the Dublin medical men that they have opened a compounding department at 41, Grafton Street, Dublin.

PATENT SPECIFICATIONS PUBLISHED.

Inhaler (Horner, E., communicated from Reed, J. H., and Bury, T.).—Relates to a sheet metal casing fitted with an arrangement for holding a tablet of a medicated compound during burning, and so arranged that the fumes all pass through a tube or funnel where they may be inhaled. No. 14,683 of 1895.

Eyeglasses (Heilborn, F.).—For myopia or irregular astigmatism, the inventor employs thin plates having a series of small radial perforations, and used in conjunction with or in place of the glasses ordinarily used for these complaints. The cutting off of part of the light and the passage of that which reaches the eye through the specially arranged perforations, is said to be beneficial. No. 14,821 of 1895.

BUSINESS CHANGES.

Mr. Charles Scanlon, chemist and druggist, Manchester, has disposed of his business at 192, Hyde Road, Ardwick, and is opening a new pharmacy at 12, Croft's Bank Road, Urmston.

The business carried on by John Currie and Son, Pharmaceutical Chemists, 479, Sauchiehall Street, Glasgow, has been acquired by Mr. John Foster, Chemist, Sauchiehall Street, who will carry it on in all its details as before.

LATE ADVERTISEMENT.

Assistant Wanted.

LINCOLN COUNTY HOSPITAL.—Wanted for the County Hospital, Lincoln, a MALE DISPENSER, not over 35 years of age, who must have passed the examination of the Pharmaceutical Society or of the Apothecaries' Hall. The person appointed will have to give his whole time to the service of the Hospital. Salary £100 per annum. A house in the grounds of the Hospital can be rented, if desired, at £15 per annum, free of rates and taxes. Applications, stating age and previous experience, with copies of not more than three recent testimonials (which will not be returned), to be sent to Mr. W. B. DANBY, Secretary, Lincoln County Hospital, Bank St., Lincoln, on or before Monday, 10th February, 1896.

Board Room, Lincoln,
27th January, 1896.

MARKET REPORT.

[Specially compiled for the *Pharmaceutical Journal*.]

[The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.]

LONDON, JANUARY 30, 1896.

There have not been any changes of great importance in the product markets connected with the drug trade since our last report, and business generally drags somewhat. In the chemical market cream of tartar has again advanced in price, and closes very firm. Tartaric and citric acid are very firm, without having changed in price. Arsenic is very scarce on the spot, and firmly held at a considerable advance in price. Copper sulphate is also very firm. Amongst fine chemicals, carbolic acid is firm, whilst quinine is very quiet without any demand. The most important change, however, is in pilocarpine, the price for which has dropped by 4s. 6d. per gramme during the week, but its present position is not likely to continue very long. Opium alkaloids are very steady, cocaine neglected and caffeine firm. In the drug market proper we have to report an advance in damiana leaves, whilst Peruvian balsam, cascara sagrada, and gentian are very firm, with a tendency to higher prices. Cod-liver oil is very firm, and the small quantity of oil obtained from December fishing is held for higher prices. In the heavy oil market, cotton, coconut, and linseed oils have advanced in price, and close very firm, whilst turpentine and petroleum have declined. Shellac and spices are steady. Full details will be found below:—

ACID, CARBOLIC.—The market is very firm, the following being the current quotations:—*Crystals*: 34° to 35° C., 6½d.; 39° to 40° C., 7¼d.; 39° to 40° C. (*detached crystals*), 8¼d. per lb. *Crude*: Unchanged; 60 per cent. is quoted at 1s. 9d., and 75 per cent. at 2s. 2d. per gallon. *Liquefied* and *oresylic* are unchanged at 1s. 1d. and 11½d. per gallon respectively.

ACID, CHRYSOPHANIC.—Very firm, although we have not heard of much business in this article lately. One of the makers quotes 21s. per lb. for quantities of not less than 28 lbs., with smaller quantities at 24s. One of the *German* makers quotes as low as 19s. per lb.

ACID, CITRIC.—Shows no alteration in price, but the market is firm. *Manufacturers* of English acid quote 1s. 2½d., whilst in second hand it offers at 1s. 2d. per lb. *Concentrated juice* is quoted at £13 15s. to £14 per pipe *f.o.b.*

ACID, TARTARIC.—The market is very firm. *English* makers still quote 1s. 3d. per lb. on the spot, whilst for *foreign* brands of acid (not guaranteed B.P.) both in *crystals*

and *powder* 1s. 2½d. is asked on the spot, and 1s. 3d. for forward delivery.

ALON.—The current quotation for *American* brands is 2s. 10d. per lb.

AMMONIA COMPOUNDS.—*Sulphate*: The market is firm, grey 24 per cent. being still quoted at £8 10s. on the spot, *Hull* is firmer at £8 10s., whilst *Leith* is quoted at £8 8s. 9d., to £8 10s., and *Beckton* terms at £8 7s. 6d. to £8 8s. 9d. *Carbonate*: 3½d. to 3¾d. per lb. *Liquor*: 3¼d. to 3½d., less 5 per cent. *Sal ammoniac*: *Firsts*, 39s.; *seconds*, 37s.

ARSENIC.—Very scarce and practically unobtainable on the spot. Good white *powder* is nominally quoted at 19s. to 19s. 6d. on the spot, landed terms, whilst for *lump* 28s. is still the quotation.

ASHES.—Best *Montreal* potashes quote at 22s. 6d., and *pearlashes* at 37s. 6d. per ton, *f.o.b.*

CAFFEINE.—Steady. The *manufacturers'* quotations for 1-cwt. lots is 18s. per lb., net, prompt delivery, and a fair amount of business is being done, (especially for the *American* market) at this rate.

CALABAR BEANS.—The demand for this drug is only slight. The current quotation is 2½d. per lb.

CAMPHOR (CRUDE).—*Formosan* camphor has fluctuated since our last report. Closing at 160s. to 162s. 6d. *c.i.f.* for January to March shipment, the quotations declined to 152s. 6d., at which price the *Syndicate* stepped in and bought 900 cases for February to April shipment. A small parcel of *Formosan* camphor has also been offering at 152s. for January to March shipment. At the close the market is firmer, and there are no sellers under 155s. *c.i.f.* for January to March shipment. A moderate business has been done in *Japan* at 182s. 6d. per cwt. *c.i.f.* Continent.

CASCARA SAGRADA.—The lowest spot price for good quality bark is 22s. 6d. per cwt. on the spot, and at this figure only a small quantity of bark is available. In fact, the general asking price is 25s. per cwt., and advices from *America* state that there is no bark coming forward from *Oregon*. For shipment from *New York*, new bark is now quoted at 21s. 6d., *c.i.f.*, and two years old at 22s. 6d., *c.i.f.*

COAL DISTILLATION PRODUCTS.—*Benzole* is quiet but firm, 50 per cent. being quoted at 1s. 11d. to 1s. 11½d., and 90 per cent. at 2s. 3d. to 2s. 3½d. per gallon. *Toluol* quotes at 2s. 3d. per gallon for *pure*. *Creosote* 1½d. per gallon. *Crude Naphtha*: 30 per cent. at 120° C. quotes at 10d. per gallon. *Solvent Naphtha*: 95 per cent. at 160° C., is quoted at 1s. 6d.; 90 per cent. at 160° C. at 1s. 3½d., and 90 per cent. at 190° C., at 1s. 2d. per gallon. *Anthracene*: 13A., 11½d.; B., 10d. per unit. *Pitch*, 37s. 6d. per ton, *f.o.b. Tar. Refined* and *crude* quote at 12s. 6d., and 12s. per barrel respectively.

COLOCYNTH.—Very firm. Business has been done privately at 1s. per lb. for good *Spanish* colocynth. *Turkish* is very firmly held, and nothing less than 2s. 10d. would be accepted for good apple.

CORIANDER SEED.—In auction on Wednesday 4s. 6d. per cwt. was paid for medium *Bombay*, offered without reserve, and 3s. to 3s. 6d. for low coarse broken and foul.

CREAM OF TARTAR.—Continues to advance in price, and best white *French* crystals are now quoted at 106s. to 107s. on the spot,

whilst for *German* brands of *powder* 108s. to 110s. per cwt. is asked. For shipment from *Bordeaux* nothing under 101s., *f.o.b.*, would be accepted.

DAMIANA LEAVES.—A fair demand has been shown lately for this article which is in only moderate supply, and advanced prices are asked, 8½d. being the current quotation for good quality *Californian* leaves.

GALLS.—The market is quiet, but steady. For arrival *China* are quoted at 57s. 6d., and *Japan* at 52s. 6d. per cwt. *c.i.f.* terms. Business in *Bussorah* galls has been confined to small sales of *blues* at fully steady rates. No *greens* or *whites* are offering. Quotations are as follows:—*Blues*, 53s. to 55s.; *greens*, 42s. 6d. to 43s. 6d., and *whites*, 43s. to 45s. per cwt.

GENTIAN ROOT.—Steady. The spot quotations for good *French* root range from 22s. to 22s. 6d. per cwt., whilst for shipment, 18s. 6d., *f.o.b.*, is asked.

GINGER.—In auction *Cochin* met with only a poor demand, but the market is steady. Of the new crop, medium and small bright washed sold at 34s. to 34s. 6d., brown rough, 34s., whilst old low cuttings sold at 23s., mixed ends, 26s. 6d., and ordinary medium to small lean at 31s. In addition, small to bold mature half-cut realised 52s., ordinary dull C cut, 45s. to 45s. 6d., and B cut, 58s. per cwt. *Jamaica* sold at a decline, 59s. to 60s. being paid for common lean and dark *Rhatoon*.

GLYCERIN.—Fairly steady. *Schering's* brand of 1·260 double distilled quality quotes at 75s. per cwt., whilst second-hand holders of *English* and *German* glycerin offer at 70s. per cwt.

GUARANA.—Is firm, and 2s. 3d. is probably the lowest price which would be accepted for good quality. The case which was sold at the drug auctions last week was of an inferior description.

JALAP.—Steady. Sales of fair *Vera Cruz* have been made privately at 9d. per lb.

LIQUORICE ROOT.—There is now a fair supply of *Bussorah* root on the spot, but, in the absence of any inquiry, quotations remain unchanged at 7s. to 7s. 6d. per cwt. for ordinary rough.

MENTHOL.—Very slow of sale, and as low as 13s. would probably be now accepted for good *crystals* on the spot in order to effect a sale.

OIL (COD-LIVER).—The fishing in the *Lafoten* district has now about commenced, but there is not likely to be any 1896 oil on the London market until towards the end of next month. Prices are firmly maintained, and there are no offers for delivery under 180s., and one of the chief importers refuses to quote even at 200s. Prime non-coagulating 1895 oil is quoted at 175s. on the spot, whilst for *Newfoundland* oil of good quality 5s. 3d. to 5s. 6d. is asked.

OILS (ESSENTIAL).—Reports from *China* advise a very firm market in *Star Anise* and *Cassia* oils, and in the case of the latter the scarcity of good oil continues, any parcels of highly aldehydic strength being at once snapped up. Lower grades do not meet with much demand. On the spot *Star anise* oil is firm, and 1s. 3d. is still asked. *Cassia* oil is firmly held for good qualities, whilst *Peppermint* oils are unchanged. *Italian* essences are practically

unchanged, with the exception of *Bergamot*, which is tending to lower rates.

OILS (FIXED) AND SPIRITS.—*Cotton* continues to be a very strong market, and has advanced 10s. since our last report, closing at £17 10s. to £18 on the spot for *refined* oil, according to brand and package. *Coco-nut* is also a very active market, especially for *Cochin*, which is now quoted at £27 on the spot, whilst *Ceylon* is steady at £22 15s. *Linseed*: Again dearer by 2s. 6d., and oil in barrels is now quoted at £20 5s. to £20 7s. 6d. on the spot. *Rape*: Very firm. *Refined* oil is still offering at £25 5s. to £25 10s. on the spot. *Olive*: Rather easier, *Tunis* being quoted at £31 to £32; and *Spanish* at the same rates. *Palm*: *Lagos* still offers at £22 on the spot. *Turpentine*: Again rather easier, *American* spirit being on offer at 20s. 7½d. to 20s. 9d. *Petroleum* oil is, if anything, rather firmer at the close, although the quotations show a marked decline on those of last week, *American* being offered at 5½d. to 6d., *Water white* at 7¼d. to 7½d., and *Russian* at 5¾d. to 5½d. *Petroleum Spirit* is unchanged, *American* being quoted at 9d. to 9¼d., and *deodorised* at 9¼d. to 9¾d. per gallon.

OPIUM ALKALOIDS.—The market is very firm, but no change has occurred in the quotations. *Morphine* is quoted at 4s. 3d. per oz. for 1000 oz. lots of *powder*, whilst for *crystals* 2d. per oz. more is asked. *Codeine* quotes at 10s. 6d. per oz. for 100 ozs. lots.

OPIUM.—The London market continues firm for *Turkish* opium, with a fair business passing in *druggists'* varieties. The current quotations are:—*Soft shipping*, 11s. 6d. to 12s. 6d.; *Smyrna*, 8s. to 8s. 6d.; *Constantinople*, 8s. to 9s., with *druggists' seconds* at 7s. 6d. to 8s. *Persian* opium is firmer, and business has been done during the week in *fine bricks* at 13s., the stocks being now practically exhausted until the new crop comes to hand.

ORRIS ROOT—Is tending rather easier, and *fine Florentine* root is now offering at 75s., and good *Veronese* at 65s. per cwt.

PERU (BALSAM)—Firmer. Business has been done since our last report at 9s. per lb. on the spot for genuine balsam of direct import, and as much as 9s. 6d. is now asked. The quotations for shipment have also advanced to 9s. 3d. per lb., *c.i.f.* terms.

PHENACETINE.—One of the principal holders quotes *Bayer's* make at 13s. per lb., and another brand at 5s. 6d.

PILOCARPINE.—One of the *German* makers of this alkaloid has lowered his quotation earlier in the week for the salts from 9s. 6d. to 5s. per gramme. The other one has since followed suit, but it is not at all likely that this price will be maintained, as there is only a small supply offering.

PODOPHYLLIN—The current quotation for *American* brands of *resin* is 7s. 6d. per lb. *Root* is very scarce on the spot and firmly held. Nominally the price is 2¾d. to 3d. per lb.

POTASH COMPOUNDS.—*Chlorate*: Offers at 4¾d. per lb. in London, both for spot and forward delivery. *Permanganate*: Firm at 60s. to 62s. 6d. for *small*, and 65s. to 67s. 6d. for *large crystals* on the spot. *Cyanide*: 98 per cent. quotes at 1s. 4d. to 1s. 6d. per lb. *Prussiate*: 7½d. to 8d. per lb. on the spot, according to brand. *Bichromate*: 4¾d. per lb. *Saltpetre*: 21s. 9d. to 22s. 9d. for *British* refined; 17s. 6d. for

Bengal, 3½ to 5 per cent. *Sulphate*: £9 7s. 6d. to £10 per ton.

QUININE SULPHATE.—The market is very dull, and little or no business is doing. *B. & S.* and *Brunswick* brands offer at 1s. 1¼d. nominally, whilst *Whiffen's* make quotes at 1s. 2d. per oz. in bulk, and 1s. 4d. per oz. in bottles.

SAFFRON.—The market is quiet, but steady. *Valencia* is quoted at 26s. 6d. to 29s. 6d. for finest, and 24s. 6d. to 25s. 6d. for good quality, according to holder, with *Bayo* at 23s. 6d. *Alicante* offers at 18s. per lb.

SENEGA ROOT.—Good quality root offers at 1s. 3d. per lb., and for shipment from New York at 1s. 2d. per lb., *c.i.f.* terms.

SHELLAC.—This market is quiet, but steady, and business has been done privately in *TN Orange* on a basis of 94s. to 95s. For shipment the market is firmer, and *TN* is quoted 87s. per cwt., *c.i.f.*, January to March, whilst business has been done at 82s., *c.i.f.*, for March to May, and 81s. to 82s., *c.i.f.*, for January to March shipment in *AC Garnet*. At the weekly sales a moderate supply only was offered, the bulk of which was *Second Orange*, but the quality was considerably better than has been shown for some time. In spite of this the demand was poor, and only about one-fourth found buyers at steady rates. The prices paid were as follows:—*Fine Orange*, good to fine pale in octagon, 115s. to 117s. 6d.; *Second Orange*: Pale lemony free, 105s., good pale ditto, 101s., whilst strong curly *AA* in circle was bought in at 110s. *Blocky TN* sold at 86s., and reddish cakey at 83s. to 84s. *Button*: Fine pale free sold at 110s. to 112s., ditto more resinous, 105s.; fair firsts, 98s. to 100s.; and seconds, 85s. to 87s.

SODA COMPOUNDS.—*Nitrate* quotes at £7 12s. 6d. to £7 15s., and *refined* at £8 3s. 9d. to £8 5s. on the spot. *Caustic* is quoted at £8 per ton on the spot for 70 per cent. with 60 per cent. at £1 less. *Soda crystals*: Unchanged at 42s. 6d. per ton *ex wharf* or ship. *Bicarbonate*: £7 5s. per ton landed terms, London. *Bichromate*: 3¾d. per lb. on the spot. *Hyposulphite*: 8s. 0d. to 8s. 3d. per cwt. in kegs on the spot.

SOY—Remains quiet but steady at 1s. per gallon for fair *China*.

SPERMACEIN—Still tending lower, and good refined *American* now offers at 1s. 7d. per lb. on the spot.

SPICES (VARIOUS).—*Cloves* are steady. In auction medium dark *Zanzibar* sold at 1¾d.; fair, 1½d.; and fine bright at 2¾d. per lb. Ordinary *Amboyna* was bought in, and fair picked *Penang* at 8d. *Cassia lignea*: In auction 105 boxes of unworked quality sold at 31s., whilst broken was bought in at 18s. to 19s. *Capsicums*: *East Indian* were bought in at 20s. for ordinary brown small round, 25s. for large red off-stalk, whilst very fine long red *Japan* sold at 46s. 6d., and ordinary brown off-stalk at 13s. 6d. per cwt. *Pimento* remains quiet, 2½d. being paid in auction for fair quality. *Arrowroot*: At the sales good quality *St. Vincent* sold at 2¾d., whilst 2½d. to 2¼d. was paid for fair ditto, offered without reserve. *Bermuda* was bought in at 1s. 3d. per lb. *White Pepper* is rather easier. In auction fair dull *Penang* sold at 2½d., and good sea-damaged at the same figure. Fine bold *Singapore* sold at 4¾d. to 5d. per lb.

St. IGNATIUS BEANS.—The current quotation is 8d. to 9d. per lb.

SUGAR OF MILK.—Very firm. Holders of best brands of *powder* ask 85s. per cwt., whilst *crystals* are quoted at 87s. 6d.

TRAGACANTH (GUM)—Some sales have been made of the new arrivals of gum, and prices remain firm. Firsts quote at £15; seconds at £13 to £14 10s.; thirds at £11 10s. to £13; fourths at £9 to £11, with yellow and pinky at £7 10s. to £8 10s., and other qualities at £7, down to £2.

TURMERIC.—The market is very quiet, and no business has been done. Fair *Bengal* offers on the spot at 7s. per cwt.

WAX.—*Japan* continues very firm, with a small business doing at 34s. to 35s. per cwt. on the spot for pale *squares*. For arrival the quotation is still 37s. 6d. per cwt., *c.i.f.* terms. *Paraffin. Crude*, is quoted at 1¼d. to 2¼d., and *refined* at 2¼d. to 3¼d. per lb.

NEW BOOKS AND NEW EDITIONS.

[Publishers are requested to send particulars of new publications, addressed "Editor, 17, Bloomsbury Square, W.C."]

A HANDBOOK OF INDUSTRIAL ORGANIC CHEMISTRY, adapted for the Use of Manufacturers, Chemists, and all Interested in the Utilisation of Organic Materials in the Industrial Arts. By S. P. SADTLER. 2nd revised and enlarged edit. Roy. 8vo., pp. 538. Price 25s. (J. B. Lippincott Company, London and Philadelphia.)

PHOTOGRAPHY IN A NUTSHELL. By "The Kernel." Enlarged. 14th Thousand. Cr. 8vo., pp. 144, sewed. Price 1s. (Iliffe and Son, London.)

FIELD FLOWERS: A Handy Book for the Rambling Botanist, suggesting what to look for and where to go in the Outdoor Study of British Plants. By S. HIBBERD. New edit. 80 Coloured Plates and Engravings. Cr. 8vo., pp. 156. Price 3s. 6d. (Collingridge.)

SEA-SICKNESS (Cause, Treatment, and Prevention), Voyaging for Health, Health Resorts: A Concise Practical Treatise. By S. DUTTON. 4th edit., cr. 8vo., pp. 141, sewed. Price 1s. (Hirschfeld Bros., London.)

MANUAL OF PHOTOGRAPHY. By W. K. BURTON. 12mo., pp. 184, sewn. Price 1s. net (Lund.)

Advertisements in the Pharmaceutical Journal.

ALL ADVERTISEMENTS must be sent to the Office, 5, Serle Street, Lincoln's Inn, W.C., where replies to prepaid advertisements may be addressed, and will be redirected free of charge. Postal Orders should be made payable at Lincoln's Inn, W.C., to STREET BROS. Cheques should be crossed "London Joint Stock Bank."

PREPAID ADVERTISEMENTS.—Advertisements of Assistants Wanted, Apprenticeships, For Sale, Partnerships, Businesses for Disposal, Businesses Wanted, and Premises to Let are charged as follows:—Fifty words or less, 3s. 6d. Each additional ten words or less, 6d.

ADVERTISEMENTS of a general character are inserted at 4s. 6d. each for seven lines (50 words) or less, and each additional line of seven words, 6d.

FREE ADVERTISEMENTS.—Advertisements of Assistants seeking Engagements will be inserted Free of Charge, subject to conditions mentioned in each number of the Journal.

LIVERPOOL MARKET REPORT.

[From our own Correspondent.]

JANUARY 29, 1896.

LINSEED: Small amount offering, and price asked being for *Turkish*, 36s. 6d. per 416 lbs., ex store. CANARY SEED: Flat; price still stands at 33s. to 34s. per 464 lbs. for *Turkish*. KOLA NUTS: 80 packages have been sold, fresh at 6d. to 6½d. per lb., dried at 7d. QUILLARIA BARK: 25 tons of *Chilian* have been sold ex store at £12 2s. 6d. per ton. COCHINEAL: *Teneriffe* "grey," 5 bags changed hands at 1s. 2d. per lb. Price of "black" is now put at 1s. 2½d. to 1s. 3d. per lb. OLIVE OIL: Fair business doing at recent rates. CASTOR OIL is firmer. *Calcutta* good seconds rather short, 2½d. per lb. being asked; *French* 1st pressure and *Madras*, 2¾d. per lb. LINSEED OIL: *Liverpool* pressed remains at 20s. 9d. to 21s. per cwt. in export casks. COTTONSEED OIL is firmly held for 17s. 9d. to 18s. per cwt. in export barrels. SPIRIT OF TURPENTINE is steady at 21s. 6d. per cwt. PETROLEUM: *Russian*, 6½d. per gallon; *American*, 7d. to 8¼d. per gallon. SAL AMMONIAC: 39s. per cwt., first quality; 37s., second quality. ARSENIC: £16 10s. per ton, powder; £26 10s. per ton, lump. BLEACHING POWDER: £7 to £7 5s. per ton. COPPERAS: *Lancashire*, 38s. per ton; *Welsh*, 36s. 6d. SULPHATE OF COPPER: £15 12s. 6d. per ton. CHLORATE OF POTASH: 4¼d. per lb. PRUSSIAN OF POTASH: 8d. per lb. BICROMATE OF POTASH: 4¾d. per lb. CREAM OF TARTAR: Best white is scarce, only a small amount is offering at 105s. per cwt. BICARBONATE OF SODA: £7 per ton. CARBONATE OF SODA: £2 10s. per ton. CAUSTIC SODA: 70 per cent., £7 12s. 6d. to £7 15s. per ton; 60 per cent., £6 12s. 6d. to £6 15s. BORAX: Lump, 19s. 6d. per cwt.; powder, 20s. 6d. NITRATE OF SODA has advanced, now quoted at 7s. 9d. to 8s. per cwt.

NEWCASTLE CHEMICAL REPORT.

[From our own Correspondent.]

JANUARY 28, 1896.

This market is a shade steadier, spring inquiries for over-sea shipment being more in evidence. The home trade continues to draw fairly well on bleaching powder stocks, and soda crystals are not kept idle similarly. Sulphur and saltcake are still on the scarce side. Sulphate of ammonia continues weak, London makers forcing markets. Carbolic acids firm; pitch, easy. South Durham salt, steady. Prices are:—BLEACHING POWDER: £6 5s. to £7 5s., according to markets and packages. SODA CRYSTALS: 37s. 6d. to 45s., according to packages. SULPHUR: £3 17s. 6d. to £4. SALTCAKE: 27s. 6d. SODA ASH: 48 to 50 per cent., £3 15s. to £4 15s. WHITE ALKALI: 48 to 52 per cent., £4 10s. to £5. CAUSTIC SODA: 76 to 77 per cent., £9 5s.; 70 per cent., £7 15s. HYPOSULPHITE OF SODA: 5 to 7 cwt. casks. £6 5s. ALUM IN LUMP: £5 15s. CHLORATE OF POTASH: 5d. per lb. CRUDE CARBOLIC ACID: 60 per cent., 1s. 9½d. CRYSTALS: 40 per cent., 6½d. SULPHATE OF AMMONIA: £8 10s. to £8 11s. 3d., Leith. PITCH: 36s. SOUTH DURHAM SALT: 9s. to 9s. 6d. per ton, *f.o.b.*, Tees,

EXCHANGE.

[For the convenience of readers, suitable notices, not exceeding thirty words in length, are inserted free in this column, if they do not partake of the nature of ordinary advertisements. They must relate to books, apparatus, shop fittings, etc., and arrive not later than Wednesday, addressed "Editorial Department, 17, Bloomsbury Square, W.C."]

OFFERED.

Southall's *Materia Medica* Cabinet, containing official specimens in boxes; also collection unofficial specimens, the whole comprising the specimens required to be recognised for the Minor. What offers?—Walker, Chemist, Willenhall.

Complete set Dickens' works, handsomely bound vols., cost 80s. Exchange ½-plate photo. set of good make. Sets 'Review of Reviews,' 'Strand Magazine,' bound. What offers?—Pike, Dentist, Leicester.

Squire's 'Methods and Formulæ' (microscopical) perfectly clean and new. Will exchange for recent edition either Cross and Coles' 'Microscopy,' Bowers' or Oliver's 'Botany.'—Smalley, Irvin Street, Preston.

Wills' 'Pharmacy' (soiled), with copious notes, sixth edition, 2s. 6d.; Bentley's 'Botany,' good as new, 3s. 6d.; Smith's 'Appendix to Principia Latina,' new, 1s. 6d.—Daybell, 5, Pimlico Road, S.W.

Maw's Circular Mahogany Soda-Water Stand, marble top, 22 in. diam.; also Leech Aquarium, 15 in. diam. What offers?—Dyer, Pharmacist, Honiton.

Half-plate Camera (Lancaster's "Instanto"), two double slides, tripod achromatic lens, with iris diaphragm, T. T. and H. view finder, and canvas case; good condition; £3 10s.—J. H. H., Marine House, Clevedon.

Professor Tyndall on 'Faraday,' 3s.; Golding Bird's 'Experimental Physical Science' (Churchill's), 12s. 6d.; 'Manual,' 4s.; Graily Hewitt's 'Diseases of Women' (16s.), 5s. All free.—Davis, "Chestnuts," Gordon Hill, Enfield.

Two Pear-shaped Carboys, 12 gallons, with stands, largest size, and one glass sign in frame, 48 in. by 21 in., with "Dispensing Chemist." What offers?—R. S. Brearley, 66, Trafalgar Road, E. Greenwich.

Fine copies, free. Thomson's 'Wanderings Among Wild Flowers,' 5s.; 'Poisonous and Noxious Plants of Britain,' coloured, 5s.; Barton and Castle's 'British Medical Plants,' half price, 15s.—Davies, 33, Eglinton Road, Bow.

Specie Jar, 36 in. high and 49 in. circumference, decorated inside, labelled "sodæ bicarb.;" good as new; what offers?—"Last," 5, High Street, Barnes, S.W.

Balances for sale. One each, Nos. 5 and 9, Oertling's, good condition, cost 18 guineas each. Price 10 guineas each.—Dryden, Chemist, Landore, R.S.O.

Bargain. Roller printing press, mounted on handsome oak cabinet, glazed panels and drawers; about 1½ cwt. beautifully cut type, all accessories, price £5 5s., cost £20. Particulars from Phillips, Chemist, Horwich, Lanes.

Bell and Redwood's 'Progress of Pharmacy,' 4s.; Drautt's 'Surgeons' Vade-Mecum,' 9th edition, 5s. 6d.—Chemist, 141, Upton Lane, Forest Gate, E.

Wills' 'Analysis,' 1s. 6d.; 'Vegetable Materia Medica,' 3s. 6d.; 'Flowers and Fruits,' 2s. 6d.; Edmond's 'Botany,' 1s. 6d.; Holmes' 'Botanical Note-book,' 2s. Exchange 'Veterinary Counter Practice'; Dental Forceps.—Burge, Chemist, Fernhead Road, W.

WANTED.

Good microscope, in exchange for Darton's medical battery in mahogany case, new, cost £3.—J. E. Whitaker, care of Mr. J. S. Ormandy, Chemist, Barrow-in-Furness.

Newman's 'British Butterflies and Moths,' or similar work, fully illustrated.—Mander, Chemist, Malvern.

Kelly's 'Directory of Chemists and Druggists,' state date of publication; Bent Front Tooth Brush Case; Clarke's Syphon Gas Stove; Ton Foot Dispensing Screen and Glass-Fronted Counter for underneath same.—Griffin, Chemist, Kidderminster.

Newth's 'Chemistry' and Edmund's 'Botany.' Lowest prices to—"Last," 5, High Street, Barnes, S.W.

Two Mahogany Pillars, about 30 in. high, for supporting large carboys. Price to—Harries, 12, Hamilton Terrace, Milford Haven.

** The attention of readers is directed to the conditions printed at the head of this column. Notices cannot be inserted unless they are in accordance with those conditions.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

SATURDAY, FEBRUARY 1.

PHARMACEUTICAL FOOTBALL CLUB v. Melrose Rovers, at Wormholt Farm.

MONDAY, FEBRUARY 3.

ROYAL INSTITUTION OF GREAT BRITAIN, at 5 p.m. General Monthly Meeting.

SOCIETY OF ARTS (CANTOR LECTURES), at 8 p.m. "The Testing of Current Transformers," by Dr. J. A. Fleming.

SOCIETY OF CHEMICAL INDUSTRY, at 8 p.m. "Manufacture of Linoleum," by W. F. Reid.

TUESDAY, FEBRUARY 4.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN. Benevolent Fund Committee. Finance Committee.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m. "The External Covering of Plants and Animals: Its Structures and Functions" (IV.), by Professor C. Stewart.

SOCIETY OF ARTS (APPLIED ARTS SECTION), at 8 p.m. "The Garden in Relation to the House," by F. T. Thomas.

WEDNESDAY, FEBRUARY 5.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN. Council Meeting.

SOCIETY OF ARTS, at 8 p.m. "The Mexican Drainage Canal," by F. H. Cheesewright.

Musical and Social Evening, at 9 p.m., at the Exchange Rooms, Birmingham.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY, at 9 p.m. Social Evening.

EDINBURGH CHEMISTS' BALL. At the Freemasons' Hall, George Street, Edinburgh.

THURSDAY, FEBRUARY 6.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m. "Dante" (IV.), by P. H. Wicksteed.

IMPERIAL INSTITUTE, at 4.30 p.m. "Forestry and Agricultural Depression," by Professor C. E. Curtis.

LINNEAN SOCIETY OF LONDON, at 8 p.m. "Polystelic Roots of Certain Palms," by B. J. Cormack.

"A Remarkable Use of Ants in Asia Minor," by R. M. Middleton.

CHEMISTS' ASSISTANTS' ASSOCIATION, at 8.30 p.m. "British and Foreign Syrups," by Joseph Ince.

CHEMICAL SOCIETY, BURLINGTON HOUSE, at 8 p.m. "The Molecular Weight and Formula of Phosphoric Anhydride and of Meta-Phosphoric Acid," by Prof. Tilden and R. E. Barnett.

"Lead Tetracetate and the Plumbic Salts," by A. Hutchinson and W. Pollard.

"An Improved Mode of Determining Urea by the Hypobromite Process," by A. H. Allen.

"An Examination of the Products Obtained by the Dry Distillation of Bran with Lime," by W. F. Laycock.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION, at 9.15 p.m. Social Evening.

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY, at 8.30 p.m.

"Some Aquatic Plants," by W. A. Cockshott.

"Quacks and Quackery," by H. B. Morgan.

FRIDAY, FEBRUARY 7.

ROYAL INSTITUTION OF GREAT BRITAIN, at 9 p.m. "Portrait Painting in its Historical Aspects," by J. Collier.

GEOLOGICAL SOCIETY OF LONDON, at 7.30 p.m. "Some Structural Characteristics of the Granite of the N.W. Himalayas" (illustrated), by C. A. McMahon.

ABERDEEN JUNIOR CHEMISTS' ASSOCIATION, at 9.30 p.m. Social Evening.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION, at 9.15 p.m.

"Flame Tests," by George Coull.

SATURDAY, FEBRUARY 8.

PHARMACEUTICAL FOOTBALL CLUB v. VAMPIRES, at Wormholt Farm.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.

"Realism and Idealism in Musical Art" (II.), by C. H. H. Parry.

Now Ready. Price 5s., or by Parcel Post, 5s. 4½d.

THE REGISTER

OF PHARMACEUTICAL CHEMISTS AND CHEMISTS AND DRUGGISTS

For 1896.

Published pursuant to the "Pharmacy Act, 1868."

SINCE the last issue the Register has undergone a complete revision, the Registrar having availed himself of the provisions set forth in the 10th Section of the Pharmacy Act, 1868, to remove from the Register the names of all persons whom two registered letters, sent at an interval of six months, had failed to reach. A number of names have thus been removed, and a large number of corrections have been made in the addresses of other persons.

Copies may be obtained from the REGISTRAR, 17, Bloomsbury Square, London, W.C.

IMPORTANT ANNOUNCEMENT.

THE

City School of Pharmacy & Chemistry

27, CHANCERY LANE, E.C.

Change of Proprietorship. Courses Re-modelled.

This well-known School of Chemistry (so centrally situated and easily accessible from all parts) has now been acquired by Mr. GEO. E. SKERRY, M.A., F.R.G.S., etc., Principal of the London Civil Service and University College, Limited.

The Teaching Staff is as follows:—

CHEMISTRY, MATERIA MEDICA, AND PHARMACY:

MR. F. A. HOCKING, B.Sc., Lond., M.P.S.

PRACTICAL CHEMISTRY AND BOTANY:

MR. T. HUMPHREYS, B.A., Lond., Inter. B.Sc., Assistant Analyst.

MICROSCOPY AND HISTOLOGY:

MR. MARTIN COLE.

PRELIMINARY EXAMS.:

MR. STEWART, M.A.

Lectures now in progress for April and June Exams. Laboratories well equipped. Individual tuition to backward men. Special arrangements for Major. Moderate Fees. Prospectuses and full details free. Write or call.

Mr. SKERRY, M.A., Principal, 27, Chancery Lane

SUPPLEMENT TO THE PHARMACEUTICAL JOURNAL.

TRADE NOTES AND NEWS.

WILCOX AND Co., "Foreign Chemists, Limited," 239, Oxford Street, London, W.—At a meeting of members of this Company, held on January 30, the audited balance sheet for the six months ending December 31 last was submitted, showing total sales £22,612 6s. 9d., and a net profit of £3187 13s. 10d., and it was resolved that a dividend at the rate of £10 per cent. per annum, free of Income Tax, be forthwith paid.

MESSRS. REYNOLDS AND BRANSON'S latest invention, the Pneumatic Ear Cushions, are far better than the softest pillow, and save the aching and painful feeling experienced



REYNOLDS & BRANSON LEEDS
Method of Application.

by persons who, owing to illness, have to lie in bed. Each cushion is about five inches long, and three and a quarter inches broad; and is fitted with loops at both ends, so that it can be connected by tapes with its fellow, and so kept in position. The ear fits into the central oval space, and the surrounding inflated ring

effectually prevents pressure upon the organ of hearing. The cushions are retailed at five shillings per pair, and are made only by Reynolds and Branson, 13, Briggate, Leeds.

MESSRS. BURROUGHS, WELLCOME AND Co. state that, owing to the recent publication of full accounts of the methods adopted by Dr. C. L. Schleich, of Berlin, for the production of local anaesthesia by infiltration, many requests have been made to them for "tabloids," by means of which the necessary solutions could be prepared, at the instant they are required. In accordance with this suggestion they now prepare "tabloids" of the following formulæ:—

No. 1—"Strong": Cocaine hydrochlor., 1-5 grain; morph. hydrochlor., 1-40 grain; sodium chloride, 1-5 grain.

One "tabloid" dissolved in 100 minims of water yields the "strong" solution.

No. 2—"Normal": Cocaine hydrochlor., 1-10 grain; morph. hydrochlor., 1-40 grain; sodium chloride, 1-5 grain.

One "tabloid" dissolved in 100 minims of water yields the "normal" solution.

No. 3—"Weak": Cocaine hydrochlor., 1-100 grain; morph. hydrochlor., 1-40 grain; sodium chloride, 1-5 grain.

One "tabloid" dissolved in 100 minims of water yields the "weak" solution.

MESSRS. P. B. BURGOYNE AND Co., of 6, Dowgate Hill, E.C., intimate that they have received such an enormous number of applications for samples of their Australian wines in response to an offer they recently made to the whole of the medical profession

(24,000), that it is impossible for them to acknowledge each one separately. They beg, therefore, to assure their correspondents that every application shall be attended to in due course.

MISCELLANEOUS NEWS.

IS BEESWAX A DRUG?—At the Tonbridge Police Court, on Tuesday, January 21, James Wickham and Co., trading as the Co-operative Stores, High Street, Tonbridge, was summoned by Supt. Bartlett for selling to the prejudice of the purchaser a certain drug, to wit, beeswax, which was not of the nature, substance, and quality of the article demanded by the purchaser, at Tonbridge, on January 10.—Supt. Bartlett, inspector under the Foods and Drugs Act for the County Council for the Tonbridge division, stated that on December 10, he sent to the defendant's shop to purchase several articles, including beeswax. On the morning of December 11 witness handed over the sample to Mr. Adams, the public analyst, who had since sent the certificate produced, which showed that the sample consisted of fifty parts of beeswax and fifty parts of paraffin. The witness now produced a copy of the British Pharmacopœia, which he said showed that beeswax was a drug.—Mr. Wardley addressed the Bench for the defence and said that the beeswax was supplied by Messrs. Pisk and Co. in boxes, and from these boxes it was sold by the defendants. This beeswax was not sold as an article of food, and the mere production by the prosecution of the British Pharmacopœia did not prove beeswax to be a drug within the meaning of the Act.—After a brief deliberation the Chairman said the Bench had unanimously decided to convict, but considering the very high character of the defendant and the manner in which he had previously conducted his premises there would only be a fine of 1s. and the costs 12s.

GLASGOW CITY PARISH COUNCIL AND REGISTERED CHEMISTS.—At a meeting of the Medical Sub-Committee of the City Parish Council of Glasgow it was put to a vote whether the dispensing of parish medicines should be transferred from Dr. McKee, Springburn, to Mr. G. L. Anderson, registered chemist, Springburn. On a vote, four voted each way, and the question was remitted to the Parish Council. This body met on Tuesday last, and the chairman, Mr. Maclure, ruled that inasmuch as the Council had, on July 2 last, decided that only registered chemists should, except in very exceptional cases, be charged with the dispensing of medicines, no discussion could take place on the matter. Accordingly it was agreed that Mr. Anderson, who is a qualified chemist, should have the dispensing of medicines in the district.

SUPPLY OF MEDICINES FOR GLASGOW CITY PARISH.—At a meeting of the Glasgow City Parish Council on Tuesday last it was agreed to accept the offer of Mr. James Taylor to supply medicines for £19 13s. 7½d. It was also agreed to purchase the following lots:—120 lbs. best grey cotton-wool at 6d. per lb. from Glasgow Apothecaries' Company, and 150 lbs. Robinson's gamgee tissue at 1s. 1½d. per lb., and 160 lbs. best castor oil at 36s. per cwt. from James Taylor.

NEWCASTLE CHEMICAL REPORT.

[From our own Correspondent.]

FEBRUARY 4, 1896.

A slight improvement in general demand is experienced. Inquiries for spring shipments are on a larger scale, particularly for bleaching powder and caustic soda. Sulphur and saltcake are still sought after, and scarceness keeps up values. Alkali quotations are well maintained. Sulphate of ammonia continues weak through enforced sales by London makers. Carbolic acid continues firm. South Durham steady, shipments being somewhat better. Prices are:—BLEACHING POWDER: £6 5s. to £7 10s., according to markets and packages. SODA CRYSTALS: 37s. 6d. to £2 5s., according to packages. CAUSTIC SODA: 70 per cent., £7 15s.; higher strength, £9 5s. SODA ASH: 48 per cent., £3 15s. to £4. SULPHUR: £3 17s. 6d. to £4. SALTCAKE: 27s. 6d. SULPHATE OF AMMONIA: £8 10s., Leith. HYPOSULPHITE: £6 5s. to £7 in casks of 1 to 7 cwt. PITCH: 36s. CARBOLIC ACID: 60 per cent., crude, 1s. 11d. CRYSTALS: 40 per cent., 7d. SILICATE OF SODA: 75 per cent., £2 12s. 6d. CHLORATE OF POTASH: 5d. per lb. SOUTH DURHAM SALT: 9s. 6d. per ton, *f.o.b.*, Tees.

LIVERPOOL MARKET REPORT.

[From our own Correspondent.]

FEBRUARY 5, 1896.

CANARY SEED, 33s. to 34s. per 464 lbs. KOLA NUTS, 6d. to 6½d. per lb. QUILLARIA BARK: *Chilian* has been selling at £12 10s. per ton *ex store*. BEESWAX: *Gambier*, £6 18s. 9d. CASTOR OIL: *Calcutta good seconds*, 2½d. *ex quay*; 2½d. *ex store*. *French* 1st pressure and *Madras*, 2½d. per lb. OLIVE OIL: *Malaga* £29 10s. per tun. COTTON-SEED OIL: *Liverpool* refined 17s. 6d. to 17s. 9d. LINSEED OIL: 20s. 9d. to 21s. in export casks. SPIRIT OF TURPENTINE: 21s. 6d. PETROLEUM: *Russian* declined to 6½d.; *American* to 6½d. to 7½d. per gallon. SAL AMMONIAC: first, 39s.; second, 37s. per cwt. CARBONATE OF AMMONIA: 3½d. to 3¾d. per lb. BLEACHING POWDER: £7 to £7 5s. per ton for hard. COPPERAS: *Lancashire*, 38s. per ton; *Welsh*, 36s. SULPHATE OF COPPER: *Dearer*, £16 per ton. CHLORATE OF POTASH: 4½d. per lb. PRUSSIAN POTASH: 8d. per lb. BICROMATE OF POTASH: 4½d. per lb. NITRE: 23s. 6d. per cwt.; 23s. for barrels. CREAM OF TARTAR: Holders of finest white ash, 105s. per cwt. SODA CRYSTALS: £2 7s. 6d. to £2 10s. per ton. BICARBONATE OF SODA: £6 15s. per ton. BORAX, crystals £19 10s. per ton; powder, £20 10s. per ton. CAUSTIC SODA: 70 per cent., £7 10s.; 60 per cent., £6 10s. per ton. HYPOSULPHITE OF SODA: £7 to £7 10s. per ton. NITRATE OF SODIUM is rising in price owing to combination, and no spot quotations are obtainable. SULPHUR rolls £5 5s. per ton; flour, £7 10; recovered, barrels, £4 5s.; bags, £3 17s. 6d. MAGNESIA, calcined, 1s. to 1s. 4d. per lb. PHOSPHORUS, *wedges*, 2s. per lb.; *sticks* 2s. 1d.; *amorphous*, 2s. 8½d.

MARKET REPORT.

[Specially compiled for the *Pharmaceutical Journal*.]

LONDON, FEBRUARY 6, 1896.

There is very little to report in the Chemical Market this week, very few changes of any moment having occurred. Cream of tartar is rather firmer, although there seems to be a tendency to run the prices down in some quarters. Tartaric and citric acids are very firm, without change in price. Arsenic is still very scarce, and copper sulphate is firmly held. Of the fine chemicals, carbolic acid is steady, in sympathy with coal distillation products. Quinine is easier, whilst opium alkaloids are very firm indeed. In the Drug Market nothing of any particular moment has occurred, and the most important changes are briefly as follows:—Insect flowers are dearer, whilst Rio ipecacuanha, guaiacum gum, and caramoms sold at advanced prices to-day, as did some grades of Sumatra benzoin. On the other hand, senega root is easier, as is jalap. Kola nuts sold at steady rates, and the same applies to Carthagena ipecacuanha. The heavy oil market is irregular, with a downward tendency. Shellac is flat, and spices mostly unaltered. Full details will be found below:—

ACACIA (GUM)—A fairly plentiful supply was shown to-day amounting to about 200 packages. *Trieste* gum was in moderate supply and slow of sale; the only parcel sold being a case of medium bright, which realised 90s., whilst 64s. was paid for three cases of picked medium, yellow, offered without reserve. *Soudan* sorts were for the most part bought in, but 35 bales of medium palish gum from Suez realised 55s. to 55s. 6d., offered without reserve. Bold ambery sorts from Aden were bought in at 42s. 6d., and small mixed ditto at 26s. per cwt. No grain *Triestegum* was offered, whilst medium picked grey was bought in at £7 to £7 10s. per cwt.

ACID, CITRIC.—There has been no change in the position of this article, and the market remains firm. *Manufacturers* of *English* acid quote 1s. 2½d. per lb., whilst in second hand it can be bought for 1s. 2d. *Concentrated lemon juice* quotes at £14 to £14 2s. 6d. per pipe *f.o.b.* Messina.

ACID, TARTARIC—Very firm. *English* makers still quote at 1s. 3d. per lb. on the spot, whilst 1s. 2¾d. would buy in second hand. *Foreign* brands of acid, both in *powder* and *crystal*, quote at 1s. 2½d. on the spot, and 1s. 2¾d. for forward delivery.

ALOES.—A total of 34 packages were catalogued for to-day's sale. *Cape* aloes, which were represented in auction by 48 cases, sold at an advance of 6d. per cwt., 22s. to 22s. 6d. being paid for good bright hard, 21s. 6d. for fair ditto, 20s. for slightly drossy quality, down to 18s. for drossy mixed. *Socotrine* aloes was in unusually large supply, the London stock having been replenished by recent arrivals of the new crop, but only 5 kegs found buyers out of a total of 87, 80s. being paid for good softish of fair aroma. *Curaçoa* aloes were all bought in at prices ranging from 36s. for dark livery, down to 27s. 6d. for medium ditto.

AMBERGRIS.—This article was represented

in auction by about 70 ozs., of which two sold at 45s. and 35s. per oz. respectively, for ordinary quality.

ANTIMONY.—In auction to-day 40 cases crude *Japan* were bought in at £17 per ton.

ARECA NUTS—Steady. A parcel of 16 bags from *Colombo* sold at 11s. 6d. for good sound, and 10s. for damaged quality.

ARGOL.—In rather large supply, and selling with good competition. The prices paid ranged from 62s. 6d. down to 30s. per cwt., according to quality.

ASAFCETIDA.—Very slow of sale. Out of about 200 packages only about a dozen found buyers, 40s. being paid for a few cases of medium mixed lump, few almonds, and 30s. for 6 boxes of ordinary mixed softish.

BAEL FRUIT.—Two cases of whole fruit imported from *Bombay* sold to-day at 1d. per lb. for fair quality.

BENZOIN (GUM).—A total of about 400 packages was offered in auction to-day. *Sumatra* gum, which was represented by some good parcels, was in fair demand, and £8 7s. 6d. to £8 12s. 6d. was paid for good seconds, evenly packed throughout, £8 5s. for fair seconds, with fair almondy centres, rather false packed sides; £5 5s. for ordinary dull seconds, and £4 10s. for very ordinary dull seconds, few almonds in centres, very false packed sides. *Palembang* gum was mostly bought in, but 51s. was paid for fair bright in tins, and 35s. to 40s. for medium ditto. Of the *Siam* gum £16 to £18 was the limit fixed for medium palish, part loose, and part block almonds, whilst £10 10s. was the buying-in price for small almonds in brown block, and 60s. to 75s. for siftings in block. Five cases of *Siam* gum of 1887 import offered without reserve sold at £5 2s. 6d. to £5 5s. for small almondy gum in dark brown block.

BUCHU—Fully steady, but in very slight demand. A total of 49 packages was offered to-day, and of these 5d. was paid for good bright *round* green leaves; 3d. for medium greenish ditto, whilst *long* narrow leaves were bought in at 6d. per lb.

CACAO BUTTER—Lower. In auction on Tuesday 500 cases (representing 50 tons) of *Cadbury's* make sold at an average of fully 13d. per lb., against 13¾d., which was the price realised at the January sales.

CALUMBA ROOT.—Steady. In auction to-day 18s. per cwt. was paid for 10 bags of good washed root, and 9s. for mixed sorts from *Zanzibar*.

CANARY SEED.—At the spice sales on Wednesday, 32s. to 33s. per 464 lbs. was paid for *Turkish* seed, and 31s. 6d. to 32s. for *Bombay*, both offered without reserve, whilst *Japan* seed was bought in at 38s.

CANNABIS INDICA.—Absolutely without inquiry. To-day about 150 robbins were bought in at 2½d. to 3d. per lb.

CANTHARIDES.—Fair *Chinese* flies are held for 1s. per lb. on the spot. Twenty cases were bought in to-day at 1s. to 1s. 1d. per lb.

CARDAMOMS.—An average supply was shown to-day, and met with a good demand, the tendency being decidedly to dearer prices for the *fruit*, whilst *seed* sold at full rates. The prices paid were as follows:—*Ceylon-Mysore*: Medium to bold pale, 2s. 10d. to 2s. 11d.; good pale, small to medium, 2s. 3d. to 2s. 6d.; medium yellowish, 1s. 10d. to 2s.; and small yellowish and brown,

1s. 6d. down to 1s. 4d. *Seed* sold at full rates, 2s. 6d. per lb. being paid.

CASCARILLA.—The only parcel offered to-day consisted of 2 bags good silvery quill, which were bought in at 55s. per cwt.

CASCARA SAGRADA.—A parcel of 70 bags of small broken quill from *San Francisco* offered in auction to-day was bought in at 21s. per cwt.

CINCHONA.—A parcel of bright *Maracaibo* bark from New York sold with good inquiry to-day at prices ranging from 7d. for sound, 5½d. for medium, down to 4d. for damaged. Fifty-four bales of flat *Calisaya* bark also found buyers, 1s. 5d. to 1s. 6d. being paid for good bright yellow, and damaged qualities at 9d. down to 3d., according to condition. *Succirubra* bark was bought in at 3s. 6d. to 4s. 6d. per lb.

COCA LEAVES.—Firmer. In auction 3 bales of broken greenish *Truxillo* leaves, of good quality, sold at 1s. per lb.

COLOCYNTH.—*Turkey* colocynth was the only kind to meet with any demand, and 2s. 6d. was paid for 5 packages of good sound apple, and 2s. 3d. for pulp. A parcel of fair *Spanish* was held for 1s. per lb., whilst another lot of damaged *Almerian* was bought in at 11d. down to 7d., according to condition.

COPAIBA (BALSAM).—In auction 3 casks of good pale *Maranhm* were bought in at 2s. per lb., and 4 casks of thick bright brown balsam at 1s. 7d. Privately good *Para* sells at 1s. 5d., and dark to fair *Bahia* at 1s. to 1s. 4d. per lb.

CORIANDER SEED.—At the spice sales common, coarse, and wiry *Bombay* was bought in at 11s., and small from *Dunkirk*, at 20s. per cwt.

CREAM OF TARTAR.—The market is very firm, and quotations are if anything advanced. For best white *French* crystals on the spot, 107s. per cwt. is the lowest price, whilst for *German* brands of powder, 109s. to 110s. is asked. For shipment from *Bordeaux* 102s. per cwt. *f.o.b.* may be taken as the value, although we have heard of offers at 99s. *f.o.b.*

CROTON SEEDS.—This article (which has been very scarce for some time) was represented to-day by 20 bags from *Colombo*, and sold at 40s. to 41s. per cwt. for good quality.

CUTTLEFISH.—Five casks of fair, clean bone from *Las Palmas* were bought in to-day at 2d. per lb.

DRAGON'S BLOOD.—An average supply of about 34 cases was shown to-day, and met with a good inquiry. For medium bright *Singapore* block £8 was paid, and for fair squares £6 15s., whilst £4 10s. to £5 2s. 6d. was accepted for 4 cases of dark gum in reeds, much of which was broken and separated from the coverings. Eight cases of dull dark saucers sold at £4 to £4 10s. per cwt.

ERGOT OF RYE.—This article was again fully represented in auction, but the demand is not very brisk. For 6 bags of smallish clean *Russian* ergot 6½d. per lb. was paid, whilst the same price was paid for a parcel offered without reserve. *Spanish* ergot was held for 9d. for good bold, and 7d. for medium clean.

GAMBOGE.—Absolutely without inquiry. Fifty-seven packages were bought in to-day at prices ranging from £10 10s. for damp

blocky *Singapore* gum, £9 10s. for pickings, and £9 for fair blocky pipe.

GALANGAL.—Fifty bales of good root from *Hong-Kong* were held to-day for 22s. 6d. per cwt.

GALLS.—In auction five bags of *Chinese* galls sold at 57s. 6d. per cwt.

GENTIAN ROOT.—Four bales were offered in auction and held for 22s. per cwt., after a bid of 19s. 6d. had been refused.

GINGER.—The market is steady, but the demand is only moderate. In auction on Wednesday, old fair washed rough sold at 33s., and new medium and small brown rough at 34s. to 35s. *Bengal* was bought in at 18s., whilst inferior quality from *Calcutta* sold without reserve at 15s. per cwt. *Jamaica* sold at irregular but, for the most part, lower rates, 53s. 6d. to 55s. 6d. being accepted for lean *Rhatoon*, 60s. for good common ditto, and 74s. for small scraped.

GUAIACUM (GUM).—A parcel of very fine bright glassy block of new, import, was offered to-day, and sold at the extreme rates of 2s. 4d. to 2s. 5d. per lb.

HONEY.—Very slow of sale. Out of about 90 packages offered, the only parcel sold consisted of 4 packages of clean *New Zealand* in tins, which realised 20s. per cwt.

INSECT FLOWERS.—Within the last few days there has been considerable activity in this market, and quotations have advanced, the following being the current rates: Wild closed, 135s.; cultivated closed, 116s. 6d.; half closed, 72s. to 96s., and open, 67s. 6d. per cwt., all *c.i.f.* terms.

IPECACUANHA.—*Rio (Brazilian)* root sold at an advance of about 2d. per lb. in auction, 5s. 5d. to 5s. 6d. being paid for fair to good sound annulated, 5s. 2d. to 5s. 3d. for slightly damaged ditto, and 4s. 9d. for thin wiry root. *Carthagena* root sold at steady prices as compared with those last paid in auction, 4s. to 4s. 1d. being paid for good stout slightly damaged quality.

JALAP.—In auction 8d. per lb. was accepted for 3 bales of fair quality *Vera Cruz* root.

KINO (GUM).—A box of genuine gum was bought in to-day for 20s. per lb., whilst another parcel, said to be genuine, was bought in for 15s.

KOLA.—At the spice sales good dry *West Indian* sold at 11d., ordinary quality at 6d., and mouldy at 4d. per lb. To-day 1s. was paid for good bright sound quality, and 9d. for fair ditto.

LIQUORICE ROOT.—The current quotation for decorticated *Russian* root is 28s. per cwt. *c.i.f.* In auction *Bussorah* root was bought in at 9s. per cwt. The spot value is about 7s. 6d. per cwt. for ordinary rough quality.

MYRRH (GUM).—To-day 112 packages were offered. The only parcels sold were a few casks of small gum, which realised 60s. per cwt., whilst 55s. was accepted for ordinary sorts.

OIL (COD-LIVER).—At the drug sales 5 casks of *Norwegian* oil (imported in March, 1895) sold at 140s. per barrel. Good quality *Newfoundland* oil is held for 5s. 6d. per gallon.

OILS (ESSENTIAL).—*Aniseed*: *Russian* oil is quoted at 10s. 6d. per lb. on the spot. *Lemon* oil continues to advance in price, and the current quotations range from 3s. 9d. to 5s. 3d. per lb., *f.o.b.*, according to brand. To-day *Rose* oil settlings were sold for 1d. to

1½d. per oz. *Cassia* oil testing 71 per cent of cinnamic aldehyde were bought in at 10s., whilst another parcel testing 45 per cent. was also withdrawn. *Ylang-Ylang*: Four cases sold without reserve at 3s. 3d. to 4s. 3d. per oz. *Cinnamon* bark oil was held for 9d. per oz. *Cinnamon* leaf oil was bought in at 5l., *Nutmeg* at 2½d., and *Cumming's Eucalyptus* oil at 1s. 4d. to 2s. per lb. A case of *Lime* oil sold at 4s. 9d., and another of *Orange* at 4s. 6d. per lb., whilst *Coching's* and *Raspe's peppermint* oils were bought in at 6s. 9d. per lb.

OILS (FIXED) AND SPIRITS.—*Castor*: *Italian* oil is quoted dearer, and 30s. 6d. to 31s. per cwt. *c.i.f.* is now asked for best quality. *French* medicinal oil still quotes at 3½d. to 3¾d. per lb. in tins (packed in cases), whilst *Calcutta* is worth 2¾d. to 2½d. for firsts, and 2½d. to 2¼d. for seconds. *Cotton* has declined 10s. since our last report, but at the close is steady. *Refined* oil is quoted at £17 to £17 10s. on the spot, according to brand and package. *Coco-nut* is very firm at unchanged rates, *Ceylon* and *Cochin* being still quoted at £22 15s. to £27 respectively on the spot. *Linseed*: Much weaker and the market closes quiet, oil in barrels being now offered at £20 on the spot. *Rape*: Very firm. *Refined* oil is returned at £25 to £25 15s. on the spot. *Olive*: Quiet, but steady. *Spanish* and *Tunis* are both quoted at £31 to £32. *Palm*: Lagos still quotes at £22 on the spot. *Turpentine*: The price quoted shows a decline of about 4½d. on that of last week, but the market closes steady. American spirit is worth 20s. 4½d. to 20s. 6d. on the spot. *Petroleum*: Firm. *American* oil is quoted at 5½d. to 6d., *Water white* at 7¼d. to 7½d., and *Russian* at 5½d. *Petroleum spirit*: *Ordinary* is quoted at 9d. to 9¼d., and *deodorised* at 9¼d. to 9¾d. per gallon.

ORANGE PEEL.—A few cases of the new arrivals of *Maltese* peel sold to-day at 8d. per lb. for thin cut (good aroma), and 3d. for damaged quality.

ORRIS ROOT.—*East Indian* orris was in good inquiry to-day, and sold at full rates, 29s. to 35s. being paid for medium dark, 23s. to 24s. for ordinary ditto, and 17s. to 20s. very ordinary dull lean.

QUININE SULPHATE.—The market is quite neglected, and no business is doing. The current quotation of 1s. 1d. for the best *German* brands shows a decline on that of last week. To-day 6000 ozs. of the "Imperial" brand of *English* quinine was offered, and bought in at 1s. 2d. per oz., the limit bringing 1s. 1½d. per oz.

RHUBARB.—Out of 85 chests offered to-day about 28 found buyers at the following prices:—*Canton*: Good bold flat, fair fracture, 1s. 4d.; good trimings, 1s. 3d.; medium round and flat fair coat and fracture, 1s. to 1s. 1d.; ditto flat fair coat, dull fracture, 10½d. *Shensi*: Medium round, pale coat, fair fracture, 1s. 2d.; wormy flat, 9d. per lb. *High dried*: Medium flat good even pinky fracture, 10d. to 11d. per lb.

SANDAL-WOOD.—In auction 162 bales sold without reserve at 5s. per ton.

SARSAPARILLA.—*Jamaica* sold to day at steady rates, 1s. 3d. to 1s. 4d. being paid for sound root, whilst for *Lima-Jamaica* (freed from stones) 11¼d. was accepted. *Honduras* was all bought in at 1s. 3d. to 1s. 6d. per lb.

SCAMMONY.—Ten boxes were bought in to-day of *Turkish Virgin* resin at 32s. 6d. to

33s. per lb., whilst *root* was also bought in at 55s. per cwt.

SEEDS (VARIOUS).—*Aniseed*: In auction 60 bags of fair *Spanish* seed sold at 22s. per cwt., whilst for damaged quality 20s. was accepted. Another parcel sold without reserve at 16s., whilst *Russian* seed was bought in at 23s. *Cumin*: *Maltese* seed was held to-day for 33s. to 35s. per cwt. *Jamboul* seed sold to-day at 10d. per lb. *Fennugreek* sold at 6s. per cwt.

SENEGA.—Easier. To-day 1s. 1d. per lb. was accepted for 5 bales of fair quality root.

SENNA.—Only about 100 bales were offered to-day, and the majority of these were bought in. A few bales of small *Alexandrian* leaves sold at 2¾d. per lb. *Tinevelly*: For medium greenish leaves 3d. per lb. was paid, and for small yellowish 1½d. to 1¾d., and damaged 1d. to 1¼d. per lb.

SHELLAC.—There has been a fairly steady demand privately, but the amount of business done has not been very extensive. For *TN Orange* 89s. to 90s. has been accepted for fair quality on the spot. In auction on Tuesday a moderate supply only was offered, and met with a poor demand, *TN* selling at fully steady rates, but other grades were easier. *Button* sold at full to higher rates, whilst no *Garnet* was offered. The prices paid were as follows:—*Fine Second Orange*, 107s. 6d. for broken *AA*, up to 112s. 6d. for fine pale *SD*. *TN Orange*: Good medium light *Calcutta* sold at 95s. to 97s., fair reddish free at 89s. to 90s., strong livery free at 85s., fair bright reddish part block, 79s. to 80s., and livery blocky, 77s.

SPICES (VARIOUS).—*Cloves* are firm. In auction *Zanzibar* sold at 2d. for good fair; 1½d. for fair, and 1¼d. for medium. *Seychelles* was bought in, as was picked *Penang*, at 7d. *Cassia lignea*: Good quality was bought in at 32s., whilst 17s. was accepted for a parcel of common broken, offered without reserve. *Cassia vera*: Mixed quill, mostly coarse, was bought in at 23s. 6d. in auction. *Cinnamon chips*: Broken quill sold at 8d., and chippings at 7d. *Pimento*: Very firm, and in good demand; ordinary to medium sold in auction at 2½d. to 2¾d., whilst 2½d. was paid for good fair. *Capsicums*: Small round red *Bombay* was bought in at 28s. per cwt. *Arrowroot* is still dull of sale, and in auction all the *St. Vincent* was bought in, fair to fine, at 1¾d. to 2¼d., except one lot, for which 2¾d. was paid, whilst 2½d. was paid for a few cases of tins. *Pepper*: In auction *Aleppo* was bought in at 2¾d., and damaged at 2½d. *White Pepper*: Very flat. Fine bold *Singapore* sold without reserve at 4¾d., whilst fine bold was bought in at 5d. to 6d. *Chillies*: Quiet. Fair *Zanzibar* sold at 33s. 6d.; medium red and brownish at 31s. 6d., and fine bright *Japan* at 78s. 6d.

TAMARINDS.—At the drug sales 7s. per cwt. was paid for 7 cases of *East Indian*.

TOLU (BALSAM).—None was sold in auction to-day. Two cases of genuine quality being bought in at 2s. 2d. per lb. Privately, 2s. has been paid for the same grade drug this week.

WAX (BEES).—*Australian*: About 5s. per cwt. lower, £6 15s. being accepted to-day. *Jamaican* sold at £8; *Zanzibar* at £6 10s. to £6 15s.; *Madagascan* at £6 15s.; *South American* at £7 5s. to £7 10s.; and *Mozambique* at £7 2s. 6d. ;

EXCHANGE.

Readers requiring, or having for disposal, books, appliances, shop-fittings, and other matters more or less directly connected with the business of pharmacy, may intimate the fact free of cost. The notices must not include more than thirty words each, and should be written on post-cards, addressed "Editorial Department, 17, Bloomsbury Square, London, W.C."

* * The Editor reserves the right to omit any notice he thinks necessary.

OFFERED.

Stereoscopic Camera, by Stereoscopic Company, complete in box, with stand, bottles, dishes, and accessories, £4; also Lantern, 4 in. condenser, three-wick lamp, complete, £1 1s.—Barnes, Terrace Road, Plaistow, E.

Green's, Bentley's (15s.), Edmunds', Oliver's, and Cook's 'Botany,' and Atfield's 'Chemistry'; what offers?—"Ebor," 49, Lyme Street, Dryden Street, Manchester.

Stokes' Patent Check Till, with spare rolls of paper, in proper working order.—Write to E. Brackenbury, Chemist, Bardney, Lincoln.

Wills' 'Notes on Flowers,' 2s. 6d.; 'Volumetric Analysis,' 1s. 3d.; 'Chemistry,' 2s.; Prantl and Vines' 'Botany,' 5s. 10d.; Stirling's 'B.P. Tinctures,' 7d.; 'Equations,' 9d.; excellent condition.—X., 13, Market Street, Scunthorpe Doncaster.

A Ross 12 in. Concentric Lens for sale. Cost £11 10s. last summer; not been used half a dozen times; owner, wanting money, will accept £5 5s.—Hampson, Chemist, Leigh, Lancashire.

Zuccatto's Trypograph, foolscap size, gives any number of copies of circulars, etc., in black, complete with materials, in box, 20s., cost 40s.—Elliott, Chemist, Southport.

Handsome Chemists' Fixtures in mahogany—mirrors and plate glass shelves; everything necessary to commence; sell for valuation, or half Maw's prices in catalogue.—Bentley, Limehurst, Goole.

Sixty ounces B.P. quinine at 1s. 3d.; Maw's Electro-Magnetic Apparatus, fig. 50, nearly new, 10s. 6d.; eight years' 'Pharmaceutical Journal,' well bound, 8s.; 1 Cwt. cask Glaubers, 6s. or exchange.—Smith, chemist, Portsea.

Six Magnetic Belts, sold at a guinea each, for 50s.—Orchard, Salisbury.

Daniel Hanbury's 'Pharmacological and Botanical Papers,' cost 16s., for 8s. free; Newman's 'British Ferns,' well illustrated, cost 12s., 4s. free.—Davies, 33, Eglinton Road, Bow.

Balance.—One Oertling's, No 9, for gold and silver assays, cost 18 guineas, will take 10 guineas, excellent condition.—Dryden, Chemist, Landore, R.S.O.

Surplus Stock. Twenty-four 8-ounce bottles Southall's A1 Cod-Liver Oil, capsuled, unlabelled, 11s., car. forward. Cash with order.—Eastman, Forest Lane, Stratford.

'Pharmaceutical Journal'; first 15 volumes for sale, cheap, and sundry imperfect years of the weekly series.—Davis, "Chestnuts," Gordon Hill, Enfield.

'Minor Ailments,' nearly new; Liston's 'Practical Surgery,' 4th edition. What offers?—Leeffe, 114, High Road, Streatham, S.W.

Two Pear-Shaped Window Carboys, with handsome glass stoppers, each holding 6½ galls.; offers invited by—J. Hill, Norton Villa, Britonferry, Glamorgan-shire.

Prantl and Vines' 'Botany' (5th), 4s. 6d.; Thorpe's 'Chemistry,' 2 vols., 3s. 6d.; Remsen's 'Chemistry' (Organic), 3s.; Whitl's 'Pharmacy' (5th), 4s.; Ganot's 'Physics' (13th), 8s. 6d. All as good as new.—95, Kennington Park Road, S.E.

Everett's 'Text-book of Physics'; Wills' 'Manual of Materia Medica'; both quite new. Any reasonable offer.—Student, 17, Bloomsbury Square.

Martindale's 'Extra Pharmacopœia,' seventh edition, 6s.; Bell and Redwood's 'Progress of Pharmacy,' 4s.; good as new; Drutt's 'Surgeons' Vade-Mecum,' 5s.—Chemist, 141, Upton Lane, Forest Gate, E.

WANTED.

Atfield's 'Chemistry,' latest edition, and other books for 'Minor.'—Stokoe, 15, Argyle Square, Sunderland.

Maisch's 'Materia Medica.'—"Ebor," 49, Lyme Street, Dryden Street, Manchester.

Specie Jar, 2½ inches high, decorated inside, good condition.—Winter, Llandudno.

Wanted to hire or purchase, Gower's Hæmacytometer.—Edward Peck, Chemist, East Dereham, Norfolk.

'Minor Ailments,' or good book, for 'Counter Prescribing.' Price to R. B. Hill, Market Place, Howden, E. Yorks.

A Mahogany Shop Door; also a Set of York Glass Bees-labelled Bottles.—Walker, West Kirby.

Kelly's 'Directory of Chemists and Druggists,' state date of publication; Bent Front Tooth Brush Case; Clarke's Syphon Gas Stove; Ten Foot Dispensing Screen and Glass-Fronted Counter for underneath same.—Griffin, Chemist, Kidderminster.

Rectilinear Lens for half plate. Must be cheap.—Lawrence, Chemist, Oban.

Weighing Machine up to 20 stone; Truck for taking out mineral waters; in good condition and cheap for cash.—Tupholme, Coleherne Terrace, Earl's Court, London.

Ince's 'Latin Grammar' or similar work. Particulars to "Vox," 109, Fentiman Road, S.W.

Remsen's 'Organic Chemistry.'—Student, 17, Bloomsbury Square.

'Veterinary Counter Practice' and Dental Forceps bicuspid and wisdom.—Burge, Fernhead Road, W.

TRADE CORRESPONDENCE.

THE ANTI-CUTTING CAMPAIGN.

Sir,—Now the Proprietary Articles' Trade Association is fairly launched, allow me to suggest that the ten retailers should be chosen from different centres. As there is certain to be a large amount of committee work, five should be chosen from the London district, the remainder from large centres, such as Edinburgh, Glasgow, Liverpool, Manchester, Sheffield, Nottingham, Birmingham, Plymouth, and Brighton, each representative to be chosen by the Local Association or other body of retailers called together for that purpose.

The owners of proprietary articles having shown a desire to consider and put into force some reasonable scheme which will not only benefit themselves, but retail pharmacists in an equal degree, it is only natural to expect the retail trade to respond by giving all the help they can, 1st, by holding meetings; 2nd, by appointing some one to whom the secretary (Mr. Glyn Jones) could communicate to carry out the various suggestions which will be made from time to time.

CHAS. THOMPSON.

Birmingham, February 5, 1896.

MARRIAGE.

STONE — BALL. — February 1, at St. Philip's Church, Heigham, Norwich, by the Rev. A. G. Blythe, George Percival Robert Stone, A.P.S., of Norwich, to Ada, youngest daughter of D. Ball, Southport.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

MONDAY, FEBRUARY 10.

ROYAL GEOGRAPHICAL SOCIETY, at 8.30 p.m.
"Movements of the Earth's Crust" (Illustrated), by Professor J. Milne.

TUESDAY, FEBRUARY 11.

PHARMACEUTICAL SOCIETY (LONDON), at 8 p.m.
Formal Transfer of the Burroughs' Memorial Fund.

"Estimation of Aconitine" (1), by Prof. Dunstan and Thomas Tickla.
"The Detection of Aconitine" (2), by Prof. Dunstan and F. H. Carr.
"Essential Oils of Black and White Peppermint" (3), by J. C. Umney.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.
"The External Covering of Plants and Animals: its Structure and Functions" (V.), by Professor O. Sewart.

ROYAL PHOTOGRAPHIC SOCIETY, at 3 p.m.
Annual General Meeting.
"The New Shadow Photography" (illustrated), by A. A. C. Swin'oon.

MIDLAND PHARMACEUTICAL ASSOCIATION, at 8.30 p.m.
"Vegetable Histology" (illustrated), by F. H. Allcock.

WEDNESDAY, FEBRUARY 12.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.
Library, Museum, School, and House Committee.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION, at 9 p.m.

"Laboratory Notes," by J. Barclay.
SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY, at 8.30 p.m.

"Mediæval Natural History," by Dr. Sorby.
BRIGHTON JUNIOR ASSOCIATION OF PHARMACY, at 9 p.m.

"Trade: An Historical Sketch," by G. Long.

THURSDAY, FEBRUARY 13.

SOCIETY OF ARTS (INDIAN SECTION), at 4.30 p.m.
"Punjab Irrigation—Ancient and Modern," by Sir J. B. Lyall.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.
"Some Aspects of Modern Botany" (I.), by Professor H. M. Ward.

CHEMISTS' ASSISTANTS' ASSOCIATION, at 8.30 p.m.
"The Chemical Training of Pharmacists," by J. C. Evans.

SCHOOL OF PHARMACY STUDENTS' ASSOCIATION, at 6 p.m.
Discussion on "A Student's Union for the School of Pharmacy," opened by Mr. T. A. Henry.

FRIDAY, FEBRUARY 14.

ROYAL INSTITUTION OF GREAT BRITAIN, at 9 p.m.

"Fish Culture," by J. J. Armistead.
ROYAL ASTRONOMICAL SOCIETY, at 3 p.m.
Anniversary Meeting.

SHEFFIELD MICROSCOPICAL SOCIETY, at 8 p.m.
Botanical Demonstration by Messrs. Hoole and Harrow.

WESTMINSTER COLLEGE OF PHARMACY.
Annual Gathering at the Bridge House Hotel, London Bridge, at 8 p.m.

SATURDAY, FEBRUARY 15.

PHARMACEUTICAL FOOTBALL CLUB v. Breweries, at Shepherd's Bush.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.
"Realism and Idealism in Musical Art" (Illustrated III.), by C. H. H. Parry.

Late Advertisement.

Engagement Wanted.

MR. FEAST, 31, Gladstone Pl., Lewes Rd., Brighton, desires an appointment as BRANCH MANAGER, to live on the premises with his family; 5 at home. Widower. Age 58. Registered. At liberty. An abstainer 14 years.

SUPPLEMENT

TO THE

PHARMACEUTICAL JOURNAL.

MISCELLANEOUS NEWS.

THE SALE OF ARSENICAL FLY-PAPERS.—We understand that there is a probability that the appeal in the fly-paper case, which came before His Honour Judge Bacon, at the Bloomsbury County Court, on January 21 (see *ante*, p. 62), will not be proceeded with.

JUNIOR PHARMACY BALL.—The fifteenth annual ball was held at the Portman Rooms, Baker Street, on Wednesday last. This dance appears to increase in popularity year by year. It is the fifth opportunity London pharmacists have had of indulging in the terpsichorean art this season, and the number that attended this function exceeded that at any of the others. Mr. H. Arliss Robinson (the Hon. Secretary) reports that over 350 guests sat down to supper, the large ball-room was filled to its utmost during the middle of the evening. The disposal of the couples for the square dances gave the M.C. (Mr. C. W. Martin) ample opportunity for displaying the tact for which he is famous. Mr. Carteighe took the chair at supper, and afterwards proposed the usual toast—"The Ladies," coupled with the name of the Hon. Sec. He also drew attention to the fact that Mr. T. C. W. Martin was for the first time absent from this gathering. We regret to learn that indisposition was the cause. The Secretary then rose to reply. He was greeted by such an enthusiastic uproar that "Chair" was the only word distinctly audible for at least five minutes. In thanking Mr. Carteighe for presiding, he remarked that he was always to the fore with his helpful presence whether at dinners, balls, or concerts. The party dispersed at 4 a.m. on Thursday, after a most enjoyable evening.

MIDLAND PHARMACEUTICAL ASSOCIATION.—A meeting of the Midland Pharmaceutical Association was held on Feb. 11, at the Mason College, Birmingham, Mr. R. Darton Gibbs (President) in the chair. Mr. F. H. Alcock read an interesting paper on 'Vegetable Histology,' at the conclusion of which a series of photographs taken by the Röntgen process were exhibited by Mr. C. F. Jarvis.

THE PROPRIETARY ARTICLES TRADES' ASSOCIATION.—The first meeting of the Council of the above Association was held at Anderton's Hotel, Fleet Street, London, on Wednesday, February 12. Almost all of the members of the Council were represented at the meeting.

The first business was that of the election of officers for the first three months. The following gentlemen were ultimately elected: President, Mr. Elliman; Vice-presidents, Mr. Gilligan (Liebig Co.), and Mr. G. R. Barclay (Barclay and Sons). Mr. Barclay was also asked to continue for the present in the office of Treasurer, and Mr. Glyn-Jones was elected Secretary.

The Secretary announced that he had communicated with the retail members who had up to last week joined the Association, asking them whether they would be prepared to act upon the Council for the first three months. Ten gentlemen had consented, and it was therefore decided that they should be elected as the retail section of the Preliminary Council. The following are the names:—W. Johnson, 69, Loughborough Road, Brixton, London, S.W.; A. J. Gower, Chemist, Tonbridge; Morgan W. James, Llanelly, South Wales; S. Lister, Chemist, Great Horton; W. Jones (Morris, Banks and Co.), 2, High Street, Birmingham; W. R. Barnes, Chemist, Upton Manor, London, E.; Albert Cooper, 80, Gloucester Road, South Kensington, London, S.W.; James Cocks, 8, Edgecumbe Street, Stonehouse, Devon; E. A. Holloway, 34, Fleet Street, Torquay; T. P. Garrett, 33, Commercial Street, Newport.

It was decided to form an Executive Committee for dealing with matters of finance and emergency, to consist of the officers above mentioned, and Messrs. Hall (Hall's Coca Wine), Tebbutt (W. Sutton and Co.), and Johnson, chemist, Brixton.

The Secretary said that he had received several communications from country members, suggesting that the expenses of attending meetings of the Council should be refunded to them. After some discussion it was decided that, at any rate for the present, this would not be advisable.

The absence of any member of the retail grocery trade upon the Council was commented upon. The Secretary explained that as the grocery trade had not been directly communicated with, with one or two exceptions, no member of that trade had joined the Association. He said he hoped that that meeting would empower him to take steps to communicate with the Grocers' Federation, with the view of soliciting their co-operation, and that as the result of such action by the time the first annual Council would be elected, a sufficient number of retail grocers, who were handling proprietary articles, would have joined the Association, and that the Council could thus consist of members both of the wholesale and retail grocery trades. A motion was moved by Mr. Johnson, seconded by Mr. Gilligan, and unanimously carried, that the Secretary be instructed to communicate with the Secretary of the Grocers' Federation, and also with each of the Secretaries of the local Pharmaceutical Associations, drawing their attention to the formation of this Association and soliciting the assistance and co-operation of their respective organisations.

The scheme for carrying out the objects of the Association drawn up by the Secretary was then submitted to the meeting. Mr. Jones, of Birmingham, who had been sent to the meeting as a delegate of the Trade Committee of the Birmingham Pharmaceutical Association, to whom a copy of the scheme had been submitted, said that his Committee had instructed him to say that in their opinion any system of rebate was objectionable, and that they thought a scheme on the lines of Mr. Elliman's, but enlarged so as to embrace other articles, was preferable. The consensus of opinion at the meeting was decidedly in keeping with these views, and it was felt that the scheme

suggested by the Secretary was too cumbersome and too expensive in its working, and it was therefore withdrawn.

Mr. Bird, of Birmingham, Mr. Gilligan, and several other gentlemen explained that it would be well if this Council would communicate with Mr. Giles, of the Grocers' Federation asking him whether a conference could not be arranged between representatives of this Association and the Committee of the Grocers' Federation, which at present had this matter under consideration. This was afterwards put in the form of a motion, and unanimously agreed to. In the event of a favourable reply being received from the Grocers' Federation it was decided that the Executive Committee, with Mr. Roberts (May Roberts and Co.) and Mr. Bird, of Birmingham, be asked to attend the conference.

THE CRYPTOSCOPE.—The Vienna correspondent of the *Daily Telegraph* states that the reported invention by Salvioni of an instrument for enabling the eye to see objects which are covered by materials that were heretofore opaque is confirmed. The instrument consists of a cylinder of cardboard, the inner surface of which is coated with a substance that becomes fluorescent under the action of Röntgen's rays. The other end is provided with a lens. The object to be examined and the cylinder are placed before the invisible rays developed by a Crookes' tube, when by applying the eye to the lens the observer sees on the fluorescent substance the shadow of the objects that are impenetrable to the rays. The instrument is called a cryptoscope, and hopes are entertained that it will shortly be perfected.

CARBOLIC ACID AGAIN.—A woman named Agnes Fairlie, 6, Drummond Street, Edinburgh, was admitted to the Edinburgh Royal Infirmary on Wednesday week, suffering from the effects of carbolic acid poisoning, and died on February 11.—A woman, wretchedly clad, was found lying insensible on a stair at 18, St. Andrew Street, Glasgow. She was suffering from carbolic acid poisoning, and, her stomach having been pumped, she was removed to the Royal Infirmary. A gill bottle, labelled "Strong Carbolic Wash," containing a small quantity of the fluid, was found underneath her on the stair.

POISONING BY LAUDANUM.—An inquest was held at the Thomas Arms Hotel, Llanelly, on Monday, before the deputy coroner (Mr. Henry W. Spowart), relative to the death of Robert Margrave, a veterinary surgeon, who died on Sunday afternoon.—Evidence was given by Henry Harries, a groom in the employ of the deceased, to the effect that on Sunday deceased appeared to be very down-hearted, and went into his surgery, where he took a quantity of tincture of opium. Hot water and mustard were administered, but in a few minutes deceased became unconscious. Soon after his breathing stopped, but he rallied a little when artificial respiration was resorted to. He never recovered, however, and death took place about five o'clock.—After a brief summing up the jury returned a verdict of death from misadventure, arising from an overdose of opium.

MARKET REPORT.

[Specially compiled for the *Pharmaceutical Journal*.]

LONDON, FEBRUARY 13, 1896.

With the exception of one or two articles, there are but few changes to report this week in either the chemical or drug market. In the chemical market cream of tartar is tending easier on the spot, although for shipment importers maintain full rates. Tartaric and citric acids are firm, without change in value. Arsenic is still very scarce, and copper sulphate firmly held. Amongst pure chemicals carbolic acid is considerably dearer, tannic and gallic acids are very firm and likely to advance in price, whilst acetanilid is firmly held. Some holders of permanganate of potash have raised their quotation, and a general advance is probable. A good business has been done in crude camphor during the week at advanced prices. None of the alkaloidal salts call for remark. In the drug market we have to report a firm market in orris root, cascara sagrada, gentian root, and insect flowers, whilst bayberry bark is scarce on the spot and firmly held. Cod-liver oil is exceedingly scarce, and owing to the feature of the fishing season, famine prices are likely to be realised. The heavy oil and spice markets are unchanged, and the same applies generally to essential oils.

ACACIA (GUM).—The market for *Bushire* gum is quiet, with little business doing. Fair so-called insoluble sorts are quoted at 11s. 6d. to 13s. 6d., and fine pale selected gum at 16s. to 20s. per cwt.

ACETANILID.—Very firm, and likely to advance in price. At present 1s. 3d. to 1s. 4d. per lb. is still the spot price, according to quality and holder.

ACID BORACIC.—The current quotation for crystals is 30s., and powder, 32s. per cwt. on the spot.

ACID CARBOLIC.—A very brisk market, and prices continue to advance steady, the following being the current quotations:—Crystals: 39° to 35°, 6¼d.; 39° to 40°, 7¼d.; 31° to 40° (*detached crystals*), 8¼d. per lb. Crude has also advanced, and now quotes at 2s. for 60 per cent., and 2s. 4½d. for 75 per cent. per gallon. *Liquefied* and *creylic* are unchanged at 1s. 1d. and 1s. per gallon.

ACID, CITRIC.—Shows no alteration in price, but the market is firm. Makers *English* acid still quote 1s. 2½d. per lb., whilst second-hand holders offer at 1s. 2d. *Concentrated lemon juice* still quotes at £14 to £14 2s. 6d. per pipe *f.o.b.* Messina.

ACID TANNIC.—Although there has been no change in the prices of this article, the market is very firm, and quotations are likely to advance shortly, and the same applies to *Gallic* acid.

ACID, TARTARIC.—This market is quite steady at firm rates. Manufacturers of *English* acid still quoting at 1s. 3d. per lb. on the spot, whilst for *foreign* brands of acid (not guaranteed B.P.), both in *crystals* and *powder*, 1s. 2½d. per lb. is asked on the spot, and 1s. 2¼d. for forward delivery.

AMMONIA COMPOUNDS.—*Sulphate*: The market is steady at unchanged rates, grey 24 per cent. being still quoted at £8 10s. on

the spot, with *Hull* at the same figure, *Leith* at £8 10s., and *Beckton* at £8 12s. 6d. *Carbonate*: 3½d. to 3¾d. per lb. *Liquor*: 3¼d. to 3½d., less 5 per cent. *Sal Ammoniac*: Firsts, 39s.; seconds, 37s. per ton.

ARSENIC.—Remains very scarce at present. Good white *powder* is still nominally quoted at 19s. to 19s. 6d. on the spot, whilst for *lump* 28s. is returned.

ASHES.—Best *Montreal* potashes quote at 22s. 6d., and *pearlashes* at 37s. 6d. per ton, *f.o.b.*

BARBERRY BARK.—There is none of this drug available now under 8d. per lb. on the spot, whilst for shipment from New York 7d. is quoted.

CAMPHOR.—The market has become much more active, and as much as 210s. has been paid on the spot during the week for *Japan* camphor, whilst business has been done to arrive near at hand at 185s. Nothing is doing in *China* camphor which quotes at 172s. 6d., *c.i.f.*, February to April shipment. The agent for one of the refiners has issued a circular during the week, in which it is stated that a sliding scale will be charged for *refined* camphor directly dependent upon the price of *crude* on the basis of 2s. 3d. per in 1 ton lots of refined, when the price of *crude* is 185s. on the spot.

CASCARA SAGRADA.—Remains very firm. Good quality bark is still quoted at 22s. 6d. per cwt. on the spot. For shipment from New York new bark is offered at 20s. 6d. *c.i.f.*, and two year old at 22s. *c.i.f.* terms per cwt.

COCA LEAVES.—There are no *Truxillo* leaves of good quality available in importers' hands at present. For damaged *Bolivia* leaves, 1s. 2d. per lb. is the price.

COAL DISTILLATION PRODUCTS.—*Toluol* is rather easier, and *pure* is now quoted at 2s. 2d. per gallon. *Benzole* is also lower, and 50 per cent. now offers at 1s. 10d., and 90 per cent. at 2s. 2d. per gallon. *Creosote*: 1½d. per gallon. *Crude Naphtha*: 30 per cent. at 120° C. quotes at 10d. per gallon. *Solvent Naphtha*: 95 per cent. at 160° C. s quoted at 1s. 5d.; 90 per cent. at 160° C. at 1s. 2½d., and 90 per cent. at 190° C. at 1s. 1½d. per gallon. *Anthracene*: 13A., 11½d.; B., 10d. per unit. *Pitch*, 34s. 6d. per ton, *f.o.b.* *Tar*: *Refined* quotes at 11s. 9d. per barrel.

COLOCYNTH.—Remains very firm. Business has been done during the week privately at 1s. per lb. for good *Spanish* colocynth, showing a steady rate, whilst good *Turkey* apple is held for 2s. 9d. per lb.

CREAM OF TARTAR.—On the spot the market is weakening, although there is no great change in the quotations. For best white *French* crystals, 106s. would now be accepted, whilst for *German* brands of powder 108s. to 110s. is quoted. For shipment holders are firm, and 102s. *f.o.b.* is still quoted from Bordeaux, and 101s. *f.o.b.* from Barcelona.

GALLS.—*Persian* kinds are very quiet, with *blues* quoted nominally at 53s. to 55s.; *greens*, of which there are little offering, at 42s. 6d. to 47s. 6d., and *whites* at 42s. to 45s. per cwt. *Chinese* galls are steady. Business has been done for arrival during the week at 57s. to 57s. 6d. per cwt., *c.i.f.*, February to April shipment, whilst the spot quotation is 64s.

GENTIAN ROOT.—Very firm. Four bales of fair quality root bought in at the last

sales have since been sold at 22s. per cwt., and there are now no sellers on the spot under 22s. 6d. The shipment quotation for *French* root has also advanced, and 20s., *f.o.b.*, is now asked. *Powder* offers at 18s. on the spot.

GINGER.—Steady. At the sales on Wednesday some of the new crop *Cochin* root was offered, but only a moderate amount was sold. Small rough cut realised 42s. 6d., medium half-cut, 55s., and medium half-cut, 62s. per cwt. *Bengal* was bought in at 17s. 6d. per cwt.

GLYCERINE.—The market is tending easier. *Schering's* brand of 1.260 double distilled glycerin still quotes at 75s. per cwt., but second-hand holders of *English* and *German* glycerine offer at 68s. to 70s. per cwt.

GOLDEN SEAL ROOT.—A fair inquiry is shown for this article privately, and 1s. per lb. is the current quotation.

INSECT FLOWERS.—In the London market business is quiet in this article, but a good demand is reported from Trieste, and stocks are said to have been reduced to very small dimensions. The current quotations are as follows:—Closed wild flowers, 132s. 6d.; cultivated closed ditto, 116s.; half closed, 76s. to 95s.; and open 66s. per cwt., all *c.i.f.* terms.

JALAP.—One of the holders has cleared out nearly all his stock of fair *Vera Cruz* root at 8½d. per lb., with the exception of a parcel for which his strict limit is 9d. per lb.

MASTIC (GUM).—The market in this article is somewhat overstocked at present, and 1s. 8d. per lb. would be accepted on the spot for good bright drop.

OIL (COD-LIVER).—Through the courtesy of Messrs. Jenkin and Phillips, 21, Mincing Lane, we have received a copy of the official report, which was issued on the 8th inst. From this we learn that the catch up to date amounts to 160,000 cod fish, equivalent to 200 hectolitres liver, and 18 hectolitres of cod-liver oil, whilst the fineness of the livers ranges from 570 to 700 per hectolitre. From this it will be seen that the present season's catch in the Lofoten district is the poorest on record for many years past, and when it is considered that the fishing in the Vesteraalen and Senjen districts is now practically finished, the dismal prospect in store will be realised, since it has been a complete failure. A cablegram received to-day just as we go to press states that there is nothing whatever doing in the Lofoten district, from which it may be concluded that no fresh arrivals of fish have arrived at the factories. The nearest price for new oil to arrive is 220s. per barrel of 25 gallons *c.i.f.* terms, whilst 1895 oil of good quality is quoted at 180s., and *Newfoundland* at 5s. 6d. per gallon.

OILS (ESSENTIAL).—Reports from *China* state that there is still no good quality *Cassia* oil available, whilst *Star anise* oil is held for an extremely high price. On the spot a large business has been done in *Star anise* oil at 10s. 1½d. per lb. during the week, and some holders now ask 10s. 3d. per lb. *Cassia* oil is unchanged. *Peppermint* oils have an easier tendency generally, and during the week 6s. 1½d. has been accepted on the spot for *dementholised* oil. The market in *Italian* oils is very active,

and prices have again advanced. *Lemon* is quoted at 3s. 9d. to 5s. 6d. per lb., *f.o.b.* *Sweet Orange* at 6s. 10d. to 8s. 6d., and *Bergamot* at 7s. 5d. to 9s. per lb., all *f.o.b.* Messina according to brand.

OILS (FIXED) AND SPIRITS.—*Castor* continues to harden in price, and best quality *Italian* oil is now quoted at 31s. per cwt. *c.i.f.* terms. *Marsilles* medicinal oil is very firm at 3½d. to 3¾d. per lb. in tins (packed in cases), whilst *Calcutta* is quoted at 2¾d. to 2½d. on the spot for firsts, and 2½d. to 2¼d. for seconds. *Cotton*: The closing price shows a further weakening on last week's quotation, but the market is now firmer. *Refined* oil offers at £17 to £17 5s. on the spot according to brand and package. *Cocoonut*: The market is firm, *Ceylon* and *Cochin* oils being quoted at £22 15s. and £26 15s. respectively on the spot. *Linseed*: The market continues to weaken and oil in barrels now offers at £19 15s. to £19 17s. 6d. on the spot. *Rape*: Quiet but fairly steady, *refined* oil being returned at £25 to £25 10s. on the spot. *Olive*: *Tunis* and *Spanish* are both quoted at £31 to £32. *Turpentine* has declined still further on last week's quotation, and *American* spirit is now quoted at 20s. 3d. on the spot. *Petroleum*: Easier. *American* is quoted at 5½d. to 5¾d.: *Water white* at 7½d. to 7¾d., and *Russian* at 5½d. per gallon on the spot. *Petroleum spirit*: *American*, 9d. to 9¼d.; *deodorised*, 9¼d. to 9¾d. per gallon.

OIL (MYRBANE)—Very firm at 6¾d. per lb.

OPIUM.—The London market remains steady, with a fair business doing in *druggists'* kinds. The current quotations are:—*Soft shipping*, 11s. 6d. to 12s. 6d.; *Smyrna*, 8s. to 8s. 6d.; *Constantinople*, 8s. to 9s., and *druggists' seconds* at 7s. 6d. to 8s. per lb. *Persian* opium is firm, the arrivals of the new crop being held for 13s. to 13s. 3d. per lb. for fine *bricks*. Business has been done at the former price during the week.

ORRIS ROOT.—The market is firm, without much inquiry at present. Best selected *Florentine* root quotes at 69s. per cwt., *c.i.f.* terms, whilst on the spot it offers at 75s., and good quality *Veronese* (which is extremely scarce) at 69s. per cwt.

POTASH COMPOUNDS.—*Chlorate*: Very firm, and 4½d. is now the lowest manufacturers price in London. *Pemanganate*: Likely to advance in price. Holders of small *crystals* now ask 60s. to 65s. per cwt., whilst 65s. to 70s. is quoted for *large*. *Cyanide*: 98 per cent. quotes at 1s. 6d. per lb. *Prussiate*: 7½d. to 8d. per lb. on the spot, according to brand. *Bichromate*: 4½d. per lb. *Salt-petre*, 21s. 9d. to 22s. 9d. per cwt. for *British* refined; 17s. 6d. for *Bengal*: 3½ to 5 per cent. *Sulphate*: £9 7s. 6d. to £10 per ton.

QUICKSILVER.—On the 7th inst. the importers lowered the price 5s. per bottle, from £7 7s. 6d. to £7 2s. 6d., and a large business has been done at the latter figure. Second-hand holders offer at £7 2s. This reduction has not as yet affected the price of *Mercurials*.

QUININE SULPHATE.—The market is quite devoid of interest at present. The best *German* makes quote at 1s. 1¼d. on the spot, but the amount of business done has been merely nominal.

SCAMMONY.—Since the drug auctions business has been done in *Turkish* virgin resin at 30s. per lb., and 31s. to 32s. is now the general "asking" price. Of *Skillippe* there is little or none on the spot. *Root* is held for 45s. to 50s. per cwt.

SENEGA ROOT—Very slow of sale. For good quality root 1s. 3d. per lb. is the general spot price.

SHELLAC.—Privately the market is quiet, but steady, and there have been sales of *TN Orange* at 93s., and good free *AC Garnet* at 88s. on the spot. The arrival market is also firm, with a small business done in *Second Orange* at 83s. *c.i.f.* for April to June shipment. At the weekly sales steady prices were paid generally, but the market was somewhat irregular for *Second Orange*, whilst *Garnet* was rather easier. The prices paid were as follows:—*Second Orange*, good pale *SSO*, 99s. to 102s.; fair red *TN*, 90s. to 91s.; dark ditto, 86s.; blocky red-dish, 83s. to 84s.; cakey, 78s. to 79s.; and broken livery, 77s. to 79s. per cwt. *Garnet* sold at 84s. to 87s. for cakey *AC*, and 76s. to 77s. for blocky. *Button*, *BL1* realised 95s.; *BL2*, 77s. to 80s.; and *BL3*, 71s. per cwt.

SPERMACETI—Continues to become easier in price, and refined *American* can now be bought at 1s. 6d. per lb. on the spot.

SPICES (VARIOUS).—*Cloves*: Very firmly held. In auction, all the *Zanzibar* were bought in, dark to good at 1½d. to 2¼d. per lb. *Penang* sold at 10d. for fine bold picked, and very fine ditto at 11d. to 11¼d. *Cassia lignea*: A lot of sea-damaged bark was bought in at the sales, as well as broken quill at 18s. to 23s., but 16s. was paid for a parcel of inferior quality offered without reserve. *Pimento* remains quiet, but steady. In auction the small supply offered was bought in at 2¾d. per lb. *Capsicums*: One hundred bales of *Bombay* off-stalk were bought in. *Chillies*: Ordinary to medium brownish *Zanzibar* was withdrawn at 31s. to 35s. per cwt. *White pepper*: Slow of sale. In auction *Penang* were bought in at 3d., and good *Singapore* at 4½d., whilst fine bold ditto realised 4¾d. to 4¾d. per lb. *Pepper*: A small proportion only was sold in auction, including *Penang* at 2½d., whilst *Trang* were bought in at 2¾d., and good *Tellicherry* at 2¾d. per lb. *Arrowroot* remains slow of sale. Fine *St. Vincent* sold at 4¼d. per lb., the remainder being bought in at 1½d. to 3¼d. per lb.

SOY.—Fair *China* offers at 1s. to 1s. 1d. per gallon on the spot.

SUGAR OF MILK.—The position is unchanged. Holders of good brands of *crystals* ask 87s. 6d., and of powder, 85s. per cwt. on the spot.

TURMERIC—Remains slow of sale. At the sales on Tuesday, the majority offered was bought in including fair to good bright *Madras* finger at 7s. 6d. to 8s. 6d., and good *Cochin* bulbs at 6s. per cwt. Some small sales of damaged finger were made at 3s. to 5s. 9d. per cwt., whilst fair *Bengal* was bought in at 9s. per cwt.

TURPENTINE.—The current quotation for *Venice* is 65s. per cwt., whilst *Chian* offers at 10s. per lb.

WAX (JAPAN)—Very firm. During the week there have been sales privately of good pale *squares* on the spot at 34s. 6d., whilst 37s. 6d. *c.i.f.* is the nominal quotation for arrival.

NEWCASTLE CHEMICAL REPORT.

[From our own Correspondent.]

FEBRUARY 11, 1896.

The General Prices are as follows:—**CAUSTIC SODA**: 70 per cent., £7 10s. to £7 15s.; same 76 to 77 per cent., £9 5s. **SODA CRYSTALS**: In bags, 42s. 6d. to 45s. **BLEACHING POWDER**: In softwood casks, £7 5s.; hardwood, £7 10s. **SULPHUR**: £3 17s. 6d. to £4. **SALTCAKE**: 27s. 6d. **SODA ASH**: 48 to 50 per cent., £3 15s. to £4 15s. **ALKALI**: 48 to 52 per cent., £4 10s. to £5. **LUMP ALUM**: £5 10s. **HYPOSULPHITE**: 5 to 7 cwt. casks, £6 5s.; kegs, 1 cwt., £7. **PITCH**: 35s. 6d. to 36s. **SULPHATE OF AMMONIA**: Leith, £8 7s. 6d. to £8 8s. 9d. **SOUTH DURHAM SALT**: *F.o.b.*, Tees, 9s. 6d. per ton. January shipments of chemicals from Tyne, and compared with the same period for 1895, are thus:—

	1895.	1896.	Increase.	Decrease.
	Tons.	Tons.	Tons.	Tons.
Alkali and soda ash	623	147	—	476
Bleaching powder..	510	773	263	—
Caustic soda	510	585	75	—
Manure	524	1829	1305	—
Soda crystals.....	253	632	379	—
Sulphate of soda ...	425	965	540	—
Sulphur	745	454	—	291
Other chemicals ...	589	1098	509	—
	4179	6483	2304	—

LIVERPOOL MARKET REPORT.

[From our own Correspondent.]

FEBRUARY 12, 1896.

LINSEED has declined 6d. to 1s. per 416 lbs. **HEMPSEED**: *Chilian* has been sold at 29s. per 336 lbs. **CANARY SEED** is stagnant; 140 bags of *Turkish* brought 32s. 6d. per 464 lbs. **CASTOR SEED**: 45 bags *Brazilian* sold *ex quay* for 7s. 3d. per cwt. **KOLA NUTS**: 70 bags dried sold at 4d. to 6¾d. per lb. **BEESWAX**: 8 sacks of *Chilian* have been disposed of at £8 per cwt.; 12 bales *Gambia* at £7, and small lots of *Italian* at £6 12s. 6d. **GUINEA GRAINS**: 15 bags sold at 16s. per cwt. **CASTOR OIL** is firm. *French*, 1st pressure, held for 27d. per lb.; *Madras*, 2¾d. per lb.; good seconds, *Calcutta*, 2½d. to 2½d. **OLIVE OIL** is advancing. *Spanish* oils are rising in price; *Seville* closed at £29 to £30 per tun; *Malaga*, £29 10s. to £30 10s.; *Candia*, £31 per tun. **LINSEED OIL**: Remains at 20s. 9d. to 21s. per cwt. in export casks for *Liverpool* makes. **COTTONSEED OIL**: 17s. 6d. to 17s. 9d. per cwt. **SPIRIT OF TURPENTINE**: In fair request at 21s. 6d. per cwt. **PETROLEUM**: *Russian*, 6¾d. per gallon; *American*, 6¾d. to 7¾d. **SAL AMMONIAC**: 39s. per cwt.; seconds, 37s. **CARBONATE OF AMMONIA**: 3½d. to 3½d. per lb. **SULPHATE OF AMMONIA**: £8 12s. 6d. to £8 15s. for good grey on the spot. **BLEACHING POWDER**: Hard, *f.o.b.*, £7 to £7 5s.; soft, £7. **COPPERAS**: *Lancashire*, 38s.; *Welsh*, 36s. per ton. **SULPHATE OF COPPER**: £16 10s. to £17 per ton. **SALTPETRE**: 23s. 6d., kegs; 23s., barrels per cwt. **CHLORATE OF POTASH**: 4½d. per lb. **BICHROMATE OF POTASH**: 4½d. per lb. **PRUSSATE OF POTASH**: 8d. per lb. **CREAM OF TARTAR**: Price asked here for finest white is still 105s. per cwt. with but little offering. **CAUSTIC SODA**: 70 per cent., £7 10s.; 60 per cent., £6 10s. per ton. **SODA CRYSTALS**: £2 7s. 6d. to £2 10s. per ton.

EXCHANGE.

Readers requiring, or having for disposal, books, appliances, shop-fittings, and other matters more or less directly connected with the business of pharmacy, may intimate the fact free of cost. The notices must not include more than thirty words each, and should be written on post-cards, addressed "Editorial Department, 17, Bloomsbury Square, London, W.C."

* * The Editor reserves the right to omit any notice he thinks necessary.

OFFERED.

Wills' 'Advanced Materia Medica,' with plates, quite new, 6s 6d.—Frank Young, 493, Seven Sisters Road, South Tottenham, N.

What offers, 20 x 4 oz. bots., Howard's quinae. etc., in good condition.—H. Rose, St. Mary's Hospital.

'Pharmaceutical Journal and Transactions,' edited by J. Bell, vols. 1 to 15 inclusive, half calf, 1842-56, 30s. only.—Davis, "Chestnuts," Gordon Hill, Enfield.

Wills' 'Analysis,' 1s. 6d.; 'Materia Medica,' 3s 6d.; 'Flowers and Fruits,' 2s. 6d.; Holmes' 'Botanical Note-book,' 2s.—Burge, Chemist, Fernhead Road, W.

What offers for 'Pharmacographia.' Thorpe's 'Quantitative Analysis,' Thorpe's 'Non Metals,' Roscoe's 'Lessons in Elementary Chemistry.' All good as new.—W. S. Gill, Chemist, Southport

Reynolds and Branson's patent long-focus camera, 7½ by 5, with three double backs, cost £7 10s.; also good tripod, perfect condition, take £3.—Booth, 72, Roe Lane, Southport.

Henfrey's 'Elementary Course of Structural, Physiological, and Systematic Botany,' fourth edition, quite new, never been used. Any reasonable offer.—J. G. N., 27, Valmar Road, Camberwell, S.E.

Beck's "Star" Microscope, with eye-piece, ¼ inch and 1 inch object glasses, stage condenser, turntable, glass slides and circles, in box, complete, quite new, £3.—E. Norman, 35, High Street, Weston-super-Mare.

Set of Oertling's Grain Weights, from 1000 grs. to 1/100 gr., in mahogany case, cost 35s., new; will take half.—W., 20, Lynn Street, West Hartlepool.

Vol. I. Braithwaite's 'British Moss Flora,' Prantl and Vines' 'Botany,' 3rd edition. Both in excellent condition. What offers?—L. Turner, Dumfries.

Twelve-cell Bichromate Battery, brass screw connections, winding arrangement for lifting plates from cells. Nearly new (cost £3 10s.). take £1, or exchange for good lens (¼ plate).—G. Drayton, Bridport.

Whitla's 'Pharmacy,' Prantl and Vines' 'Botany,' Fisher's 'Elementary Chemistry,' latest edition, B.P. with notes and appendix, 1890, all equal to new. What offers?—Bastow, Boulevard Pharmacy, Weston-super-Mare.

Balance in splendid condition, with perfect set of weights, etc., cost £35, will take £25.—Tinctura, 15, Market Street, Ulverston.

Martindale's 'Extra Pharmacopœia,' fifth edition, 2s. 6d., post free.—Whyte, Chemist, Arbroath.

Gray's 'Operative Chemist,' 1831, scarce work, 4s. 6d.; Gray's 'Supplement,' incomplete, also scarce, 5s.; Ure's 'Chemistry,' 1831, 2s. 6d.; Semple's 'Materia Medica,' 3 vols, 6s. All free.—Davies, 33, Eglinton Road, Bow.

Thermopile and Galvanometer, cost over £6, take £2 15s., or exchange photographic apparatus.—J. Williamson, 144, Church Road, Hove, Brighton.

Lindley's 'School Botany'; Bentley's, third edition; Proctor's 'Pharmacy'; Hargreave's 'Venereal Diseases'; Quain's 'Dictionary of Medicines,' 6 vols., cost 45s., gilt edges. Cash offers.—Chemist, 85, Unthanks Road, Norwich.

Surplus stock, 4 ozs. iodoform, 3s. 6d.; 4 ozs. quinine, 4s.; 2 dozen Cockles' pills, at 8s. 4d.; 7-pound parcels patass. permang., at 7d., car. forward. Cash with order.—Eastman, Forest Lane, Stratford.

Handsome Complete Chemist's Fixtures, nearly new, mahogany, mirrors, plate glass; everything necessary to commence; sell half Maw's catalogue prices. Also Hall's Typewriter, perfect condition; cash or exchange.—Bentley, Chemist, Gooles.

'Pharmaceutical Journal,' January, 1842, to June, 1843, well bound, good condition, with frontispiece, portrait of William Allen, first President; offers, cash or book exchange.—J., 30, Little South Street, Wisbech.

Wills' 'Chemistry,' 'Prescripta,' 'Autograph Prescriptions,' 'Volumetric Analysis,' 'Habitat Map,' Prantl and Vines' 'Botany,' what offers.—S., 13, Manley Street, Scunthorpe, Doncaster.

B.P., Attfield's 'Green's 'Botany' (vol. 1); Wills' 'Analysis,' 'Materia Medica,' 'Pharmacy'; Selecta à Prescriptis'; Wootton's 'Physics'; Turner's 'Organic'; Stirling's 'B.P. Strengths,' 25s.—14, Culcheth Lane, Newton Heath, Manchester.

Aitken's 'Medicine,' 2 vols.; Playfair's 'Midwifery,' 2 vols.; Erichsen's 'Surgery,' 2 vols., price for lot 1 guinea. A list sent on application to—Rawlings, Chemist, Torquay.

Two 4-gal. pear-shaped carboys, 15s. each; 1 specie jar as Maw's (with royal arms), height 24 inches, magnesia, £3.—D., 9, Boreham Road, Warminster.

Taylor on 'Poisons'; Thomé's 'Botany'; Ganot's 'Natural Philosophy'; Attfield's 'Chemistry.'—Dixon, 164, Aigburth Road, Liverpool.

Attfield's 'Chemistry' (good condition), 5s.; Remsen's 'Elements of Chemistry' (good condition), 1s. 6d.; Edmond's 'Elementary Botany' (good as new), 1s. 9d.; Newsholm's 'Hygiene' (good as new), 2s. 6d.—Rad. Rhei, 8, High Street, Windermere.

Surplus stock, Quicksilver, 2s. lb., carriage forward, cash with order.—Jinks, Chemist, Ironbridge, Salop.

Carboys for disposal. Five 2-gallon and two 1-gallon, cut stoppers, pear shape, any reasonable offer accepted to clear.—Apply Cullen, Chemist, Norwich.

What offers for 144 pairs of spectacles and eye-glasses? Good saleable condition, many pairs retail at 5s. and upwards. First reasonable offer has them.—Address Specs, 260, Upper Street, Islington.

WANTED.

Cheap Dispensing Scales; also Leathart's Hair-Dye, dark brown preferred; full price given for latter.—Cripps, Hayward's Heath.

Muter's 'Short Manual of Analysis,' last edition, in exchange for Remsen's 'Organic Chemistry,' last edition, unsoiled, or lowest cash price.—Donnan, Chemist, 56, Park Ridings, Hornsey, N.

Thorpe's 'Metals and Non-Metals,' Southall's 'Materia Medica,' Thomé's 'Structural Botany,' Ince's 'Grammar' and 'Art of Dispensing,' Cripps' 'Pharmacy,' 'B.P.' Latest editions and good condition.—Lurcock, 21, High Street, Sutton, Surrey.

A good balance, acting accurately to a tenth of a grain. Describe fully, and state lowest price to—Kemp, 254, Stretford Road, Manchester.

Bunte's (or similar) gas burette with 3-way tap, price to—Wm. Moore, 8, Montague Place, W.C.

Kelly's 'Directory of Chemists and Druggists,' state date of publication; Bent Front Tooth Brush Case; Clarke's Syphon Gas Stove; Ten Foot Dispensing Screen and Glass-Fronted Counter for underneath same.—Griffin, Chemist, Kidderminster.

TRADE NOTES AND NEWS.

THE LIQUOR CARNIS Co, yielding to the desire of a large number of chemists in the South of France, has opened a Paris dépôt where all the firm's goods can now be obtained at advantageous prices. Messrs. C. Buchet and Co., Pharmacie Central de France, Paris, are now the firm's appointed wholesale agents.

RUDDOLPH DRUG COMPANY, LIMITED.—Registered January 20, by W. H. Sargeant, 28, Budge Row, E.C., with a capital of £5000 in £10 shares. Object, to enter into an agreement with W. H. Sandwith, of Bracknell, Berks, for the acquisition of the business of the Ruddolph Laboratory Company, Limited, now carried on at London Road, Reading, and to develop and extend the same. The directors are John F. Sargeant, John H. Knowles, and W. H. Sandwith. Qualification, 250 shares. Remuneration to be fixed by the company.

WOMAN POISONED AT GOUROCK.—A young woman named Margaret Dunbar, employed as a domestic servant at Craigard, Gourrock, died on Sunday night from the effects of laudanum poisoning. On Friday night she took laudanum to alleviate pain, and the dose being excessive, she never rallied from its effects.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

SUNDAY, FEBRUARY 16.

LIVERPOOL SUNDAY SOCIETY, at 3 p.m.
"The Evolution of the British Isles," by R. D. Roberts.

MONDAY, FEBRUARY 17.

IMPERIAL INSTITUTE, at 8.30 p.m.
"The New British Route to the Pacific," by Colonel J. Harris.

TUESDAY, FEBRUARY 18.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.
"The External Covering of Plants and Animals: its Structure and Functions" by Professor C. Stewart.

SOCIETY OF ARTS (FOREIGN AND COLONIAL SECTION), at 8 p.m.

"Recent Developments in Electrical Enterprise in America," by G. F. Parshall.

WEDNESDAY, FEBRUARY 19.

SOCIETY OF ARTS, at 8 p.m.
"Report of the Royal Commission on Secondary Education," by H. C. Macan.

WESTERN CHEMISTS' ASSOCIATION, at 9 p.m.
Discussion on the British Pharmacopœia as a Standard under the Foods and Drugs Acts, to be opened by the President.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION, at 9 p.m.

"Coal in Relation to Pharmacy" (II.), by H. Jessop.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY, at 9 p.m.
Social Meeting.

ROYAL MICROSCOPICAL SOCIETY, at 8 p.m.

"On the Male of *Stephanoceros eichhornii*" by F. R. Dixon Nuttall.

"New Freshwater Algae," by W. and G. S. West. THURSDAY, FEBRUARY 20.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.

"Some Aspects of Modern Botany" (II.), by H. M. Ward.

CHEMICAL SOCIETY, at 8 p.m.

"Origin of Colour; the Yellow 2 : 3 Hydroxynaphthoic Acid"; "Note on Etherification."

"The Relation of Pinene to Citrene," by Professor Armstrong.

LINNEAN SOCIETY OF LONDON, at 8 p.m.

"Discoveries Resulting from the Division of a *Prothallus* of a Variety of *Scolopendrium vulgare*," by E. J. Lowe.

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY, at 8.30 p.m.

Exhibition of New Suppository Mould by the President.

"Facts," by Dr. Larkin.

LIVERPOOL CHEMISTS' ASSOCIATION, at 7 p.m.

"The Bacterial Analysis of Water," by Professor Robert Boyce.

CHEMISTS' ASSISTANTS' ASSOCIATION, at 8.30 p.m.

"Filtration," by W. Manger.

FRIDAY, FEBRUARY 21.

ROYAL INSTITUTION OF GREAT BRITAIN, at 9 p.m.

"Past, Present, and Future Water Supply of London," by E. Frankland.

ABERDEEN JUNIOR CHEMISTS' ASSOCIATION, at 9.30 p.m.

Short Papers by A. Deans.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION, at 9.15 p.m.

Open Meeting—Conducted by W. B. Cowie.

SATURDAY, FEBRUARY 22.

PHARMACEUTICAL FOOTBALL CLUB v. Polytechnic, at Wormholt Farm, Shepherd's Bush.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.

"Light," by Lord Rayleigh.

SUPPLEMENT

TO THE

PHARMACEUTICAL JOURNAL.

MISCELLANEOUS NEWS.

PARAFFIN IN WHITE WAX.—Mr. Curtis Bennett has decided, in a case heard at the Marylebone Police Court, that the sale of white wax containing 38 per cent. of paraffin was to the prejudice of the purchaser, and the defendant was therefore fined forty shillings, with two guineas costs. The magistrate found as a fact that there are two distinct articles obtainable—white wax and a commercial wax—but refused to state a case for appeal.

WESTMINSTER COLLEGE OF PHARMACY.—The annual gathering of Westminster College students took place at the Bridge House Hotel, on St. Valentine's Day, to celebrate the birthday of the founder of the College, Mr. G. S. V. Wills. A capital concert was given by the students, the character songs being especially well rendered and enjoyed. In the course of the evening handsome presentations were made to the Principals—Mr. G. S. V. Wills and Mr. H. Wootton, and to the Secretary, Mr. E. Walden. Musical honours were rendered, and "Success to the College" drunk, with much enthusiasm. A very pleasant and successful evening was closed by the singing of "Auld lang Syne," Welsh and English National Anthems.

DANCE OF THE GLASGOW CHEMISTS.—Under the auspices of the Glasgow and West of Scotland Pharmaceutical Association, the Glasgow chemists held their annual dance in the Windsor Hotel, St. Vincent Street, on the evening of Thursday of last week. There was an attendance of about eighty couples, including the leading members of the Association and their friends. Mr. W. L. Currie, President, bade the guests welcome heartily, and expressed the hope that they would enjoy themselves. Dancing was gone into with spirit and zest, and the fine floor of the ballroom, which is the finest in Glasgow, together with up-to-date music, beautifully played by Herr Iff's band, added to the pleasures of the dance. The programme was well arranged, and the gathering broke up in the early hours after a very enjoyable night.

WILLIAM JAMES BUTCHER, son of G. S. Butcher, Chemist, Salford, was one of the successful candidates at the Preliminary scientific (M.B.) examination of the University of London, recently held.

SUICIDE BY STRYCHNINE.—The suicide by means of strychnine of the Mayor of Lourmel, Algeria, is reported. The deceased had been arrested the previous evening on a serious charge, and during the night the attention of his gaolers was attracted by the groaning of the prisoner,

when it was discovered that he had taken some poison which he possessed for the purpose of destroying noxious animals.

DEATH OF A WELL-KNOWN EXETER CHEMIST.—Chemists in the Exeter district will have heard with deep regret of the death at Branscombe, of Mr. George Cooper, who for many years carried on an extensive business as a wholesale chemist and stationer at Exeter. The deceased went to Exeter about sixty years ago as traveller for the late Mr. Matthews of Fore Street, with whom he eventually entered into partnership. He subsequently became sole proprietor of the business, which he carried on until his establishment was destroyed by fire some twenty years ago. He then sold his drug business and afterwards his stationery business, and retired to live at Branscombe. The deceased was in his 85th year, and was twice married, but his son died in infancy. He took an active part in public life and filled many offices. He represented St. David's ward in the City Council in succession to the late Mr. Peter Lisson for many years, and was appointed an Alderman on the retirement of Mr. Edwin Force. In the first year of the mayoralty of Mr. R. T. Head—in 1864-5—he served the office of Sheriff of the City. Mr. Cooper continued to be a member of the Council until 1880, when he retired from public life, and just before he left the city in 1882, he was presented on his 71st birthday with a diamond ring by many friends, he being held in high respect and esteem.

R. B. WILD, M.D., M.Sc., assistant lecturer in pharmacology and therapeutics in the Owens College, Manchester, has been awarded the Parkin Prize of £100 of the Royal College of Physicians, Edinburgh, for an essay upon "Charcoal as a Therapeutic Agent." This prize is awarded once every three years.

BURNED TO DEATH BY SULPHURIC ACID.—On Monday, 17th inst., David Ritchie, aged 24, died in the Glasgow Royal Infirmary from scalding injuries received by falling into a vat of boiling sulphuric acid at Shawfield Chemical Works.

SUICIDE BY PRUSSIC ACID.—On Monday night, February 17, Peter Gentleman, jobbing butcher and cattle drover, Falkirk, committed suicide by swallowing a dose of prussic acid. He obtained it from a chemist on the assumption that it was for poisoning a dog. It is understood that Gentleman had been drinking heavily for some time past. He was 40 years of age and unmarried.—*Edinburgh Evening News.*

THE LIMITED COMPANY verdict last week is naturally the chief topic of discussion in Irish pharmaceutical circles, and great dissatisfaction is expressed with the decision. It is generally felt that the learned judges did not give the case that consideration which the importance of the question involved demanded, and very great disappointment is felt that there is no appeal to a higher Court. It is hoped that the Council may devise some means by which what is considered the severest blow that Irish pharmacy has ever received may be mitigated.

MEDICAL SPECIALTIES IN PERU.—The Peruvian Customs House places under this heading such pharmaceutical specialties as Savory's pancreatic emulsion, Guyot's liquid tar, special cod-liver oil, etc. The duty is uniformly fixed at 45 per cent., excepting in the case of surgical and orthopaedic instruments, which pay 10 per cent. These goods are chiefly of French origin, England and Germany doing but very little, relatively speaking. The imports from Belgium amount to a value of 993 sols.—*Belgian Consul-General at Santiago de Chili, July 3, 1895.*

DR. OLIVER WENDELL HOLMES.—"I shall never forget that breakfast in the historical house in which the famous breakfasts had taken place, and where so many good things had been said, as they appear in the pages of the *Autocrat*. Of the meal itself there were almost as many dishes as one could have procured at that Piccadilly resort of gourmets, Hatchett's, when Pratti is on his mettle. It was not a mere tea and coffee affair, with rounds of toast, the inevitable egg, and strips of bacon; but there were solids, like cold chicken, veal patties, liver on toast, game, and Cumberland ham, with choice wines and acceptable Apollinaris Water, which capital diluent, by the way, is as popular a table tippie in the United States as it is in Europe. It was a veritable *embarras de richesse*. The Man of Letters was determined that his guests should have a variety to choose from."—*"Dinners with Celebrities,"* by Howard Paul.

CARBOLIC ACID FOR HOP BITTERS.—On February 17, Robert Fielding, labourer, Goodwin Street, Bolton, got up to go to work, and before leaving the house picked up what he thought was a bottle of hop bitters and drank part of the contents. The liquid proved to be carbolic acid. Fielding at once aroused his wife, and then ran a quarter of a mile to the nearest doctor. He fell exhausted in the surgery, and died soon afterwards, after acute suffering.

NEWCASTLE CHEMICAL REPORT.

[From our own Correspondent.]

FEBRUARY 18, 1896.

This market on the whole remains on the quiet side. Business is more of a prospective nature, inquiries being preliminary to the usual contracting for the Baltic shipping season. Prices are:—BLEACHING POWDER: £6 5s. to £7 5s., according to casks, packages, and markets. SODA CRYSTALS: 37s. to 45s. CAUSTIC SODA: 76 to 77 per cent., £9 5s.; for 70 per cent., £7 15s. CHLORATE OF POTASH: 5d. per lb. RECOVERED SULPHUR: £3 17s. 6d. SODA ASH: 48 per cent., £3 15s. HYPOSULPHITE OF SODA: 5 to 7 cwt., £6 5s.. SOUTH DURHAM SALT: 9s. 6d. per ton, *F.o.b.*, Tees.

LATE ADVERTISEMENT.

ASSISTANT wanted, Qualified, about 25, for Dispensing and Retail. Out-doors. MILLER, Chemist, 30, Tranquil Vale, Blackheath.

MARKET REPORT.

[Specially compiled for the *Pharmaceutical Journal*.]

[The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.]

LONDON, FEBRUARY 20, 1896.

Few changes have occurred in the Chemical Market since our last report. Cream of tartar remains neglected, but without any great change in price. Citric and tartaric acids are firm at unchanged rates. Arsenic remains scarce and dear, whilst sulphate of copper is dearer for some brands. The principal change in the week has been in the price of carbolic acid, which both for crystal and crude acid has advanced considerably. There is said to be a considerable amount of business being done on foreign account. Quinine is neglected, whilst there is no change to report in the other alkaloids. In the Drug Market an improved inquiry generally was shown at the drug sales to-day. The principal points of interest are as follows:—Tinevelly senna, insect flowers, and cardamoms seeds are dearer; whilst ipecacuanha, sarsaparilla, gum benjamin, and rhubarb are fully steady. Full details will be found below:—

ACACIA (GUM).—*Trieste* gum was quite neglected in auction, all being bought in at prices ranging from £7 10s. for medium grey down to £5 for ordinary yellowish, whilst bold palish and mixed grey were withdrawn at £9 10s. to £10 15s. respectively. Of *Soudan* sorts, ten bales of medium mixed gum from Aden sold without reserve at 50s., whilst 27s. was accepted for seven bags of ordinary small sorts.

ACID, CARBOLIC.—This article continues to advance steady in price in consequence of a brisk demand, mostly on foreign account. The current quotations are now as follows:—*Crystals*, 34° to 35° C., 7½d.; 39° to 40° C., 8½d.; 39° to 40° C. (*detached crystals*), 9½d. per lb. *Crude* is also about 3d. dearer, 60 per cent. being now quoted at 2s. 3d. and 75 at 2s. 7d. per gallon. *Liquefied* and *cresylic* are unchanged at 1s. 1d. and 11d. respectively per gallon.

ALOES.—*Cape* was in large supply, and steady prices were paid, fair to good bright hard, being disposed of at 22s. to 22s. 6d.: ordinary quality, rather drossy at 21s. and drossy mixed with sand at 14s. per cwt. *Curacoa* was largely offered, and a fair amount was sold at 38s. to 41s. for good livery, whilst *gourds* realised prices ranging from 32s. for good brown. 18s. for ordinary capey, down to 14s. and 10s. for drossy qualities.

AMMONIACUM (GUM). Two cases of fair block with a few loose almonds sold without reserve at 30s. per cwt., whilst a parcel of part blocky drop was bought in at 50s. per cwt.

ASAFOETIDA (GUM)—A large supply was offered to-day, but the inquiry was somewhat limited. For good mixed greyish and pinky block 54s. was paid, whilst about 55 cases of fair soft block, mixed with straw, sold at 29s. to 33s. per cwt.

BENZOIN (GUM)—Was in plentiful supply to-day, a total of 361 cases being offered. *Siam* gum was represented by some nice parcels, of which a case of good pale loose almonds sold at £23 10s., whilst small pale drop gum, part loose and part in block, realised £8. £10 10s. was the buying-in price of bright brown almondy block, and 60s. of dark siftings in block. *Sumatra* gum was mostly bought in, but £8 17s. 6d. was paid for 8 cases of fine almondy seconds, evenly packed throughout, and £8 12s. 6d. for good ditto, also well packed. Fair seconds were all bought in at from £6 10s. to £7 15s., according to packing. *Penang*: Three cases of old break glassy gum sold at 70s. per cwt. *Palembang* gum was all bought in at 33s. to 37s. 6d. for fair seconds in tins.

CALUMBA ROOT.—Rather easier. To-day 8s. 6d. was accepted, subject to approval, for a parcel of 155 bags of ordinary dark roots, imported *via* Hamburg.

CAMPHOR (CRUDE).—At to-day's sales 49 cases of *Chinese* camphor sold at 165s. per cwt.

CANNABIS INDICA.—It was quite a novelty to find any of this article sold in auction to-day, when 160 robbins were offered, about two-thirds sold at 2½d. per lb. for green tops.

CANTHARIDES—Remain very slow of sale in auction. To-day several parcels of *Chinese* flies were bought in at 1s. per lb. The new crop of *Russian* cantharides offers at 2s. 11d. per lb. *c.i.f.* terms.

CARDAMOMS—In moderate supply, but selling with good demand at full rates to dearer rates. The following prices were paid:—*Ceylon - Mysore*: Medium to bold pale plump, 2s. 10s. to 2s. 11d.; medium plump pale to yellow, 2s. 5s. to 2s. 7d.; small to medium yellowish, 2s. to 2s. 2d.; small brownish, 1s. 9d. to 1s. 10d.; small to medium partly brown and speckled, 1s. 6d. to 1s. 8d. *Ceylon - Mangalore*: Palish plump sold at 2s. 5d. *Seed* None was offered in auction. A case which had been catalogued was sold previously at 2s. 6d. per lb. Privately 2s. 9d. is asked for good quality.

CASCARILLA.—In auction 44s. was accepted for twelve bales of sound brown quill, whilst five barrels of siftings were bought in at 30s. per cwt.

CASSIA FISTULA.—In auction 17 bales of ordinary lean pods, part broken, imported *via* Hamburg, sold without reserve at 8s. to 8s. 6d. per cwt.

CINCHONA.—At the periodical sales held on Tuesday, the large supply of 2731 packages was offered, against 1761 at the January auction. The larger portion of the catalogue consisted of good quality *Officinalis* bark, which sold at fully steady rates. The average improvement unchanged at ½d. per lb. The prices paid were as follows:—*Ceylon*: *Succirubra*, fair to good stem chips and shavings, 1½d. to 1½d.; ditto root, 1½d.; ordinary to fair renewed chips and shavings, 1d. to 1½d. per lb. *Officinalis*: Ordinary stem chips, 1d.; good branch, 1½d. to 1½d.; good root, 1½d. to 1½d. per

lb. *Indian*: *Succirubra*, fair to good chips and shavings, 1½d. to 2½d.; reserved ditto, 2½d. to 2½d.; good quill, 3½d. to 4½d. *Officinalis*: Ordinary to fair stem chips and shavings, 1½d. to 2d.; good rich ditto, 2½d. to 3d.; fair to good root, 2d. to 2½d., and renewed chips and shavings, 1½d. to 3½d. per lb. *Java*: *Ledger* chips, 2½d. to 2½d.; branch, 2½d., and root, 1½d. to 2d. *South American*: Cultivated *Calisaya* quills, ordinary to fair, 2½d. to 3½d.; damaged, 1½d. to 3½d. per lb. The total exports from Ceylon from January 1 to 31 were: Season 1896, 30,000 lb.; 1895, no shipments; 1894, 310,000 lb.; and the total exports from Java from October 1 to January 31: Season 1895-96, 3,982,800; 1894-95, 2,787,624; 1893-94, 2,684,055 Amsterdam lb. At the drug sales a parcel of flat *Calisaya* bark sold at 5d. to 7d. per lb., according to condition, with bad damaged at 1d. *Succirubra* was bought in at 1s. 3d., *Maracaibo* at 9d., and flat *Carthagena* at 7d. to 10d. Twenty-six serons of *Loxa* bark from Payta sold at 10d. to 1s. per lb.

COCA LEAVES.—In auction 6 bales of *Bolivian* leaves imported *via* Hamburg, were bought in at 1s. 6d. per lb., whilst 5 bales of ordinary damaged quality sold without reserve at 7½d. per lb. There are no *Truxilo* leaves on the spot at present. The quotation for shipment is 1s. *c.i.f.*

COCCULUS INDIAN.—Twenty bags of this drug imported from Bombay were bought in to-day at 8s. 6d. per cwt.

COAL DISTILLATION PRODUCTS.—*Toluol* is again rather easier, being now quoted at 2s. 1d. per gallon. *Benzole* is steady at 1s. 10d. per gallon for 50 per cent., whilst 90 per cent. is returned at 2s. 2d. per gallon. *Creosote*: 2d. per gallon. *Crude Naphtha*: 30 per cent. at 120° C. quotes at 10d. per gallon. *Pitch*, 35s. per ton, *f.o.b.* *Tar* is quoted at 11s. per barrel for refined and 13s. for crude.

COLOCYNTH.—*Turkey* was in average supply to-day. Three casks of fair apple sold at 2s. 5d. per lb., whilst another parcel was bought in at 2s. 6d. *Almerian* were all bought in, sound at 1s. 6d., and damaged at 11d. down to 7d., according to condition.

DRAGON'S BLOOD—Was represented at to-day's sale by a total of 48 cases. For 12 cases of very seedy *Singapore* lump, fair colour, offered without reserve, £6 2s. 6d. to £6 5s. was paid, whilst four cases of very dull bricky saucers sold at £4 5s. Dark saucers were bought in at 110s. to 220s., reeds at £5, and very low block at 45s. per cwt.

ELEMI (GUM)—Very slow of sale in auction. To-day 25 cases of palish clean *Singapore* gum were bought in at 30s. per cwt.

ERGOT OF RYE—Quiet and difficult of sale, except when offered without reserve. In this instance 6½d. per lb. was accepted for 16 bags of thin *Russian*, whilst the same price was paid for 4 bags of *Spanish*, and 5d. for 12 bags of old re-sifted *Spanish*. Good *Spanish* of the new crop was bought in at 10d. per lb.

GALANGAL.—Twenty bags of good quality root from *Hong Kong* were bought in to-day at 22s. per cwt.

GALBANUM (GUM).—Nine bags containing 2 cwt. each were offered in auction. Four sold at 1s. per lb. for fair almondy block.

GAMBOGE.—A rather moderate supply, amounting to 24 cases, was offered to-day, and the majority of this found buyers. For fair mixed ricey *Singapore* block £9 to £9 10s. was paid, whilst good pickings realised £8 17s. 6d., and very soft mixed damaged block £7 15s. per cwt.

GINGER.—At the sales on Tuesday a moderate supply of *Cochin* root was offered, mostly of the new crop, which met with a good demand at firmer prices. Washed rough root sold at 38s. to 39s., small to medium part lean rough, 35s. 6d. to 36s.; small and shrivelled rough, 30s. to 30s. 6d.; whilst medium mature cut sold at 53s. to 53s. 6d. per cwt. *Jamaica* root was also in good demand, and the majority of the catalogue sold at an advance of 2s. 6d. to 7s. 6d., including medium small washed at 74s. 6d. to 80s. 6d. and ordinary brown scraped to low medium washed, 64s. to 69s. 6d., and lean dark *Rhatoon* at 57s. 6d. to 60s. 6d.

HONEY.—A good supply was shown, and a fair amount of business resulted. A parcel of *Californian* was bought in at 32s. 6d. per cwt. for nice clean ambery, whilst another lot, consisting of 25 cases, sold at 28s. to 28s. 6d. per cwt., subject to approval. *Australian* honey from Brisbane realised 20s., and brown *Jamaican*, 25s. *Honolulu* in tins was bought in at 26s. 6d., and fine pale *Chilian* at 42s. to 45s. per cwt.

INSECT POWDER.—There is no change to report in the position of this article in London, but the Trieste market is very active, and prices have advanced considerably owing to the smallness of the stocks. The present quotations are:—Closed wild flowers, 142s. 6d. to 145s.; cultivated closed ditto, 130s.; half closed, 87s. 6d.; and open, 80s. per cwt., all *c.i.f.* terms.

IPECACUANHA.—*Rio* (Brazilian) root is as represented in auction by about 60 bales, which sold at very irregular rates, but generally speaking was fully steady. The prices paid were as follows:—5s. 8d. for sound annulated root, 5s. 6d. for good sound fleshy, and 5s. 3d. to 5s. 5d. for fair to good slightly damaged annulated. *Carthagena* (Columbian) root sold at an advance in some cases, 4s. 1d. to 4s. 3d. being paid for good stout slightly damaged quality. A case of picked *Singapore* root was bought in at 5s. 10d. per lb.

KOLA NUTS.—An average supply was offered, but sales were made with difficulty. A few bags of dull *African* kolas sold at 7d. per lb., whilst fair bright *West Indians* were bought in at 1s. 2d. per lb.

LIME JUICE.—To-day 5 hogsheads of *Jamaica* juice were bought in at 1s. 3d. per gallon.

MYRRH (GUM).—Remains quite neglected, and the only lot sold was three bales of fair sorts, which fetched 55s. per cwt.

NUX VOMICA.—A comparatively large supply was offered to-day, but little found buyers. A parcel of 38 bags of *Bombay* seed sold at 6s. per cwt., whilst 2s. 6d. was accepted for a bag of sweepings.

OIL (COD-LIVER).—There is no change to report in the position of this article. The new season's *Lofoten* oil is quoted to arrive at 220s. per barrel of 25 gallons, *c.i.f.* terms. On the spot, business

has been done at 175s. in good quality 1895 oil, and 180s. is now the lowest price, whilst good *Newfoundland* oil offers at 6s. per gallon. At to-day's drug sales 10 casks of old yellow *Norwegian* oil sold at 155s. per barrel.

OILS (ESSENTIAL).—*Star Anise* oil is decidedly easier, and as little as 9s. 9d. per lb. has been accepted during the week, a fair business having been done at this rate. Some holders, however, have refused to sell under 10s. Two cases which were bought in at the sales at 10s. 6d. per lb. were disposed of subsequently at 9s. 9d. Business has been done in *H. G. Hotchkis'* brand of *Peppermint* oil at 9s. 9d. to 9s. 10½d. on the spot, which shows an easier market, whilst *dementholised* Japan oil offers at 5s. 6d. on the spot. At the drug sales two cases of *Japan* oil (Popp and Co's brand from Kobe), guaranteed to contain over 40 per cent. of menthol per lb. sold without reserve at 6s. to 6s. 3d. *Cajeput*: Ten baskets were bought in at 2s. 7d. per lb. *Lemon*: *Fisher's* brand was bought in at 2s. 6d. *Giovanni Hamnett's* brand of *Sweet Orange*, at 9s. per lb. after 5s. 3d. had been bid. A case of *Cocking's* *Orange* oil was bought in at the same figure. *Cinnamon*: Two cases of *Perera's* genuine bark oil sold at 7d. per oz. *Bergamot*: Four half coppers sold without reserve at 4s. 8d. per lb. *Eucalyptus* was in good demand in auction, 1s. 8d. to 1s. 9d. being paid for the *Eagle* brand, subject to approval, 1s. 6d. for the *P.B.* brand, and 10d. for the *Padlock* brand. In addition to the above, several lots of essential oils were bought in, including *Bay* oil at 10s. per lb., *Cedar wood* at 1s. 4d., and *Cassia* ("Yee Tack" brand, analysis 45 per cent. of aldehyde) at 6s. 6d. and ("Van Loong" brand, analysis 55 per cent. of aldehyde) at 7s. per lb. Privately *Cassia* oil is easier, and 80 to 85 per cent. oil offers at 9s. 6d., and 70 to 75 per cent. at 8s. 6d. to 9s. per lb. on the spot.

OILS (FIXED) AND SPIRITS.—*Castor* continues very firm, *Italian* oil, best quality, being quoted at 31s. per cwt., *c.i.f.* terms. *Cotton* has weakened still further since our last report, the closing price being a decline of 5s. to 10s. for refined oil, which is now quoted at £16 10s. to £17 on the spot. *Cocunut* is steady at unchanged rates, *Ceylon* and *Cochin* being quoted at £22 15s. to £26 15s. respectively on the spot. *Linseed* remains very quiet, and prices have declined about 2s. 6d., oil in barrels being now quoted at £19 12s. 6d. to £19 15s. on the spot. *Rape*: Barely steady. *Refined* oil is worth £24 15s. to £25 10s. on the spot. *Turpentine*: Slightly easier. *American* spirit is quoted at 20s. 1½d. to 20s. 3d. on the spot. *Petroleum*: Unchanged, *American* oil being quoted at 5½d. to 5¾d., *water white* at 7½d. to 7¼d., and *Russian* at 5½d. per gallon on the spot.

OLIBANUM (GUM).—A single case was sold to-day at 27s. per cwt.

ORRIS ROOT.—To-day best selected *Florentine* root was bought in at 85s. per cwt., and 9 bales of powder at 90s. per cwt.

QUILLAIA BARK.—Lower. In auction to-day £12 10s. per ton was accepted for 5 tons of this article.

QUININE SULPHATE.—Remains very slow of sale, and practically neglected at 1s. 1¼d. for the best *German* makes. To-day 13,000

ozs. of the "Imperial" brand of *English* quinine were bought in at 1s. 2d. per oz.

RHUBARB.—Very slow of sale. Out of 186 cases offered to day, only seventeen found buyers, prices being unchanged. *Shensi*: Bold flat, rather rough coat, fair fracture sold at 1s. 2d., whilst 1s. 10d. was paid for fair round trimmings. *Canton*: Very bold, flat, slightly wormy, sold at 1s. 3d.; medium bold, round, fair grey and pinky fracture, at 1s. 2d.; and bold mixed pickings at 11d. to 1s. 1d. *High-dried*: For four cases of low, rough, round, wormy pickings, 4d. per lb. was paid.

SARSAPARILLA.—Was in large supply to-day, and sold at fully steady rates, 1s. 3d. to 1s. 4d. being paid for sound *Jamaica* root, and 11½d. to 1s. 1d. for damaged quality, according to condition. *Guayaquil* sold at 11¼d. to 1s., and *Lima-Jamaica* at 1s. 0½d. for sound, and 11d. to 11½d. for damaged quality. A few bales of *Mexican* also found buyers at 4d. per lb., whilst sound *Honduras* was bought in at 1s. 4d. per lb.

SEEDS (VARIOUS).—*Coriander*: Ordinary mixed bright *Bombay* seed sold without reserve at the spice sales at 7s. 6d. to 9s. per cwt. *Anise*: Fifteen bags of *Spanish* seed sold at 26s. *Cumin*: *Maltese* seed was bought in at 42s. *Stavesacre*: Fair quality was bought in at 95s. per cwt., and *Jamboul* seed at 1s. per lb. *Star Anise*: Five cases of genuine *Chinese* seed sold at 90s. per cwt.

SENNA.—*Tinevelly*. An improved supply amounting to about 250 bales, was offered to-day, and met with a very good demand for every grade, the prices realised showing an all round advance as follows:—medium greenish, 4d. to 4¼d.; small to medium yellowish, 3d. to 3¾d.; ditto, brownish, 1d. up to 2½d., with common at ¾d. to ¾d. per lb. *Pods* sold at 1¼d. *Alexandrian*: A single case of small leaves sold at 1s. per lb.

SPICES (VARIOUS).—*Cloves*: In auction fair *Zanzibar* sold at 2d., and fine bright at 2½d. per lb., whilst *Amboyna* was bought in at 4d. per lb. *Penang* sold at 9d. per lb. for good bold bright picked. *Cassia lignea*: In auction 1000 cases (old import) sold at 30s. to 30s. 6d. per cwt. *Cassia vera* sold at 15s. to 15s. 6d. per cwt. for coarse dark *Japan* root. *Pimento* is firm, medium greyish selling in auction at 2¾d. per lb. *Capsicums* sold at 21s. 6d. per cwt. for small bright off stalk, and 26s. for bold bright red ditto.

SQUILLS.—Sales of pale "firsts" have been made during the week at 3½d. per lb., whilst fair ditto sell at 3d., and brownish seconds at 2d. per lb.

STICKLAC.—The market is firm but quiet. In auction to-day several parcels of bold, partly woody, lac were bought in at 70s. per cwt.

TURMERIC.—Very slow of sale. In auction several parcels of good bright parcels of good bright finger at 9s. 6d. to 10s., whilst 7s. 6d. was accepted, subject to approval, for 51 bags of fair bright *Bombay*.

WAX (BEES).—In moderate demand only, and prices are unchanged, with the exception of *Jamaican*, which is dearer. *Californian* wax was bought in at £7 12s. 6d. Fine *Jamaican* sold at £8 5s., *Mexican* at £6 17s. 6d., fair to good *Zanzibar* at £6 10s. to £7, *Madagascar* at £6 15s. to £6 17s. 6d., and *Australian* at £7.

EXCHANGE.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

4 ft. Mahogany and Plate-glass Dispensing Screen in good condition; two Plate-glass Counter Cases, 4 ft. by 1½ ft.—Barrow, Chemist, Newmarket.

About 4 dozen different size narrow and wide-mouth Stoppered Bottles, in boxwood cases, including 5 ether Bottles and Expeditive Digne Cachet Apparatus for 3 sizes, 30s. the lot.—Reece and Co., 168, Piccadilly, W.

Day's Patent Air-tight Covers, good condition.—W. F. Noak, Chemist, Berkeley.

Thorpe's 'Chemistry,' Vol. II.—Metals, 2s. 3d., post free, new; Wills' 'Prelim. Exes.,' 1s. 6d.—C. A. Stokes, 45, Stapleton Road, Bristol.

Maw's Gas Fittings, compo. pipe, etc., for disposal, eighteen months' use, superseded by electric light.—Postlethwaite, Southsea.

Prantl and Vines' 'Botany,' Watts' 'Inorganic Chemistry,' 'Selecta Præscriptus,' Oliver's 'Botany,' Serton's 'Quantitative Analysis.' What offers?—Thos. Thompson, 6, Lower Belgrave Street, London, S.W.

Attfield's 'Chemistry' and Bentley's large 'Botany,' latest editions, comparatively new. Best offers.—Woodruff, 218, Bury New Road, Manchester.

Saxon Silver Penny of Edward the Confessor, effigy and lettering distinct, guaranteed genuine. Post free, 3s. 6d.—A. G., 54, Fremantle Road, Kingsdown, Bristol.

Five Two-Gallon Carboys, pear shape, cut stoppers, equal to new; accept 16s. 6d. for the lot, or 4s. each, to clear, packages, and put on rails free.—Cullen, Chemist, Norwich.

'Pharmaceutical Journal,' first 15 vols., half calf, 30s., offered at, not yet sold, a good set and scarce.—Davis, "Chestnuts," Gordon Hill, Enfield.

Scarce Books, all free: Phillips' 'Translation of the Ph.,' 1836, gives all synonyms, 3s.; Thomson's 'Materia Medica,' a volume of over 1000 pages, 6s., cost 31s. 6d.—Davies, 33, Eglinton Road, Bow.

Frena No. 1 Hand Camera, 3¼ × 3¼, takes 40 films, £2 12s. 6d.. lens alone cost more; beautiful slides can be made from negatives taken in it.—Matthew, 529, Battersea Park Road.

Thorpe's 'Chemistry,' 2 vols., 3s.; Watts' 'Chemistry,' 2 vols., 'Organic and Inorganic,' 6s.; Ince's 'Latin Grammar,' 1s. 6d.; Mitchell Bruce's 'Materia Medica,' 2s. All in perfect condition.—Stark, 128, Victoria Street, S.W.

Lawrance's "Clifford" Hand camera; Taylor and Hobson's 6 inch focus R.R. lens; Iris diaphragms, 2 crystal view finders to focus from 5 to 20 feet, in leather sling case in perfect condition, carries 12 plates, 20 plates, or 30 films. What offers?—Cammack, Chemist, Fulham.

Surplus stock, 2 cwt. best double distilled Glycerin, 1:260; 10 × 1 lb. original bottles Phenacetine (Bayer's).—D. S. G. Reid, Chemist, 155, New City Road, Glasgow.

Attfield's 'Chemistry' (13th), 7s. 6d.; Wills' 'Materia Medica,' 5s.; 'Pharmacy,' 2s. 6d.; 'Selecta Præscriptus,' 2s.; Wurtz's 'Chemistry,' 5s.; Martindale's (7th), 3s.—14, Culcheth Lane, Newton Heath, Manchester.

'United States Dispensary,' unbound, in seven parts; Watts' 'Inorganic Chemistry,' latest editions, new.—"Solazzi," 21, Queen Street, Louth, Lincs.

'Selecta Præscripta,' Wills' 'Elements of Pharmacy,' Gerrard's 'Materia Medica,' Smith's 'Pharmaceutical Guide.' All recent editions; 10s. 6d. the lot, post free.—Wilson, 10, Nevill Street, Southport.

Aitken's 'Medicine,' 2 vols.; Playfair's 'Midwifery,' 2 vols.; Erichsen's 'Surgery,' 2 vols., price for lot 1 guinea. A list sent on application to—Rawling, Chemist, Torquay.

Martindale's 3rd and 4th editions of 'Extra Pharm.'; Squire's 'Companion,' 9th edit., 3s. 6d. lot; Ringer's 'Therapeutics,' 8th edit., 3s.; Bristowe's 'Theory and Practice of Medicine,' 2nd edit., 5s.—Botham, Higher Broughton, Manchester.

WANTED.

Richter's 'Organic Chemistry'; Reynold's 'Organic Chemistry'; Attfield's (last edition); Squire (1894 edition); Tilden's 'Chemical Philosophy'; Bernthsen's 'Organic Chemistry'; Vines' 'Text-Book of Botany'; Newth's 'Inorganic Chemistry.'—Baxter, Bramley, Leeds.

Wide Angle, symmetrical or rectilinear, whole plate, cheap, state focus and maker.—Bush, Chemist, Melksham.

Second-hand Frena Camera, lantern size, in good condition; state lowest cash price.—Brackenbury, 106, Patrick Street, Cork.

Tilden's 'Chemical Philosophy'; Bower's 'Practical Botany'; Remsen's 'Organic Chemistry'; Southall's or Bentley's 'Materia Medica.' Lowest price for one or more to—Monro, 5, Market Terrace, Wood Green, N.

** Attention is specially directed to the new conditions of the "Exchange," in accordance with which a small charge will in future be made for the insertion of notices. It should be noted that a special opportunity will be afforded to those who advertise in the next number of the Journal, as it will be sent to more than sixteen thousand individuals directly connected with pharmacy.

LIVERPOOL MARKET REPORT.

[From our own Correspondent.]

FEBRUARY 19, 1896.

CANARY SEED: Rather more inquiry, 100 bags of *Turkish* sold at 33s. per 464 lbs. LINSEED: Steady, but "forward" business slack, 300 bags of *Trebizonde* sold at 32s. 6d. to 33s. per 416 lbs. *ex* quay. CHILLIES: *Sierra Leone* in small amount sold at 25s. per cwt. *ex* quay. GINGER: 300 bags good *Sierra Leone* sold at 20s. 6d. to 21s. per cwt., and 100 bags medium *Sierra Leone*, at 18s. per cwt. QUILLARIA BARK: Small sales of *Chilian* are reported at £12 12s. 6d. per ton. KOLA NUTS: 15 bags dried sold at 7d. per lb. BEESWAX: 6 bales of *Gambia* brought £6 18s. 9d. per cwt. OLIVE OIL is rapidly advancing; *Malaga* is £2 per tun dearer, and the market is cleared of *Candia*. CASTOR OIL is very steady; good seconds, *Calcutta*, 2½d. to 2¾d.; *Madras*, 2¾d.; 1st pressure, *French*, 2¾d. per lb. LINSEED OIL: Quiet at 20s. 6d. to 21s. for *Liverpool* makes in export casks. COTTONSEED OIL: Slow of sale at easier rates; 17s. 3d. to 17s. 6d. per cwt. SPIRIT OF TURPENTINE: Remains firm and in good demand at 21s. 6d. per cwt. PETROLEUM: Very quiet; *Russian*, 6d. per gallon; *American*, 6½d. to 7½d. ARSENIC: Lump, £26 10s. per ton; powder, £16 10s. BLEACHING POWDER: £7 to £7 5s. per ton. COPPERAS: *Lancashire*,

38s. per ton; *Welsh*, 36s. 6d. COPPER SULPHATE: £16 10s. per ton. PRUSSIAN OF POTASH: 8d. per lb., crystals. BICROMATE OF POTASH: 4½d. per lb. CHLORATE OF POTASH: 4¾d. per lb. CAUSTIC SODA: 70 per cent., £7 12s. 6d. to £7 15s.; 60 per cent., £6 12s. 6d. to £6 15s. per ton. BICARBONATE OF SODA: £7 per ton. SODA CRYSTALS: £2 10s. per ton. BORAX: Lump, 19s. 6d.; powder, 20s. 6d. NITRATE OF SODA: Held firmly at 7s. 10½d. to 8s. 1½d. per cwt. on the spot. SAL AMMONIAC: 39s. per cwt., firsts, POTASHES: 21s. 6d. per cwt. PEARLASHES: 37s. 6d. per cwt.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

SUNDAY, FEBRUARY 23.

LIVERPOOL SUNDAY SOCIETY, at 3 p.m.
"Interviews and Interviewing," by Harry How.

MONDAY, FEBRUARY 24.

IMPERIAL INSTITUTE, at 8.30 p.m.
"The Lighthouses of the British Isles," by C. A. Kent.

SOCIETY OF ARTS (CANTOR LECTURES), at 8 p.m.
"The Chemistry of Certain Metals and their Compounds Used in Building" (II.), by Professor J. M. Thompson.

ROYAL GEOGRAPHICAL SOCIETY, at 8.30 p.m.
"A Journey Across Tibet from North to South," by St. George R. Littledale.

TUESDAY, FEBRUARY 25.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.
"The External Covering of Plants and Animals: its Structure and Functions" (VII.), by Professor C. Stewart.

ROYAL PHOTOGRAPHIC SOCIETY, at 8 p.m.
"The Stereoscopic Photochromoscope," by F. E. Ives.

Messrs. Newton's Simple Method of Projecting Stereoscopic Pictures," by T. E. Freshwater.
"Stellar Photographs Taken without a Driving Clock," by J. Lunt.

WEDNESDAY, FEBRUARY 26.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION, at 9 p.m.
"A Botanical Romance," by A. McD. Cobban.
BRIGHTON JUNIOR ASSOCIATION OF PHARMACY, at 9 p.m.
"Hints on 'First Aid' Ambulance Work," by F. J. Paley.

THURSDAY, FEBRUARY 27.

SCHOOL OF PHARMACY STUDENTS' ASSOCIATION.
Social Evening at 6.30. Professor Greenish will exhibit a series of lantern slides illustrating a trip in Spain.
ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.
"Some Aspects of Modern Botany" (III.), by Professor H. M. Ward.
SOCIETY OF ARTS (INDIAN SECTION) AT THE IMPERIAL INSTITUTE, at 4.30 p.m.
"The Tobacco Industry of India and the Far East," by C. Tripp.

CHEMISTS' ASSISTANTS' ASSOCIATION, at 8.30 p.m.
"The Digestive Ferments of the Pancreas," by R. H. Jones.
GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION, at 9.15 p.m.
"The Phosphates of Iron and Calcium in Pharmaceutical Syrups," by J. Black.

FRIDAY, FEBRUARY 28.

ROYAL INSTITUTION OF GREAT BRITAIN, at 9 p.m.
"Marine Organisms and Their Conditions of Environment," by J. Murray.
SHEFFIELD MICROSCOPICAL SOCIETY, at 8 p.m.
Practical Night.

SATURDAY, FEBRUARY 29.

PHARMACEUTICAL FOOTBALL CLUB *v.* Fulham Football Club, at Wormholt Farm, Shepherd's Bush.
ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.
"Light" (II.), by Lord Rayleigh.

MARKET REPORT.

[Specially compiled for the *Pharmaceutical Journal*.]

[The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.]

LONDON, FEBRUARY 27, 1896.

Business in the chemical market has been quiet during the week, but quotations generally remain steady. Cream of tartar is quiet but the holders do not seem disposed to give very much in the way of price, except for shipment, where the quotations are decidedly easier. Tartaric and citric acids are very firm, but without change in price. Chrysophanic acid is very firm, and good araroba seems more unobtainable than ever. Arsenic is very strong, and the same applies to all brands of sulphate of copper. Carbolic acid is very firmly held for crystals especially, whilst acetanilide is unchanged. Amongst the alkaloidal salts, morphine has been advanced in price, but this does not apply to codeine. Caffeine and quinine are devoid of interest. In the drug market, we have to report an advance in insect flowers, and some grades of opium, whilst cascara sagrada, gentian root and orris root are very firm. Cod liver oil is very strong, and advancing in price, whilst castor oil is also inclined to higher prices. The spice market generally is active, a good business at advanced rates having been done in cloves and ginger especially. Shellac is also decidedly dearer. The essential oil market is quite devoid of interest. Full details will be found below:—

ACACIA GUM.—*Persian* so-called insoluble gum remains in very large supply, but the amount of business doing is very much restricted. Fair sorts offer at 13s. 6d. to 14s., whilst business has been done in fine block at 8s. 6d. per cwt.

ACID CARBOLIC.—The manufacturers report a continued brisk demand for this article, and some difficulty is experienced in executing the orders received—especially on foreign account—sufficiently quickly. Current quotations are as follow:—*Crystals*: 34° to 35° C., 7½d.; 39° to 40° C., 8½d.; 39° to 40° C. (*detached crystals*), 9½d. per lb. *Crude* is unchanged, 60 per cent. being still quoted at 2s. 3d., and 75 per cent. at 2s. 7d. per gallon. *Liquified* and *Cresylic* are unchanged at 1s. and 11½d. per gallon respectively.

ACID CITRIC.—Shows no alteration in price, but the market is firm. Makers of *English* acid still quote 1s. 2½d. per lb., whilst second-hand holders offer at 1s. 2¼d.

ACID, TARTARIC.—Is very firm, without any change in price. *English* makers continue to ask 1s. 3d. per lb. on the spot for prompt delivery, and 1s. 3½d. for forward. Foreign brands of acid (not guaranteed B.P.) both in *powder* and *crystals*, are quoted at 1s. 2½d. to 1s. 2¾d. on the spot.

AMERICAN DRUGS.—The current spot quotations for some of the more generally used American drugs are as follows:—*Condurango bark*, 5½d. per lb. *Black willow bark*, 14s. per cwt. *Golden seal root*, 1s. per lb. *Senega root*, 1s. 3d. *Damiana leaves*, 6d. *Canada Balsam*, 1s. 2d. *Slippery elm bark*, 5d. *Snake root*, 1s. *Podophyllin root*, 3½d. per lb.

AMMONIA COMPOUNDS.—*Sulphate* is slow of sale, grey 24 per cent. being quoted at the unchanged rate of £8 10s. on the spot, with *Hull* rather easier at £8 8s. 9d., *Leith* at the same figure, and *Beckton* at £8 7s. 6d. *Carbonate*: 3¼d. to 3½d. per lb. *Liquor*: 3¼d. to 3½d. per lb. less 5 per cent. *Sal ammoniac*: Firsts, 39s.; seconds, 37s. per ton,

ARSENIC.—Very firmly held, the supplies continuing to be very limited. Best white *powder* is held for 20s. on the spot, whilst for *lump* 28s. is asked.

CASCARA SAGRADA.—Steady. Business has been done at 21s. per cwt. on the spot, and this price up to 21s. 6d. is the current quotation. For shipment from New York quotations have advanced, 21s. per cwt. *c.i.f.* being now asked for new, and 22s. 6d. *c.i.f.* for two-year-old bark.

COAL DISTILLATION PRODUCTS.—*Toluol* is quoted at 1s. 8d. for 90 per cent. *Benzole* is steady at unchanged rates, 1s. 10d. per gallon being quoted for 50 per cent., whilst 90 per cent. is worth 2s. 2d. *Creosote*: 2d. per gallon. *Crude Naphtha*: 30 per cent. at 120° C. quotes at 10l. per gallon. *Solvent Naphtha*: 95 per cent. at 160° C. quotes at 1s. 5d.; 90 per cent. at 160° C. at 1s. 3d.; and 90 per cent. at 190° C. at 1s. 2d. per gallon. *Anthracene*: 13A quotes at 11½d. per unit; B at 10½d. per lb. *Pitch*: 35s. 6d. per ton *f.o.b.* *Tar*: *Refined* and *crude* at 13s. and 11s. per barrel respectively.

COCA LEAVES.—A parcel of good green *Truxillo* leaves has arrived during the week for which the holder asks 1s. 3d. per lb. Ordinary *Bolivian* cocas offer at 1s. 2d. per lb. for damaged quality.

CONCENTRATED LEMON JUICE.—Is quoted at £14 to £14 2s. 6d. for pipe, *f.o.b.*, Messina.

COPAIBA (BALSAM).—The total amount of *Copiaba* balsam exported from *Maranham* in the year ending June 30, 1895, was 12½ tons, of a value of £1290, against 14 tons, valued at £1460 in the previous year.

CREAM OF TARTAR.—This market is quiet, and shows continued evidence of weakening, although the prices do not show a marked decline. On the spot, best white *French* crystals offer at 105s. per cwt., whilst for *German* brands of powder 108s. would be accepted. For shipment from *Bordeaux* 99s., *f.o.b.*, is quoted.

ERGOT OF RYE.—Privately, sales of fair quality *Russian* ergot have been made at 7½d. per lb. The spot quotation is now

7d. per lb., but there is little inquiry for either this variety or *Spanish*.

GALLS.—No business is reported in *Persia* kinds but prices are firm as follows:—*Blues*, 53s. to 55s.; *greens*, 45s. to 47s. 6d., and *whites* 42s. 6d. per cwt. *China* galls are quiet but firm, whilst *Japan* are quoted at 52s. 6d. per cwt. *c.i.f.* terms.

GENTIAN ROOT.—Is steady. Good quality *French* root is still held for 22s. 6d. per cwt. on the spot. Shipment quotations are rather easier, 19s. 6d., *f.o.b.*, being now quoted.

GERMAN DRUGS.—The current quotations for bulk quantities of some of the more important raw drugs imported from Germany are as follows:—*Aconite root*, 40s.; *leaves*, 33s. *Arnica flowers*, 31s.; *root*, 53s. *Alkanet root* (best quality), 30s. *Angelica root*, 30s. *Belladonna leaves* (best quality), 45s.; *root*, 27s. 6d. *Cevadilla seed*, 125s. *Colchicum seed*, 38s.; *root*, 32s. *Elder flowers*, rubbed, 50s.; bunches, 40s.; *Henbane leaves*, 32s. *Hellebore root*, 22s. *Male fern root* (decorticated), 46s.; *Stramonium seed*, 15s.; *Stavesacre seeds*, 85s.; *Taraxacum root*, 32s. 6d. All per cwt. *c.i.f.* terms., London or Liverpool.

GINGER.—All varieties are very firm. At the weekly sales the majority of the *Cochin* root was bought in, ordinary to good washed old at 38s. to 40s., but cuttings sold without reserve at 26s., rough small, and ends, 31s. to 31s. 6d., and good washed at 40s. In addition, ordinary *B* old cut realised 60s., whilst *C* was bought in at 50s. New medium cut native sold at 55s. 6d. to 56s. 6d., and limed *Japan* at 23s. A moderate supply of new *Jamaica* root was offered, and sold with good competition at a further marked advance, 62s. to 63s. being paid for common lean and dark *Rhatoon*, 68s. 6d. to 69s. for good common ditto, 73s. to 77s. 6d. for small scraped, and 96s. for good medium washed.

INSECT FLOWERS.—There is nothing fresh to report in regard to the London position of this article, but the Trieste market is reported to be very active, and prices have again advanced, the current quotations being now as follows:—Closed wild flowers, 142s. 6d. to 145s.; closed cultivated flowers, 132s. 6d.; half-closed, 95s.; and open, 90s. per cwt., all *c.i.f.* terms.

JABORANDI.—The reports of *jaborandi* leaves from *Maranham*, in *Brazil*, during the year ending June 30, 1895, amounted to 7½ tons, of a value of £681, whilst during the corresponding twelve months ending June 30, 1894, the exports were 41 tons, valued at £2970.

OIL (COD-LIVER).—The London market is exceedingly firm. Mail reports received from the *Lofoten* district, dated the 18th inst., state that the previous week's catch was very poor, the fishermen not being able to put out to sea on account of the bad weather prevailing, whilst the quality of the liver is very lean. From the latest Government official report we learn that the total result of the *Lofoten* fishing up till the 22nd inst., amounts to 270 hectolitres of the crude oil, which represents about 160 barrels of refined non-congealing oil. Last year the catch for the same period amounted to about 840 hectolitres. On the spot the quotations for 1896 vary considerably, according to holder. There appears to be little or none in Lon-

don, and 220s., *c.i.f.*, per barrel of 25 gallons may be taken as the lowest price, although some holders ask 240s. Business has been done in old oil at 180s. per barrel, and 185s. is now asked, whilst good quality *Newfoundland* oil is quoted at 6s. to 6s. 6d. per gallon according to quantity.

OILS (ESSENTIAL). *Star Anise* oil unchanged but little business is reported. On the spot 9s. 9d. to 9s. 10½d. is the current quotation, whilst for arrival sales have been made at 9s. 3d. *c.i.f.* terms. *Cassia* oil is quiet. Nominally 10s. is asked for 80 to 85 per cent. oil, and 8s. 6d. for 70 per cent. *Citronella* is firm at 2s. on the spot, whilst for fine June shipment 1s. 9d. *c.i.f.* was quoted. *American* peppermint oil is quiet at 9s. 9d. for *H. G. Hotchkiss'* brand, whilst *Japan* oil is quoted at 6s. 6d., and *dementholised* at 5s. 9d. per lb. nominally. *Eucalyptus*: There have been sales of the *Platypus* brand at 2s. 2d. per lb. during the week. *Italian* oils are very firm, and reports advise a probable further advance.

OILS (FIXED) AND SPIRITS—*Castor* continues very firm, *Italian* oil of best quality being quoted at 31s. 6d. per cwt. *c.i.f.* terms, with a probability of a further advance shortly. There have been sales of *Calcutta* oil at 2¼d. to 2½d. per lb. on the spot for first quality, whilst "seconds" quote at 2¾d. to 2½d. per lb. *Marsilles* medicinal oil is firm at 3¼d. to 3½d. per lb. on the spot in tins (packed in cases). *Cotton* is steady, but quiet, the closing price of *refined* oil remaining £16 10s. to £17 on the spot. *Cocoonut* is a trifle easier, *Ceylon* and *Cochin* being now quoted at £22 10s. to £22 15s., and £26 10s. respectively on the spot. *Linseed* is firm, oil in barrels being still quoted at £19 12s. 6d. to £19 15s. on the spot. *Rape*: Steady. *Refined* oil is still quoted at £24 10s. to £25 10s. on the spot. *Turpentine*: Quiet but steady, *American* spirit being still quoted at 20s. 1½d. to 20s. 3d. on the spot. *Petroleum* is easier, *American* oil quoted at 5½d., *Water white* at 7d., and *Russian* at 5¾d. per gallon on the spot. *Petroleum Spirit*: *American* quotes at 9d. to 9¼d., and *deodorised* at 9¼d. to 9½d. per gallon.

OIL (OLIVE).—The amount of oil exported from *Tunis* in 1894 showed a large increase on the previous year, amounting to 9855 tons, valued at £275,955, against 5608 tons of a value of £130,026 in the previous twelve months.

OPIUM.—The London market is very firm, and a good business has been done in manufacturing kinds during the week at an advance of about 6d. per lb. The following are the current quotations:—*Soft shipping*, 12s. to 12s. 9d.; *Smyrna*, 8s. 6d. to 9s.; *Constantinople*, 8s. 6d. to 9s. 6d., and *druggists seconds*, 8s. to 8s. 6d. per lb. *Persian* opium is very firm, there being only a very limited amount available on the spot. An arrival of the new crop in *bricks* just to hand is held for 13s. 6d. per lb., and business has been done at this rate.

OPIUM ALKALOIDS—Dearer. *Morphine* has advanced in price 4d. per oz. since our last report, and manufacturers' quotations are now 4s. 7d. per oz. for *powder*, and 4s. 9d. for *crystals* in 1000-oz. lots. *Codeine* is very firm at unchanged rates, 10s. 6d. to 11s. being quoted, according to quantity.

POTASH COMPOUNDS—*Chlorate*: Very firm at 4¼d. per lb., which is the lowest

manufacturers' quotation. *Permanganate*: Very firm. Holders of *small crystals* ask 65s., whilst 70s. appears to be the lowest price per *large ditto*. *Cyanide* 98 per cwt. quoted at 1s. 6d. per lb. *Prussiate* is quoted at 7½d. to 8d. per lb. on the spot according to brand. *Bichromate* 4½ per lb.

SCAMMONY.—The market is firm, *root* being held for 47s. 6d. to 50s. *Turkish* virgin scammony resin is very firmly held. Business has been done at 30s. per lb., and this is quite the lowest in price.

SHELLAC.—The market is very firm and prices continue to advance, business being somewhat limited privately owing to the absence of sellers. On the spot *TN Orange* is worth 97s. and *AC Garnet* 92s. 6d. per cwt. For arrival, sales of *Second Orange* have been made at 95s. *c.i.f.*, of *TN Orange* at the same figure (January to March shipment), and *AC Garnet* at 85s. to 85s. 6d. *c.i.f.* (February to April shipment). At the weekly sales small supplies only were offered and met with a good demand, *Second Orange* selling at an advance of 2s. to 3s., whilst *Button* sold at full rates. The following were the prices paid:—*Second Orange*: Fine pale free, 105s. to 106s.; good pale curly, 100s. to 102s.; and flat reddish livery at 94s. *Button*: Ordinary *BL2* sold at 85s., whilst fair firsts were bought in at 110s. per cwt.

SODA COMPOUNDS.—*Bicarbonate*: £7 5s. per ton in London; £6 15s. in Liverpool. *Nitrate* quotes at £8 for ordinary, and £8 5s. for refined. *Caustic Soda*: 70 per cent. is held for £8, and 60 per cent. for £1 less.

SOY.—Very slow of sale, and fair *China* offers at 11d. per gallon on the spot.

SPERMACETI.—Rather dull of sale at 1s. 6d. per lb. for good refined *American*.

SPICES (VARIOUS).—*Cloves* are dearer. Privately holders are very firm, business having been for arrival at 2½d. to 2¾d. per lb. for June to August shipment, and on the spot at 2½d. In auction *Zanzibar* sold at a slight advance as follows:—Medium dark, 2½d.; fair to good fair 2½d. to 2¾d.; good bright, 2¾d.; whilst fine pale was bought in at 2½d. to 2¾d. Dark *Ceylon* sold at 3½d. per lb. All the *Penang* was bought in except three cases of very good picked, which realised 9½d. per lb. *Cassia lignea*: 30 bales of broken common quality sold at 16s. per cwt. *Cinnamon chips*: Ordinary coarse *Ceylon* sold at 2½d. *Pimento* is steady, ordinary grey selling in auction for 2½d., fair at 2¼d. to 2½d., and good at 2¾d. per lb. *Capsicums*: Ten bags of large red *Bombay* off stalk sold at 23s. 6d. per cwt. *Chillies*: Slow of sale. A few cases of good bright clean red *Japan* sold at 72s. 6d. to 75s. 6d. per cwt. *Pepper*: In fair demand, 2¼d. being paid in auction for ordinary *Singapore*, and 2½d. for fine sea damaged. Fine *Aleppo* sold at 2¼d., whilst extra bold *Mangalore* was bought in at 4¼d.

TOLU (BALSAM)—Remains very slow of sale. Privately 2s. per lb. is asked for good genuine quality, but we have not heard of any business. The shipment quotation is 1s. 10d. per lb. *c.i.f.* terms.

TRAGACANTH (GUM).—A fair amount of business is being done in the arrivals of new crop gum at steady rates, the current quotations being as follows.—Firsts (fine pale "druggists"), £15; seconds, £13 to £14 10s.; thirds, £11 10s. to £13; fourths, £9 to

£10 10s.; yellow and pinky, £6 10s. to £8; with other grades 40s. to 130s. per cwt. *Hog* is very slow of sale, with nominal quotations ranging from 30s. to 80s. per cwt.

WAX (JAPAN).—There has not been so much inquiry lately for the article, although the market is firm. Good pale *squares* are quoted at 34s. 6d. per cwt. on the spot, and 37s. 6d. for arrival, *c.i.f.* terms.

LIVERPOOL MARKET REPORT.

[From our own Correspondent.]

FEBRUARY 26, 1896.

LINSEED: *Turkish*, 35s. 9d. to 36s. per 416 lbs.; *Trebizonde*, 32s. 6d. to 33s. spot prices. KOLA NUTS: 24 bags at 5d. GINGER: *African* new crop, to arrive, 20s. to 21s. 6d. per cwt., small quantities, *ex quay*, at 22s. 6d.; 100 bags *Sierra Leone*, 18s. CHILLIES: 250 bags *Sierra Leone*, 24s. to 26s., and 75 bags *Sierra Leone*, new crop, 32s. 6d. CARNAUBA WAX: 28 bags grey at 100s., yellow, 110s. BEESWAX: 20 sacks of *Chilian*, £7 7s. 6d. to £7 15s. CASTOR OIL: Good seconds *Calcutta* and 1st pressure *French*, 2½d. to 2¾d.; *Madras*, 2½d. OLIVE OIL: Spanish oils rising. *Malaga*, £29 10s. to £30 10s. per tun; *Seville*, £29 to £30. LINSEED OIL: 20s. 6d. to 21s. for *Liverpool* makes. COTTONSEED OIL: 17s. 3d. to 17s. 6d. for *Liverpool* refined. SPIRIT OF TURPENTINE: 21s. 6d. PETROLEUM: *Russian*, 5¼d.; *American*, 6¾d. to 7½d. SAL AMMONIAC: firsts, 39s.; seconds, 37s. per cwt. CARBONATE OF AMMONIA: 3½d. to 3¾d. SULPHATE OF AMMONIA: £8 12s. 6d. to £8 15s. for good grey. BLEACHING POWDER: £7 *f.o.b.* for soft; £7 5s. hard. COPPERAS: *Lancashire*, 38s.; *Welsh*, 36s. SULPHATE OF COPPER: £16 15s. to £17. PRUSSATE OF POTASH. 8d. CHLORATE OF POTASH: 4¾d. BICHROMATE OF POTASH: 4¾d. NITRE; 23s. 6d. kegs, 23s. barrels. CREAM OF TARTAR: 105s. SODA CRYSTALS: £2 7s. 6d. to £2 10s. BICARBONATE OF SODIUM: £6 15s. CAUSTIC SODA: 70 per cent., £7 10s.; 60 per cent., £6 10s. BORAX: £19 10s. crystals; £20 10s. powder. HYPOSULPHITE OF SODA: £7 to £7 10s. NITRATE OF SODA: 8s. to 8s. 3d.

Late Advertisements.

Wanted to Purchase.

A GENUINE Chemist's and Druggist's BUSINESS in London or suburbs. Address, with full particulars, Mr. GEISEL, Frankfort Ter., Harrow Rd., W.

Assistant Wanted.

A SMART JUNIOR, not under 5ft. 7in. Time for study and no Sunday duty. Apply, J. NORTHWAY, 27, Gt., Tower St., E.C.

Engagement Wanted.

JEUNE Français, bonne famille, très au courant, depuis 7 ans premier élève dans pharmacies de premier ordre en France, désire place stable et lucrative dans pharmacie, quartier français de Londres ou chez un Médecin faisant la pharmacie. Bonnes notions de langue et de pharmacie anglaises. S'adresser à, MEDHURST, City of London College, White St., E.C.

REMEDIES INTRODUCED IN 1895.*

Adhesol.—Mixture of copal resin (35), gum benzoin (3), balsam tolu (3), ether (2), oil thyme (2).—Surgical dressing.
Airol.—Bismuth Oxyiodogallate.—Surgical antiseptic.
Akolethe.—Proprietary “solution of the sedative principles of opium.”
Alpha-cresote.—Mixture of normal constituents of creosote, containing 25 per cent. of crystallised guaiacol.
Alpha-guaiacol.—Crystallised synthetic guaiacol.
Aminol.—Solution of calcium oxide, sodium chloride, and trimethylamine.—Antiseptic.
Ammonium Glycerinophosphate.—Nervine.
Ammonium Persulphate.—(NH₄)₂S₂O₈.—Antiseptic and deodorant.
Ammonol.—Ammoniated phenylacetamide.—Analgesic and antipyretic. Dose: 0.3–1 Gm. (4½–15 Grn.).
Ammonol Salicylate.—Analgesic and anti-rheumatic. Dose: 0.5–1.5 Gm. (7½–23 Grn.).
Amygdophenin.—Para-amidophenol amygdalate.—Antipyretic and analgesic. Dose: 1 Gm.

Anhalonine Hydrochlorate.—C₁₂H₁₅NO₃.—Spastic and nervine, like strychnine.
Aniline Sulphate.—C₆H₇N·H₂SO₄.—Internal cancer-remedy. Dose: 0.1 Gm., gradually increased to 0.8 Gm. daily.
Anthion.—Compound consisting chiefly of potassium supersulphate. Substitute for Javelle water or hydrogen peroxide in photography.
Anticancerin.—Prof. Emmerich and Scholl's cancer-serum used in erysipelas.
Antinosin.—Sodium salt of nosophen.—Antiseptic.
Antiphlogistine.—Proprietary antipyretic.
Antipyonin.—Sodium tetraborate or polyborate.—Antiseptic.
Antistreptococcin.—Serum preparation used against erysipelas.
Apolysin.—Monoparaphenetidine - citric acid, C₃H₄(OH)(CO)(OH)₂CO·NH·C₈H₄OC₂H₅.—Analgesic and antipyretic. Dose: 0.5–1.5 Gm.
Arecoline Hydrobromate.—Salt of alkaloid from *Areca catechu*.—Myotic (in 1 per cent. solut.) and veterinary laxative, like physostigmine.
Argonin.—The soluble silver casein salt obtained by treating a solution of casein-sodium with silver nitrate.—Antiseptic and astringent, like silver nitrate.

Baptolene.—Compound antiseptic solution.
Benzacetine.—Acetoamidomethylsalicylic acid.—Antineuralgic.
Bismuth Oxyiodogallate.—See Airol.
Bismuth Phosphate, Soluble.—Contains 20 per cent. Bi₂O₃.—Gastro-intestinal antiseptic. Dose: 0.2–0.5 Gm.
Bismuth Pyrogallate.—Known also as “Helcosol.”—Succedaneum for pyrogallol internally.
Bismuthol.—“Bismuth-sodium phosphosalicylate”; soluble bismuth phosphate.—External astringent and antiseptic.
Borine.—Compound antiseptic solution.
Borsalicyl.—Result of the action of boric acid (25) on sodium salicylate (32).—Antiseptic.
Bromalin.—Hexamethylenetetramine bromethylate; Bromethylformine.—Antiepileptic. Dose: 1–4 Gm.
Bromhemol.—Bromated hemol.—Antiepileptic.
Bromophtharin.—Mixture of calcium and iron oxides, calcium carbonate and sulphate, sodium sulphate, sand, and yellow colouring-matter.
Byrolin.—Antiseptic ointment and cosmetic in collapsible tubes.
Caesium Bitartrate.—C₃C₄H₄O₆.—Nervine and cardiac.

(To be continued.)

* Reprinted from *Merck's Market Report*.

MAXIMUM DOSES OF VETERINARY REMEDIES.*

COMPILED BY A. SCHREIBER, OF NEUKIRCH.

MEDICAMENT.	Dogs.		Cats.		Horses.		Cattle.		Sheep or Goats.	
	Single.	Daily.	Single.	Daily.	Single.	Daily.	Single.	Daily.	Single.	Daily.
	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.
Acid, Arsenous	0.003	0.006	0.002	0.005	0.25	2	0.75	5	0.01	0.05
Acid, Carbolic	0.05	0.2	0.01	0.06	5	10	5	10	1	1.5
Aconite Root	0.1	0.5	.....	.....	2	5	5	10	.....	.....
Aconitine	0.0005	0.002	.....	.....	0.005	0.02	0.02	0.06	.....	.....
Apomorphine Hydrochlorate	0.001	0.003	.....	.....	0.02	0.05	0.02	0.05	.....	.....
Atropine Sulphate	0.005	0.02	.....	.....	0.05	0.1	0.05	0.1	.....	.....
Belladonna Leaves	0.2	1	.....	.....	10	30	10	40	5	10
Bitter-almond Water... .. .	0.5	3	.....	.....	10	50	10	50	2	10
Caffeine	0.2	1	.....	.....	5	10	5	10	.....	.....
Cantharides... .. .	0.1	0.3	.....	.....	0.5	2	2	4	0.2	0.5
Chloral... .. .	0.5	1	.....	.....	20	50	20	50	4	8
Chloroform... .. .	0.5	4	.....	.....	20	50	20	50	.....	.....
Codeine... .. .	0.02	0.1	.....	.....	0.4	1.5	2	2.5	.....	.....
Colchicum Root... .. .	0.05	0.3	.....	.....	3	6	4	8	0.1	1
Conium Herb	1	4	.....	.....	20	90	.....	.....	4	8
Croton Oil	0.05	0.2	.....	.....	0.5	1	0.6	1.5	0.2	0.5
Digitalis	0.05	0.5	.....	.....	2	10	2.5	10	0.5	1
Ergot	0.5	2	0.2	1	15	30	25	50	2	5
Ergotin... .. .	0.2	0.5	.....	.....	.....	.....	.....	.....	.....	.....
Fowler's Solution	0.05	1	.....	.....	10	50	10	50	0.1	0.6
Hyoscyamus	0.5	4	.....	.....	15	90	15	90	8	30
Creosote	0.05	0.2	.....	.....	5	15	5	15	1	2
Morphine Hydrochlorate... .. .	0.02	0.1	.....	.....	0.4	1.5	2	3	.....	.....
Opium	0.1	0.5	0.05	0.2	5	20	10	25	1	3
Physostigmine Sulphate	0.0005	0.003	.....	.....	0.05	0.1	0.1	0.2	0.02	0.05
Pilocarpine Hydrochlorate	0.005	0.02	0.001	0.003	0.1	0.8	0.2	0.5	0.02	0.05
Potassium Bromide... .. .	0.5	2	0.2	0.5	20	50	20	50	5	10
Potassium Chlorate... .. .	0.1	1	.....	.....	5	10	5	10	2	5
Potassium Iodide	0.25	1	.....	.....	5	15	5	15	2	5
Quinine Sulphate	0.25	1	.....	.....	5	20	10	25	2	5
Strychnine Nitrate	0.001	0.003	0.0005	0.001	0.05	0.1	0.05	0.15	0.005	0.01
Tartar Emetic	0.005	0.1	.....	.....	1	10	4	15	0.1	0.3
Tincture Opium... .. .	1	5	.....	.....	50	150	75	200	.....	.....
Tobacco	0.3	0.5	.....	.....	10	25	25	50	2	5
Veratrine	0.001	0.005	0.001	0.005	0.05	0.2	0.05	0.2	0.005	0.01
Veratrum Viride	0.01	0.03	.....	.....	5	15	10	20	3	5

* Reprinted from *Merck's Market Report*.

MODERN PHARMACEUTICAL INDUSTRIES.

IDRIS AND COMPANY, LIMITED.

THE ORIGIN OF THE FIRM.

The name of Idris is now so familiar to the retail pharmacist that it is somewhat difficult to imagine that it is only some five and twenty years since the founder of the firm, Mr. Thomas Howell Williams (now Mr. T. H. W. Idris, J.P., L.C.C.) commenced the manufacture of mineral waters. But after a brief acquaintance with Mr. Idris, one ceases to wonder at the marvellous rate with which the business of the firm has been developed. Although the senior director of the firm has so much time occupied by work on the London County Council—where he fills the position

of orange wine, as well as for brewing ginger beer which during the last few years has re-asserted its popularity in such a marked degree. It is so seldom architectural appearances are considered in the realm of factories, that the pleasing effect conveyed to the eye when the building is viewed from the roadway was commented on to Mr. Idris. "I have been chaffed on some occasions," he said, "owing to my weakness in that direction, but I really fail to see why factories should necessarily be eyesores."

PLAN OF THE WORKS.

Although this visit of inspection took place during winter time, there was still every evidence of a brisk business being done in all the departments. On the left-hand side of the yard, shown to the right of the first illustration, is situated the factory



VIEW OF FACTORIES,
CAMDEN TOWN, LONDON, N.W.

of Chairman of the Water Committee—as well as by his magisterial duties, that he is now compelled to relegate most of the business of the factory to his partners, Messrs. Adpar Jones, J. Hughes, and E. K. Bishop, he readily placed himself at our disposal to act as guide during an inspection of the various departments of the works.

Allusion has already been made to the unpretentious manner in which this business was inaugurated. As time went on, fresh premises were occupied and in turn discarded, until some two and a half years ago a plot of land was acquired in Pratt Street, on which was built, from the firm's own designs, the factory under notice, which is undoubtedly most perfectly appointed in every respect. Even now it is by no means completed, additional premises having been acquired on the eastern side, part of which will be utilised for the reception of electrical plant, whilst an extensive wing is in course of erection which will serve for the manufac-

proper, whilst the stables, foundries, and other workshops lie on the opposite side, the water-distilling apparatus being placed at the top of the block of buildings shown at the extreme end. This yard is used solely for the dispatch of goods, empties being brought in at a separate entrance, and it will be noticed that the ground floor is of such an elevation that the tail-boards of the waggons are on a level with it. Some of these details were noticed on the way to the counting-houses, whence it is not far to the board-room, the walls of which are covered with awards which have been gained by the firm on various occasions, as well as by photographs of the factory. A portrait of the President of the Pharmaceutical Society occupies a prominent place, whilst at one end stands a handsome show-case which has done duty on several occasions.

THE BREWING OF GINGER BEER.

Mr. Idris first drew attention to the view of the factory

as seen from the roof, and then led the way to the department devoted to the brewing of ginger beer. This article is now made under strictly scientific principles and a visitor in the course of his perambulations sees the different stages in operation. Commencing with the maceration of the bruised ginger in water, the infusion is next run off into shallow tanks to cool and settle, whence the clear liquor is again run off. Subsequently, on the ground floor, are to be seen hundreds of gross of the finished product stored in rooms, the temperature of which is regulated so as to perfect after fermentation. In another room attention is attracted by an ingenious cork-squeezing apparatus, by means of

usually it is then ready for making the solutions of the required salts, whilst if distilled water is required, an apparatus worked by steam pipes is used, which obviates the objectionable taste perceptible in water which has simply been condensed directly from waste steam. The means adopted to ensure the absolute purity of the water used in the products of this factory have been dwelt upon somewhat particularly, as that is obviously a cardinal point, and it may be said that the evidence of care in this department is typical of the methods used throughout.

THE CHEMICAL LABORATORIES.

This fact is still further impressed when one comes to the



THE MAIN LABORATORY.

which all dust and loose particles are got rid of previous to use.

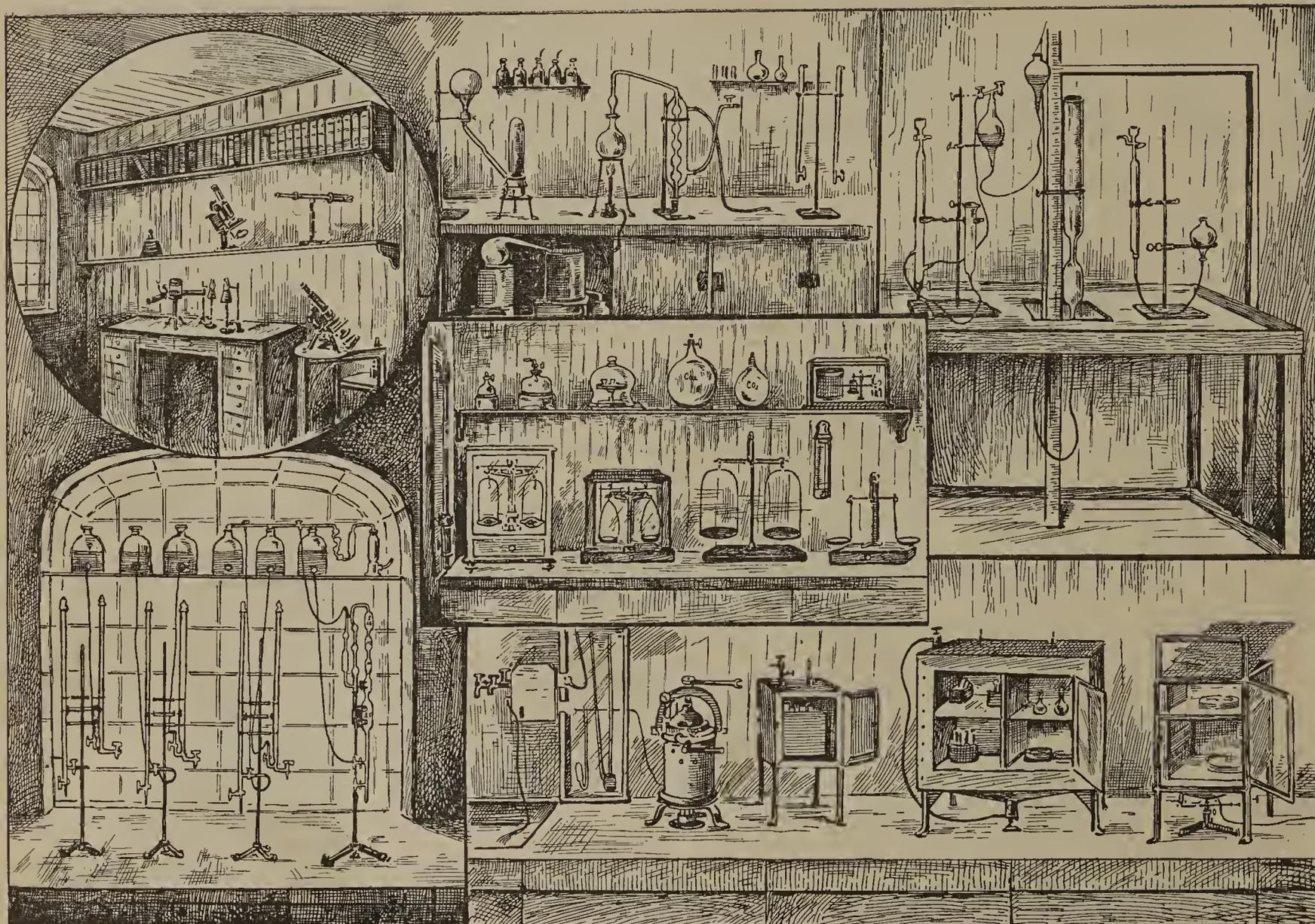
PURIFICATION OF THE WATER.

The means adopted in this factory to ensure perfect purity of the water used in all the preparations deserves attention. First of all, the water from the main—which is supplied by the New River—goes under an elaborate process of filtration, through a cylindrical apparatus packed with charcoal and glass-wool at each end, whilst the centre is filled with sand; it is then treated with lime, which reduces the hardness from 13° down to about 7° , and in addition removes micro-organisms. The second stage of the purification takes place in large slate tanks, which are used in turn, and are thoroughly cleaned out after every use. If necessary, the softened water undergoes a further process of filtration, but

chemical laboratories, the equipment of which is probably quite unrivalled by any other mineral water factory. These are three in number, all of which were designed by Dr. W. H. Symons, F.I.C.—for many years the scientific adviser and consulting chemist to the firm—and are now under the supervision of Mr. Frank Stephens, F.C.S., and a staff of detail workers. The second illustration gives some idea of the equipment of the main laboratory, where the daily routine work of testing the solutions is done, as well as general chemical work. This is a large well-lighted room some 25 feet square, in the centre of which is a stand on which the various reagents and chemicals are grouped. Benches are fitted round the sides, one of which is covered by an adjustable glass hood, so that all operations involving evaporation, or any

experiments in which noxious fumes are evolved can be carried on without contaminating the air of the laboratory. Injector pumps are connected with the various benches, water at low pressure being supplied to the condensers, hot water funnels and ovens, which are arranged to keep at a constant level. Here also was seen the apparatus whereby a constant check is kept over the carbonic acid gas used on the works. A connection is made with the bell in the engine room, so that quantities can be examined at any time. The apparatus used, which is shown in the third illustration, consists of a 500 C.c. receiver filled with the gas, which is forced by means of a levelling tube containing brine into a eudiometer containing potash. The

the detection of impurities in water. In addition, waters from all parts of the kingdom are examined here chiefly for organic contamination and, now that the science of bacteriology is playing such an important part in water analysis, the firm have set apart a room for that particular branch, which is fitted with steam and hot air steriliser, Hearson's incubator and all the necessary appliances for the bacteriological examination of water and for the cultivation of the various ferments used in the production of ginger beer. There are also microscopes by Watson, Swift, and Crouch. A dark room, used for polariscopic and spectroscopic analysis, together with a library of technical literature, completes this department.



LABORATORY APPARATUS.

amount of gas undissolved divided by five gives the percentage of air present, which is always kept below 0.5 per cent. The operation is very rapid and allows of as many as half a dozen determinations being completed within an hour. A centrifugal machine, reverberatory and muffle furnaces and fume chambers are also in evidence, in addition to the various paraphernalia of a laboratory. The adjoining room is set apart for volumetric work. The number of determinations performed daily sometimes reaches the total of 200. They include the volumetric testing of every tank of water, lemon syrup, various cordials, and the numerous articles manufactured. The test solutions are kept in five litre aspirators about four feet above the level of the burettes, so that the time required in filling the burette after each operation is reduced to a minimum. The benching in this room is covered with white glass, which facilitates

ENGRAVING SYPHONS AND BOTTLES.

Leaving this interesting section, the visitor is next interested in the processes involved in the engraving of names and designs on siphons and bottles, which has now become a very important adjunct in the business of the firm. Not only is this work carried out for their own requirements but a large staff of workers are engaged in engraving the glassware for other firms. For the sand blast, machines are used involving in some cases jets of air and in others of steam. In addition many hands are occupied in the preparation of glass show tablets, designed for the use of the customers of the firm. Surprise was caused by the space devoted to these operations and, in reply to some remark to that effect, Mr. Idris stated that it is intended to increase this branch considerably in the near future.

PREPARATION OF FRUIT CORDIALS AND SYRUPS.

The next place visited was a room in which several girls were engaged in peeling lemons by means of machines, which automatically pare off the rind in a very rapid fashion. In another corner stands a large Tangye press used for pressing out fruit juices. This led to a remark on the comparative utility of hydraulic and screw presses, and Mr. Idris expressed the opinion that the former are by no means so satisfactory when working on a large scale as the latter and he contemplates reverting to the use of the old-fashioned form in future. A large store-room is devoted to the processes of filtering, clarifying, and bottling fruit cordials and

65,000 cubic feet, the walls being covered with Doulton tiles, which give it an artistic appearance; the roof is of varnished wood and there is positively no foothold for dust or micro-organisms. The syphon fillers are arranged in a long row, and the syphons are conveyed to them by a series of elevated tram lines, subsequently passing on to the next department, where they are all inspected, labelled and finally admitted into stock. Parallel rows of bottle fillers occupy the remainder of the room. The engines, cylinders and pumps occupy a room of the same size immediately underneath.

MINOR DEPARTMENTS.

The ground floor of the building on the opposite side of the roadway



THE FILLING AND BOTTLING DEPARTMENT.

syrops, which, it may be said, are in practically every instance really prepared direct from the fruit and not flavoured artificially. Mr. Idris acknowledged that, at the outset, some trouble was experienced in devising a satisfactory method of filtration for this class of preparation, but the present arrangement works very well, the clarification being mainly effected by means of paper pulp. After a peep into a room which is used for storing orange and medicated wines, the factories on the ground floor claimed attention.

SYPHON-FILLING AND BOTTLING DEPARTMENT.

There is no necessity to enter into details respecting the filling, labelling, and packing, as these are much the same in all mineral water factories, although they are in this instance carried out on a gigantic scale, Idris and Co. being the largest syphon fillers in the world. The filling room is light and lofty, occupying a space of

is devoted to sand blasting, whilst on the top storey is fitted the apparatus for preparing distilled water and supplying steam to the different parts of the factory. In the adjoining department considerable space is devoted to the casting and finishing of the syphon tops, which are all made and fitted on the premises and furnish employment for a considerable staff. The glass syphons and syphon tubes are not made in this country, but are imported direct from Bohemia, the tops being made of pure block tin, which are silver-plated if required. Recently it has been found necessary to restrict the use of this material to the ordinary aerated waters, lemonade and ginger ale being supplied in syphons, the tops of which are porcelain lined, this precaution being taken to prevent any solvent action of the acid upon the metal,



HISTORY OF THE FIRM OF ROBINSON AND SONS, LTD.

ALMOST within the shadow of the curiously distorted spire of All Saints' Church, Chesterfield, some sixty years ago, a wholesale and retail druggist's business was being conducted by Mr. John Bradbury Robinson. He also cultivated plants for medicinal purposes, including

poppies, roses for the sake of their petals, and purple pansies for the preparation of a coloured solution, called "Anthokyan," which was extensively sold and employed for preparing syrup of violets. In addition, he did a considerable trade in druggists' sundries, and, in respect to certain articles, this developed to such an extent that he began to entertain the idea of manufacturing for himself. The first step taken in this direction was the purchase of a small pill-box business, carried on by a Mr. Fletcher, near Middleton-by-Youlegrave, a little village in one of the North Derbyshire dales. In 1839, this business was transferred to Wheat Bridge House, near Chesterfield, where work was commenced with a staff of two girls, the new proprietor having been informed by his predecessor that he might consider he had done a good week's work if he managed to dispose of twenty gross of one ounce nested pill-boxes per week. At the present time boxes of various kinds are turned out by the million weekly and a staff of two hundred workers is employed for that purpose alone, whilst altogether some seven hundred and fifty persons are kept actively employed by the firm of Robinson and Sons, Ltd. and the business is still growing.

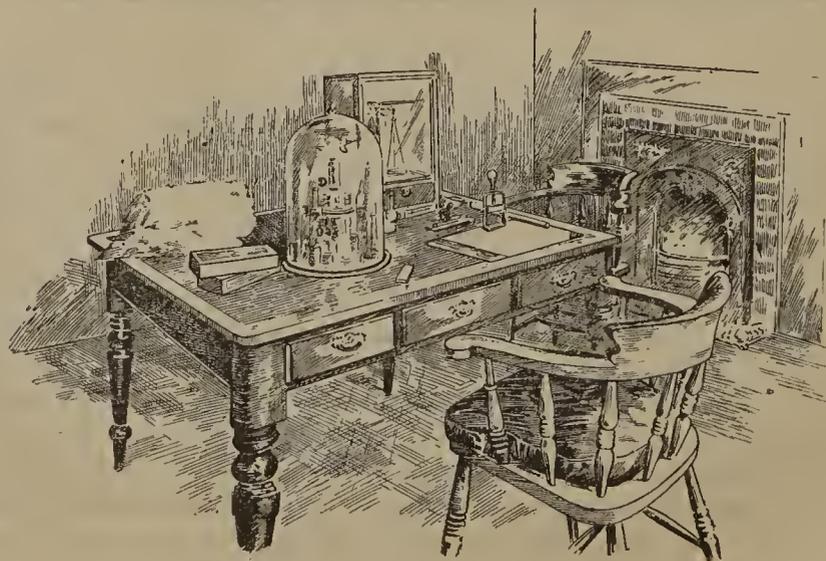
The present head of the firm, Mr. William Bradbury Robinson, joined his father, the founder, fifty-six years ago. He was then but fourteen years old and appears to have been blessed with a decided inventive genius. Lint was in those days made almost entirely by hand and a woman who was engaged in the manufacture was employed by the firm to teach a staff of girls the same art. A treadle machine was first devised to allow of the cloth being scraped more rapidly and evenly, but considerable hindrance to the business being caused by an affection of the ankle induced in the case of one of the best workers, the inventive faculties of the younger partner were set to work and this resulted in the production of the first automatic lint-making machine. The movements in this were virtually the same as in the old hand and treadle machines, but improvements have been continually effected until the present marvellously efficient power machines were produced. Lint and

bandages are now turned out by the mile where formerly they were produced by the yard and, at the same time, they are finished more uniformly and more satisfactory generally.

THE MANUFACTURE OF LINT AND BANDAGES.

A visitor to the Wheat Bridge works, which are plain in their elevation and erratic in their general plan, as is to be expected considering how the business has gradually but steadily increased, is impressed at the outset by the enormous bales of raw cotton, for the firm not only prepares the lint and other products, but also manufactures all its own cloth, thus ensuring the purity of all its goods. Tons of cotton are imported from America and elsewhere; after being carefully freed from all mechanical impurities, it is properly blended, then opened to loosen the fibres, carded and spun, to produce the yarn. Most of the machinery is driven by steam engines of about 420 horse power, or by means of electricity, three dynamos and five electro-motors being employed throughout the extensive works, which are also illuminated with the electric light, whilst all departments are connected with the principal's office by telephone. Besides steam and electricity, however, gas and water are also utilised as sources of power, the gas engine employed being about 20 horse-power and the water wheel of about 12 horse-power. As to the intricate spinning machines, so ingeniously are they constructed that the breaking of a single thread suffices to cause a stoppage and draw attention to the accident so as to prevent the production of imperfect material.

After being conducted through the rooms where the earlier operations are performed and being partly whitened by the mimic snow-



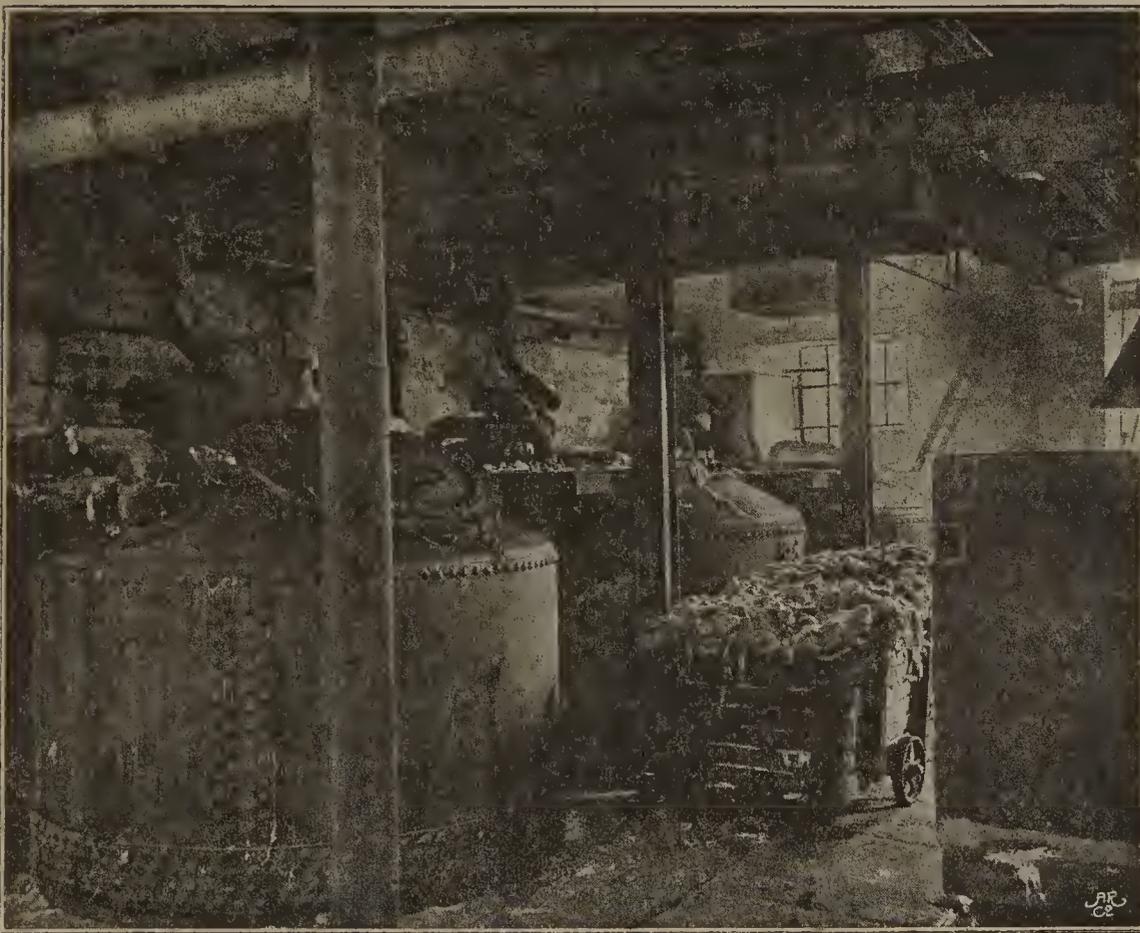
THE CHEMIST'S OFFICE.

storm in an apartment heated considerably above the normal, the visitor who is specially favoured is successively shown the opera-

almost everywhere. Curiously enough one of the last strongholds of the original article is the British army, the authorities yet persisting in the use of the higher priced article, which does not serve the desired purpose so well. Lint for the Indian army however must be made of cotton exclusively. This is surely an instance of red-tape rampant.

ABSORBENT COTTON WOOL.

Of even greater importance than lint, from a manufacturing point of view, is cotton wool, especially the absorbent variety, and probably nowhere can the preparation of this important adjunct to the surgeon's art be seen to greater advantage than at the Wheat Bridge Mills. The cotton is freed from grease, by the action of alkalis, in enormous "kiers." In these the cotton is boiled under pressure, and it is then ready to be bleached, the latter process being performed in huge stone vats, in which the cotton is successively subjected to the action of chlorinated lime and hydrochloric acid. After washing to remove the residual acid, the cotton is partially dried in large hydro-extractors which revolve at an enormous speed and remove most of the water; the final drying then takes place in large wood-lined ovens, which are protected against overheating by automatic sprinklers fixed at the top. These sprinklers have proved effectual on several occasions, and

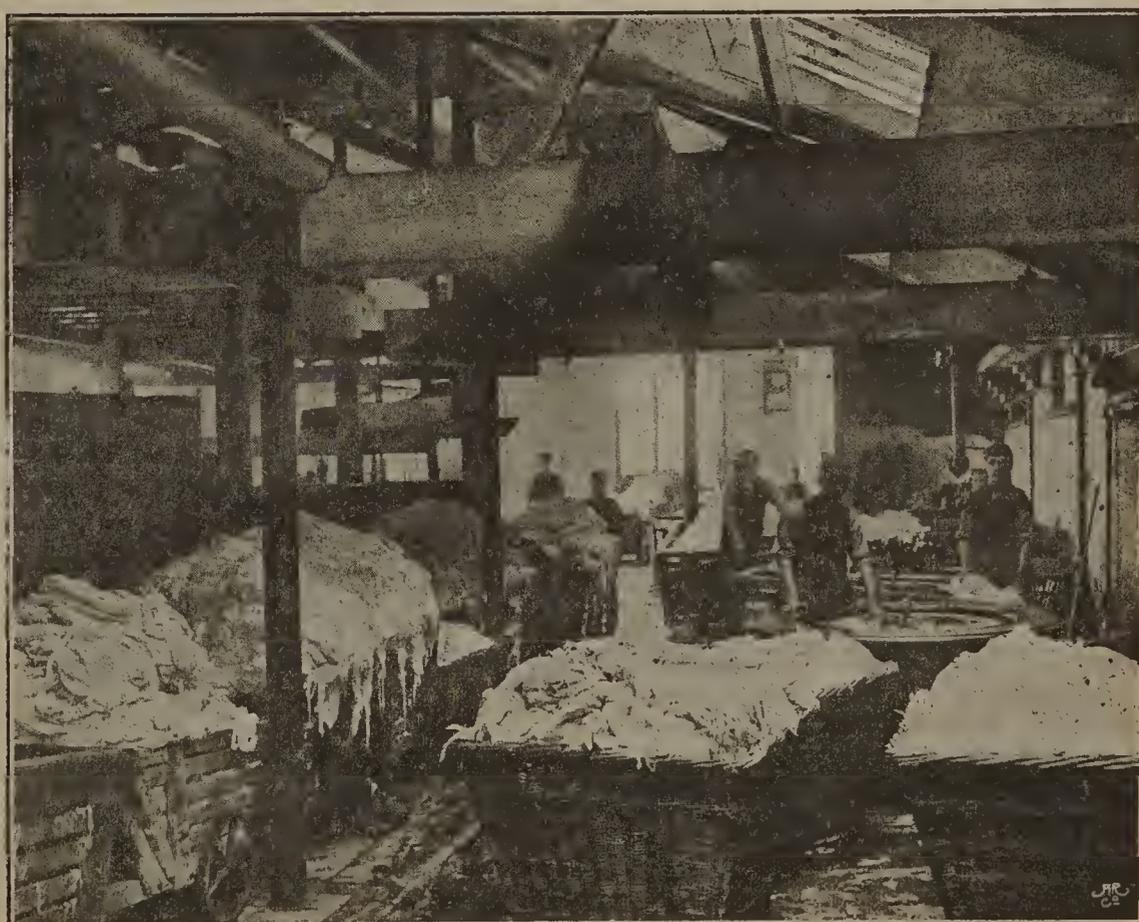


HIGH-PRESSURE BLEACHING KIERS FOR ABSORBENT WOOL.

tions of weaving the cloth and scraping it to produce the lint. In like manner he sees the weaving and finishing of surgical bandages of all kinds and will probably have his attention drawn to the enormous piles of packages intended for export to the Congo State, or for the use of the British and Indian armies, or hospitals in various parts. White, open-weave absorbent bandages were first introduced to the medical profession by Mr. W. B. Robinson and they have been a great success. They are cut up into ribbons by steam machinery and rollers and measured by an automatic machine also invented by Mr. Robinson. The length of bandages produced weekly is about one hundred and sixty miles.

are now fitted to the ceilings of all the work-rooms.

The earlier stages in the preparation of cotton wool are prac-



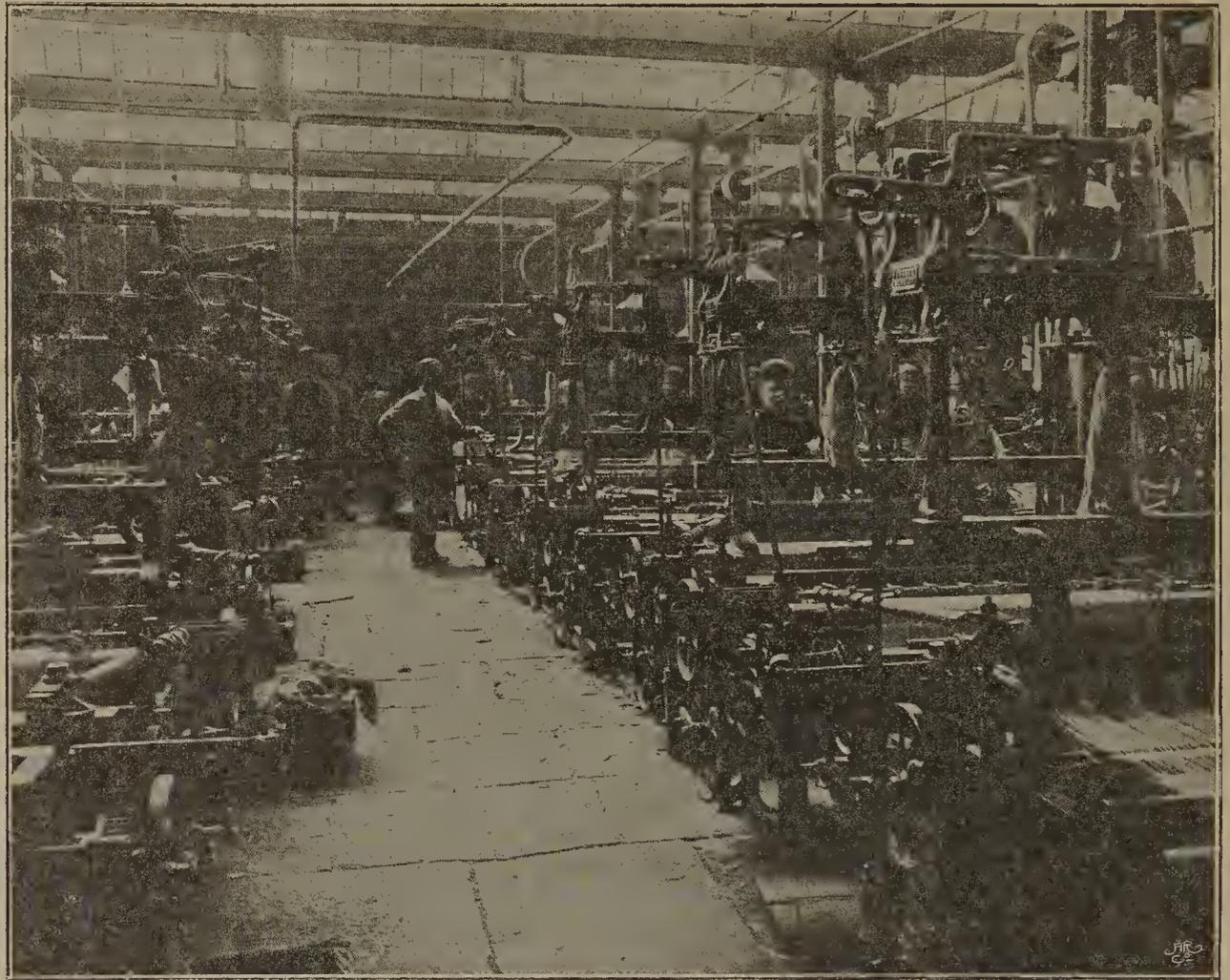
As is well known, lint was originally prepared from flax and, in some instances, though never by the firm under consideration, cotton lint was at the beginning of its career sold as flax lint, that course being adopted on account of the almost insuperable prejudices that prevented the sale of any other product than that of the flax plant. These objections Mr. W. B. Robinson prides himself upon having been mainly instrumental in removing, by being enabled practically to demonstrate the superiority of cotton lint to influential medical men. Today the triumph of the newer product is complete, flax lint having been ousted

BLEACHING COTTON WOOL.

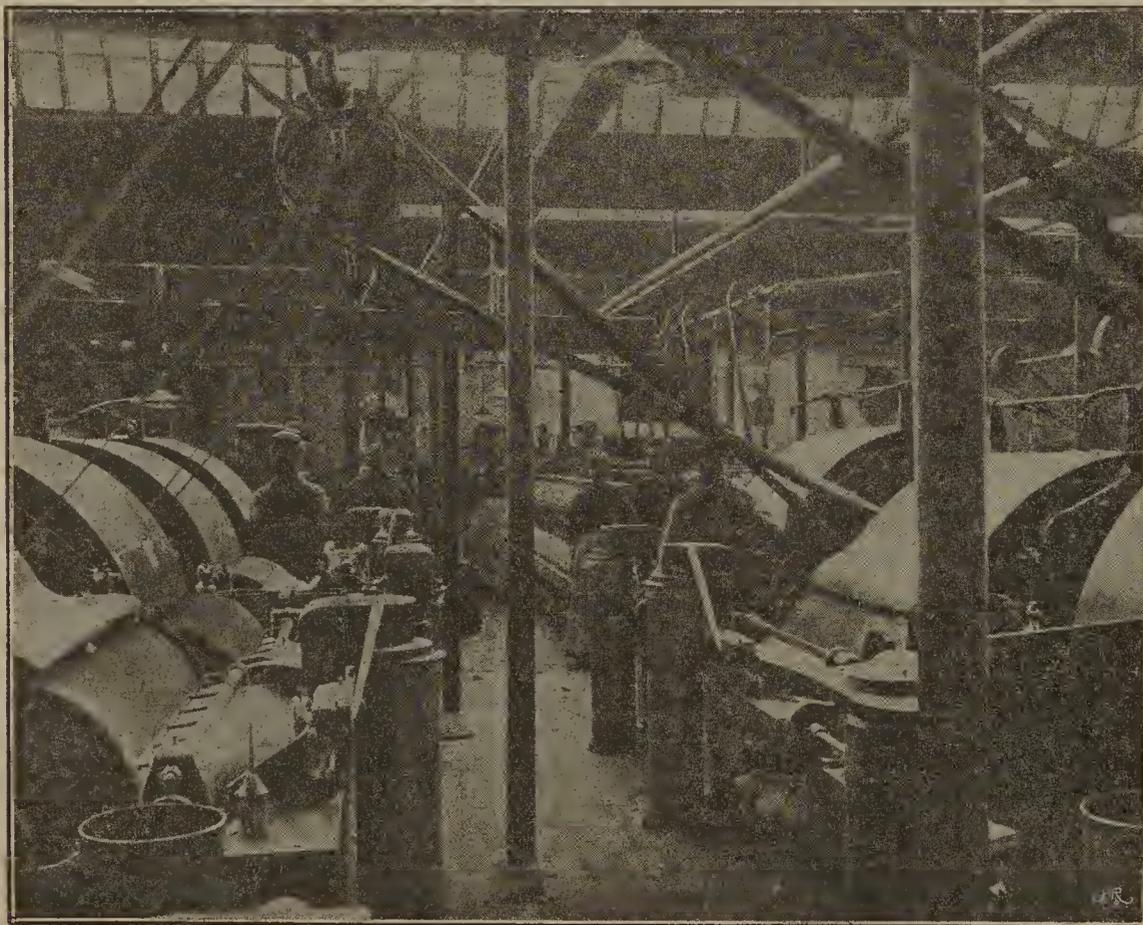
tically the same as those adopted in the production of the yarn for lint. The later stages, however, are essentially different, the object being to open the fibres thoroughly, yet uniformly, instead of weaving them into a fabric. It is impossible to speak other than generally of the processes here. Suffice it to say that the fleecy clouds are to be seen floating over the enormous rollers, apparently aimlessly yet strictly under control, millions of detached fragments being brought together to produce a brilliant white downy pile, of equal thickness and unexampled softness. Messrs. Robinson and Sons were the first to manufacture the well-known "Gamagee" tissue, having been asked to do so by the late Professor Gamagee, who patented the idea on which its production is based. The tissue consists of a thick layer of absorbent cotton, enclosed between two sheets of muslin. It may be noted by the way that even this muslin is manufactured by the firm.

ANTISEPTIC DRESSINGS.

But the most interesting application of absorbent cotton and gauze at the present day is un-



SPINNING THE YARN



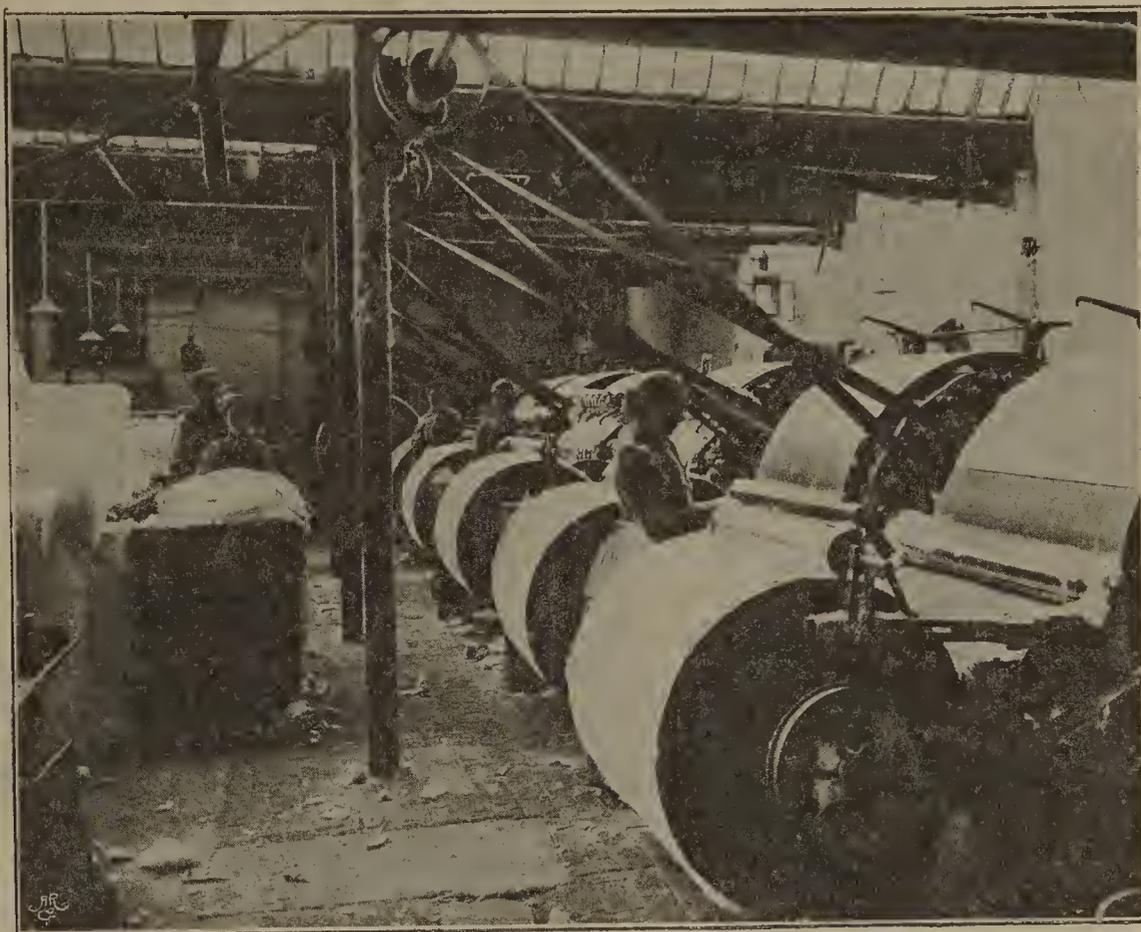
PREPARING COTTON WOOL.

doubtedly their use for antiseptic dressings. In this direction Messrs. Robinson and Sons have made enormous strides during recent years; the firm is now probably the largest producer of surgical dressings in this country, more than ten tons being turned out weekly. Great personal interest is taken in this branch by the manager, Mr. William Bradbury Robinson, junr., and the department is in charge of Mr. J. Bainbridge, a skilled chemist, who received his special training in the subject under Mr. Edmund White, of St. Thomas's Hospital, a pharmacist who is specially qualified to impart the necessary instruction. A three-storeyed building has been adapted for the purpose of Mr. Bainbridge's staff and here may be witnessed the medication of lints, cotton wools and gauzes, with all the different antiseptics used in the Listerian system of surgery. Alembroth, boric, carbolised, eucalyptus, iodoform, zinc sulphate, salicylic, sublimate, thymol, and zinc and mercury cyanide dressings are those in chief demand. The gauzes are coloured differently, according to the medicaments with which they are to be impregnated, then immersed in vats containing the medicated solutions and passed over heated rollers as

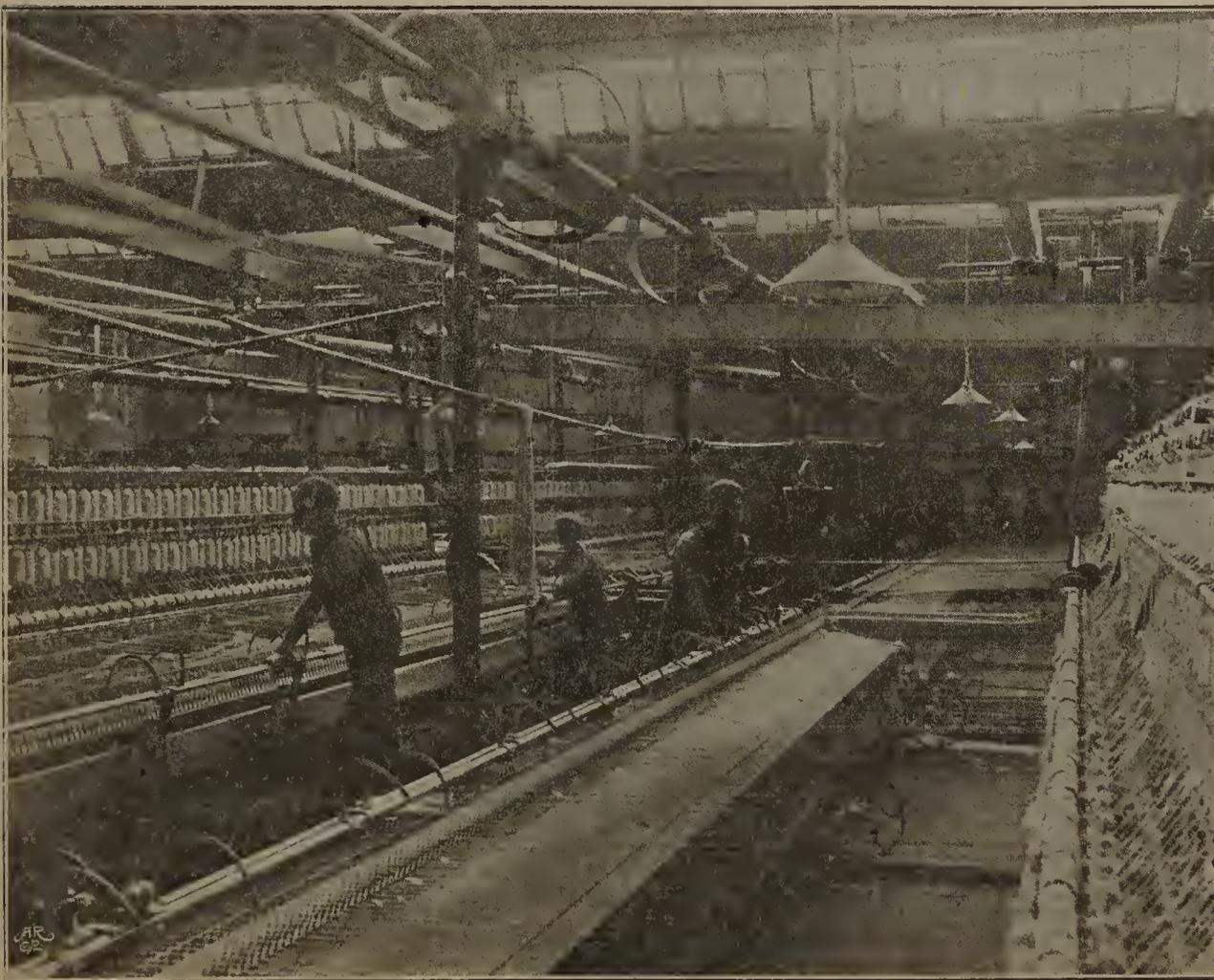
they are withdrawn, being subsequently finished and folded, and enclosed in air-tight cases. The lints and cotton wools are impregnated by packing them in the revolving drum of a large hydro-extractor, then spraying them with the solution by means of a leather hose. The excess of liquid drains off through holes to the revolving drum, and the latter is kept revolving at a high rate of speed for some time longer, until the dressings are almost dry. All the floors and benches in this department are cemented, the dressings are kept covered with sublimate cloths (not shown in the sketch), and the workers wear special dresses, besides being compelled to wash their hands frequently in antiseptic solutions, every possible care being thus taken to avoid contamination. It may be noted also that very completely fitted chemical and bacteriological laboratories are placed at the disposal of the head of this department, so that all the materials used may be tested, and the strength of the finished products determined.

CELLULOSE WADDING.

The most novel of the dressings prepared by the firm, which is left for notice until the last, seems also destined to become the most important. This is the new cellulose wadding, manufactured under Feirabend's



FINISHING COTTON WOOL.

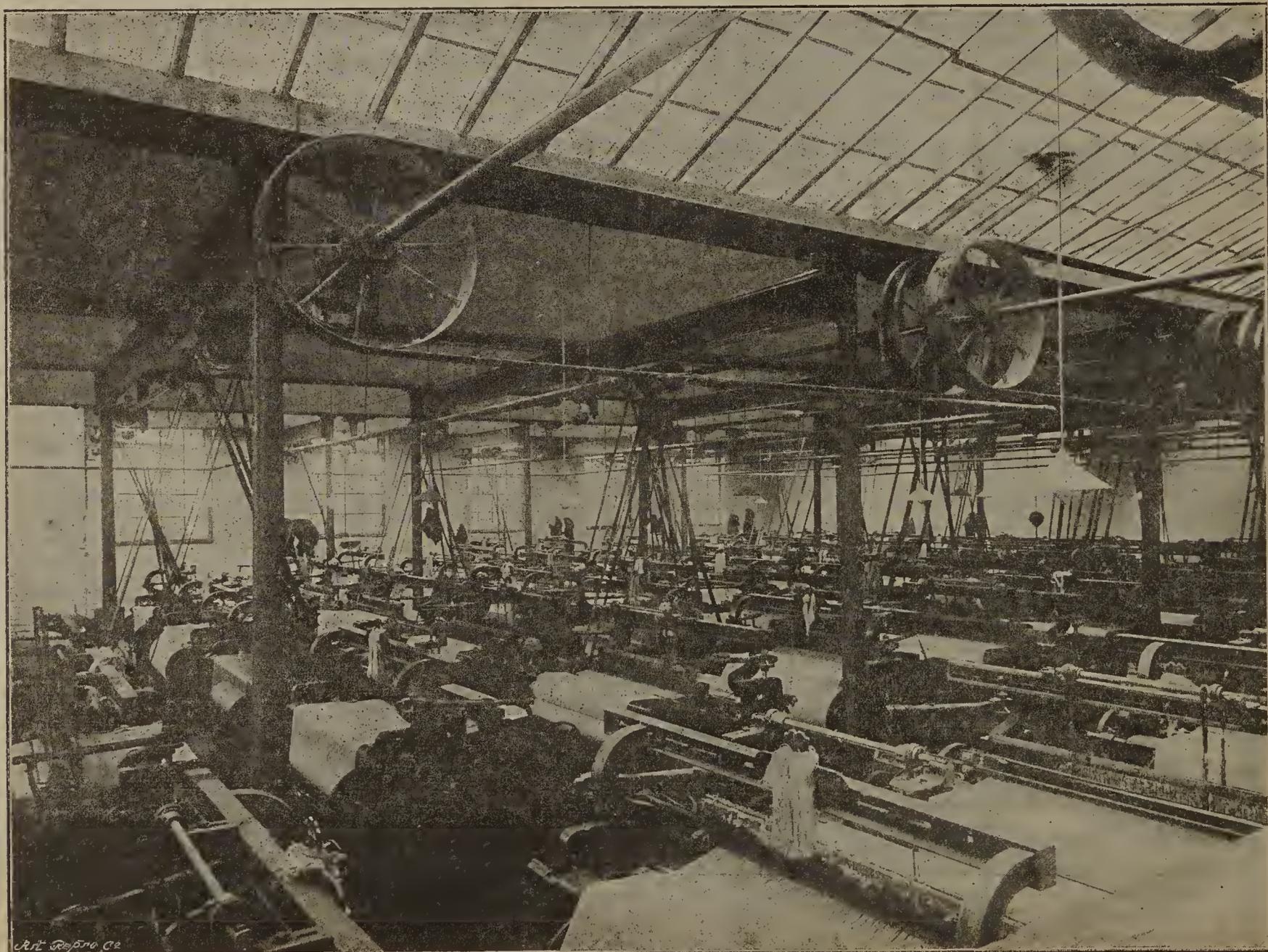


MULES FOR SPINNING WEFT FOR BANDAGES.

patent, the rights in which have been acquired by Messrs. Robinson and Sons, in so far as they relate to this country. The wadding is prepared from wood pulp, is both less expensive and lighter than absorbent cotton wool, and about five times as absorbent. Not only is it more absorbent, but its diffusive power is also greater. Thus, whereas in a pad of absorbent wool the discharge is absorbed within somewhat narrowly circumscribed limits, and soon makes its appearance on the outside of the dressing, a similar pad of the new cellulose wadding will retain the discharged matter until it is permeated throughout. The wadding is naturally sterilised in the process of manufacture, makes admirable sponges, sanitary pads, etc., etc., and seems superior to the best absorbent cotton wool for most, if not all, of the purposes for which the latter is usually employed. Great difficulty already exists in coping with the numerous large orders received for this product, and there is necessarily unavoidable delay in the execution of orders for the new dressing. The



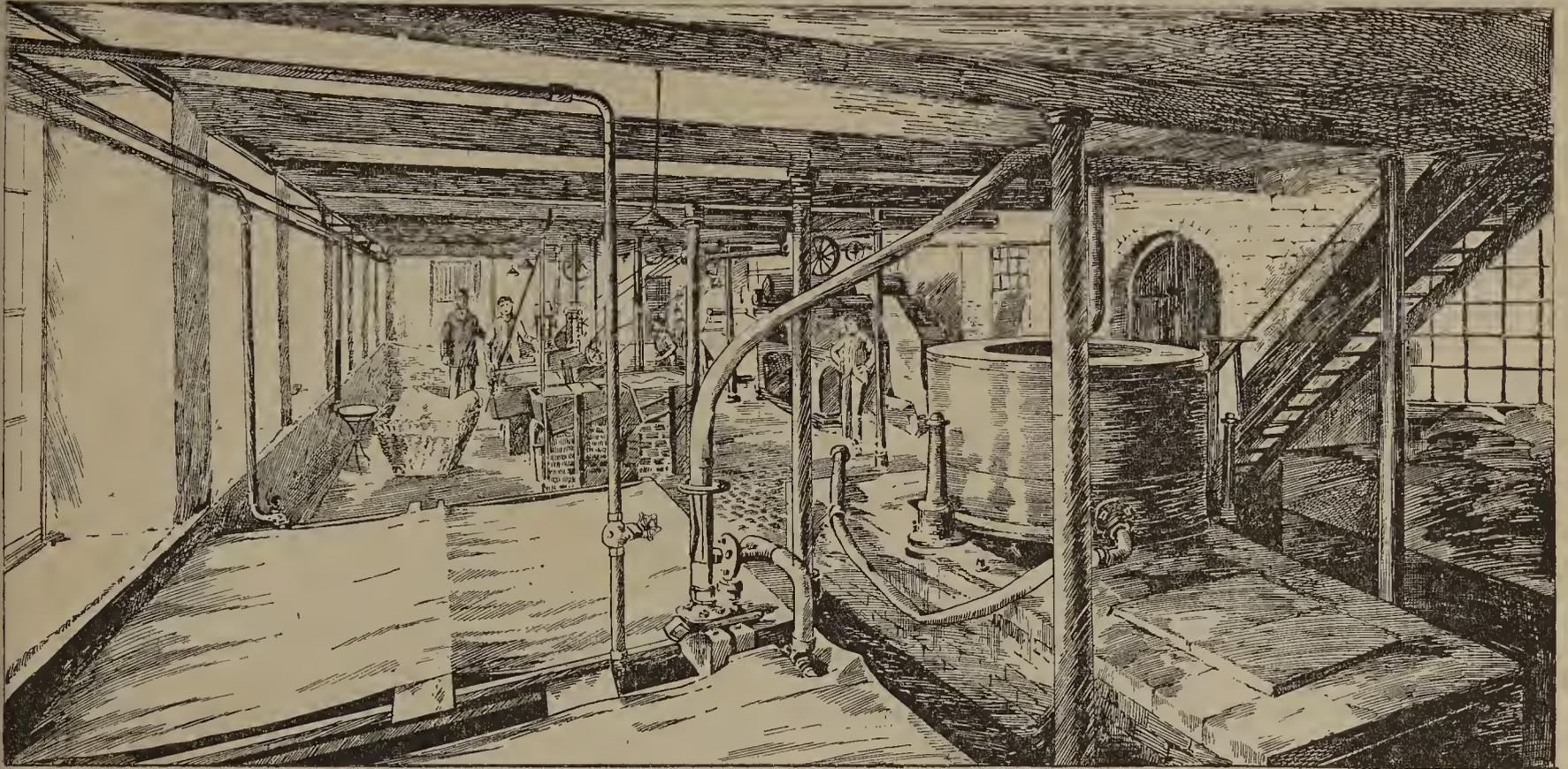
WRAPPING ROOM, WHERE MEDICATED DRESSINGS ARE MADE INTO PACKAGES.



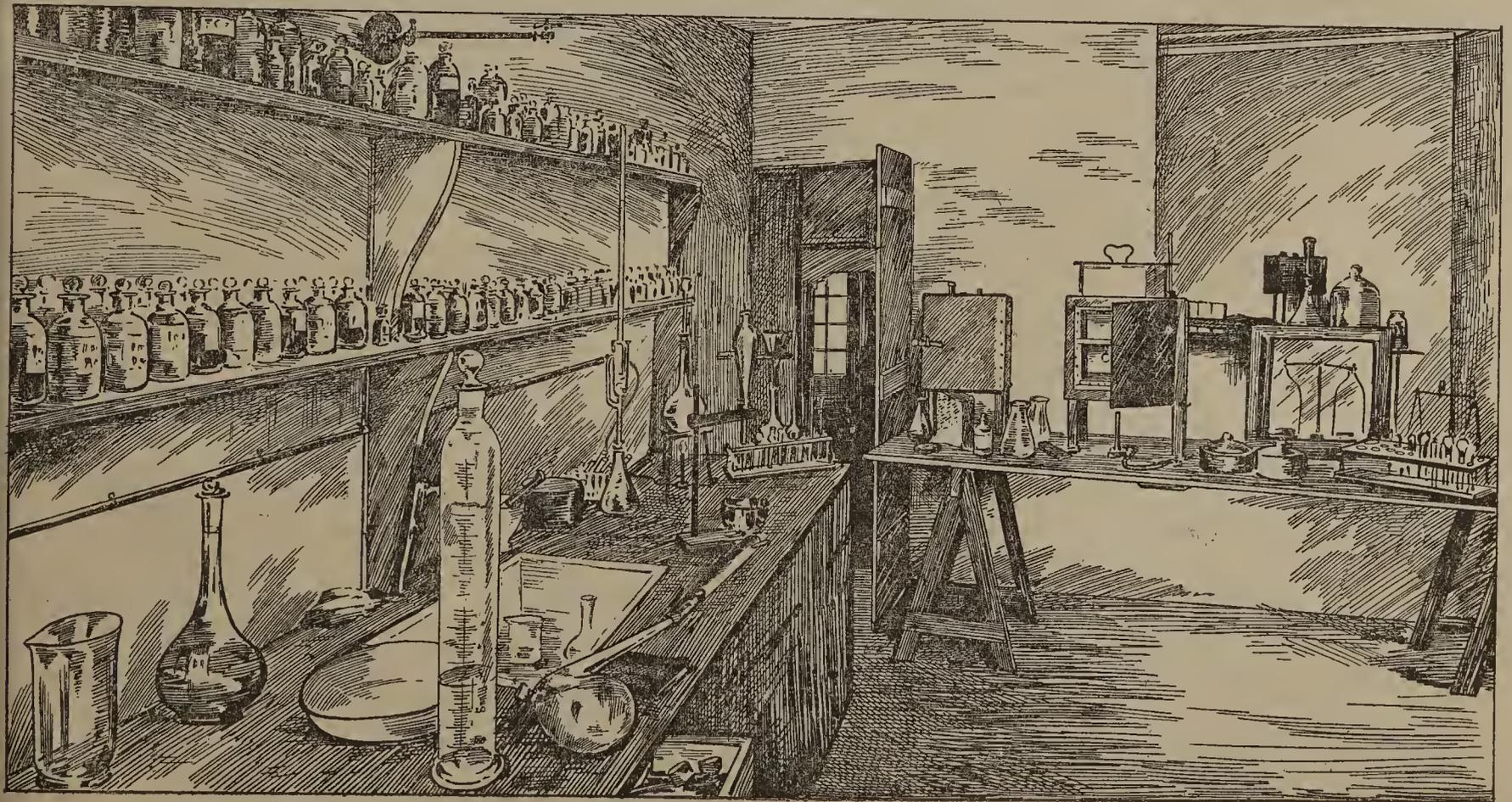
WEAVING THE CLOTH FOR MAKING LINT.

experimental stage is now well over, however, and as soon as new plant is completed the cellulose wadding will be supplied regularly in any quantity, and may be expected to displace many of its rivals,

ment of the firm's business, and can be only briefly referred to here. This branch of the business is under the management of Mr. Charles Portland Robinson, and also shows signs of great and continued



PROCESS OF MEDICATING DRESSINGS—HYDRO-EXTRACTOR IN THE FOREGROUND, WITH MEDICATING VATS AND HEATED ROLLERS BEHIND.



CHEMICAL LABORATORY SHOWING BACTERIOLOGICAL APPARATUS temporarily removed from BACTERIOLOGICAL LABORATORY. on account of its relative cheapness as well as its undoubted superiority.

CARDBOARD BOXES.

The manufacture of cardboard boxes is an entirely distinct depart-

ment, an additional building at the Holme Brook Mills having been quite recently finished. The ordinary round pill-boxes are made in enormous quantities, as many as a quarter of a million of one kind alone being turned out in a week. Pill-boxes, however,

constitute but a small proportion of the total output. Homœopathic bottle cases, camphor ball boxes, insect powder boxes, magnesia boxes, and many other varieties are manufactured on a proportionately large scale. Square boxes are also made in great variety with loose or hinged lids, as well as sliding boxes, others fastened with metal edges or studs so as to avoid the use of glue or paste, and folding boxes and cases. In every case any desired matter is printed upon the boxes or cases, thus avoiding the use of separate labels, the firm having a very complete printing outfit, capable of doing whatever is necessary in this direction.

CONCLUSION.

This necessarily brief description of a huge undertaking that has developed from an ordinary druggist's business requires, for the sake of completeness, that two points should be emphasised. Those are that the heads of the firm appear always to have devoted themselves to the conduct and development of their business, and that they have never continued to purchase manufactured articles when they could profitably make similar goods for themselves. The fact that the machine shop, where new machines are continually being made and suggested improvements tested, is one of the largest engineering works in the neighbourhood, and that every step in the production of the firm's different specialties from the raw material is taken under its own supervision, should suffice to prove the wisdom of the position it has taken up. Self-dependence and enterprise, coupled with a shrewd appreciation of the value of applying science in practice, have served to create a business in things that seem trifling in themselves, which may fairly be regarded as being far from the least of the commercial successes of the century.

ENGLISH NEWS.

ROYAL INSTITUTION.—On Saturday afternoon last, Lord Rayleigh began a course of six lectures on light. According to the *Daily News*, he spoke at the outset of the wave length of light, its velocity, and its periodic time, things which were closely connected. As illustrating the rapidity of light he caused a disc of very narrow alternate black and white teeth to rotate with great rapidity, so that in the ordinary light it appeared to the eye as a neutral grey. The light was then turned down, and a spark, which occupied probably not more than the ten thousandth part of a second in duration, was flashed upon the disc, with the result that the black and white teeth were seen for the short period of time that the spark lasted as though standing perfectly still. The light had enabled the eye to see the disc when it was at a given point, and then had gone with startling rapidity before the revolution of the disc could destroy the illusion of stillness. Passing on to the law of refraction the lecturer explained that the angle of refraction was not always in proportion to the angle of incidence, though it might be fairly so when the angle was small, as Descartes and Snell had discovered. In optical experiments they had to deal with a more complicated matter than passage through water or glass. If two sides at which light entered were not parallel, they found certain effects, which were noticeable in a prism, either of glass or liquid. If they passed white light through a prism it was split up, as shown in the spectrum which Newton first explained. To say that the coloured lights were contained in the white light was the only way of speaking of the matter, but there was a paradox in it all the same. A line in the wax of a phonograph contained the elements of speech, and that was an illustration of a line of light and what it contained. It was difficult sometimes, however, to say that certain colours were present and others absent. This led him to speak of the effects of absorbing agents or media upon the spectrum. Throwing the several colours of the spectrum upon the screen, he showed that the application of bichromate of potash made the blue dark, that a red glass cut almost everything away except the red, and that sulphate of copper cut away the red. In light, colours acted by subtraction and the result of putting blue and red together was not to give a mixed colour, but blackness or opacity. This also he illustrated by the colours of the spectrum. A red paper disc held over the red line appeared transparent, but over the other lines it was black. Similarly a green disc was transparent over the green line, and black over the others,

and the same effect was shown with the blue and other colours. A further interesting experiment to illustrate the principle of absorption was made with a dish containing a liquid placed on the floor of the theatre. No one remaining seated could distinguish the colour of the liquid, which was ultimately found to be yellow.

INTERESTING DEBATES BY LAW STUDENTS' SOCIETIES.—The *Manchester Guardian* reports that at a meeting of the Manchester Law Students' Society, a debate was opened on the following lines:—"Mr. H., a business man, making by his personal exertions a large income, about fifty years of age, and in good general health, purchases at the shop of Mr. B. a dose of phenacetine as a cure for headache. Within an hour of taking it he dies, poisoned by strychnine. The dose was served out of a bottle supplied to Mr. B. by Messrs. W., ordered as and labelled 'phenacetine,' which is a harmless and non-poisonous drug. On being analysed after Mr. H.'s death, it was found that the contents of the bottle consisted of phenacetine mixed with about 30 per cent. of strychnine. Mr. B. had ordered at the same time from Messrs. W. a bottle of strychnine for making up vermin-killer; part of the contents of the bottle supplied in accordance with this order, and duly labelled 'strychnine' and 'poison,' were unused, and on being analysed were found to consist of phenacetine only. The contents of the two bottles had therefore somehow become mixed, but how was not very clear. Can Mr. H.'s executors sue either Mr. B., the chemist, or Messrs. W., the wholesale druggists, or both, for damages?—Mr. Z. M. Lord, for the affirmative, maintained that an action on contract would lie against the retail dealer under the Sale of Goods Act, and that by Lord Campbell's Act an action would pass to H.'s executors against Messrs. W. as having dealt negligently with goods of a known dangerous description (citing *Thomas v. Winchester*, an American case; *George v. Scivington*, and *Bowater v. Smith*).—Mr. E. H. Coombs, in reply, referred to the well-known doctrine of *caveat emptor*, and argued that the case of negligently dealing with poisons had never come before the English Courts, that even in America the retail dealer was always considered free from liability, and that in commenting on the American cases on poison the English Courts had held that they went too far.—The President (His Honour Judge Parry) summed up strongly in favour of the affirmative, pointing out that special caution had always to be used in dealing with goods of a dangerous character, and the meeting thereupon decided by a large majority in favour of H.'s executors having a right of action on contract against B., and on tort against the wholesale dealers. According to the *Blackburn Telegraph*, the Blackburn and Bolton law students have held a joint debate on the same subject. Mr. F. W. Cooper, of Bolton, presided, and the decision was to the effect that the retail chemist and wholesale druggist were responsible in damages.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.—In consequence of the success which attended the first West of England Pharmacy Ball, held at Stonehouse Town Hall recently, the ball committee sent invitations to members of the Association to join in a dinner last week, which was well served at the Liberal Club, Plymouth. The attendance included Messrs. C. J. Park (President), J. G. Netting and Doble (Vice-Presidents), J. H. Bailey (Treasurer), J. Cocks (Hon. Sec.), Perkins, J. W. Swainson, Hester, Ralph, A. D. Breeze, R. F. Roper, Menhennick, J. D. Turney, G. Fairweather, P. A. Kelly, J. Lamble, Johnson, H. Cattle, J. Maurice, Vickery, G. Cocks, F. Maitland, and H. O. Westcott (Secretary to Ball Committee). The loyal toasts having been duly honoured, Mr. Breeze proposed the "Ball Committee," which Messrs. Maitland and Westcott acknowledged. "The Association" was given by Mr. Roper, and responded to by Messrs. C. Park, J. G. Netting, Doble (Tavistock), and J. Cocks. Mr. Fairweather (Jun. Sec.), gave a very satisfactory account of the junior section and praised the seniors for their kind attention. The ball committee agreed to purchase a microscope for the Association from the surplus gained over the ball. A most enjoyable musical programme was submitted.

POISONED BY OPIUM.—An inquest was held at Liverpool on Saturday last by the City Coroner, Mr. T. E. Sampson, regarding the death of William East Watson, 32 years of age, who lived at 124, Albert Edward Road. On the previous day he sent an errand boy for twopennyworth of laudanum, which he wanted for a cut finger. Shortly afterwards he gave the bottle, which was then empty, to the boy, who then by his orders bought another two-

pennyworth of laudanum from another chemist. George Martin, licensee of a public house in Wavertree Road, stated that the man went to his place about noon and asked for a small whisky. Witness saw that he had a small bottle in his hand; he refused to serve him, and suspecting something was wrong he took the bottle from him with great difficulty, and saw that it contained laudanum. He at once sent the man back to the shop and followed him. Shortly afterwards the man died, the medical evidence being that death was due to opium poisoning.—The jury found that the deceased died through opium poisoning by misadventure.

DEATH OF A DOCTOR FROM OPIUM POISONING.—The Coroner for the Isle of Ely, Mr. W. Welshman, held an inquest at Doddington, on February 20, on the body of Dr. C. B. Stephens, who had been bedridden and a great sufferer for some time, and was in the habit of taking opium to induce sleep. On the previous Monday evening he took an overdose, and in spite of the efforts of his son, Dr. C. B. Stephens, to counteract the drug, he gradually sank, and died from exhaustion the following afternoon.—The jury returned a verdict of "Death from exhaustion, consequent on an overdose of opium inadvertently administered by himself."

ANOTHER SEIDLITZ POWDER CASE.—At West Bromwich on February 24 John Salmon Mould, trading in High Street, West Bromwich, as the Wolverhampton Drug Stores, was summoned for selling seidlitz powders on December 17 last, which were not of the nature, quality, and substance demanded.—Mr. A. Caddick prosecuted on behalf of the Corporation of West Bromwich, and Mr. Vachell defended.—George William Davis (inspector) gave evidence as to the purchase of the powders, and said a third portion of them was handed over to the borough analyst.—In reply to Mr. Vachell, Mr. Davis said he did not complain of the quality or of the nature of the ingredients, or even of the introduction of any foreign ingredients, it was simply a question of weight as given in the British Pharmacopœia.—Mr. Vachell urged that the powders should have been mixed together, and then divided into three portions. Mr. Vachell contended that the British Pharmacopœia for the first time published a description of what seidlitz powders should be composed of in 1890, and chemists made up two classes of powders.—The Stipendiary said Mr. Vachell seemed to suggest that the British Pharmacopœia was not the standard for making up seidlitz powders.—Harry Sylvester, borough analyst, said that the average deficiency of the blue papers was 9.1 grains, whilst in the white paper there was an excess of 3½ grains. He did not examine each packet separately. He mixed them all together, and then made the analysis. He admitted in reply to Mr. Vachell that the powders submitted to him were exactly of the same nature, quality and substance as those prescribed in the British Pharmacopœia. It was a question of the packets being short measure.—Arthur Winterbottom, chemist, said the proper way to deal with seidlitz powders was to weigh them, and he considered the standard of the British Pharmacopœia the proper one. If the mixture was not properly made up serious results might accrue.—The Stipendiary ultimately dismissed the summons on the ground that the samples had not been divided in accordance with the Act of Parliament.

THE HOLBORN EXPLOSION.—At Holborn Town Hall on February 24, Dr. Danford Thomas opened an inquest with reference to the death of Arthur French St. George, age 34, a chemist, who resided at Earlswood, Surrey, and was the victim of an explosion which occurred on Thursday, February 22, in the laboratory of Messrs. Redwood and De Hailes, analytical chemists, 15, Red Lion Square. Mr. A. Spencer, chief officer of the Public Control Department of the London County Council, was present at the inquiry.

The Coroner stated that he had been in communication with Sir V. D. Majendie, inspector to the Board of Trade under the Explosives Act, who wrote that Dr. Dupré and himself had not yet concluded their investigations into the case, and he suggested an adjournment of the inquest to enable him to make his report.

Agnes St. George, widow of the deceased, residing at Coxwold House, Earlswood, Surrey, stated that her husband went to 15, Red Lion Square, for the purpose of conducting some chemical experiments in which he was interested. He did so on Thursday. He left home apparently well and cheerful. Subsequently she learnt that he had met with an accident.

Mr. Alfred James de Hailes, analytical chemist, in partnership with Mr. Redwood, at 15, Red Lion Square, said that he had only known the deceased a week. He (the deceased) was bringing out

a patent relating to the preparation of grease for the manufacture of candles. He visited the laboratory on Thursday. The witness said, in the interests of the widow, it was desirable that he should not reveal the nature of the invention the deceased intended patenting. He was working on Thursday on a small oxygen cylinder, and there was nothing in what he had to do likely to prove dangerous. Shortly before one on Thursday afternoon, whilst the witness was in his private room on the second floor adjacent to the laboratory occupied by Mr. St. George, he heard a terrific explosion in the latter room, and was enveloped in the smoke of burnt sugar. The witness called to his man Glass, asking him if he was all right, and he replied, "Yes." The witness, looking on the floor of the laboratory, found the deceased lying on the floor as depicted in the photograph produced. The top of his skull was completely blown away, and he was otherwise frightfully injured. The cylinder which the deceased was using was an absolutely new cylinder, and it was empty. It was about a foot long, and four or five inches in diameter. It would hold about 10 feet of compressed gas. The witness added that he did not like the look of the cylinder, and asked the deceased what he was going to do with it. He said, "I want to heat it up to 30 lb. pressure," which was nothing serious. The cylinder was guaranteed to bear a pressure of 1½ ton. Mr. Glass observed the movements of the deceased, and took notes. From these notes the witness arrived at the conclusion that Mr. St. George was doing a foolish thing, and he was not surprised the cylinder burst. Certain articles were deposited in the cylinder, which was then screwed down. The cylinder was then placed on a gas furnace. The former was absolutely sealed up. Considering the temperature to which it was exposed, an explosion would naturally, in the witness's opinion, result. The cylinder was placed on the gas furnace twenty minutes before the explosion occurred.

Mr. Spencer: When he said he wanted a pressure of 30 lb. didn't he mean a pressure of two temperatures, or 30 lb. to the square inch?—The Witness: I didn't give it a thought.

If you had known that he was applying heat to a full cylinder without any safety valve at all, you would probably have stopped him at once?—Certainly.

By the Coroner: I should consider Mr. St. George was an expert, a very capable chemist indeed.

Dr. W. R. Gould, 10, Lamb's Conduit Street, who was called in, stated that he found the deceased lying on the floor of the laboratory. The roof of the head was absent, and the brain was blown into an adjoining room 15 feet away from the scene of the accident. Death must have been instantaneous. Part of the cylinder was lodged in the ceiling. He could not see where the cylinder had burst.

Mr. De Hailes (recalled) said that the cylinder was ripped up on one side and driven into the ceiling.

The Coroner: If you were to seal up the outlets of a kettle you would have an explosion similar to this.

Richard Russell, who was the deceased's assistant, but did not happen to be in the laboratory at the time of the explosion, said the cylinder was filled with a kind of liquid. Having been screwed up the cylinder was placed on the gas furnace. It was hermetically sealed.

The inquiry was adjourned.

SCOTTISH NEWS.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES ASSOCIATION.—The sixth meeting of the eighteenth session was held in the Pharmaceutical Society's Hall, 36, York Place, on Friday, February 21, at 9.15 p.m., Mr. J. Mackintosh Cameron President, in the chair.

The minutes of last meeting were read and approved.

Mr. W. B. Cowie gave an interesting lecture, fully illustrated by diagrams and drawings, of the systems of reproduction in a fern, a pine, and an ordinary flowering plant, the homologous parts of each being compared. He also exhibited under the microscope and described the prothallus of a fern.

The next communication was entitled "Landmarks in the Progress of Organic Chemistry," by G. G. Davidson. The author referred to the synthesis of urea by Wöhler and Liebig, and dealt more especially with the employment of electricity in the production of calcium carbide, and the use of the latter in the production of acetylene. He sketched the possible uses to which this discovery could be put, and referred to its probable importance as a source of pure organic substances for pharmaceutical and medical use.

Mr. Cowie then demonstrated the combustion of common air in an atmosphere of coal gas, and *vice versa*, by means of the glass chimney of an ordinary paraffin lamp. The lower end of the chimney was closed with a cork perforated so that two glass tubes passed through it. One tube was connected with the ordinary gas supply and the other admitted air. On lighting the gas and admitting sufficient of it, the chimney became filled and the flame passed from the gas pipe to the air pipe, thus showing combustion of air in coal gas. The excess of gas could be lighted at the upper end of the chimney. On reducing the supply of gas the air again predominated, and the flame passed back to the gas pipe.

On the motion of the Chairman votes of thanks were awarded to Messrs. Davidson and Cowie.

EDINBURGH ROYAL DISPENSARY PHARMACY STUDENTS' SUPPER.—The eighth annual supper of the pharmacy students connected with the Edinburgh Royal Dispensary School of Pharmacy, took place in the Grand Restaurant, St. Andrew Street, on the evening of Friday, February 21. Mr. William Duncan, Principal, occupied the chair, and Messrs. German and McVitie acted as croupiers. Among others present were Mr. Peter Boa, President of the Edinburgh District Chemists' Trade Association; Mr. Herbert B. Ezard, L.D.S., Secretary Edinburgh Odontological Society; Parish Councillor D. Maclaren, Mr. George Coull, B.Sc., Mr. J. Rutherford Hill, etc. The toast list included "The Pharmaceutical Society," proposed by Mr. D. Maclaren, acknowledged by Mr. George Coull, B.Sc.; "The Scotch Board of Examiners," proposed by Mr. McVitie, acknowledged by Mr. P. Boa; "The Pharmacy Students," proposed by Mr. Boa, acknowledged by the Chairman; "The Ladies," proposed by Mr. Hume, acknowledged by Mr. Kitson. In the course of the evening handsome presentations were made of a silver coffee-pot to Mr. Duncan, a case of brier tobacco pipes to Mr. W. G. Mackenzie, and a gold signet ring to Mr. German. Mr. Hudson acted as pianist, and an exceedingly pleasant evening was enlivened by songs and recitations contributed by Messrs. Fletcher, Arries, Westland, Cook, Mennie, Rowland, Duncan, Hogg, Adamson, McLaren, Ezard, and Kitson.

MR. JAMES CHALMERS, chemist and druggist, has purchased the business formerly carried on by Mr. John McCurrie, at Main Street, Kelty, Fifeshire.

DEATH IN AN AIRDRIE DRUG SHOP.—On February 24, James Gray, of Airdrie, was found lying dead on the floor of the shop in South Bridge Street, which he used as a consulting room, though not registered as a medical man. He had been in a weakly state of health for some time. On Sunday night he had gone to see a patient at Coatdyke, and had got the key of the shop in order that he might make up any medicine that was needed. On getting inside he had locked the door, and was not seen again till the body was discovered on the shop being opened yesterday. The cause of death was failure of the heart's action. In the shop where the event took place, a drug business is carried on though the proprietor is not registered.

A CROFTER'S FAMILY POISONED.—A peculiar case of poisoning is occupying the attention of the Inverness-shire police. Last week the wife and the children of Mr. MacLean, crofter, of Kiltarlity, were seized with sudden illness, which proved fatal in the case of a girl aged four, whilst another child is not yet out of danger. The doctors believe that death was due to narcotic poisoning.

IRISH NEWS.

PHARMACISTS AND PLUMBERS.—In the course of a lecture last week on "Sanitary Reform," Mr. W. Kaye Parry, C.E., the eminent Dublin sanitary specialist, remarked that the Legislature insisted that only properly qualified persons should practise pharmacy, and as our lives were just as much at the mercy of the plumber as the chemist, the law should insist on no one but competent men acting as plumbers.

SULPHURIC ETHER, in about fifty 5-gallon tins, was discovered floating in the sea last week outside Queenstown. Sulphuric ether was added to the Irish scheduled poisons a few years ago, owing to the extensive use of it as an intoxicant in some parts of Ireland.

MUNICIPAL APPOINTMENT.—Mr. George H. Grindley, junr., son of an Irish Pharmaceutical Councillor, has been appointed assistant secretary to the Rathmines Commissioners.

THE ASSISTANTS' ASSOCIATION is shortly to commence holding its meetings in the Pharmaceutical Society's House, at Dublin. Much gratification has been expressed by the assistants at the generous way in which the Council has treated them.

PARLIAMENTARY INTELLIGENCE.

SHOPS (EARLY-CLOSING) BILL.—This measure stands for Committee on the 28th inst., and from the couple of pages of amendments on the Notice Paper, it may be assumed that the fortune which favoured its early parliamentary progress this session is temporarily clouded. Eight members have recorded suggestions, based on their individual convictions, for the improvement of the Bill. With most of such suggestions chemists have very little to do, but the amendments standing in the names of the Hon. H. Duncombe (Egremont), Mr. F. G. Banbury (Peckham), and Mr. C. B. Renshaw (W. Renfrew), merit attention. Clause 9 of the Bill runs as follows:—"A pharmaceutical chemist or chemist and druggist shall not be liable to any fine under this Act for supplying medicines, drugs, or medical appliances after the hour appointed by an order made under this Act for the closing of shops; but this section shall not be deemed to authorise the shop of a pharmaceutical chemist or chemist and druggist to be open after the said hour, save so far as may be necessary for the purpose aforesaid." The honourable gentlemen representing Peckham and W. Renfrew, wish that saving clause deleted, and propose to add to the schedule to the Bill (which exempts certain businesses) the words "chemists' shops," or "pharmaceutical chemists, or chemists and druggists." The effect of these amendments would be to entirely exempt the business of a chemist and druggist from the provisions of the Bill. Mr. Duncombe proposes to bring about much the same result by moving the deletion of all the words from and including "but" on line 5 of the above clause. It is difficult indeed to see why chemists should not enjoy the same degree of freedom from the pains and penalties of the Bill as that accorded to refreshment-house keepers, publicans, tobacconists, and newsagents. In any case there is ground for anticipating that the measure, should it become law, will prove an extremely remunerative piece of legislature to the legal profession.

FOOD PRODUCTS ADULTERATION.—On the motion of Sir W. H. Walrond, Bart., M.P. for Tiverton, and Patronage Secretary to the Treasury, a Select Committee of nineteen members has been ordered to inquire into the working of the Margarine Act, 1887, the Food and Drugs Act, 1875, and any Acts amending the same. The commission, which has power to send for "persons, papers, and records," is to report as to the amendments (if any) desirable in the law relating to adulteration. The names of the commissioners will be given in this column in due course.

PETITIONS.—Petitions have arrived from Lanark and elsewhere in favour of the adoption of the metrical system of weights and measures; also further petitions for the early report of the Royal Commission on Vaccination. These are all ordered to lie on the table.

VACCINATION COMMISSION.—Mr. Benjamin Cohen (L.), Member for East Islington, elicited from the President of the Local Government Board on the 19th instant that the report of the Vaccination Commission, constituted in 1889, might be expected very shortly.

TUBERCULOSIS COMMISSION.—The Member for West Salford, Mr. Lees Knowles, has a notice on the paper, calling attention to the report of the Royal Commission on Tuberculosis. He proposes to move for the re-appointment of the Commission with extended scope, so that it may report on the administrative procedure available for reducing the amount of tuberculous material in animal food. No date has yet been assigned for the notice. The old Commission included Professor G. T. Brown, the late Sir G. Buchanan, Dr. J. F. Payne, and Professor Burdon Sanderson.

LEGAL REPORTS.

PROCEEDINGS UNDER THE SALE OF FOOD
AND DRUGS ACTS.

THE SALE OF WHITE WAX.

At the Marylebone Police Court on February 13, before Mr. Curtis Bennett, Richard Jefferson Dodd, chemist and druggist, 146, Edgware Road, London, was summoned at the instance of the Marylebone Vestry authorities for selling, to the prejudice of the purchaser, 2 ounces of white wax, which was adulterated with paraffin to the extent of at least 38 per cent. The prosecution was supported by Mr. Greenwell, solicitor, and Mr. John Hunt, barrister, defended.—Mr. Greenwell stated that the definition of drug in the Food and Drug Act was that it should "include medicine for internal or external use." White wax was used extensively in ointments for external application, and also in surgical cases. It was most desirable from the point of view of the public that if white wax was asked for, it should be supplied unadulterated with paraffin wax.—The defence having agreed to accept the analyst's certificate, Daniel Jas. Andrews, inspector under the Food and Drug Act, deposed to making the purchase at the defendant's shop. He asked for white wax, was served by the defendant's manager, and paid him 4*d.* for the 2 ozs. Having informed the manager who he was and having gone through the usual formalities, he submitted the wax to the public analyst, whose certificate he produced.

Dr. Wynter Blythe, public analyst for Marylebone and medical officer of health, said he examined the wax purchased by the last witness, and gave the certificate produced. White wax ought not to contain any extraneous drug—paraffin or anything of that sort. It was merely the wax secreted by the bee, bleached, and should not contain paraffin. The term "wax" applied to a great many other things besides beeswax. The object of the British Pharmacopœia was to serve as a standard for making up pharmaceutical preparations. Beeswax was decidedly a drug. It was frequently used for ointments and plasters as a carrier of more active preparations. Witness was not aware that the white wax of commerce was mixed with paraffin. Pereira's book—which said "I have never met with wax purely white"—was a valuable one, and Pereira was a great authority, but not upon this particular point. White wax was used for waxing cotton and silk, and for laundry purposes, and as so used he did suppose the admixture of paraffin would be prejudicial. White beeswax cost about 3*s.* 6*d.* lb., and paraffin wax about 9*d.* lb., so that it was greatly to the advantage of the seller to mix paraffin with the wax if he could sell it as white beeswax. He did not think people went to druggists for white wax for commercial purposes. If he was prescribing a simple ointment, he should expect it to be made with pure white wax, and not with wax plus paraffin; he should expect that defined by the British Pharmacopœia.

Mr. Hunt, addressing the magistrate for the defence, said his contention would be that there were two kinds of wax; the pure beeswax bleached, and the white wax of commerce which was used for other purposes. That sold by his client was a composite wax.—The magistrate interrupting, said that if that was so the customer should be so informed, and should be asked which he wanted. To sell as white wax something which was not white wax was not right.—Mr. Hunt went on to contend that the article sold did not come within the definition of the Act, it was not a drug.—The magistrate said he admitted that the article supplied did not, but what was asked for did.—Mr. Hunt replied that this was not a medicine. The wax was not used for the effect it would have upon the system, but as a means of transmitting another body to the system. It was used to give the ointment consistency; the effect on the body was *nil*. This wax, he contended, was not a drug, but if the magistrate was against him on that point he would show that the case came within Section 6, Sub-section 1, viz., that it was used for commercial purposes.—The magistrate said it should be labelled and sold as such, and the purchaser should be asked whether he wanted the three and sixpenny article or the ninepenny. He (the magistrate) knew perfectly well what the worldly man would say.—Mr. Hunt pointed out that there was nothing in the Act which compelled sellers to tell the purchaser that the article

sold was not a drug. In common parlance "white wax" was the white wax they had sold; the other kind was called pure white wax.

Mr. Dodd, the defendant, was then called as a witness, and in reply to Mr. Hunt said there were two kinds of wax, pharmaceutical wax, or white beeswax, which, by the way, was not white, and commercial white wax. The latter was composed of a mixture of paraffin wax and white wax, and it was sold to meet the demands of the public. The paraffin wax was added to whiten the pharmaceutical wax. The magistrate suggested whether it was not added to secure larger profits, but witness asserted he could show that, in fact, he had made less profit. Further questioned by the magistrate, witness said there was absolutely no difference in the sale price of the two articles; he got 2*d.* per ounce for both. The cost price of commercial white wax was 2*s.* lb., and of pure white wax 2*s.* 3*d.*, not 3*s.* 6*d.*, as had been stated. Witness sold the article at 3*d.* oz. It was impossible to get bleached wax that was white. In dispensing a prescription in which white wax was an ingredient, witness would always use the pure wax. Witness was a member of the Vestry of St. Pancras and knew that that body had refused to prosecute in these cases, as both Dr. Stevenson and Dr. Sykes had said the article was not a drug. At this point the case was adjourned.

Upon the matter again coming before the Court, the magistrate, replying to a question by Mr. Hunt, said he could not see his way to hold that the article sold was not a drug. If a person went to a chemist's shop and asked for white wax, he would not expect to get the white wax of commerce. Mr. Hunt said he should endeavour to show the contrary, and called Dr. John Frederick Sykes, lecturer of health at Guy's Hospital, and officer of health for the parish of St. Pancras, to support his contention. Mr. Arthur Philpot, traveller to Messrs. Harker, Stagg, and Morgan, wholesale druggists, Dr. John Hincks Vinrace, physician at St. John's Hospital for Skin Diseases, and other witnesses having also given evidence for the defence,

Mr. Curtis-Bennett gave his decision. He said he had no doubt, after hearing the evidence for the prosecution, that there were two kinds of wax—white wax properly so-called, and another article of commerce called white wax, which was white wax plus something else, spermaceti or paraffin. If there was any doubt about it, it had been abundantly proved by the defendant's own witness. The defence had gone out of their way to prove that which was abundantly clear. The evidence showed, and he had no doubt that the article in question was a drug within the meaning of the word drug as used in the Act. When one asked for white wax he expected it, and not that article plus something else. If persons asked for the white wax of commerce, then, he admitted, they should be supplied with the compound article. It ought, however, to be labelled. To sell to the purchaser that which was not white wax, was "to the prejudice of the purchaser." This was clearly a case in which a conviction must follow. He did not think the case called for an exemplary fine, because he had no doubt a great many other people had been doing wrong in the matter. If, however, persons were brought before him in future—if chemists continued to carry on their business without making a distinction between the articles—the fines would increase as the offences increased. He fined the defendant forty shillings and two guineas costs. In reply to Mr. Hunt, the magistrate said he found, as a fact, that there were two waxes—a pure white wax and a wax of commerce—and that the defendant had sold "to the prejudice of the purchaser."

Mr. Hunt: Will you state a case, sir?

Mr. Curtis-Bennett: No. You can appeal at the Sessions if you care to.

COURT OF CHANCERY.

FRANZ JOSEF MINERAL WATER.

Three actions which have been pending for some time before Mr. Justice Stirling, one by Messrs. Hertz and Collingwood against Mr. Hirschler for specific performance of an agreement, and two by Mr. Hirschler and the Franz Josef Water Co. respectively, against Messrs. Hertz and Collingwood for an injunction to restrain the use of labels, and for damages, were set down on Saturday, February 22, as a short cause and an order taken by consent. The details were not given, but it was stated that the agreement was to be treated as no longer subsisting; there was an injunction against imitating the labels, and a provision for the payment of damages, not to be enforced unless there were a breach of the injunction, and not in any event without the sanction of the Court.

REPORTS, ANALYSES, AND NOTES ON NEW INVENTIONS.

TAKA-DIASTASE.

A starch digestant possessed of a sufficiently high diastatic power to be of service in cases of salivary indigestion and allied troubles has long been a desideratum with the medical profession. The objection to malt extracts as a class has been that although doubtless beneficial from their nutrient properties, their action on starch is often far from satisfactory, whilst the excessive amount of sugar present is frequently objectionable. Taka-diastrase, a preparation introduced by Messrs. Parke, Davis and Co., is stated to be the produce of a fungus of the genus *Aspergillus*, discovered by Mr. Takamine, of the University of Tokio. Experiments fully substantiate the statement that it is capable of dissolving 100 times its weight of starch under proper conditions. To a stiff mucilage of arrowroot starch containing 50 grains in 4 fluid ozs. of distilled water, which was kept at a temperature of 99° F., half a grain of the preparation was added. The converting action was practically instantaneous, the whole of the starch being rendered soluble within five minutes, whilst further examination, both by means of the iodine and copper tests, showed that digestion at the temperature for sixty minutes was sufficient to effect complete conversion of the starch into glucose. The most important of the claims advanced by the makers was therefore substantiated, but it may be stated, in addition, that it is perfectly soluble in water, practically without smell or taste, and does not appear to be in any way liable to deterioration by keeping. Its price is not excessive if it be remembered that the dose is only from 1 to 5 grains. Taka-diastrase is certainly possessed of a much greater power of converting starch than any similar substance which has recently come to the fore in pharmacy.

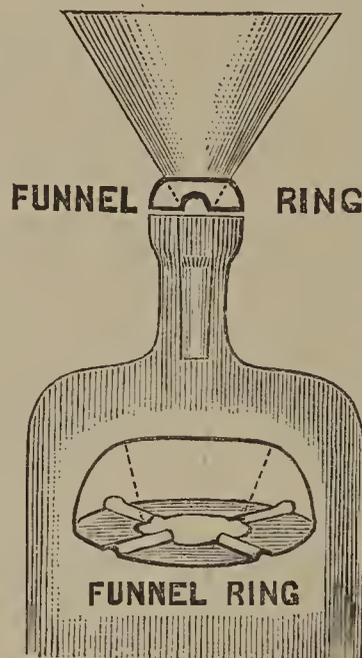
"LEHLIA" TOILET REQUISITES.

The difficulty of finding a name for proprietary preparations that will constitute a perfectly good trade mark, seems to have been overcome by Squire and Sons, of 413, Oxford Street, W., who use the registered word "LEHLIA" to distinguish a new series of toilet preparations. Lehlia Cream is a very seasonable article at present, being specially designed for application to the face and hands in frosty weather. It is of uniform consistence, perfumed just enough, and put up in attractive red celluloid boxes, with the name embossed in gilt lettering on the lids. Lehlia Soap belongs to the superfatted variety, and causes no irritation or roughness on the most sensitive skins. Lehlia Dusting Powder (absorbent and soluble), and Lehlia Face Powder, are delicately perfumed, and appear well adapted for their intended purposes. They are supplied in specially adapted boxes, containing small powder puffs. Lehlia Extract is a fluid preparation, intended to remove the ill-effects of wind and sun on the skin, and the list is completed by the Lehlia Dentifrice, which is harmless in use, yet perfectly efficient, and, withal, agreeable. It is satisfactory to find that a firm in the front rank of pharmacy is yet so careful of its

reputation that even its extra-pharmaceutical preparations are produced and finished with the same extreme care that is associated with its medicinal products.

PATENT FUNNEL RINGS.

The pharmacist does not exist who has not been worried by funnels tipping when inserted in the necks of bottles, or by the difficulty of securing free egress of air as the filtered liquid passes through. Green's Patent Funnel Rings are intended to obviate these troubles. They consist of rubber



rings so shaped as to hold glass funnels firmly in an upright position. The under side of each is flat, so as to rest securely upon a bottle-neck, and grooved to permit the escape of air. The rings are made in four sizes, and supplied in sets of six at 1s. each, by W. Toogood, Heddon Street, Regent Street, W. Convenient glass funnels can also be obtained ready fitted with the rings, which are very durable in use, seeming none the worse after six months' constant use for dispensing purposes.

ALUMINIUM UMBILICAL PADS.

After a time the trade will probably become accustomed to the frequent outbursts of Mr. Fred Reynolds' inventive genius, but at present the prevailing idea is that he must resemble a very active volcano, ever and anon overflowing. The latest of his ideas (for it must be his) realised by the firm of Reynolds and Branson, of Leeds, is an aluminium umbilical pad for infants. This is, of course, exceedingly light, and it is conveniently perforated so that it can be sewn on the body belt. The pads are sold at 4s. the dozen, and are certainly what they are claimed to be—cheap, light, and clean.

PATENT LENTILINE BISCUITS.

Made of pure Egyptian lentil flour and English wheat meal, Marriott's Patent Lentiline Biscuits possess valuable sustaining properties, and are especially adapted for rearing growing children, the makers claiming that they present all the elements necessary to the formation of bone and muscle, and so ensuring a full development, whilst

imparting a vigorous and healthy tone to the system. They are easily digested, and suitable in cases of dyspepsia, weak digestion, or habitual constipation. In addition to the plain lentiline biscuits, the makers also supply lentiline and charcoal biscuits, which are, of course, peculiarly suitable as an article of diet for persons suffering from dyspepsia, indigestion, flatulence, etc. Both varieties can be obtained of the makers, E. Marriott and Co., 49, Upper Parade, Leamington, or through the London sundries houses.

THE NEW PHOTOGRAPHY.

There has been great difficulty in obtaining suitable vacuum tubes for producing the Röntgen X rays for photographic purposes, chiefly because the best conditions were not known. A long series of careful experiments has been made to ascertain the conditions of success at King's College, London, which has resulted in a tube of different shape, size, and degree of vacuum to those previously employed. One important result of this is that far less current can be employed, and that a simple battery and coil may be used without Tesla apparatus. These tubes are all London made, and supplied by Newton and Co., 3, Fleet Street, London, at 25s. each. Owing to the great interest excited by the experiments of Prof. Röntgen in photographing metallic weights, coins, etc., when enclosed in a wooden box, and other similar objects by means of the rays from a radiant-matter tube, Messrs. Newton and Co. have also made arrangements to supply lantern slides at 2s. 6d. each, printed from negatives taken in the same manner by Mr. A. A. C. Swinton, who has produced perhaps the most successful results yet obtained. A list of these will be sent on application to Messrs. Newton and Co.

WARNER'S PHARMACEUTICAL SPECIALTIES.

The preparations of the firm of W. R. Warner and Co., whose English agents are F. Newbery and Sons, King Edward Street, London, are too well known to require detailed description. Their lentiforms of extract of cascara sagrada are worthy of special mention, however, on account of the excellence of their finish. They possess the shape of a double convex lens, contain 2 grains of extract, and are pearl coated. Other notable products by the same firm are their parvules or minute pills, which are quickly soluble and designed for the administration of remedies in small doses. Ingluvin, or chicken pepsin, is recommended as a specific for vomiting in gestation. Details of other preparations supplied by the firm or their agents may be found by referring to Warner's 'Therapeutic Reference Book,' a handy guide for physicians and others, which treats of posology, incompatibles, the digestibility of foods, and numerous other matters of prime importance to medical men and pharmacists.

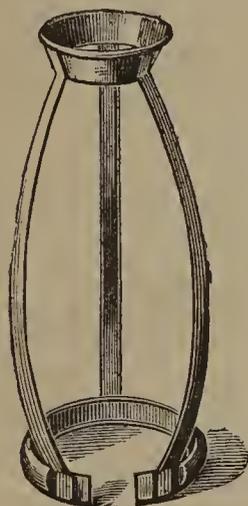
THE "BILTOR" PIPE.

The number of pharmacists addicted to the use of the soothing weed is sufficiently great to justify a reference in these columns to a tobacco pipe constructed on sound hygienic principles. The "Biltor" pipe is supplied in various qualities, but the prin-

ciple is the same in all, a small cartridge of absorbent paper being inserted in the stem so as to filter the smoke and retain all moisture and impurities. The makers—the "Bilitor" Co., 93, Oxford Street, London—claim that this pipe makes smoking cleaner and cooler than any other.

HYGIENIC AND ELASTIC CLOTH.

The claim of Ickringill's Patent Hygienic and Elastic Cloth Syndicate, Ltd., Keighley, that their cloth will retain its elasticity, and the stability of the fibre not be impaired, after washing with warm water and soap, has been tested by having samples of the different varieties of the cloth subjected to the same treatment as ordinary woollen and cotton goods that require cleansing. As a result, the claim appears to be fully borne out, no shrinkage or loss of elasticity having occurred in the process of washing.



THE SPARE HAND.

An ingenious and excellent time-saving device is the "Spare Hand," invented by Mr. A. Haslewood, of Buxton. Its purpose is to support a funnel, and the patent vulcanite "Universal Funnel," specially designed for use with it, enables a dispenser to utilise it with advantage for bottles of any size—from 2 drachms to 30 ounces.

DIKE'S PEPSIN.

In spite of the multitude of pepsins which have been brought forward at different times during the last few years, it is comparatively seldom that a brand is met with which always fulfils the claims advanced by the manufacturers. Dike's pepsin is said to possess a solvent action on albumin to the extent of 3000 times its own weight when tested according to the United States Pharmacopœia and, in addition, to be perfectly soluble in water, forming a clear solution. It would obviously be more in accordance with the requirements of pharmacists in this country if its power when tested according to the B.P. were stated. Recent examination of this article affords confirmation of the statements as to its solvent action on albumin when tested according to the U.S.P., and this strength it should be noted corresponds to a strength of 1:250 if the test be carried out in accordance with the B.P. If it be borne in mind that this high proteolytic powder is accompanied by freedom from disagreeable taste and smell, non-hygroscopicity and perfect solubility in water, it will readily be appreciated that the present satisfactory quality being maintained, Dike's pepsin is likely to occupy a prominent position as a high class preparation. It is manufactured by Frederick Stearns and Co., Detroit, Mich., whose sole agents in Great Britain are Thomas Christy and Co., 25, Lime Street, E.C.

MISCELLANEOUS NEWS.

THE EARLY CLOSING BILL.—Mr. Geo. P. Pond sends copies of correspondence with respect to this Bill, as follows:—

"68, Fleet Street, E.C.
"Feb. 26, 1896.

"To SIR JOHN LUBBOCK.

"Sir,—As a chemist, with your kind permission, permit me to say a word about the special saving Clause for chemists. This Clause will render the Act null and void for two reasons. Firstly, unless you can decide what is a drug, and what is a medical appliance. Example—A magistrate has just decided that wax is a drug. Camphorated chalk is either a food or a drug, and a tooth brush is certainly a medical appliance, so is a sponge and a hair brush. Secondly, when is a shop to be considered open, and when shut? Most shops have no shutters, but a gate. When the gate is up and a little door in the gate is open, will the shop be then closed or open; or, if the side door be open and the front door be closed, is the shop shut? Can anyone decide the import of the words "So far as may be necessary," in reference to drugs, medical appliances, and when the shop is open? If the Clause remain and the Act perchance be enforced, it will cause a very great amount of vexatious proceedings. But it matters little whether it pass or not, because it will never come into operation, as you will not get two-thirds of chemists in any district to agree to close. To give your Act a better chance of success, if you think there is any good to come from it, you should excuse, at present, chemists altogether from it, or impose a fine upon any employer who should employ anyone over a certain number of hours in a week.

"This might be made applicable to nearly all work; although objectionable, is not so objectionable as to force the closing of shops, and it would be legislating for the health and strength of the country if applied all round, and would gradually bring about what you desire, an earlier closing hour in all businesses, while your Bill interferes with the liberty of the person and the freedom of trade.—Your humble servant,

"GEO. P. POND."

[The Reply.]

"2, St. James's Square,
"February 26, 1896.

"To G. P. POND, ESQ.

"Sir,—I beg to acknowledge the receipt of your letter.

"The technical difficulty to which you refer now arises on Sundays.

"In reality I do not think it would be found a practical objection.

"Yours sincerely,
"JOHN LUBBOCK."

MR. H. KEARLEY, M.P. for Devonport, is promoting the Early Closing Bill in the House of Commons, and the Plymouth Chemists' Association is giving him its support.

"K.O.P." CONVERSAZIONE.—The members of the latest social club, which rejoices in the mysterious title of "K.O.P.," held a conversazione at their headquarters, the Elephant and Castle Hotel, Shrewsbury, last week. About fifty gentlemen responded to the invitation of the Committee, among those present being Alderman W. G. Cross (who occupied the chair), Alderman Corbett, Councillor Brace, etc. The proceedings commenced with a smoking concert, which was admirably arranged and carried out with complete success, and during an interval supper was served in an adjoining room.

SEEING THE INVISIBLE.—Mr. A. A. C. Swinton has written to the *Standard* to say he has succeeded, by means of the Röntgen rays, in "actually seeing the coins inside a leather purse, the metal instruments inside a closed wood and leather case, a coin through a piece of wood half-an-inch in thickness, and also through a sheet of aluminium."

THE SALE OF METHYLATED SPIRIT IN GLASGOW.—At the Justice of Peace Court, Glasgow, on February 21, Messrs. John Shaw, Craig and Co. (Limited), licensed retailers of methylated spirit, Paterson Street, Glasgow, were charged with selling to an officer of the Inland Revenue, on January 8 last, a quart of methylated spirit in which mineralised naphtha had not been dissolved.—Respondents admitted the sale, but pleaded that it had been effected by a clerk, ignorant of the fact that his action was against the law.—The Supervisor of the Inland Revenue, who prosecuted, said the object of the prosecution was to put a stop to the sale of methylated spirit mixed with peppermint as a beverage. Methylated spirit, he would point out, reduced a little, and with a little peppermint added, used to be extensively drunk in Glasgow, and as the beverage was more harmful and intoxicating than whisky even, and much cheaper, the Court would see how necessary it was to put down the sale.—The Court imposed a mitigated penalty of £5.

EXETER ASSOCIATION OF CHEMISTS AND DRUGGISTS.—An impromptu meeting of the members of this Association was held at the Albert Memorial Museum, on Wednesday, last (February 26), to make arrangements for a conference proposed to be held in connection with the anti-cutting movement. Mr. Hy. Gadd (the President of the Association) presided. It was stated that the Association had received an offer from Mr. Glyn-Jones, the Secretary of the Proprietary Articles Trade Association, to address a meeting of the chemists of the Exeter district on the question, and the meeting was accordingly convened for Thursday, March 5, at the Exeter Arcade Lecture Hall, at 3 p.m. A discussion will follow the lecture. Notices of the meeting have been sent to all chemists in the district.

A CHEMICAL LABORATORY AT GALATA.—The Customs Department is about to establish a laboratory at Galata for the analysis of pharmaceutical produce.

EXCHANGE.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

Cassell's 'Family Physician,' volumes I. and II., quite new, cost 7s. 6d. each. What offers?—Williams, 193, Knight's Hill Road, West Norwood, S.E.

Offers wanted for 'Chemical Journal,' Jan., 1872, to Dec., 1890; 'Chemical Industry Journal,' Jan., 1883, to Dec., 1895; 'Year-Book of Pharmacy,' 1874 to 1894; Ganot's 'Physics,' 1877; Pereira's 'Materia Medica,' 3 vols.; 'Pharmaceutical Journal,' complete, 54 vols.; Publications of Cavendish Society, viz., Gmelin's 'Chemistry,' 18 vols. and index; 'Life of Cavendish,' 'Life of Dalton,' Laurent's 'Chemical Method,' Bischof's 'Chemical and Physical Geology,' 3 vols., Lehman's 'Physiological Chemistry,' 3 vols., Funke's 'Physiological Atlas.'—Beta, care of 'Pharmaceutical Journal,' 5, Serle Street, London, W.C.

Curtis' 'Flora Londinensis,' 2 vols., good condition, £5 5s. Nine-foot Portable Screen, with frame, and tackle and box, new, £1 10s. Stainer, Folkestone.

'Squire's Companion,' 15th edit. (1890), with additional supplement. 5s. 6d. Post free.—Baxter, Bramley, Leeds.

Post Free. Prof. Parker's 'Zootomy,' cost 8s., 4s.; Ecoresby-Jackson's 'Materia Medica,' 3rd. edit., cost 12s. 6d., 6s. 6d.; Hooper's 'Medical Dictionary,' cost 30s., 5s.—Davies, 33, Eglinton Road, Bow.

British Pharmacopœia, 1885, and Supplement, with Minor Notes, 4s. 6d.; Muter's 'Analytical Chemistry,' 3s. 6d.; 'Minor Chemistry Notes,' 5s. 6d.; Set of Boxing Gloves, new 6s.—Pearce, 2, Queen Street, Exeter.

'Journal of Society of Arts,' 1867-88, 25s.; Woodville's 'Medical Botany,' 3 quarto volumes, complete. many coloured plates, 21s. only, original cost £4. Davis, "Chestnuts," Gordon Hill, Enfield.

'United States Pharm.,' 1874 edit., 3s. 6d.; Bristowe's 'Theory and Practice of Med.,' 2nd edit., 5s.; Gregory's 'Elements of Practice of Med.,' 6th edit., 5s.; Phillips' 'Translation of Pharm.,' 1851, with notes and illustrations (scarce), 8s. 6d.—Botham, Higher Broughton.

'Pharmaceutical Journal,' the whole of the third series, 25 volumes, perfect, any reasonable money offer accepted, or exchange for anything useful, no books nor drugs.—S. Barlow, Chemist, Darlington.

A book of 130 Well-tryed Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free 1s. 6d.—Tully, Chemist, Hasting.

Muspratt's 'Chemistry,' 7 vols.; 'Year-Book of Pharmacy,' 20 vols.; both unsoiled. What offers?—Boyce, Clarence Road, Windsor.

What offers for 16 years' 'Pharmaceutical Journals,' complete, dating from 1879 to 1895. Apply at once to—J. C. Gibson, Chemist, Nottingham Street, Sheffield.

'Pharmaceutical Journal,' 1880-94, unbound, clean, 5 bound vols., 1883-7; 'Review of Reviews,' 1894, unbound; 'Sketch,' 62 recent Nos.; Britten's 'Dispensers' Vade-Mecum,' cheap. Offers cash or exchange.—Hinde, Chemist, Lowestoft.

Martindale's 'Extra Pharmacopœia,' 5th edit. 1s. 6d.; 6th edit., 2s. 6d.; 7th edit., 3s. 6d.—W. R. Gossling, 7, The Strand, Southsea.

Appliances.

Two Siegle's Steam Sprays for 5s.; No. 10 Wedgwood Funnels, slightly snipped at tips, half cost price: one large and one small Electro-Magnetic Machine as Maw's No. 50, 12s. and 8s. 6d., baywood cases; two portable Electric Bells on baywood stands, Battery, Push, and 20 yards of Wire all complete, easily fixed, 15s. lot.—Botham, Higher Broughton, Manchester.

Miscellaneous.

For Sale.—Eight Carbolie Smoke Balls, stamped, 8s. each.—James Watson, Rose Corner, Norwich.

For Sale.—About 4 lbs. finest Mitcham OL Lavand., 100s. per lb.—James Watson, Rose Corner, Norwich.

Surplus stock, 6 B. & W's. Pinol Eucalyptia Inhalers, 9d. each; 3 Fairchild's Zymine Tablets, 10d. each; ¼-oz. Fairchild's Zymine, 1s.; 4s. 6d. Carlsbad Salts, 3s., good condition.—Matthew, 529, Battersea Park Road.

Southall's Model of Cod-Liver Oil Factory. New, Jan. 1895. Cost 21s. What offers?—Allenby, Chemist, Helmsley, Yorks.

Lancaster's "International" Camera, 10 by 8, tripod-stand, two double dark slides, time and instantaneous shutter inside camera, Voigtlander's Rapid Euryscope Lens (No. 4), and studio stand; the whole cost £24; what offers?—Bienvenu, Andover.

WANTED.

Books, etc.

Richter's 'Organic Chemistry' (Kegan Paul, 1892). Whitla's 'Pharmacy'; Remington's 'Practice of Pharmacy.'—Baxter, Bramley, Leeds.

Kelly's 'Directory of Chemists and Druggists' State date of publication. Bent Front Tooth brush Case; Clarke's Syphon Gas Stove; 10-ft. Dispensing Screen with Mirror Centre and Glass; Fronted Counter for underneath same.—Griffin, Chemist, Kidderminster.

'London Pharmacopœia,' 1851, or Translation; 'Proceedings of the British Pharmaceutical Conference,' 1864 and 1867.—Liverseege, 292, Rotton Park Road, Birmingham.

Appliances.

Aerated Water Plant, hand-power, Haywood, Tylor, or other good maker, equal to new; also Bracher's mixer for 28 lbs., good order. Particulars, etc., to—Chemist, 113, Mowbray Street, Heaton, Newcastle-on-Tyne.

Miscellaneous.

Show Jar, 21 inches. Arms of Great Britain, as Maw's Fig. 1, but white ground.—W. R. Gossling, 7, The Strand, Southsea.

Personal Weighing Machine, must be small, neat, and in good condition. State lowest price and fullest particulars.—Tovey, Chemist, Shanklin, I.W.

Twelve Window Tablets, special size and lettering. Write to—F. Dickins, 7, Prince Street, Bridlington Quay.

Microscope, suitable for students, good condition, new or second-hand, full particulars with lowest cash price—Association, care of F. Matland Chemist, 31, Chapel Street, Stonehouse, Plymouth.

* * Attention is specially directed to the new conditions of the "Exchange," in accordance with which a small charge will in future be made for the insertion of notices. The careful observance of those conditions will tend to obviate much inconvenience and possible delay.

NEWCASTLE CHEMICAL REPORT.

[From our own Correspondent.]

FEBRUARY 25, 1896.

Business in the chemical line is somewhat on the quiet side. With the exception of the regular orders for the trading steamers to Hamburg, Holland and English coast, little is doing. Prices are practically without change and are quoted as follows:—SODA CRYSTALS: 37s. 6d. to 45s. in casks or bags. BLEACHING POWDER: £7 5s. to £7 10s. according to packages. SULPHUR: £3 17s. 6d. to £4. CAUSTIC SODA: 76 to 77 per cent., £9 5s.; 70 per cent., £7 15s. SODA ASH: 48 per cent., £3 15s.; 56 per cent., £4. HYPOSULPHITE OF SODA: £6 5s. to £7. ALKALI: 48 per cent., £4 10s. PITCH: 35s. SULPHATE OF AMMONIA: £8 11s. 3d. to £8 12s. 6d, Leith. SAL AMMONIAC, WHITE: £37 to £39. SALT-CAKE: 27s. 6d. ENGLISH BORAX, REFINED: £20. ALUM IN LUMP: £5 10s. SOUTH DURHAM SALT: 9s. 6d. per ton, *f.o.b.* Tees.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

MONDAY, MARCH 2.

ROYAL INSTITUTION OF GREAT BRITAIN, at 5 p.m.

General Monthly Meeting.

SOCIETY OF CHEMICAL INDUSTRY, at 8 p.m.

"Artificial Silk," by Messrs. Cross and Bevan.

TUESDAY, MARCH 3.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

Benevolent Fund Committee.

Finance Committee.

General Purposes Committee.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.

"External Covering of Plants and Animals: its Structure and Functions" (VIII.), by Professor C. Stewart.

WEDNESDAY, MARCH 4.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

Council Meeting.

SOCIETY OF ARTS, at 8 p.m.

"Rontgen's Photography of the Invisible," by A. A. C. Swinton.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.

Musical and Social Evening, at 8 30 p.m.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY.

Social Evening, at 8 p.m.

THURSDAY, MARCH 5.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.

"Voltaire," by Reverend W. Barry.

IMPERIAL INSTITUTE, at 4.30 p.m.

Afternoon Paper in Connection with the Indian

Section of the Society of Arts.

CHEMICAL SOCIETY, at 8 p.m.

"On the Explosion of Cyanogen," by H. B. Dixon, E. H. Straggl, and E. Graham.

"On the Mode of Burning of Carbon," by H. B. Dixon.

"On the Detonation of Chlorine Peroxide," by H. B. Dixon, and J. A. Harker.

"The Constitution of a New Acid Resulting from the Oxidation of Tartaric Acid," by H. J. H. Fenton.

LINNEAN SOCIETY OF LONDON, at 8 p.m.

"Segmentally Disposed Thoracic Glands in the Larvæ of Trichoptera," by Professor Gustav Gilson.

CHEMISTS' ASSISTANTS' ASSOCIATION, at 8.30 p.m.

Annual Dinner at the King's Hall, Holborn

Restaurant.

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY.

Exhibition of Lantern Slides, at 8.30 p.m.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION, at 9.15 p.m.

Open Meeting.

FRIDAY, MARCH 6.

ROYAL INSTITUTION OF GREAT BRITAIN, at 9 p.m.

"The Tunnel Under the Thames at Blackwall, by A. R. Binnie.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION, at 9.15 p.m.

"The Darwinian Theory," by A. S. Birnie.

ABERDEEN JUNIOR CHEMISTS' ASSOCIATION, at 9.30 p.m.

"Humorous Paper," by C. Forbes.

SATURDAY, MARCH 7.

PHARMACEUTICAL FOOTBALL CLUB v. Mount View, at

Wornholt Farm, Shepherd's Bush.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.

"Light" (III.), by Lord Rayleigh.

SUPPLEMENT

TO THE

PHARMACEUTICAL JOURNAL.

MISCELLANEOUS NEWS.

"ANTI-CUTTING" MEETING AT PLYMOUTH.—Under the auspices of the Plymouth, Devonport, Stonehouse and District Chemists' Association, a meeting was called last Wednesday afternoon, at the Foresters' Hall, Plymouth, for the purpose of explaining the objects of the "anti-cutting" scheme. Invitations were extended to all chemists from Newton Abbot, Devon, to Penzance, Cornwall. Mr. J. C. Park, President, occupied the chair, and introduced the following delegates from the Proprietary Articles Trades' Association:—Mr. Glyn-Jones (Sec.), Mr. A. Tibbutt (Messrs. Sattton and Co.), Mr. G. R. Barclay (Messrs. Barclay and Son), Mr. H. S. Norris (Condal Water Co.). Amongst those present were Messrs. J. G. Netting, R. H. Rendle, and Doble (Vice-Presidents); J. H. Bailey, Treasurer; J. Cocks, Secretary; A. D. Breeze, F. Maitland, F. W. Hunt, P. A. Kelly, A. Davey, Committee. Letters regretting absence were read.—Mr. Glyn-Jones gave an impressive and interesting address respecting the objects of the scheme they had in hand, and asked whether the chemists intended to let the cutter have all his own way, or if they should meet him with the object of the "anti-cutting" movement. The Association was formed about four months ago, and they then had 80 members. Their membership was now 220, which appeared very small in the face of the very large number of chemists in the United Kingdom. He urged those present to strengthen the movement by joining, and doing their utmost to secure other members, and bring the Association's objects to the front.—The President proposed the following resolution: "That this meeting, having heard the report of the representatives of the Proprietary Articles Trades' Association, pledges itself to support that organisation in its endeavour to place proprietary articles upon a sound and equitable basis.—Mr. Rendle seconded.—In answer to Mr. Balkwill's question as to what the Pharmaceutical Society intended to do in the movement, Mr. Glyn-Jones said he did not know.—Mr. Rendle maintained that the manufacturers held the key of the situation, and he did not agree with the present composition of the Council. He thought the representation should be ten manufacturers, five wholesale men, and fifteen retailers would be a better representation.—After a few remarks by Messrs. Maitland, Condy U'Ren, Kelly, Roper, and Hunt, Mr. Barclay said that they would have to decide whether they would be coerced by the "cutters" or if their Association should coerce the "cutters."—Mr. Tibbutt maintained that it was the Civil Service Stores that commenced "cutting," and pointed out that the wholesale houses had as great an interest as the retailers, and thought by the joint support of them all they could control the "cutting" matter.—Mr. Norris

was very glad to see that the most "cutting" firms were joining the Association, and thought it was wise to stimulate them.—Mr. Kelly proposed: "That this meeting of registered chemists in Plymouth and its neighbourhood requests the Council of the Plymouth, Devonport, Stonehouse and District Chemists' Association to act as a local executive in connection with the Proprietary Articles' Trade Association."—Mr. U'Ren seconded.—Mr. F. Maitland also proposed: "That this meeting of registered chemists residing in Plymouth and its neighbourhood desires to express its pleasure at seeing that a number of influential manufacturers have already joined the Association, and to assure them and all other manufacturers that any steps they may take in connection with the Association to insure fair profits would meet with the approval and cordial support of every legitimate retail trader."—Mr. Hearder seconded, and all three resolutions were unanimously carried. A vote of thanks was accorded the delegates, and Mr. Barclay replied.

THE SUPPLY OF DRUGS TO UNREGISTERED PERSONS.—At the Sheffield County Court, on Wednesday, before His Honour Judge Ellison, an interpleader action was heard, Messrs. Lofthouse and Saltmer, wholesale druggists, of Hull, claiming the stock-in-trade and goods of John William Sales, of Gower Street, Sheffield, an unregistered dealer in drugs, under a bill of sale. The evidence revealed the following circumstances.—Messrs. Kino, the tailors, had levied an execution upon Sales in respect of an unpaid account for clothes supplied. The claimants paid out the execution creditor under protest, lodging the money in court. The bill of sale was produced in court, and it transpired that Sales executed it last September in consideration of a sum of £175 5s. 2d. There was no attempt to dispute the validity of the document, but it was urged on behalf of the execution creditor that new goods had been added to the stock since the deed had been executed, and that upon those he had a right to distrain. It was stated that a fire had recently occurred on the premises, which destroyed some of the stock and the fittings, and that a portion of the stock had since been replaced. In reply to this piece of evidence, Sales said the change in the stock had been but small.—His Honour said he considered it advisable that the claimant should take stock afresh, and bring the revised schedule into Court. It would then be possible to ascertain the value of the goods acquired since the bill of sale was executed.—An adjournment until the 25th inst. was granted in order to allow this to be done.—Mr. C. W. Robinson represented the claimants and Mr. A. Neal the execution creditor.

SHADOW PHOTOGRAPHY.—At the Society of Arts on Wednesday a lecture was given by Mr. A. A. SWINTON on "Röntgen's Photography of the Invisible." The lecturer also related to the new power of seeing direct the effects of the X rays by means of a screen of fluorescent substance, as also the superior effects of Crookes' tubes when furnished with an internal small platinum reflector, by which the rays are thrown off

more nearly, as it were, from a point, the definition of the results being thereby greatly improved. Another peculiar effect of these rays has been investigated by Professor J. J. Thomson, namely, the facility with which they discharge an insulated body charged with either positive or negative electricity. In fact, any substance, however good an insulator it may be under ordinary circumstances, seems to become a conductor of electricity during the time the Röntgen rays are passing through it. This was demonstrated by a gold leaf electroscope. The new form of Crookes' tube above referred to has been made by Messrs. Newton from a design emanating from King's College. Among the new photographs shown on the screen was that of a puppy one day old, in which the gelatinous bones showed the commencement of the concretions of phosphatic material to form the solid bony structure. It also evidenced the manner and progress of its development. The mode of rendering visible to the eye the shadows cast by the Röntgen rays through the substances exposed in thin parts, as practised by Professor Salvioni, of Perugia, was also demonstrated; and the Chairman, Professor Dewar, of the Royal Institution, by its means declared the contents of a purse placed between two boards in the path of the rays. The apparatus is a cardboard tube, small at the end to which the eye is applied; the other, or broad end, being furnished with a screen opaque to ordinary light, but coated on its inner side with fluorescent material. The screen is more or less fluorescing, according to the depth of shadow thrown upon it.—In proposing a vote of thanks to Mr. Swinton, the Chairman remarked on the immense value given to the Röntgen discovery by the widespread attention which had been given to it, and the rapidity with which it had been investigated and applied to practical surgery and other purposes. The discoveries of science were not monopolies, and there was far more advantage to the world by the rapid combinations of intellect than could be secured by any possible title to exclusive rights by a discoverer.—*Standard.*

SCHOOL OF PHARMACY STUDENTS' ASSOCIATION.—A meeting of this Association was held on Thursday, February 27, Professor J. Reynolds Green, President, in the chair. Professor Greenish entertained the members present by exhibiting a series of lantern slides illustrative of a tour in Spain. The principal places of interest visited were Gibraltar, Malaga, Granada, Seville, Cordova, Madrid, Toledo, the Escorial, Segovia, and Burgos, the views of Granada and Cordova being especially beautiful and interesting. A hearty vote of thanks to Professor Greenish terminated the meeting, which was entirely of a social character and was well attended by members and their friends.

PROFESSOR A. LOISETTE, founder of the popular memory system, wishes it to be known that he has removed his school and offices to 200, Regent Street, W. He will be glad to send the pamphlet explaining his system to any of our readers who may be interested in the subject.

MARKET REPORT.

[Specially compiled for the *Pharmaceutical Journal*.]

LONDON, MARCH 5, 1896.

There is not much interest to report in the Chemical Market this week. Citric acid is firm, whilst tartaric acid, although unchanged as regards English brands, is easier for foreign makes. Cream of tartar is quite neglected, and very slow of sale. On the other hand, permanganate of potash is very scarce and likely to go dearer. At the present time makers have a difficulty in filling their contracts. Arsenic and copper sulphate are very firm. Of the fine chemicals, carbolic acid is unchanged, sugar of milk is quite steady, and chrysophanic acid firmly held. Of the various alkaloids and salts, those of opium are firm and unchanged in value, atropine has been advanced in price, whilst quinine is decidedly dearer. The fortnightly drug sales which were held to-day passed off quietly. The most important changes are as follows:—Bæswax, cardamoms, senna, and Chinese soy are dearer. Sumatra benzoin, Rio ipecacuanha, and Calumba root are fully steady. Buchu leaves, cumin seeds, Carthagenia ipecacuanha and virgin scammony resin have declined in value. Cod-liver oil continues to advance steadily in price, and much higher prices have been paid for 1895 oil since our last report. Castor oil is very firm, and likely to advance, whilst the heavy oil market is rather firmer generally. Essential oils are practically unchanged. Shellac, although firm on the spot, is easier for delivery, spices are firm, with cloves and Jamaica ginger quoted dearer. Full details will be found below:—

ACACIA (GUM).—An average supply amounting to about 150 packages, was offered at the drug sales, but the majority was bought in. Five cases of greyish picked *Trieste* gum sold without reserve at £6 7s. 6d. to £6 12s. 6d. per cwt., whilst a case of medium yellowish realised 83s., also without reserve. Several parcels of *Soudan* and *Persian* sorts were also offered, but no sales were effected, 52s. 6d. to 62s. 6d. being the buying-in prices of mixed sorts from *Suez*.

ACCROIDES (GUM).—A parcel of this gum amounting to 55 bags, imported from Sydney, was offered to-day and bought in at 46s. per cwt.

ACID, CARBOLIC.—The market remains firm, a brisk demand being reported for *crystals* especially. Quotations are as follows:—*Crystals*: 34° to 35° C., 7½d.; 39° to 40° C., 8½d.; 39° to 40° C. (*detached crystals*), 9½d. per lb. *Crude* is unchanged. 60 per cent. being still quoted at 2s. 3d. and 75 per cent. at 2s. 7d. per gallon. *Liquefied* and *cresylic* are unchanged at 1s. and 11d. per gallon respectively.

ACID, TARTARIC.—Although the quotations of *English* makes are unchanged, *foreign* acid is decidedly easier, both *powder* and *crystals* (not guaranteed B.P.) offering at 1s. 2½d. per lb. on the spot. *Laves'* and *Kembell's* makes are still quoted at 1s. 3d. per lb. At the drug sales several parcels of *Cape Argol* were offered, and found ready buyers at prices ranging from 43s. to 60s., according to quality.

ALGÆS.—A total of 291 cases was offered at the drug auctions. *Cape* aloes, which was represented by 21 packages, was mostly bought in, but 5 cases of ordinary quality, rather drossy, realised 20s. to 21s. per cwt., the buying-in prices of the remainder being 23s. to 21s. for fair to good bright hard. Ten boxes of *Barbadoes* aloes, new import, sold at 15s. per cwt., whilst 12 kegs of *Socotrine* were bought in at 57s. 6d. to 85s. per cwt. *Curaçoa* was in large supply, but only a small proportion found buyers, 40s. being paid for good livery, 25s. to 30s. for fair brown, 20s. for ordinary ditto, and 17s. down to 12s. for water-damaged qualities.

AMMONIACUM (GUM).—Was in unusually large supply to the amount of 28 packages. Two cases of mixed pale, loose and block almondy gum sold without reserve at 30s. per cwt., whilst 17s. to 20s. was paid for four cases of drossy lump, with a few almonds, from Bombay. Fine pale drop was bought in at 60s., and good ditto, slightly blocky, at 50s. per cwt.

ANNATTO SEEDS.—None was sold in auction, although 26 packages were offered. Dull Madras seed was bought in at 3d., and common bricky ditto at 1d. per lb.

ARECA NUTS.—Thirty bags of wormy nuts, part broken, 1893 import, sold in auction to-day at 8s. 6d. per cwt.

ASAFCETIDA (GUM).—The large supply of 803 cases were offered to-day, but only a limited inquiry was shown. One broker sold a fair proportion of his catalogue at prices ranging from 52s. 6d. down to 23s. per cwt.

BENZOIN (GUM).—A moderate supply only was offered, amounting to 242 cases. *Siam* gum, which was represented by 18 cases, sold at £20 for one case of good bold loose almonds, £11 for small almonds in bright brown block, 57s. 6d. for siftings in block, and 42s. 6d. for drossy dark siftings in block. *Sumatra* gum was in good demand, and £8 10s. to £8 12s. 6d. was paid for good seconds, small to medium almonds, fairly well packed, £7 to £7 5s., for fair ditto pale almondy centres, rather false packed sides, and £6 to £6 2s. 6d. for ordinary seconds. Four cases of dull *Sumatra* thirds sold at 70s. per cwt. *Palembang* gum was all bought in, almondy seconds in tins at 37s. 6d., and ordinary thirds in cases at 27s. 6d.

BUCHU.—The large supply of 96 packages was offered to-day. The majority of this consisted of new arrivals of good bright, round green leaves. For these the prices paid show a decline of ½d. to ¾d. per lb., 3½d. to 3¾d. being paid, whilst 3d. was accepted for greenish, 2½d. to 2¾d. for yellowish-green round leaves, and 2d. for yellow stalky ditto. A single bale of dull long green leaves sold at 5d. per lb.

CALUMBA.—Steady. To-day a parcel of ordinary unmixed sorts from Zanzibar via Hamburg, sold at 8s. 6d. to 9s. per cwt., and 3s. for damaged quality.

CANNABIS INDICA.—Firm. In auction, four bales of stalky greenish tops from Bombay sold at 2½d. per lb.

CANTHARIDES.—There is no inquiry whatever for this article. To-day 17 cases of *Chinese* flies were held for 1s. per lb. Privately, the new *Russian* crop offers at 2s. 11d. per lb. *c.i.f.* terms.

CACAO BUTTER.—Easier. In auction on

Tuesday 500 cases, representing 50 tons, of *Cadbury's* make, sold at an average of 12½d. per lb., against fully 13d., which was the price paid at the February sales.

CARDAMOMS.—The moderate supply of 70 cases offered to-day did not include any very fine grades, but firm to slightly dearer prices were paid as follows:—*Ceylon-Mysore*: Medium fair pale, 2s. 9d.; fair small pale, 2s. 4d. to 2s. 5d.; bold yellowish, 1s. 11d. to 2s. 1d.; small to medium yellow, 1s. 5d. to 2s. 1d. per lb. *Ceylon-Malabar*: 30 cases of medium yellowish sold at 2s. 4d. per lb. No seed was offered.

CASCARA SAGRADA.—The demand seems to have quite died out. To-day 60 bags of fair medium bark from San Francisco were bought in at 21s. 6d. per cwt.

CHIRETTA.—Nine bales of this drug were bought in at 4d. per lb. Privately, 3½d. has been paid during the week.

CINCHONA.—Several parcels of *Crown* bark were offered at to-day's sales, and met generally with a good inquiry, 8d. to 1s. being paid for ordinary to fair *Loxa* and *Huanoco* bark imported from Callao and Payta, and 7d. for damaged ditto. *Calisaya* bark sold at 11d. to 1s. 2d. for bold flat, and 5½d. for papery ditto. A parcel of *Mara-caibo* bark sold for the most part at 4¾d. to 5d. for sound, and 2d. for damaged quality.

COCA LEAVES.—A parcel of damaged *Ceylon* leaves was bought in to-day at 1s. per lb. Privately, 1s. 2d. has been paid for greenish broken *Truxillo* leaves.

COLOCYNTH.—Firm. Two cases of fair *Turkey* apple catalogued to be offered to-day had been sold previously at 2s. 6d. per lb. A parcel of *Almerian* colocynth was bought in at 10d. to 11d., for fair, 7d. to 8d. for ordinary, and 4d. for damaged quality.

COPAIBA (BALSAM).—Very firm. A parcel of bright brown balsam was bought in at 1s. 8d. to 1s. 11d., and thick pale *Maranham* at 2s. per lb.

CUBEBS.—In moderate supply. Five cases of fair quality *Singapore* berries sold to-day at 32s. 6d. per cwt.

CUS-CUS ROOT.—About 150 bales of this article, offered without reserve, were cleared off to-day at 5s. 6d. to 6s. 6d. per cwt. for sound, and 4s. for damaged quality.

DRAGON'S BLOOD.—None was sold in auction, good bright *Singapore* lump being bought in at £9, and dark saucers at £5 per cwt.

ERGOT OF RYE.—Remains very dull and difficult of sale under any conditions. To-day 27 out of 43 bags of ordinary *Russian* fetched 4¾d. to 5d. per lb., whilst fair *Spanish* was bought in at 9d. to 10d. per lb.

GALBANUM (GUM).—Two bags of fair almondy block were bought in to-day at 1s. 3d. per lb. Privately good dry gum offers at 1s. 10d. per lb.

GALANGAL.—A parcel from *Hong Kong* was bought in at 22s. per cwt.

GAMBOGE.—An average supply, amounting to 19 cases, was offered, but the only lot sold was a case of good clean bright *Singapore* pipe, for which £9 15s. was paid.

GINGER.—At the weekly sales *Cochin* proved in quiet demand, and the whole supply was bought in, *A* at 72s. 6d., *B* at 62s. 6d., *C* cut at 50s., and cuttings at 27s. to 28s. per cwt. *Bengal* was also bought in for 18s. 6d. *Jamaica* root was in very good demand, and higher prices were paid for the better qualities, a few cases of medium

washed selling at 84s. to 85s., whilst partly scraped *Rhatoon* realised 69s., and dark to good ordinary ditto, 60s. to 66s. 6d. per cwt.

HONEY.—A good supply amounting to 146 cases was shown, and met with a fairly brisk inquiry. *Jamaican* was rather dearer, 26s. 6d. being paid for good clean bright, and 19s. to 21s. for ambery, part rather foul. *Chilian* sold at 21s. for 6 kegs of fair quality, whilst 20 casks of fine pale were bought in at 40s. A parcel of good pale *New Zealand* sold at 45s. per cwt.

IPECACUANHA.—*Rio* (Brazilian) root was represented at the sales by about 58 packages, and the prices paid showed a firm market, the majority of the business done being in drossy pickings mixed with a lot of stalk and dust. For 18 packages of this stuff, 3s. per lb. was paid, with the exception of one, which went for 1s. The prices paid for good root were as follows:—5s. 7d. for sound annulated, 5s. 6d. for good sound stout, and 5s. 4d. to 5s. 5d. for fair to good slightly damaged annulated, whilst 5s. to 5s. 1d. was paid for damaged root. *Carthagena* (Columbian) root sold at a decline of 3d. to 4d. per lb., 3s. 10d. to 3s. 11d. being accepted for sound damaged quality.

JALAP.—Is firm. Of 68 packages offered in sale to-day, 8d. per lb. was paid for a few, whilst privately business has been done in fair *Vera Cruz* at 8½d. per lb.

KOLA NUTS.—Although 49 packages were offered, little business was done. A box of ordinary dark grey *West Indian* sold at 5d per lb. Sound quality were bought in at 9d. to 1s.

LIQUORICE ROOT.—*Persian* root is very slow of sale, and with large stocks quotes nominally at 6s. to 7s. 6d. per cwt. on the spot. Decorticated *Russian* root quotes at 28s. 6d. per cwt., *c.i.f.* terms.

MENTHOL.—Is quiet. Business has been done during the week at 13s. per lb., but it is doubtful if this price could now be obtained, and quotations range from 12s. 3d. to 12s. 9d. per lb. on the spot. For delivery the last price we heard was 11s. 6d. per lb. *c.i.f.* terms. At the drug sales 3 cases of *Cocking's* brand were bought in at 17s.

MYRRH (GUM).—A very large supply was offered, but proved very slow of sale. For 3 bales of clear native picked gum, 75s. to 77s. 6d. per cwt. was paid, but all the other parcels were bought in.

OIL (COD-LIVER).—The market remains in an unsettled condition, with every prospect of greatly advanced prices for 1896 Norwegian oil. At the present time quotations vary exceedingly, but we think that 220s., *c.i.f.*, would certainly be the lowest price at which the new season's oil could be bought, in fact some holders ask 240s. per barrel. On the spot, business has been done at greatly advanced prices in 1895 oil, 195s., followed by 200s., having been paid for good quality. *Newfoundland* oil is also exceedingly scarce and dear, business having been done privately at 6s. 6d. per gallon, whilst a cask which was catalogued for to-day's sale had been disposed of privately at this figure.

OILS (ESSENTIAL).—*Star anise* oil is unchanged, but there is now a decided disposition to sell. Business has been done during the week at 9s. 10½d. to 10s. per lb., but no doubt 9s. 9d. would be readily accepted. *Eucalyptus*: Business has been

done privately in the *Platypus* oil (testing 55 per cent. eucalyptol) at 2s. 2d. per lb. For nine cases of this oil 2s. was refused to-day in sale. *Peppermint*. *H. G. Hotchkiss's* oil offers at 9s. 9d. per lb. *Japan* oil testing 40 per cent. of menthol was bought in to-day at 7s. per lb., whilst *dementholised* offers at 5s. 3d. to 5s. 6d. per lb. on the spot. Several parcels of essential oils were bought in to-day, including *Bombay Rose* oil at 4d. per oz.; *Ylang-Ylang* at 5s. per oz.; *Sandalwood* (McD., S. and Co.'s) at 9s. per lb.; *Sweet Orange* (G. Hamnett's) at 8s. per lb.; *Citronella* at 2s. 2d. per lb.; and *Japan Camphor* oil at 50s. per cwt.

OILS (FIXED) AND SPIRITS.—*Castor* is very firm, and likely to advance. Best quality *Italian* oil is now quoted at 31s. 6d. per cwt., *c.i.f.* terms. *Cotton* is rather firmer, the closing price for *refined* oil being £16 10s. to £17 5s. on the spot. *Cocunut* is firmly held, and prices seem likely to advance further. *Ceylon* is now quoted at £23 on the spot, and *Cochin* at £27, showing an advance of 5s. to 10s. *Linseed* is to-day firm, but prices show a decline on those of last week, oil in barrels being now quoted at £19 10s. to £19 12s. 6d. on the spot. *Rape* is quiet, but firm, *refined* oil being worth £24 10s. to £25 on the spot. *Turpentine* is rather firmer, but quotations remain unchanged at 2s. 1½d. on the spot for *American* spirit. *Petroleum* is practically unchanged in price after being easier earlier in the week. *American* oil quotes at 5½d.; *water white* at 6¼d. to 6½d., and *Russian* at 5¾d. to 5½d. on the spot.

ORRIS ROOT.—A large supply of *East Indian* root from Aden was offered at to-day's sales, but was all bought in at 20s. to 30s. for ordinary to fair dark lean sorts. Eight bales of fine *Florentine* root were also withdrawn at 80s. per cwt.

POTASSIUM PERMANGANATE.—A very firm market, and likely to advance further, the supplies being very limited. At present the lowest price for small *crystals* seems to be 67s. 6d., and for large, 70s. to 72s. 6d. per cwt. on the spot.

QUASSIA.—In auction, 8 tons of *wood* sold without reserve at 77s. 6d. per ton, whilst £6 15s. was paid for a ton of *chips*.

QUININE SULPHATE.—This market has been generally quiet since our last report, but revived considerably during the last few days. Earlier in the week the best *German* brands were quoted at 1s. 1½d. per oz., with no business reported, but on Wednesday, 1s. 1½d. was paid. The market closed firm.

RHATANIA ROOT.—Five bales of this drug sold at 9d. per lb.

RHUBARB.—Very slow of sale. Out of 149 cases offered only 4 found buyers, 5d. per lb. being paid for small wormy rough high-dried, and 7d. for flat wormy ditto, whilst a case of medium round *Canton*, part wormy, realised 10d., and ditto flat, 8½d. per lb.

SARSAPARILLA.—Only one bale of *Jamaica* was offered to-day, which sold at 11d. per lb. for damaged quality. Ordinary to sound *Honduras* was bought in at 1s. 1d. to 1s. 5d. per lb.

SEEDS (VARIOUS).—*Anise*: Good *Spanish* seed was bought in to-day at 28s. to 30s. per cwt. *Cumin*: Easier. Fourteen bags of

Maltese sold to-day at 33s. 6d. per cwt. for sound, and 30s. for slightly damaged quality. *Coriander* 70 bags of *Bombay* seed were bought in at 9s. 6d. per cwt. *Star Aniseed*: Genuine *Chinese* was bought in at 95s., and spurious ditto at 35s. per cwt. *Stavesacre*.—85s. per cwt. is asked privately for this article.

SCAMMONY.—Turkish *virgin* resin is tending easier. To-day 4 boxes, for which the limit recently was 31s. per lb., were bought in at 26s. to 30s. per lb.

SENNA.—The supply of 296 packages of *Tinevelly* leaves met with a fair inquiry at fully steady to dearer rates as follows:—Good bright green, 5d.; fair bright green, 3½d. to 4½d.; medium greenish, 3d. down to 1½d. per lb. *Pods* sold for 3¼d. per lb. No *Alexandrian* leaves were sold.

SHELLAC.—Privately the market is firm, but very quiet basis. *Second Orange TN* being quoted at 97s. 6d., and free *AC Garnet* at 92s. 6d. per cwt. For arrival, quotations are easier, business being done in *TN Orange*, January to March steamer, at 91s., *c.i.f.* terms. At the weekly sales a good competition was shown, and steady prices were paid for *Second Orange*, whilst *Garnet* was steady, and *Button* rather dearer. The prices paid were as follows:—*Fine Second Orange*: Pale free *DJ*, in diamond, 107s. *TN Orange*: Good strong pale free, 97s. to 98s.; fair bright curly free, 97s.; fair bright cakey, 95s. to 96s.; red livery free, 90s. to 91s., and low blocky liver 37s. to 38s. *Garnet*: Flat free ambery *G*, 90s.; block *OCC*, 82s. *Button*: Pale *A1*, 108s. to 109s.; blocky *BL2*, 84s. per cwt.

SOY.—A parcel of good thick *China soy* amounting to 142 casks, sold without reserve at 10d. to 10½d. per gallon, which shows a slightly firmer market on the rates recently paid privately. In addition, 4½d. to 6¼d. per gallon was paid for 94 casks of *Japan*.

SPICES (VARIOUS).—*Cloves*: A good demand has been shown privately, and advanced prices have been paid to arrive, including 2¾d. to 2 11/32d. for March–May delivery, and 2¾d. to 2 15/32d. for June–August ditto. At the weekly sales, firmer prices were paid, low medium ordinary *Zanzibar* selling at 2d. to 2½d., medium at 2¾d., fair quality at 2¼d. to 2¾d., and good at 2¾d. Picked *Penang* was bought in at 7d. to 9d. per lb. *Pimento* is steady, ordinary grey selling in auction for 2½d., fair for 2¾d., and good fair for 2¾d. per lb. *Capsicums*: Very fine bright red, sold at 32s., and fine medium ditto at 46s. per cwt. *Chillies* are slow of sale; ordinary dull old *Zanzibar* realised 22s. 6d. in auction, and very ordinary stalky brown, 9s. 6d., per cwt, *Cassia vera*: In auction damaged quality sold at 16s. to 17s. per cwt.

SQUILLS.—Pale "firsts" sell privately at 3d. per lb., and medium "seconds" at 2½d.

TURPENTINE (CHIAN).—A case of this article inferior quality sold at 2s. 7d. per lb.

WAX (BEES).—Very firm, and prices have advanced considerably all round. *Jamaica* wax is about 10s. per cwt. higher, £8 10s. to £8 15s. being paid to-day for good red, and £8 2s. 6d. to £8 7s. 6d. for other grades. *Madagascar* is 2s. 6d. dearer, £6 17s. 6d. to £7 being paid to-day. For *East Indian*, £6 12s. 6d. to £6 15s. was paid, and £6 for *Spanish*.

EXCHANGE.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

Eight years' 'Pharm. Journal,' 1869 to 1878, good condition, bound, 7s.; several new glass retorts, receivers, etc., half cost; 4 oz bottles B.P. quinine. Offers or exchange.—Smith, Chemist, Portsea.

A book of 130 Well-tryed Recipes for Chemists and Druggists comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

For Sale.—Aitken's 'Medicine,' Playfair's 'Midwifery,' Erichsen's 'Surgery,' Walshe's 'Diseases of Heart,' Walshe's 'Diseases of Lungs,' Malgaigne's 'Operative Surgery,' Virchow's 'Cellular Pathology.' Particulars and prices forwarded by Rawling, Chemist, Torquay.

Miscellaneous.

Ruhmkorff Surgical Coil, splendid condition, in strong case, with four half-pint bichromate batteries, price 26s., worth 40s.—Address, W. J. Lewis, King Richard's Road, Leicester.

Typewriter, Caligraph, No. 2; perfect order and condition, cost £20, lowest price £8.—"Bargain," 'Pharmaceutical Journal' Office, 5, Serle Street, London, W.C.

Southall's Norwegian Fishing Station Model; 'Post Office London Directory,' 1895, published at 32s. What offers? 3 ozs. quinine salicylate, 1s. 8d. oz.; 3 doz. floral vinolia soap, 3s. 8d. doz.—Matthew, 529, Battersea Park Road.

Shop Fittings.

Richard Pickering, chemist, Bryn, near Wigan, having closed branch will accept stock or any useful exchange for fittings, bottles, scales, mortars, jars, carboys, etc., complete.—Offers will oblige.

WANTED.

Wanted. Muter's 'Analytical Chemistry,' latest edition. Offers to—R. L. Morris, 18, Victoria Street, Dunfermline.

'Pharmaceutical Journal,' first 23 vols., bound, good condition.—Greenish, 20, New Street, Dorset Square, N.W.

Plate-glass Shelves and brackets, for window enclosure, give size and price.—Alfred Smales, Chemist, New Shildon.

** Attention is specially directed to the new conditions of the "Exchange," in accordance with which a small charge will in future be made for the insertion of notices. The careful observance of those conditions will tend to obviate much inconvenience and possible delay.

LIVERPOOL MARKET REPORT.

[From our own Correspondent.]

MARCH 4, 1896.

LINSEED: Firmer, and spot parcels in good demand at higher rates. *Turkish*, 35s. 9d. to 36s. *Tribizonde*, 32s. 6d. to 33s., per 416 lbs. CANARY SEED is quiet at reduced prices; *Turkish*, 32s. to 33s.; *Barbary*, 35s. to 37s. 6d., and *Spanish*, 44s. to 46s. per 464 lbs. KOLA NUTS: 8 bags of fresh have been sold at 7d. per lb.; 58 bags *Gold Coast* dried, sold at 3½d., per lb. GINGER. 25 bags of old crop *Sierra Leone* have been disposed of at 23s. per cwt. *ex store*; also 50 bags of *Sierra Leone* at 24s. CHILLIES: 200 bags of *Sierra Leone* sold at 23s. to 32s. 6d. per cwt. CARNAUBA WAX: A good amount of business has been done during the week, present price for good grey is 100s. per cwt., and yellow 125s., sales of ordinary grey have been made at 95s. OLIVE OIL is still strongly maintaining its recent advance, *Malaga* is £29 10s. to £30 10s., per tun, and *Seville*, £29 to £30. CASTOR OIL is very steady; *Madras*, 2½d. to 2½d. per lb.; *Calcutta*, good seconds, held for 2½d. *French*, 1st pressure, 2½d. to 2½d. per lb. LINSEED OIL. Quiet at 20s. 3d. to 21s. per cwt. COTTONSEED OIL: remains steady at 17s. 3d. to 17s. 6d. per cwt. SPIRIT OF TURPENTINE: firm on the spot at 21s. 3d. per cwt. PETROLEUM: *American*, 6½d. to 7½d. per gallon; *Russian*, 5½d. SAL AMMONIAC: 39s. per cwt. for first quality; 37s. for second. BLEACHING POWDER: Steady at £7 to £7 5s. per ton *f.o.b.* in hardwood casks. COPPERAS: *Lancashire*, 38s. per ton *f.o.b.*; *Welsh*, 36s. 6d. SULPHATE OF COPPER has advanced to £16 15s. to £17 per ton. PRUSSIAN OF POTASH: 8d. per lb. BICHROMATE OF POTASH: 4½d. per lb. CHLORATE OF POTASH: 4½d. to 4½d. per lb. CREAM OF TARTAR is steady at 105s. per cwt. for finest white. SODA CRYSTALS: £2 10s. per ton. SODA BICARBONATE: £7 per ton. CAUSTIC SODA: 7d. per cent., £7 12s. 6d. to £7 15s. per ton; 60 per cent., £6 12s. 6d. to £6 15s. BORAX: Crystals, 19s. 6d. per cwt.; powder, 20s. 6d.

NEWCASTLE CHEMICAL REPORT.

There are now evidences that the general improvement in trade is beginning to influence the chemical market. A distinctly better inquiry is now reported for home consumption, though shipping orders are still naturally slow at this season of the year. But as the spring advances these will come to hand more freely. There is no change in prices so far, but the tone is steadier, and the following quotations are well held:—SODA CRYSTALS: 36s. to 42s. 6d.; SODA ASH: (50 per cent.), £4; CAUSTIC SODA: (70 per cent.), £7 5s. to £7 15s.; BLEACHING POWDER: £6 10s. to £7 5s., according to destination. SULPHUR: £3 17s. 6d. SOUTH DURHAM SALT is in fair request at 9s. 6d. a ton *f.o.b.* for ordinary qualities.

NEW BOOKS AND NEW EDITIONS.

[Publishers are requested to send particulars of new publications, addressed "Editor, 17, Bloomsbury Square, W.C."]

SYNOPTICAL FLORA OF NORTH AMERICA. By A. GRAY, S. WATSON, and B. L. ROBINSON. Vol. 1, Part 1, Fascicle 1: Polypetalæ from the Ranunculaceæ to the Frankeniaceæ. Imp. 8vo., pp. 220, sewed. Price 11s. net. (Wm. Wesley and Son, London.)

AN EXERCISE BOOK OF ELEMENTARY PRACTICAL PHYSICS for Organised Science Schools under the Department of Science and Art, Evening Continuation Schools, and Elementary Day Schools, arranged according to the Headmasters' Association's Syllabus of Practical Physics. By R. A. GREGORY. 4to., pp. 190, sewed. Price 2s. 6d. (Macmillan and Co., London.)

LATE ADVERTISEMENT.

WANTED. — A Qualified ASSISTANT. About 25. London experience. Indoors. Single-handed, and to take charge when principal absent. Full particulars to PHARMACIST, 13, Hereford Rd., Bayswater. Seen by appointment.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

MONDAY, MARCH 9.

IMPERIAL INSTITUTE, at 8.30 p.m.

"A Tour through Australia," by H. Haywood.

TUESDAY, MARCH 10.

PHARMACEUTICAL SOCIETY (LONDON), at 8 p.m.

"The Pharmacy of Phosphorus," by Wm. Martindale.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.

"The External Covering of Plants and Animals: its Structure and Functions," by Professor C. Stewart.

IMPERIAL INSTITUTE, at 5 p.m.

"My Twelve Years' Stay in Cyprus" (II.), by Dr Max Ohnefalsch-Richter.

SOCIETY OF ARTS (APPLIED ART SECTION), at 8 p.m.

"English Book Illustrations, 1860-70," by J. Peonell.

ROYAL PHOTOGRAPHIC SOCIETY, at 8 p.m.

"Notes on Medical Photo-Micrography," by E. Roughton and C. Cosens.

ROYAL COLONIAL INSTITUTE, at 8 p.m.

"The Development of Tropical Africa," by Sir George Baden-Powell.

MIDLAND PHARMACEUTICAL ASSOCIATION, at 8.30 p.m.

"Laboratory Notes," by H. S. Shorthouse.

WEDNESDAY, MARCH 11.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

Library, Museum, School, and House Committee.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY, at 9 p.m.

Short Papers by Messrs. Jeeves, Lemon, and Yates.

SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY, at 8.30 p.m.

A Paper by G. T. W. Newsholme.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION, at 9 p.m.

Short Papers by Members.

THURSDAY, MARCH 12.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.

"Masters of Modern Thought" (II), Rousseau," by Reverend W. Barry.

SCHOOL OF PHARMACY STUDENTS' ASSOCIATION, at 6 p.m.

"Report on Inorganic Chemistry," by H. Reed.

"Report on Pharmacy," by W. Moore.

CHEMISTS' ASSISTANTS' ASSOCIATION, at 8.30 p.m.

"Nutrient Preparations of Beef," by A. W. Gerrard.

FRIDAY, MARCH 13.

ROYAL INSTITUTION OF GREAT BRITAIN, at 9 p.m.

"The Theory of the Ludicrous," by W. S. Lilly.

SHEFFIELD MICROSCOPICAL SOCIETY, at 8 p.m.

"Starch," by C. Carr.

SATURDAY, MARCH 14.

PHARMACEUTICAL FOOTBALL CLUB v. St. Michael's, at Wormthorpe Farm, Shepherd's Bush.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.

"Light," by Lord Rayleigh.

SUPPLEMENT

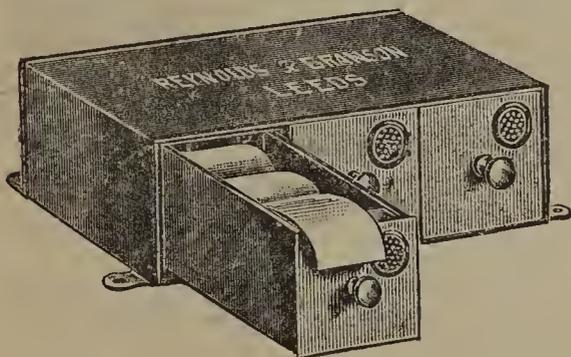
TO THE

PHARMACEUTICAL JOURNAL.

REPORTS, ANALYSES, AND NOTES ON NEW INVENTIONS.

STORAGE OF SURGICAL DRESSINGS.

THE PATENT DUST-PROOF SELF-CLOSING DRAWERS, made by Reynolds and Branson, of Leeds, are peculiarly adapted for the storage of surgical dressings. As is well known, when the temperature of a room sinks the air contracts, and when it rises the air expands, and as all boxes, drawers, etc., contain air, naturally the dust floating about in a room must with a fall of temperature be sucked into any ordinary box or drawer and there deposited, this process continually going on. For example, everyone must have noticed at some time or another the peculiar brown-fogged marks under the glass of an engraving, or on the white mounts of



water-colour drawings. It has been proved by careful experiments that the air will take the easiest passage, therefore, Messrs. Reynolds and Branson make all parts of these drawers tight-fitting, except a portion in front serving as an air filter. This is loosely packed with a suitable filtering medium, which can be renewed by anyone at pleasure without cost. By this means the air is filtered as it passes into the drawer. After a time the air filtering medium will be found darkened by dust that has been intercepted. Mr. Pridgin Teale, F.R.S., and other authorities are said to be delighted with these drawers, which are self-closing, though they will stop open when fully drawn out.

POWER FOR CHEMISTS.

THE need of convenient sources of power on a small scale is frequently felt in many of the details of every-day life and work. Messrs. F. Darton and Co., 142, St. John Street, Clerkenwell, should therefore have many enquiries respecting their recently introduced series of gas engines and dynamos, which are well worthy of attention. The smallest size gas engine costs 90s., whilst 50s. is the price of a ten-volt dynamo intended to work with it, but in addition there are larger sizes, some of which seem to be very applicable to the needs of pharmacists in want of a small installation of power. They also serve for illuminating purposes. In every instance the workmanship is excellent, whilst joint considerations of compactness, strength, and price are all that could be desired.

CREOCIDE.

BOTH the carbolated and non-carbolated forms of this new germicide, made by the Sanitas Co., Limited, Bethnal Green, E., have been examined and reported upon by Dr. S. Rideal, F.I.C., of Westminster. "Creocide" is a slightly alkaline mixture, consisting of the basic constituents of coal tar without any appreciable quantity of tar acids, mixed with a considerable amount of the principles of oxidised essential oils. "Carbolated creocide" is also alkaline, but contains tar acids with a correspondingly smaller quantity of the principles of oxidised essential oils. The 20 per cent. carbolated preparation "sterilised" bouillon cultures of *Staphylococcus pyogenes aureus*, *Bacillus coli communis*, *B. typhosus*, *B. diphtheriae*, and *Spirillum cholerae* in less than 5 minutes when added in the proportion of 2 per cent., whilst the non-carbolated creocide possesses about half that activity, and should not be used in solutions of a strength less than 2 per cent.

REMEDIES INTRODUCED IN 1895.*

(Continued from p. xxxix.)

Caesium Bromide.—Nervine and cardiac. Dose: 0.2-0.3 Gm.

Calcium Borate.—Antiseptic astringent. Dose 0.3-0.4 Gm. (in children).

Calcium Sulphocarbonate.—Internal antiseptic and disinfectant. Dose: 0.1-0.3 Gm.

Carniferrin.—"Compound of iron and phospho-sarcosolactic acid."—Hematinic. Dose: 0.5 Gm. per day.

Casein Ointment.—Casein (14), potassium and sodium hydroxide 4:1 (0.43), glycerin (7), vaselin (21), salicylic acid or borax (1), and water (56.57).—Dermic vehicle.

Chlorolin.—Mixture of mono- and trichlorophenols.—Antiseptic and disinfectant.

Citrophen.—Paraphenetidine citrate.—Antipyretic and analgesic. Dose: 0.5-1 Gm.

Cocaine-Alum.—Crystalline compound of cocaine and aluminium sulphates.—Local anaesthetic and astringent.

Collesin.—Professor Schiff's skin-varnish.

Copper Resinate.—Compound of cupric sulphate and resin, introduced as a remedy against fissured hoofs in veterinary medicine.

Cotarmine Hydrochlorate.—Salt of a base obtained by fractionation of narcotine.—Hemostatic.

Creosal.—Compound of creosote and tannic acid.—Astringent and antiseptic. Dose: 3 Gm. (representing 1.8 Gm. creosote) per day.

Creosote Calcium Hydrochloro-phosphate.—Antitubercular and antiscrophulotic. Dose: 0.1-0.3 Gm., in emulsion.

Crystalline.—Sodium salt of puresaccharin.—Sweetener.

Cutin.—Substitute for silk or catgut; prepared from the gut of cattle.

Cupratin.—Organic copper compound analogous to ferratin, containing 6 per cent. of cupric oxide.—Nervine.

Cuprohemol.—Copper hemol.—Succedaneum for the older copper compounds in tuberculosis, scrophnlosis, etc.—Dose: 0.2-0.15 Gm.,

Diacetylalphadiam-idophenetol.

Dihydroresorcin.—Antiseptic.

Diiodocarbazol.—Antiseptic.

Dithiochlorosalicylic Acid.— $S_2C_6H_4ClOH$ COOH.—Substitute for iodoform.

Enterol.—Liquid intestinal antiseptic. Dose: 0.005-0.015 Gm.

Eudoxin.—Bismuth salt of nosophen (tetraiodophenolphthalein), containing 52.9 per cent. of iodine.—Intestinal antiseptic. Dose: 0.3-0.5 Gm.

Euthymol.—Compound antiseptic solution.

Fellitin.—"Natural" medicinal soap, prepared from bile.—Chilblain remedy.

Fer Cremol.—Iron compound obtained from blood by the action of a "dilute neutral iron solution" containing 3 per cent. Fe.—Hematinic. Dose: 0.2-0.5 Gm.

Ferrohemol.—Ferrated hemol.—Hematinic. Dose: 0.5 Gm.

Ferropyrine.—Ferripyryne; compound of three molecules antipyrine and one molecule ferric chloride.—Chalybeate, analgesic, and astringent. Dose: 0.5-1 Gm.

Ferrosine.—Composition consisting of ferric oxide (70.75 per cent.), lime and albumin (10.20 per cent.), water, etc. (10-15 per cent.).—Paint for iron, as a colour, polishing material etc.

Fluorol.—Synonym of sodium fluoride.

Gallicin.—Methylic ether of gallic acid, $C_6H_2(OH)_2COOCH_3$.—Topical antiscrophulotic.

Glucin.—"Sodium amidotriacinsulphonate." Sweetener, 100 times as sweet as sugar.

Guaiacol Phosphate.— $PO(C_6H_4OCH_3)_2$.—Antitubercular.

Guaiacol Succinate.— $C_4H_4O_4(C_6H_4OCH_2)_2$.—Antitubercular.

Gynocyanauridzarin.—From *Gynocardia lancifoliata* and gold.—Antitubercular. Dose: 0.03-0.2 Mg.

Hemostaticum.—Extract thymus gland with 7 per cent. calcium chloride, rendered alkaline with soda solution.

Hematin-Albumin.—Dried albumin from ox-blood.—Hematinic. Dose: 1 or 2 teaspoonfuls.

Hexamethylenetetramine.—See Urotropin.

Hypnoacetin.—Acetophenonacetyl-paraamidophenol.—Hypnotic and antirheumatic.

Iodiformal.—Substitute for iodoform, similar to iodoformin.

Iodoformin.—Compound of iodoform and hexamethylenetetramine, containing 75 per cent. of iodoform.—Succedaneum for iodoform.

Iodogenin.—Mixture of powdered charcoal and potassium iodate, or some other oxygen compound of iodine, moulded into cones or pastilles.—Fumigant and disinfectant (for ignition).

Iodohemol.—Iodised hemol.

Iron Glycerino-phosphate.—Nervine. Dose: 0.15-0.3 Gm.

Iodoiodoformin.—Compound of iodine and iodoformin.—Succedaneum for iodoform.

Iodsuccinimide.—Succedaneum for iodoform.

Iron-Casein.—Compound of iron with casein.—Hematinic and nutritive.

Kreplinum.—Tincture Panama bark mixed with small quantities of aromatic oils.

Lactyltropeine.—From action of lactic acid on tropeine.—Cardiac tonic.

Laifan.—Crude, watery borneol, probably identical with Ngai camphor, and obtained from *Blumea balsamifera*.—Topical anodyne.

Lamolein.—Wool-fat.—Ointment base.

(To be continued.)

* Reprinted from *Merk's Market Report*.

MARKET REPORT.

[Specially compiled for the *Pharmaceutical Journal*.]

[The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.]

LONDON, MARCH 21, 1896.

Business in the chemical market has not developed any very striking features during the week, and where quotations have changed they have mostly been on the down line. The principle change amongst the chemicals has been the lowering of the price of cocaine hydrochlorate, which would now seem to have reached its limit. Opium alkaloids are very firm, quinine quiet and featureless, and caffeine flat. Arsenic is as scarce as ever, and is perhaps a trifle dearer. Carbolic acid is decidedly easier for crystals, whilst other varieties are unchanged. Citric acid is dull of sale at lower rates, whilst tartaric acid is quiet at unchanged rates. Cream of tartar is now quite a dead letter. Chrysophanic acid is firm, and there are no new developments to report in the price of atropine sulphate. The manufacturers of lithia salts have issued a circular during the week which intimates an all-round advance in the quotations. Permanganate of potash is very scarce, and rather dearer, whilst copper sulphate is firm at steady rates. In the drug market cod-liver oil continues to advance in price, and the prospects for the year are quite alarming. Opium is very fair, and the same applies to Persian gum acacia. We have to report an advance in insect flowers, whilst insect powder is also very firm. Peruvian balsam is quiet, and the same applies to cascara sagrada bark. Castor oil is very firm for the Italian variety, whilst the heavy oil market generally is unchanged. Spices are mostly steady, but the demand is not brisk. Shellac, after showing symptoms of a decline at the sales, has since firmed up somewhat. The only feature of the essential oil market is the advance in oil of star anise, in which a good business has been done. Full details will be found below:

ACACIA (GUM).—Business in *Persian* insoluble is greatly restricted, owing to the firmness of holders. For fair sorts, 13s. 6d. to 14s. per cwt. would be readily paid, whilst some sales of fine picked gum have been made at fully steady rates.

ACID (CARBOLIC).—The market has weakened since our last report, and *crystal* acid especially is considerably easier. Current quotations are now as follows:—*Crystals*, 34° to 35° C., 7d.; 39° to 40° C., 7½d.; 39° to 40° C. (*detached crystals*), 8½d. per lb. *Crude*: 60 per cent. quotes at 2s. 3d., whilst 75 per cent. is also unchanged at 2s. 7d. per gallon. *Liquefied* and *Cresylic* are returned at 1s. and 11½d. per gallon respectively.

ACID, CITRIC.—Very slow of sale at easier rates. Makers of *English* acid now quote 1s. 2¼d. per lb., whilst second-hand holders offer at 1s. 2d. per lb. *Concentrated lemon juice* is quoted at £14 to £14 2s. 6d. per pipe *f.o.b.* Messina.

ACID, TARTARIC.—The market is quiet, manufacturers of *English* acid still quote 1s. 3d. per lb., but holders of *foreign* brands, both in *powder* and *crystals* (not guaranteed B.P.) offer at 1s. 2d. to 1s. 2¼d. per lb. on the spot.

AMMONIA COMPOUNDS.—*Sulphate* is still slow of sale, grey 24 per cent. being still quoted at the unchanged rate of £8 10s. per ton on the spot, whilst *Hull* is worth £8 8s. 9d., and *Leith* and *Beckton* £8 7s. 6d. *Lignea*: 3¼d. to 3½d. per lb. less 5 per cent. *Sal Ammoniac*: Firsts, 39s.; seconds, 37s. per ton.

ARSENIC.—Is still very scarce, and firmly held. Good white powder is nominally quoted at 20s. and 20s. 6d. on the spot, whilst for lump, 28s. is the price.

ASAFCETIDA (GUM).—Since the drug sales a good business has been done, both in first and second hand, at advanced prices.

BORAX.—Very dull of sale. It was announced to-day that the Convention price had been lowered, but we have heard no confirmation of this. Second-hand holders offer at 19s. 6d. for *crystals*, and 20s. 6d. for *powder*, but the Syndicate prices are 20s. to 21s. respectively.

CAMPHOR (CRUDE).—The market is firm but quiet. Earlier in the week business was done in *Formosan* camphor to the extent of 100 piculs at 167s. 6d. for March to May shipment, but although there are further buyers at this rate there is none to be had. *Japan* is firm, being quoted nominally at 187s. 6d., *c.i.f.* terms. The shipments from *Japan* during February only amounted to 800 piculs. It is said that the steamer *Spondilus*, which was wrecked at Cape Varella, had on board 2000 piculs of *China* and 1000 piculs of *Japan* camphor.

COAL DISTILLATION PRODUCTS.—*Toluol* is quoted at 2s. per gallon for *pure*. *Benzole* is easier, 50 per cent. being now worth 1s. 9d., whilst 90 per cent. is quoted at 2s. 1d. per gallon. *Creosote*: 1½d. per gallon. *Solvent naphtha*: 95 per cent. at 160°, quotes at 1s. 6d.; 90 per cent. at 160° C., at 1s. 3d., and 90 per cent. at 190° C., at 1s. 1½d. per gallon. *Pitch*: 34s. per ton *f.o.b.* *Tar* quotes at 12s. per barrel for *refined*.

COCAINE.—Since our last report the majority of the *German* makers of *hydrochlorate* have reduced their quotations, and now offer 100 oz. lots (in tins) at 12s. 10d. per oz., 1-oz. bottles being charged 2d. per oz. more. One brand is, however, still quoted at 14s. 6d. per oz. This reduction in price is said to be partly due to the large amount of crude cocaine which has recently arrived, and partly with a view to under-selling possible outside makers.

CREAM OF TARTAR.—Is now quite a dead letter, and prices have dropped considerably. On the spot best white *French crystals* offer at 95s., and *German* brands of *powder* at 92s. per cwt.

GALLS.—There is very little business doing in *Persian* galls. Some small sales have been made of fine *blues* at 54s. to 55s., and *greens* at 47s. 6d. per cwt., whilst *whites* are quoted nominally at 45s., but there are

no offers. In auction on Tuesday 25 cases of fair *Japan* galls were bought in at 55s. per cwt.

GINGER.—Is rather slow of sale. In auction on Wednesday about half the *Cochin* root offered sold at about steady rates, 26s. to 26s. 6d. being paid for cuttings, 31s. for small and rough ends, 34s. to 35s. for washed rough, and 47s. for medium half cut, whilst medium to bold native cut realised 55s. to 58s., and bold ditto 67s. 6d. New *Jamaica* root of good quality sold at fully steady rates, 95s. being paid for medium washed, 71s. 6d. to 80s. 6d. for medium scraped, 66s. to 69s. for small *Rhatoon*, and 60s. to 65s. for small dark ditto.

INSECT FLOWERS.—Are very firmly held at a slight advance in price, the following being the current quotations:—Closed wild flowers, 145s.; closed cultivated flowers, 135s.; half closed, 102s. 6d.; and open, 85s. per cwt., all *c.i.f.* terms. *Powder* is quoted at 102s. 6d. per cwt., *c.i.f.* terms.

LITHIA SALTS.—The makers of *lithia* compounds have advanced their prices since our last report, and now quote for *carbonate* and *citrate* as follows:—Small lots, 9s. 6d. and 6s.; 28 lb. lots, in one delivery, 9s. 3d. and 5s. 9d.; 112 lbs., in one delivery, 9s. 1d. and 5s. 7d.; 2 cwt., contract over three months, 8s. 11d. and 5s. 6d. These prices are for pure *carbonate* and crystallised *citrate* respectively, powdered *citrate* being charged 3d. per lb. more.

MENTHOL.—Very quiet on the spot, with nominal quotations varying from 12s. 3d. to 12s. 9d. per lb. The shipment price is 12s. to 12s. 3d. per lb., *c.i.f.* terms.

OIL (COD-LIVER).—The last official report, dated March 2, gives the following particulars:—

	Fish caught (thousands).		
	1894.	1895.	1896.
Lofoten	5700	5000	1200
Winter districts	5871	3683	1623
	11571	8683	2823

	Cod-liver oil in hectolitres.		
	1894.	1895.	1896.
Lofoten	2713	1664	400
Winter districts	3603	1738	661
	6316	3402	1061

It is also stated that nothing was done in Lofoten or the winter districts during the week previous to the issue of the report, but the weather has now improved considerably, and better results may be expected. The production of cod-liver oil in the Lofoten district up to March 7 for the last four years compares as follows:—

1896	904	hectolitres.
1895	3713	"
1894	4460	"
1893	8548	"

On the spot a good business has been done, but owing to the extreme prices asked for

new *Norwegian* oil, a large portion has been in 1895 oil, for which 200s. to 210s. is the current quotation on the spot. The new season's oil has sold at 240s. *c.i.f.* per barrel of 25 gallons, and this is certainly the lowest price at which it can be bought, in fact some holders ask 260s. *c.i.f.* The position of *Norwegian* oil has naturally caused considerable attention to be paid to *Newfoundland* oil, in which a good business has been done at prices varying between 6s. 6d. and 7s. per gallon. The latter variety bids fair to become a formidable opponent to *Norwegian* oil, as the quality has been considerably improved of late, the erection of new factories and machinery having enabled the producers to put a non-congealing oil on the market.

OILS (ESSENTIAL).—The feature of the essential oil market during the week has been the advance in *Star Anise* oil, which has revived considerably in price. During the week, sales have been made at 10s., followed by 10s. 3d., the latter price having been paid for considerable quantities. Since then, 10s. 4½d. has been bid and refused, and some holders now ask 10s. 6d. per lb. The stocks, both in London and Hamburg, are very low. The last shipment quotation was 10s. 10d. per lb., *c.i.f.* terms. *Cassia* oil is slow of sale, 8s. to 8s. 6d. being nominally quoted for 70 per cent. oil. There is nothing to report in any other oil.

OILS (FIXED) AND SPIRITS.—*Castor*: *Italian* oil is very firmly held in consequence of the scarcity of the raw material, best quality being quoted at 30s. 6d. per cwt. *c.i.f.* terms. *Cotton* is rather quiet, but fully steady, *refined* oil being still quoted at £16 10s. to £17 5s. on the spot. *Coco-nut* is very firm, *Ceylon* being, if anything, a trifle dearer at £23 to £23 5s., whilst *Cochin* is still quoted at £27. *Linseed* is quiet, but practically unchanged in value, oil in barrels being quoted at £19 10s. on the spot. *Rape* is slow of sale, but the quotations are steady at £24 10s. to £25 for *refined* oil on the spot. *Turpentine* is steady at unchanged rates, *American* spirit being quoted at 20s. 1½d. on the spot. *Petroleum*: The market for *American* oil is firmer, a better inquiry being shown. Quotations range from 5½d. to 5¾d., whilst *water white* is quoted at 6¾d. to 6¼d., and *Russian* at 5¾d. to 5¼d. on the spot. *Petroleum spirit*: *Ordinary* quotes at 9d. to 9¼d., and *déodorised* at 9¼d. to 9½d. per gallon.

OPIUM.—The London market continues very firm, without any change in the quotations, which are as follows:—*Soft shipping*, 12s. to 12s. 9d.; *Smyrna*, 8s. 6d. to 9s.; *Constantinople*, 8s. 6d. to 9s. 6d.; and *druggists' seconds*, 8s. to 8s. 6d. per lb. Business has been done in fine *Persian bricks* at 13s. per lb., and there is some likelihood of advanced prices for this quality. *Fair ball* is quoted at 12s. to 12s. 6d. per lb.

OPIUM ALKALOIDS.—Very firm, without any change in price, *morphine*, in 1000 oz. lots, being quoted at 4s. 7d. for *powder*, and 4s. 9d. for *cubes*, whilst *codeine* is quoted at 10s. 6d. to 11s. per oz.

POTASH COMPOUNDS.—*Chlorate* is steady at 4½d. per lb. on the spot or for forward delivery. *Permanganate* is exceedingly scarce, and continues to advance in price, 70s. being now asked for small, and 75s. per cwt. for large *crystals*. *Bichromate*: 4½d.

per lb. *Yellow Prussiate* is quoted at 8d. per lb. for ordinary brands. *Cyanide*: For 98 per cent. 1s. 5d. per lb. is asked. *Bromide* quotes at 1s. 8d. per lb.

QUICKSILVER is steady. Importers still ask £7 2s. 6d. per bottle, and there are no sellers in second-hand under £7 2s.

QUININE SULPHATE—The market for the best *German* makes has lapsed into a quiet and featureless condition, with little or no business reported. The nearest quotation for *B. & S.* and *Brunswick* is 1s. 1¼d. per oz. During February the landings were 24,496 ozs. and the deliveries 68,016 ozs., making the stock on the 29th February 1,930,369 ozs., against 2,609,008 ozs. at the corresponding period in 1895.

SHELLAC.—A somewhat improved demand has been shown since last week's auction, and moderate sales of ordinary to fair *Second Orange* have been made at 92s. to 96s. per cwt. on the spot. The arrival market is quiet, *T.N. Orange* being quoted nominally at 88s. to 90s. *c.i.f.* terms. In auction on Tuesday a fair demand only was shown, and *T.N. orange* barely maintained its previous value, in some cases selling at 1s. decline. *Garnet* was all bought in, whilst *Button* was lower. Since the sales the market has been firmer, 500 cases of *Second Orange* having been sold for arrival at 90s., *c.i.f.*, April to June shipment, whilst for July delivery an additional 500 cases have been sold without mention of the price.

SODA COMPOUNDS.—*Hyposulphite* is quiet, the spot price being £7 7s. per ton in kegs, whilst casks offer at £6 15s. *f.o.b.*, Tyne. *Caustic soda* is quoted at £7 15s. for 70 per cent. on the spot, with 60 per cent. offering at £1 less. *Soda crystals*. 42s. 6d. ex-ship or wharf, London. *Prussiate*, 6d. per lb. *Bicarbonate*: £7 10s. per ton on the spot. *Nitrate* is quoted at £8 5s. on the spot for *refined*, and £8 for *crude*.

SPICES (VARIOUS).—*Cloves* are quiet, but steady. In auction ordinary dark *Zanzibar* realised 2d., and good fair, 2¼d. per lb., whilst common dark *Amboyna* fetched 2¼d. *Cassia lignea*: None was sold in auction, unworked being bought in at 31s., and common to good broken at 18s. to 24s. per cwt. *Pimento*: Quiet, but steady, 2¾d. being paid for ordinary grey, 2¾d. for fair ditto, and 2½d. for good quality. *Cayenne pepper*: Six cases of *Natal*, 1895 import, sold without reserve at 9½d. to 10d. per lb. *Chillies* are dull of sale. For fairish dull *Zanzibar* 29s. was paid, and 11s. 6d. for brown stalky *Java*, offered without reserve. Good bright red *Japan* realised 75s. per cwt. *Capsicums*: Long red off stalk *East Indian* sold at 16s. to 23s. 6d. *Pepper*: Ordinary grey *Singapore* sold at 2¾d. per lb. *White pepper*: Sea-damaged *Penang* sold at 2¼d. to 2½d., whilst 4½d. was paid for fine *Singapore*, and 5d. for very fine ditto.

A NEW SYNTHETIC OIL.

The inferior quality of the majority of cassia oils at present on the market has induced Messrs. Schimmel and Co. to bring out a synthetic oil, which has obvious claims to consideration. This product is guaranteed to contain 98 per cent. of cinnamic aldehyde, and its price is very moderate when compared with

the natural product. It is said that comparative experiments made with soap, perfume mixtures have demonstrated that Schimmel's preparation is 25 per cent. stronger than a normal cassia oil containing 75 per cent. of aldehyde. In appearance it is of a golden-yellow colour of cinnamon like taste and odour. It has a specific gravity of 1.056, and is readily soluble in rectified spirit, even when diluted.

NEWCASTLE CHEMICAL REPORT.

The chemical market here continues quiet and without change. There is a fair inquiry for staple products for home consumption, but export business is still very slow, though the probable early opening of the Baltic may shortly be expected to have some effect upon this branch of the trade. The chief feature of the week has been the advance in sulphate of copper, which is now quoted at £19 per ton. Quotations to-day are as follows:—BLEACHING POWDER: £6 10s. to £7 5s.; SODA ASH: (52 per cent.), £4; SODA CRYSTALS: 36s. to 42s.; SULPHUR: £3 17s. 6d.; SOUTH DURHAM SALT: 9s. 3d. to 9s. 6d.; CAUSTIC SODA: (70 per cent.), £7 5s. to £7 15s.

LIVERPOOL MARKET REPORT.

[From our own Correspondent.]

MARCH 11, 1896.

CANARY SEED: *Spanish*, 46s.; *Turkish*, 32s. to 33s. per 464 lbs. KOLA NUTS: dried, 5d.; fresh, 7d. GINGER: *African*, old crop, 24s. to 24s. 6d.; new, 24s. CHILLIES: medium *Sierra Leone*, 24s.; good, 29s. 6d. to 30s. GUINEA GRAINS: 15s. 9d. to 16s. BEE-WAX: *Chilian*, £7 17s. 6d. to £8; *Gambier*, £7 2s. 6d. HONEY: *Mexican*, 24s. COCHINEAL: *Teneriffe* black in small amount at late rates. GUMS: *Arabic* quiet, *Hog Tragacanth*, 52s. 6d. TURMERIC: *Cochin* bulb and finger at recent prices. CASTOR OIL: *Calcutta*, good seconds, ex quay, 2 15/32d., ex store, 2½d.; *Madras* and 1st pressure *French*, 27½d. to 2½d. OLIVE OIL: *Malaga*, £30; *Seville*, £29 to £29 10s. SPIRIT OF TURPENTINE: 21s. 3d. LINSEED OIL: *Liverpool* makes, 20s. 3d. to 21s. COTTONSEED OIL: 17s. 3d. to 17s. 6d. in export barrels. COD OIL: *Newfoundland*, £17. PETROLEUM: *American*, 6d. to 7½d.; *Russian*, 5½d. to 5¼d. AMMONIUM CARBONATE: 3¾d. to 3½d. AMMONIUM SULPHATE: "Good grey," £8 12s. 6d. to £8 15s. SAL AMMONIAC: First quality, 39s. BLEACHING POWDER: £7 to £7 5s. for hard *f.o.b.* COPPERAS: *Lancashire*, 38s.; *Welsh*, 37s. COPPER SULPHATE: £19 10s. to £20. PRUSSATE OF POTASH: 8d. CHLORATE OF POTASH: 4¾d. NITRE: Kegs, 23s. 6d.; barrels, 23s. CREAM OF TARTAR: Finest white, 103s. to 104s. PHOSPHORUS: *Wedges*, 2s.; *sticks*, 2s. 1d.; *amorphous*, 2s. 8½d. BICARBONATE OF SODA: £6 15s. SODA CRYSTALS: £2 7s. 6d. to £2 10s. CAUSTIC SODA: 70 per cent., £7 10s.; 60 per cent., £6 10s. BORAX: Crystals, £19 10s.; powder, £20 10s. HYPOSULPHITE OF SODA: £6 15s. to £7 5s. NITRATE OF SODA: 7s. 10½d. to 8s. 3d. SULPHUR: Recovered, £3 17s. 6d. in bags; roll, £5 5s.; flour, £7 10s.

EXCHANGE.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

A book of 130 Well-tried Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

'Ure's Dictionary of Arts, Manufactures, and Mines,' 2100 engravings; 4 vols. complete, perfect condition, never used; published at £7 7s. Offers, cash or exchange.—Place, Betley, Crewe.

'Pharmaceutical Journal,' complete 54 vols.; vols. 1 to 36 bound, half calf, rest in numbers; good condition, £3 10s. 'Garrard's Herbal,' best edition, half morocco, fine condition, 35s.—Tanner, Westminster Hospital.

Miscellaneous.

Typewriter, Caligraph, No. 2; perfect order and condition, cost £20, lowest price £8.—"Bargain," 'Pharmaceutical Journal' Office, 5, Serle Street, London, W.C.

Indiarubber Mat, 36 ins. by 24 ins., quite new, perfect bargain, 16s. 6d.; also one 30 ins. by 24 ins., 15s., half cost, pattern perforated, and fluted surface; 11½ lbs. cetaceum opt., 15s., bargain.—Chemist, 4, Commercial Road, Peckham, S.E.

Two 4s. 6d. Wright's Liq. Carb. Deterg., 2s. 6d. each; 2 2s. 9d. Schouwer's Red X Pills, 1s. 6d. each; Paul's 2s. 6d. Ceraline, Creme Camélia, Poudre Lustrale, 1s. each—Matthew, 529, Battersea Park Road.

Telescope, 1½-inch object glass by Wray, ¼-inch Huyghenian eye-piece, mounted in polished brass, gives excellent definition, will divide a Gemini; price £2.—Brauer, Middlewich.

Spinal Jacket, good as new, cost £2. What offer?—Hardie, 8, Ealing Green, London, W.

Surplus stock, Spanish Herbal Cigarettes and Smoking Mixture. 1 doz. each 2s. 6d. cigarettes and smoking mixture; 2 doz. 1s. 6d. cigarettes and 1 doz. 1s. 6d. smoking mixture; 2 doz. each 1s. cigarettes and smoking mixture, newly stocked. Offers wanted for whole or part.—J. Pirie, Chemist, Keith, N.B.

WANTED.

'Wanklyn's Water Analysis,' 2 copies; U.S.P., 1894.—Barfoot, West Bars, Chesterfield.

Cushion or Pneumatic Safety; give 900 lbs. (about) MacLood's sheep dip, retail 6d. per lb., and 2 by 2 gals. charcoal filters, retail 25s. each.—Palmer, East Gates, Lynn.

* * * Attention is specially directed to the new conditions of the "Exchange," in accordance with which a small charge will in future be made for the insertion of notices. The careful observance of those conditions will tend to obviate much inconvenience and possible delay.

TRADE NOTES AND NEWS.

MR. VINCENT WOOD, the manufacturer of elastic surgical hosiery, whose works and rubber mills are situated in Nottingham, intimates that he has opened a new manufactory in London, fitted with all modern accessories, and is now in a position to guarantee the delivery of special orders the same day as received. This firm has now seven factories exclusively devoted to the manufacture of elastic hosiery, the whole of the material used from the rubber itself to the bindings being made by the firm's employes. Silk and cotton dyeing for their own needs, and for those of other firms, also forms an important department.

THE BRITISH ANTITOXINE MANUFACTURING COMPANY announce that the price of antitoxine—the anti-pyretic—has been reduced to 3s. per ounce.

MESSRS. EVANS, SONS, AND Co., of Liverpool, and Messrs. Evans, Lescher, and Webb, of London, publish a half-yearly price current of drugs, chemicals, druggists' sundries, proprietary articles, etc., which is a wonderful production. It contains more than 120 pages, devoted to price lists of the various products offered by the firm, and as many more which serve as a general buyer's guide, selected advertisements having been accepted for publication in the book.

FOOTBALL

METROPOLITAN v. WESTMINSTER.—This match was played on Tooting-Bec Common, Saturday, 7th inst., resulting in a victory for the Metropolitan by 7 goals to *nil*. On a previous occasion the Metropols also were victorious against the South London School of Pharmacy by 4 goals to 2.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

MONDAY, MARCH 16.

IMPERIAL INSTITUTE, at 8.30 p.m.
"The Technical Characteristics of Modern Pictorial Art," by C. Dyall.
PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.
General Meeting.

TUESDAY, MARCH 17.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.
"The External Covering of Plants and Animals: its Structure and Functions" (X.), by Professor C. Stewart.
SOCIETY OF ARTS, at 8 p.m.
"Bahamas Sisal Industry," by Dr. D. Morris.
IMPERIAL INSTITUTE, at 5 p.m.
"My Twelve Years' Stay in Cyprus" (III.), by Dr. Max Ohnefalsch-Richter.
ROYAL PHOTOGRAPHIC SOCIETY, at 8 p.m.
"Screens for Process Work."
"Note on Photogravure," by Cap'tain Collardon.
MIDLAND PHARMACEUTICAL ASSOCIATION, at 8 p.m.
Smoking Concert.

WEDNESDAY, MARCH 18.

PHARMACEUTICAL FOOTBALL CLUB AND CRICKET CLUB, at 7 p.m.
Annual Dinner.
ROYAL MICROSCOPICAL SOCIETY, at 8 p.m.
"Some American Rotifera," by Dr. A. C. Stokes.
WESTERN CHEMISTS' ASSOCIATION, at 9 p.m.
Discussion on "The Prescribing of Proprietary Medicines," to be opened by R. H. Parker.
MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION, at 9 p.m.
"Cod-liver Oil and Its Emulsification," by P. C. Arblaster.
BRIGHTON JUNIOR ASSOCIATION OF PHARMACY, at 9 p.m.
Social Evening.
MANCHESTER PHARMACEUTICAL ASSOCIATION.
Distribution of Prizes.

THURSDAY, MARCH 19.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.
"Goethe," by Reverend W. Barry.
LINNEAN SOCIETY OF LONDON, at 8 p.m.
"On the Structure of the Female Flowers and Fruit of Sararanga, Hemsl. (Pandanaeae)," by Dr. A. Stapf.
"On Two Little-known Opisthognathous Snakes," by G. S. West.
CHEMISTS' ASSISTANTS' ASSOCIATION, at 8.30 p.m.
"The Rational Pharmacist," by C. Morley.

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY, at 8.30 p.m.

"Solution," by R. C. Cowley.
"Some Weak Points in our Trade Morality," by H. Peirson.
GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION, at 9.15 p.m.
"Coal and Coal-Gas," by R. Tocher.
CHEMICAL SOCIETY (BURLINGTON HOUSE), at 8 p.m.
"The Constitution of a New Organic Acid," by H. J. H. Fenton.
"The Volume and Optical Relationships of the Monoclinic Series of Double Sulphates R₂M(SO₄)₂·6H₂O," by A. E. Tutton.

FRIDAY, MARCH 20.

ROYAL INSTITUTION OF GREAT BRITAIN, at 9 p.m.
"Immunitation Against Serpent's Venom and the Treatment of Snake-Bite with Antiveneno," by Professor T. R. Fraser.
ABERDEEN JUNIOR CHEMISTS' ASSOCIATION, at 9.30 p.m.
"Taxonomic Botany," by H. Fraser.
EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION, at 9.15 p.m.
"Demonstration of Granulation on a Small Scale," by G. Lunan.

SATURDAY, MARCH 21.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.
"Light" (V.), by Lord Rayleigh.
PHARMACEUTICAL FOOTBALL CLUB v. Breweries, at Wormholt Farm, Shepherd's Bush.

PERSONAL.

MISS CATHERINE PERKINS, pharmaceutical chemist, M.P.S., was on Saturday last appointed dispenser to the Small Heath branch of the Birmingham and General Dispensary.

MESSRS. CARMAN AND WORKMAN announce in the *Cape Argus* that they have purchased the chemist's business, until recently carried on by Mr. F. P. Hutchinson, at Woodstock and Salt River. Mr. Carman holds the Major certificate of the Pharmaceutical Society of Great Britain, and is a member of that Society. He has been manager for Mr. Hutchinson at Salt River for over two years, and previous to leaving England was Dispenser to the Society of Apothecaries, Apothecaries' Hall, London. Mr. Workman holds the certificate of the Colonial Pharmacy Board, and has had varied English and Colonial experience.

SUPPLEMENT

TO THE

PHARMACEUTICAL JOURNAL.

REPORTS, ANALYSES, AND NOTES ON
NEW INVENTIONS.

THE "AREMA" VAPORISER.

The vaporiser manufactured by the "Arema" Manufacturing Company, High Holborn, W.C., appears to be one of the best appliances of its kind. It consists of a polished wood stand, 6 ins. in diameter, with stout brass rods springing from two sides and uniting at the top to form a handle. Sliding on these rods is a brass ring which supports a copper water bath, tinned inside and covered with an enamelled vaporising pan. Notches in the brass rods enable the ring to be supported at definite points, so that the temperature can be maintained at 110°, 130°, or 160° F. respectively. The source of heat is a night-light in a glass container and protected from draughts by a glass shade. In



use, water is heated in the outer copper pan, and gradually imparts its acquired heat to the liquid to be vaporised, which is contained in the enamelled pan. The complete apparatus is sold at 10s. 6d., but a less expensive form in tin retails at 5s. The "Arema" night-lights are made specially for the vaporiser, and burn for twelve hours. If desired, however, a wick floating on oil in the glass container can be used. Special non-

poisonous antiseptic inhalants are prepared for use with the vaporiser. These consist of a camphoraceous oil, pine oil, eucalyptus oil, and pure terebene, variously blended with benzoin, storax, tolu balsam, oil of amber, iodoform, thymol, and beechwood creosote, according to the purpose for which the inhalant is to be used. But the vaporiser is well adapted for diffusing any volatile substance, and ought to meet with considerable favour.

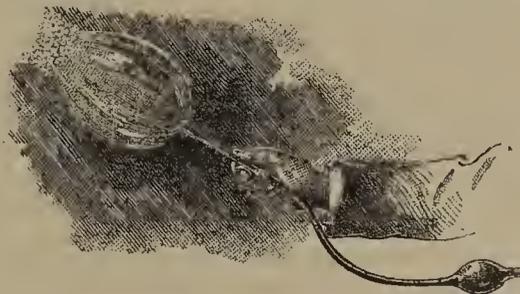
SAVAR'S COCA WINE.

Every chemist knows that few of the multitudinous coca wines on the market contain the proportion of alkaloid required by the Inland Revenue authorities in order to make them non-excisable. Recognising this fact, Messrs. Evans, Lescher, and Webb, 60, Bartholomew Close, E.C., have recently introduced a coca wine which is claimed to contain half a grain of cocaine alkaloid in each fluid ounce. Sample bottles have been distributed amongst the medical profession in London, and examination shows that the preparation is likely to be extensively prescribed whenever a standard preparation of coca is indicated. The vehicle used is a wine of Marsala character, and a clear mix-

ture is produced when it is added to either wine or water, which is by no means unpalatable. A dose of a dessert-spoonful is suggested as a suitable one to begin with, this being equivalent to about one-eighth of a grain of cocaine. The innovation is likely to maintain the prestige which the "Savar" series of pharmaceutical preparations has always possessed.

THE BALL NOZZLE SYRINGE.

This is one of the most ingenious modifications of a syringe nozzle that have yet been produced. A ball is placed loosely in a bell-shaped nozzle, and however great the pressure of water ejected, the ball remains in position and causes the issuing film of fluid to assume an unbroken egg-shape. For vaginal and rectal syringes, therefore, the



ball nozzle is perfect. The idea has also been applied to bath sprays, lawn sprinklers, fountains, and fire extinguishing apparatus. The address of the British-American Ball Nozzle Company is 52, Oxford Street, W., and the wholesale agents are Messrs. S. Maw, Son, and Thompson, Aldersgate Street, E.C. The ball nozzle syringe pipe in ebonite retails at 3s., but can also be obtained adapted to various kinds of syringes. The list price of the bath spray, a most welcome addition to the ordinary bath, is from 5s. upwards.

ORISINE.

An antiseptic mouth wash, consisting of a saturated solution of the antiseptic constituents of thyme, eucalyptus, wintergreen, and cloves, in conjunction with benzoic and boric acids, etc., is thus named by the maker—Mr. Anthony Nichol, pharmaceutical chemist, Carlisle. ORISINE is a clear, pinkish liquid, possessing a very agreeable aromatic odour. It mixes in all proportions with water, and possesses special advantages as a mouth wash in that it is neither poisonous nor irritant. It is neatly put up in white panelled flats with sprinklers, which retail at 2s. and 3s. 6d. each, and forms a decidedly elegant preparation.

TRADE NOTES AND NEWS.

THE LIQUOR CARNIS CO., LTD., announces that, owing to the scarcity and difficulty of obtaining Red Marrow, it has become necessary to increase the prices of VIOL SANS SUCRE from 9d. and 3s. 6d. to 1s. and 5s. retail. The trade discount remains as before.

MESSRS. REYNOLDS AND BRANSON, of Leeds, submit a price-list of their PATENT DUST-PROOF SELF-CLOSING DRAWERS, described in last week's Supplement. According to this, the price of a single drawer is 7s. 6d., a set of four is supplied for 25s., and a set of eight costs £2 2s.

NEWCASTLE CHEMICAL REPORT.

[From our own Correspondent.]

MARCH 17, 1896.

This market remains on the quiet side; over-sea orders, although the Sound ports and lower Baltic are open, not coming to hand readily. Home business runs steadily on, but not to any material extent to change values. Alkali has been advanced 5s. to 10s. per ton more through a restricted make than otherwise. Sulphate of ammonia is more stirring at late figures. Pitch easy. South Durham salt steady. Prices are:—SODA CRYSTALS: 36s. to 45s. BLEACHING POWDER: Softwood casks, £7 5s.; hardwood, £7 10s. CAUSTIC SODA: 76 to 77 per cent., £9 5s.; 70 per cent., £7 10s. to £7 15s. RECOVERED SULPHUR: £3 17s. 6d. SODA ASH: 48 per cent., £3 15s. ALKALI: 48 per cent., £4 10s. to £4 15s. HYPOSULPHITE OF SODA: Casks, £6 5s.; 1-cwt. kegs, £7. SULPHATE OF AMMONIA (Leith): £8 7s. 6d. PITCH: 34s. SOUTH DURHAM SALT: 9s. per ton *f.o.b.* Tees.

LIVERPOOL MARKET REPORT.

[From our own Correspondent.]

MARCH 18, 1896.

CANARY SEED: *Turkish*, 31s. per 464 lbs. LINSEED: *Turkish*, 35s. to 36s. per 416 lbs. *Samsoun*, 34s. CHILLIES: *African*, 24s.; *Sierra Leone*, 30s. 6d. HEMPSEED: *Chilian*, *ex store*, 28s. per 336 lbs. GUMS: 10 serons of *Arabic* "sorts" sold on private terms at slightly less than recent prices. KOLA NUTS: Scarce, dried medium, 4d.; fresh, 7d. OLIVE OIL: *Syrian*, £28 10s. CASTOR OIL: *Calcutta*, good seconds, 2 15/32d. to 2 1/2d.; *Madras* and *French* 1st pressure, 2 7/8d. to 2 3/4d. LINSEED OIL: 19s. 9d. to 21s. for *Liverpool* makes in export casks. COTTONSEED OIL: 17s. to 17s. 6d. in export barrels. SPIRIT OF TURPENTINE: Steady at 21s. 3d. PETROLEUM: *Russian*, 5 1/2d. to 5 3/4d.; *American*, 6d. to 7 1/2d. SAL AMMONIAC: First quality, 39s.; second quality, 37s. SULPHATE OF AMMONIA: £8 10s. for good grey. BLEACHING POWDER: £7 to £7 5s. COPPERAS: *Lancashire*, 38s.; *Welsh*, 37s. SULPHATE OF COPPER: Second-hand, £18 to £19. BICHROMATE OF POTASH: 4 1/2d. CHLORATE OF POTASH: 4 1/2d. PRUSSIAN OF POTASH: 8d. SALTPETRE: 85 bags of *Kurrachee* sold on private terms *ex quay*. CREAM OF TARTAR: Slow of sale, 103s. to 104s. for best white. BICARBONATE OF SODA: £7. SODA CRYSTALS: £2 10s. BORAX: Lump, 19s. 6d.; powder, 20s. 6d. CAUSTIC SODA: 70 per cent., £7 12s. 6d. to £7 15s.; 60 per cent., £6 12s. 6d. to £6 15s.

FOOTBALL.

METROPOLITAN COLLEGE v. BARRON HARVEY'S AND Co.—The above match was played on Tooting Bec Common on Saturday, March 14, and ended in a win for the Metropolitan College—8 goals to *nil*.

MARKET REPORT.

[Specially compiled for the *Pharmaceutical Journal*.]

LONDON, MARCH 19, 1896.

There are few important changes to report in the chemical market this week. Citric acid is quiet but steady, and the same applies to tartaric acid, whilst carbolic acid has firmed up again somewhat. Cream of tartar remains neglected, sulphur of copper very strong, ammonia compounds weak, and arsenic as scarce as ever. Potassium permanganate is very scarce and dearer, and likely to advance. Amongst the fine chemicals, camphor is quiet, whilst the various ackoloidal salts are unchanged in price. The fortnightly drug sales were held to-day, when the most important changes were as follow:—Brazilian and Columbian ipecacuanha, dragon's blood, gamboge, gum acacia, senna and cardamoms are all decidedly dearer. Sumatra benzoin, buchu leaves, and aloes are unchanged. Cod-liver oil continues very firm, and the scarcity of the new oil is as pronounced as when last reported on. Italian castor oil is rather easier, and the heavy oil market generally is slack. Shellac is rather easier, and spices are generally dull of sale. At the monthly cinchona auctions the unit declined in value.

ACACIA (GUM).—Previous to the sale a good business was done in *Soudan* sorts at considerably advanced rates, and this variety is now very firmly held. The present position of affairs in Egypt is, of course, directly connected with this renewed inquiry, as there is a possibility that supplies will be curtailed considerably. At to-day's drug sales a total of 172 packages were offered but no Turkey sorts were sold, medium to bold palish gum from Suez being bought in at 80s., and it was stated that this price has been paid. Three casks of bold ambery *Mogador* gum realised 37s. per cwt., whilst 42s. 6d. was paid for medium pale ditto. *Trieste* gum was in moderate supply only. For 6 cases of pale grain £5 10s. to £5 12s. 6d. per cwt. was paid, whilst a case of medium to bold picked greyish sold at £6 17s. 6d.

ACID, CARBOLIC.—The market is firm, in fact, *crystal* acid is rather dearer, the following being the current quotations:—*Crystals*: 34° to 35° C., 7¼d.; 39° to 40° C., 8d.; 39° to 40° C. (*detached crystals*), 9d. per lb. *Crude* is quoted at 2s. 3d. for 60 per cent. and 2s. 7d. per gallon for 75 per cent. *Liquefied* and *creylic* are unchanged at 1s. and 11½d. per gallon respectively.

ACID, TARTARIC.—The market is quiet. *English* makers still quote 1s. 3d. per lb., whilst holders of *foreign* acid, both in *powder* and *crystals* (not guaranteed B.P.), offer at 1s. 2d. to 1s. 2¼d. per lb. on the spot. At the sales on Tuesday *Cape argol* sold at steady rates, 51s. being paid for ordinary grey, 40s. for ordinary pink, whilst good grey was bought in at 65s. per cwt.

ALOES.—An average supply of 323 packages was offered in auction. *Cape* aloes, which was represented by 28 cases, was mostly bought in, but 20s. to 21s. was paid for ordinary quality rather drossy, which

shows no change in price. Fair to fine bright hard was bought in at 23s. to 25s. per cwt. All the best qualities of *Curaçoa* aloes, of which 283 packages were offered, were bought in, some damaged lots selling at 17s. down to 5s. per cwt., according to condition. Twelve kegs of *Socotrine* aloes were bought in at 60s. to 82s. 6d. per cwt.

AMMONIACUM (GUM).—Only 6 cases were offered to-day. Of these, 5, which consisted of good yellow loose drop, were bought in at 55s. per cwt.

ANNATTO SEEDS.—The unusually large supply of 75 packages was offered, but the demand was very moderate. For 2 bags of good bright *Colombo* seed 5d. per lb. was paid, whilst 2¼d. to 2½d. was accepted for ordinary dull seed from *New York*. *Madras* seed of good red colour was bought in at 8d. per lb.

BAEL FRUIT.—Three bags of this drug in slices were bought in to-day at 1s. per lb.

BENZOIN (GUM).—A good supply, amounting to 363 cases, was offered. *Siam* gum, which was only represented by 13 cases, was mostly bought in, but £10 was paid for a case of good bright brown almondy block, whilst medium to bold pale almonds, most loose, were bought in at £16, and siftings in block at 70s per cwt. *Sumatra* gum was in moderate demand for ordinary qualities, but a parcel of good seconds, small to medium almonds, fairly well packed, sold at £8 2s. 6d. to £8 10s., and a good inquiry is shown for this grade of gum. For ordinary dull false packed seconds, with few almonds, £5 15s. was accepted. *Palembang* gum was all bought in; fair seconds in tins at 35s., good pale almondy ditto, at 55s., and ordinary thirds in cases at 27s. per cwt. No Penang gum was shown.

BUCHU.—The supply offered to-day was only 39 packages, as compared with 96 last week, and even for these no inquiry at all was shown. Good *round* green were bought in at 4d., and broken greenish ditto, at 3¼d., whilst a single bale of fair stalky, greenish leaves fetched 2¼d. per lb.

CALUMBA ROOT.—Very slack. To-day, ordinary dark mixed *Zanibar* sorts were bought in at 9s., and good washed at 33s. per cwt.

CANELLA ALBA.—Five bales of mixed quill, imported from New York, were bought in to-day at 30s. per cwt.

CANNABIS INDICA.—Rather dearer. To-day 3d. per lb. was paid in auction for 10 robbins of greenish tops, whilst brown stalky ditto were bought in at 2¼ per lb.

CARDAMOMS.—An excellent demand was shown for this article to-day, when about 190 packages were offered. Some fine grades of *Mysore* cardamoms were offered, and an average advance of 3d. to 4d. per lb. was indicated, whilst *seed* was about 6d. per lb. dearer. The following prices were paid:—*Ceylon-Mysore*: Medium to bold pale, 3s. to 3s. 3d.; medium plump yellowish, 2s. 9d. to 3s.; small to medium pale, 2s. 4d. to 2s. 8d.; small to medium brown, 1s. 8d. to 2s. 3d.; and ordinary brown, 1s. 6d. to 1s. 7d. per lb. For *seed* 3s. per lb. was readily paid.

CASCARILLA.—Which was represented by 60 packages, sold readily at an advance, 50s. to 51s. per cwt. being paid for good round, silvery quill, whilst 32s. to 37s. was accepted for thin, stringy, brown bark, part grey.

CINCHONA.—An average supply was

offered at the fortnightly sales. The majority of the catalogue consisted of good manufacturers' bark, but only a moderate demand was shown, and easier rates were paid, the average amount being reduced from ¾d. to ½d. per lb. The prices paid were as follows:—*Ceylon*: *Succirubra* stem chips, 1d. to 1½d.; ditto renewed, 1d. *Officinalis* matured stem chips, 1½d. to 2d. Other descriptions, 1d. to 2¼d. *Indian*: *Succirubra* chips and shavings, 1¼d. to 2d.; fair ditto renewed, 1¾d. to 1¼d. per lb. *Officinalis* chips and shavings, 1¼d. to 2¼d.; short druggists' quill, 2d. *Ledger*: Fair matured chips, 1½d. per lb. *Java*: Rich stem chips, 3¼d. to 4d. *South American*: Cultivated Bolivian *Calisaya*, 2½d. to 3d. for ordinary quill, and 2½d. for fair chips. *African*: 2d. to 2½d. per lb. for fair quill and shavings. The total exports of cinchona bark from Ceylon from January 1 to February 29 were: Season 1896, 112,000 lbs.; 1895, 79,000 lbs.; 1894, 484,000 lbs.; and the total exports from Java from October 1 to February 29: Season 1895-96, 4,556,307; 1894-95, 3,700,624; 1893-94, 3,195,303 Amsterdam lbs. At the drug sale a parcel of *Maracaibo* bark, consisting of 32 bales, sold at 6½d. to 7d. per lb., whilst *Succirubra* bark was bought in at 4d. to 10d. per lb.

COCA LEAVES.—Ordinary brownish *Bolivian* leaves were bought in to-day at 1s. 8d. For *Truxillo* leaves, of good green colour, 1s. 3d. per lb. is asked privately. Eight bales of sound quality, but broken, were bought in at 1s. 4d. to 1s. 6d. per lb.

COPAIBA (BALSAM).—Very firm. To-day two casks of bright reddish *Maracaibo* balsam sold at 1s. 8d., whilst five cases of clear thin *Para* were bought in at 1s. 11d. per lb.

COLOCYNTH.—Is steady. A few cases of good *Turkey* apple sold in auction at 2s. 6d. per lb., whilst *Spanish* was bought in at 1s. 2d. to 1s. 4d. for sound, and 10d. for damaged quality.

CUBEBS.—Were in large supply, but absolutely no inquiry was shown, fair quality *Singapore* berries being all bought in at 33s. to 35s. per cwt.

DRAGON'S BLOOD.—Was represented in auction by 34 packages. For 2 cases of fine bright *Singapore* lump £9 15s. 6d. to £10 10s. was paid, whilst £6 was accepted for fair quality ditto. Dark saucers were bought in at £4 10s. to £5 10s., and reeds at £5 for dark (much broken and separated), and £3 10s. for good quality.

ELEMI (GUM).—This article proves quite unsaleable. To-day 25 cases of palish *Singapore* gum were bought in at 30s. per cwt.

ERGOT OF RYE.—Is still very dull of sale. To-day, out of 69 packages, 5d. to 5¼d. per lb. was paid for old wormy *Spanish* ergot, whilst fair quality was bought in at 9d. per lb. *New Russian* was also bought in at 7½d. per lb.

GALLS.—The market is quiet. At the sales on Tuesday, 100 cases of *China* galls sold without reserve at 57s. 6d. per cwt. for fair plum shape, the remainder being bought in, fair quality at 65s. per cwt. *Persian* galls are steady, *blues* being quoted at 53s. to 55s.; *greens* at 42s. 6d. to 44s. 6d., and *whites* at 43s. to 45s. per cwt.

GAMBOGE.—Was in very good supply, and selling with brisk demand at an advance in prices. For good clean bright *Singapore* pipe £10 was paid, whilst £9 5s. was accepted for medium quality. For fair damp

blocky pickings £8 2s. 6d. to £8 12s. 6d. was paid.

GENTIAN ROOT is very slow of sale. To-day 43 bales of fair quality *French* root were bought in at 23s. per cwt.

GINGER.—*Cochin* is steady, but slow of sale. In auction on Wednesday about a third of the catalogue sold, 70s. 6d. to 71s. being paid for fine bold native cut, 55s. to 55s. 6d. for good medium ditto, and 42s. to 45s. for good small ditto, whilst good cuttings realised 27s., and fair washed 34s. 6d. to 35s. All the *Bengal* and *Japan* root was bought in. *Jamaica* was in good supply, but only quiet demand. Good qualities fetched steady prices, but ordinary root sold at some decline. For low lean *Rhatoon* 53s. 6d. was paid, for good common 60s. to 63s., for ordinary medium washed 70s. to 74s., for medium bright washed 76s. to 80s., whilst 100s. was paid for a half barrel of fine quality.

GUAIACUM (GUM).—Out of 21 cases of this article offered in sale to-day, 2s. to 2s. 3d. was paid for good bright glassy block, and 2½d. to 4½d. per lb. for drossy mixed grades.

HONEY.—A good supply amounting to 355 packages was offered, and steady rates were paid, 20s. to 22s. being the price for ambery *Jamaican*, 25s. for pale *Honolulu*, and 21s. 6d. for *Chilian*. Good pale *Californian* was bought in at 38s. per cwt.

INSECT FLOWERS are very firmly held at the following quotations:—Closed wild flowers, 145s.; closed cultivated flowers, 135s.; half-closed, 102s. 6d.; and open, 85s. per cwt., all *c.i.f.* terms. To-day 4 bales were bought in at 100s. per cwt., whilst 10 kegs of so-called *insect powder* sold at 2d. per lb.

IPECACUANHA.—*Rio* (Brazilian) root was in very small supply to-day, and the bulk of the catalogue consisted of second-hand parcels. The prices paid show a very strong market, but nearly all was bought in. For fair quality, slightly damaged annulated root, 5s. 7d. was paid, showing an advance of about 3d. per lb., whilst 5s. 1d. was accepted for ordinary damaged quality. *Carthagena* (Columbian) root sold at an advance of 3d. to 4d. per lb., 4s. 2d. being paid for 7 bags of sound damaged quality.

KOLA NUTS—Are dull of sale. Out of 77 packages 10½d. was paid for sound *Grenada* nuts, and 7d. for seven bags of undried *West Indian* kolas.

KINO (GUM).—Thirteen packages of gum offered under the name of kino were offered to-day, but the majority was bought in. Six bags of the *African* variety were withdrawn at 15s. per lb., whilst a case containing eleven 7-lb. packets realised 9s. 6d. per lb. Four cases of astringent gum (mixed with bark) of a dark red colour were bought in at 45s. per cwt., and a box of gum, similar in appearance to the genuine gum, at 15s. per lb., after a bid of 10s. had been refused.

LIQUORICE ROOT.—Ten bales of *Persian* root of ordinary rough quality sold to-day at 7s. 6d. per cwt., whilst 2 bales of unpeeled *Russian* root realised 10s. per cwt.

MERCURIALS.—In consequence of the fall in the price of quicksilver, the manufacturers of *mercurials* on Tuesday announced a reduction of 1d. per lb. all round, and the following are now the current quotations for quantities of not less than 56 lbs.:—*Calomel*, 2s. 10d.; *corrosive sublimate*,

2s. 6d.; *red precipitate*, 3s. 1d.; *ditto levigated*, 3s. 1d.; *white precipitate*, 3s. 1d.; *yellow subsulphate*, 3s. 1d.; *persulphate*, 2s. 2d.; *sulphur with sulphur*, 2s. 1d.; *mercury with chalk*, 1s. 0d. per lb.

MYRRH (GUM)—In unusually large supply to-day, amounting to nearly 200 packages. The majority of this was, however, bought in, fine pale native packed at 110s., and good pickings at 65s. Twenty-one bales of ordinary drossy pickings fetched 21s. 6d. to 22s. 6d. per cwt., whilst 29 bags of ordinary sorts from Aden sold without reserve at 45s. per cwt.

OIL (COD-LIVER).—The London market continues very firm, and the prices asked for new *Norwegian* oil are so prohibitive that business in it is almost at a standstill. During the week 240s. per barrel *c.i.f.* terms has been paid, but although 260s. is asked in several quarters, we have not heard of this being paid. For 1895 oil of good quality quotations being from 210s. to 220s. per barrel, and a good business has been done during the week. *Newfoundland* oil is also in good demand, and 7s. 6d. per gallon is now asked for good quality, 7s. having been paid during the last few days. At to-day's sales, 21 casks of 1895 *Norwegian* oil were offered. Part of the parcel was bought in at 220s. per barrel, whilst the remainder, amounting to 75 casks, sold at 187s. 6d. According to the official report, the production of cod-liver oil this year in *Lofoten* up till—

March 14, 1896,	was 2090	hectolitres,
Against 1895	6467	"
" 1894	5360	"
" 1893	12845	"

OILS (ESSENTIAL).—*Rose*: Five pots sold in auction without reserve at 1d. per oz. *Cassia*: 13 drums of unworked oil imported from Hong Kong (*via* Bremen) were bought in at 10s. per lb., with oil testing 49 per cent. of aldehyde at 6s. *Eucalyptus*: Four cases of Tasmanian oil (*Eagle* brand) sold at 1s. 8d., and three cases of Australian oil (*R.M.* brand) at 1s. 7d. per lb. subject. In addition, three cases realised 9d. to 10d. per lb. *Citronella*: Five cases of *Fisher's* oil sold at 2½d. per oz., whilst for a case of so-called *Bergomot* oil, offered without reserve 2s. 6d. per lb. was paid. In addition the following oils were bought in at the drug sales:—*Cinnamon bark* oil at 7d. per ounce; *Cinnamon* at 1s. per ounce; *Cajeput* at 2s. 6d. per lb.; *Pascall's Lavender* at 11s. per lb.; *Mitcham Lavender* at 100s. per lb.; *Wintergreen* (*D. and O.'s* brand) at 6s. 3d. per lb., and white *Camphor* oil at 47s. 6d. per cwt.

OILS (FIXED) AND SPIRITS.—*Castor*: *Italian* oil is tending rather easier, and 20 case lots now offer at 30s. 6d. per cwt. *c.i.f.* terms. At to-day's drug sales 20 cases of of *Schmidt's Italian* oil offered without reserve sold at 30s. per cwt. *Cotton* has been very slow of sale, and prices being considerably lower, closes at £16 5s. to £16 10s. on the spot for *refined* oil. *Coco-nut* is very firm at unchanged rates, *Ceylon* being quoted at £23 to £23 5s. and *Cochin* at £27 on the spot. *Linseed* is, if anything, a trifle firmer, but the demand has not been very brisk. Oil in barrels offers at £19 10s. to £19 12s. 6d. on the spot. *Rape* is quiet, and *refined* oil now offers at £24 10s. to £24 15s. on the spot. *Turpentine* is quiet at

easier rates, *American* spirit being quoted at 20s. on the spot. *Petroleum* is decidedly firmer, a better inquiry being shown all round. *American* oil is quoted at 5½d. to 5½d., *Russian* at 5½d. to 5½d., and *water white* at 6½d. to 7d. per gallon on the spot.

ORRIS ROOT—Is slow of sale, but the market is firm. To-day lean dark *Aden* sorts were bought in at 25s. to 30s. per cwt., and best selected *Florentine* at 85s.

QUICKSILVER.—A large business has been done during the earlier part of the week, and on the 17th inst. the importers reduced their price 5s. per bottle, making the current quotation £6 17s. 6d.

RHUBARB—Was represented by about 190 chests, but the demand was only moderate, about 50 chests finding buyers at the following prices:—*Shensi*: Fine bold flat, good even pinky fracture, 2s. 5d.; ditto medium, 2s. 3d.; medium flat, fair fracture, 1s. 5d.; mixed round and flat pickings, 10d.; bold rough round (without reserve), 7d.; and very wormy round, 5d. per lb. *Canton*: About 40 cases, more or less wormy root, were cleared off at prices ranging from 7½d. to 8d. per lb., whilst pickings realised 6½d., and medium round, 7d. per lb.

SARSAPARILLA.—In very good supply and selling at steady rates, 1s. 3d. to 1s. 4d. being paid for good grey *Jamaica*, 9½d. to 1s. for *Lima-Jamaica*, and 1d. for *East Indian* sarsaparilla (*smilax*), whilst *Honduras* was bought in at 1s. 1d. to 1s. 4d.

SCAMMONY.—Fine *Turkish* virgin resin was bought in to-day at 31s. per lb. and *Skillippe* at 11s. *Root* sold at full rates 50s. down to 32s. per cwt. being paid for damaged grades according to condition.

SEEDS (VARIOUS).—*Turkish*: Several parcels of *Russian* seed were bought in at 22s. per cwt. *Cumin*: 61 bags of *Maltese* seeds, part sold at 30s. to 32s. 6d. per cwt. *Strophanthus*: *Kombe* seed was bought in at 3s. 9d. per lb.

SHELLAC.—Privately the demand has been quiet since our last report, but prices are fairly steady, *TN Orange* being quoted 95s. to 96s. In auction on Tuesday supplies were only small, but there was only a moderate demand, and owing to the firmness of holders, little business was done. A small quantity of ordinary red *Orange* sold (without reserve in some instances) at 93s. for fair red shivered, 90s. to 91s. for ordinary free livery, and 85s. for broken liver. A few cases of *Garnet* also sold at 88s. without reserve for blocky *AC*. Since the sales the arrival market has been firmer, business having been done in *Second Orange*, January to March shipment, at 91s. to 92s. per cwt.; also in *AC Garnet* at about 83s., February to March shipment.

WAX (BEES)—Very firm. *Jamaican* sold at £8 to £8 10s. for good quality; *Zanzibar* at £6 5s.; *Mogador* at £6 to £6 10s., and *Madagascar* at £6 10s. to £6 17s. 6d. per cwt.

A FORMER well-known figure in Mincing Lane circles has been removed in the person of Mr. Matthew Hale, formerly senior partner in the firm of Hale and Son, who died at his residence at Claydon (Suffolk) last Tuesday. The deceased who was in his eighty-four year had retired from active business pursuits for some years, and had devoted his time to country pursuits. The interment takes place on the 20th inst.

EXCHANGE.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

Wills' 'Fruits and Flowers'; Wills' 'Volumetric Analysis'; Wootton's 'Chemical Physics'; Scott's 'Structural and Physiological Botany'; Roscoe's 'Chemistry.' What offers?—"Chemist," 52, Ferndale Road, S.W.

'Pharmaceutical Journals,' complete, 54 vols., good condition, vols. 1 to 36 bound, half calf, rest in numbers, £3; 'Gerarde's Herball,' best edition, half morocco, fine condition, 30s.—Tanner, Westminster Hospital.

'MacNish's Drunkenness,' scarce, 3s. 6d.; 'Greek Euripidis,' 6 vols., 3s. 6d.; 'Parker's Zoology,' 3s. 6d.; 'Faraday's Chemistry of Candle,' 2s. 6d.; 'Golding Bird's Natural Philosophy' (12s. 6d.), 3s. 6d.—Davies, 33, Eglinton Road, Bow.

'Tannor's Practice,' 2 vols., 'Squire's Companion,' 10th, for 'Martindale's Pharmacopoeia,' 8th, 'Beasley's Receipts,' 10th, and good pharmacy or veterinary work, or offers.—Jones, Greenfield Villas, Llanely.

A book of 130 Well-tryed Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

Sir Thos. Watson's 'Practice of Physic,' 2 vols. (published £3), 7s. 6d.; Graily Hewitt's 'Diseases of Females' (published 16s.), 5s.; Liebig's 'Chemistries,' 2 vols. (published 19s.), 5s.—Davis, "Chesnuts," Gordon Hill, Enfield.

WANTED.

Fell's Australian Balm, 1s. 1½d. size. State quantity and price to—Gatward and Wright, Yeovil.

. Attention is specially directed to the new conditions of the "Exchange," in accordance with which a small charge will in future be made for the insertion of notices. The careful observance of those conditions will tend to obviate much inconvenience and possible delay.

MISCELLANEOUS NEWS.

FOOD ADULTERATION.—In again giving evidence before the Committee on Food Products Adulteration, on Tuesday last, Dr. Otto Hehner expressed the opinion that the fines inflicted upon offenders under the Food and Drugs Act were ridiculously insufficient. Then the law as to drugs, he said, was in a most chaotic state, and was fraught with no small danger to health. The law should state what a pure drug is. He also alleged that practically the whole body of public analysts differed in their analyses from those of Somerset House. In this connection the Chairman of the Committee stated that the Somerset House authorities had applied to be allowed to give rebutting evidence, and he thought the matter might well be fought out before the Committee.

PROPRIETARY ARTICLES TRADES' ASSOCIATION.—At a meeting of the Wholesale Section of this Association, on March 11, Mr. J. Thompson (S. Maw, Son and Thompson) occupied the chair, and a plan was considered which had been suggested for the wholesale trade by Mr. Thompson. The Secretary then reported what had been done at various meetings of the trade held throughout the country, and stated that the Manufacturers' Section had unanimously agreed to adopt the following scheme:—

"That as many manufacturers as chose to combine issue a circular to the wholesale trade, first fixing the minimum price they are to sell at, and requiring them to sign an agreement to maintain these prices, and also not to supply any of the articles included in the combination to any retailer whom the Association might notify as cutting, except at maximum retail prices."

After discussion, the meeting agreed to this scheme. Subsequently the question of a fair retail profit on proprietary medicines was gone into, and it was also agreed to support Mr. Park, of Plymouth, in his candidature for a seat on the Pharmaceutical Council.

COLIFORM BACILLI have been within the past few days discovered in the drinking water of two of the Dublin military barracks.

DEATH FROM AN OVERDOSE OF LAUDANUM.—On March 17, Mr. E. Hooper held an inquiry at the Leopard Inn, Horseley Heath, touching the death of Phyllis Smith, aged nine months.—The mother had been giving her cough mixture, purchased in pennyworths from a neighbouring beerhouse. On the night of March 13 she sent to a chemist for a pennyworth each of castor oil, laudanum, and syrup of rhubarb. These were mixed, and subsequently put into bottles that had contained the "cough syrup." Early on the morning of the following day the baby appeared to be restless, and was given a teaspoonful of the mixture, from the effects of which she died.—Dr. A. S. Underhill said the baby was brought to him and was then pulseless. It was with very great difficulty he aroused her. The child was evidently suffering from narcotic poisoning, and he was of opinion that too big a dose of the mixture had been given. Mixtures containing opium were sold at little shops, and it was no uncommon thing for children to be taken to his surgery after having had too large a dose of a sedative mixture.—The jury returned a verdict that the child died by taking an overdose of poison administered inadvertently.

A **HEAVY BILL** has been presented by the Clerk to the South Dublin Guardians, of over £50, for the expenses of taking a boy to the Pasteur Institute in Paris, and occasioned some strong language. One guardian said their clerk travelled like a nobleman.

LATE ADVERTISEMENT.

Pharmacist Wanted.

A **LEADING** London firm of manufacturing Chemists require a young **PHARMACIST** of ability, to superintend their Sugar-coating department. Must have had first-class practical experience in this class of work. Good prospects for the right man. Apply by letter, giving usual particulars as to age, experience, salary required, &c., to **EXCELLENCE**, care of 28, Gt. Marlborough St., London, W.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

MONDAY, MARCH 23.

IMPERIAL INSTITUTE, at 8.30 p.m.

"The Migration of Birds," by Dr. B. Sharpe.

TUESDAY, MARCH 24.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.

"The External Covering of Plants and Animals: Its Structure and Functions" (XI.), by Professor C. Stewart.

SOCIETY OF ARTS (FOREIGN AND COLONIAL SECTION) at 8 p.m.

"The Colonies and the Supply of Dairy Produce and Products of Petite Culture," by C. R. Valentine.

WEDNESDAY, MARCH 25.

SOCIETY OF ARTS, at 8 p.m.

"Our Food Supply, as Affected by the Farming of the Future," by Professor J. Long.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION, at 8.30 p.m.

First Annual Dinner at the Colonnade Hotel, Birminghham.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY, at 9 p.m.

Prize Essays on Dispensing.

THURSDAY, MARCH 26.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.

"Spinoza," by Reverend W. Barry.

SCHOOL OF PHARMACY STUDENTS' ASSOCIATION, at 6 p.m.

"The Work of Darwin," by Miss Harrison.

"Report on Analytical Chemistry," by J. R. Walker.

SOCIETY OF ARTS (INDIAN SECTION), at 8.30 p.m.

"Kashmir: its People and its Products," by W. R. Lawrence.

CHEMICAL SOCIETY, at 8 p.m.

Anniversary Meeting.

President's Address.

Election of Officers and Council.

CHEMISTS' ASSISTANTS' ASSOCIATION, at 8.30 p.m.

Social Evening.

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY, at 8.30 p.m.

"Some Pleasant Memories of Bygone Chemists," by C. Sharp.

FRIDAY, MARCH 27.

ROYAL INSTITUTION OF GREAT BRITAIN, at 9 p.m.

"New Researches on Liquid Air," by Professor Dewar.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.

"Opium: Its Uses and Abuses," by E. A. Hodge.

SHEFFIELD MICROSCOPICAL SOCIETY, at 8 p.m.

"Old Sheffield Scraps," by A. Jackson.

SATURDAY, MARCH 28.

PHARMACEUTICAL FOOTBALL CLUB v. Templars, at Wormholt Farm, Shepherd's Bush.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.

"Light" (VI.), by Lord Rayleigh.

SUPPLEMENT

TO THE

PHARMACEUTICAL JOURNAL.

MISCELLANEOUS NEWS.

IN RE NYRAM JONES AND ELVEN'S PATENT.—In the Court of Chancery on Thursday, March 26, before Mr. Justice Romer, a petition for the revocation of this patent was presented by the Pharmaceutical Society of Great Britain. The respondents did not appear, but as they had declined to acquiesce in the revocation when the petition originally came before Mr. Justice North, it was ordered to go into the list of witness actions for trial. — Mr. Roger Wallace, Q.C., and Mr. Sebastian appeared for the petitioners; and Mr. Michael Car-teighe having stated that the ingredients mentioned in the patent were all well known and in common use at the date of the patent, Mr. Justice Romer ordered the patent to be revoked, and gave the petitioners the cost of the petition.

ILLEGAL SALE OF POISON.—At the County Petty Sessions, Tenbury, before Major Decie, Colonel Wheeler, and Mr. Godson, George Turley, of High Street, Tenbury, was summoned for selling strychnine, he not being a qualified chemist, and also with keeping a shop for the sale of poisons. Mr. A. Spencer Thursfield, of Kidderminster, prosecuted, on behalf of the chief constable of Worcestershire.—It was explained that of late many animals had been poisoned in the district, and the sale of the poison could not be traced. A portion of a valuable pack of hounds had been destroyed, and many foxes had been found dead. One fox was opened, and a quantity of strychnine was found in the intestines. Acting under authority, a man went to the defendant's shop and asked for a shillingworth of strychnine. In serving him with the poison, the defendant asked him not to tell anyone where he had it from. The poison was handed to Sir William Chetwynd, the master of the hounds, who placed himself in communication with the chief constable.—The county analytical chemist declared that there was sufficient poison purchased by the man to destroy a small army.—The defendant was fined £3 10s., with the alternative of one month's imprisonment.—*Birmingham Post.*

BOY POISONED BY TRANSFER PICTURES.—An adjourned inquest was held at Seaforth, Liverpool, on Friday, 20th inst., on the body of a boy of four who died recently from irritant poisoning. The lad had been using "transfer pictures," highly coloured devices sold in toy shops, popular amongst children. These are made in Germany, and are usually licked with the tongue and pressed on the hand, the coloured impression being thus transferred. Since the first sitting of the jury an analysis of these pictures was made, with the result that they were

shown to contain lead. The Jury found this was the cause of death, and made a presentment that the sale of such pictures should be stopped.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.—The first annual dinner of the Midland Chemists' Assistants' Association was held on Wednesday night at the Colonnade Hotel, Birmingham, Mr. R. Darton Gibbs (President of the Midland Pharmaceutical Association) presiding. There was a large attendance.—After the loyal toasts Mr. R. M. Williams proposed "The Pharmaceutical Society." He said it had been in existence for fifty years, and during that period its progress had been very marked alike from the educational, benevolent, and defensive standpoints. He urged that there should be more unity amongst chemists, and that they should give greater adherence to the Pharmaceutical Society. He wished that Society all prosperity, and hoped it would make as much progress in the next fifty years as it had done in the past.—Mr. C. Thompson, in reply, advocated further support being given to the Pharmaceutical Society, especially by the younger members of the profession. Their Association could assist materially in the anti-cutting scheme which was now under consideration. There were certain manufacturers in London who would not join the movement, and who were waiting to see which way the cat jumped. The way the assistants could aid those who desired to legitimately raise prices was by putting such manufacturers' advertisements under the counter, and their literature into the waste paper basket, and by urging their employers to stir up those manufacturers to join the anti-cutting scheme. He spoke in favour of Sir John Lubbock's early closing Bill, and urged upon qualified assistants not to sell their qualifications to companies formed of persons who were not qualified. If they made up their minds to do that, the problem of company trading would soon be solved.—The Chairman gave "The Midland Chemists' Assistants' Association," and said that in the efforts at combination which they had made he was quite sure they had the best wishes of all who took an interest in pharmacy.—Mr. T. C. Clarke, in response, said although the origin of the Society was of recent date, no fewer than seventy members had been enrolled.

CHEMISTS AND LOCAL AFFAIRS.—Mr. James Cocks, of Edgecumbe Street, Stonehouse, the energetic honorary secretary of the Plymouth, Devonport, Stonehouse and District Chemists Association, is one of twelve gentlemen nominated to fill five vacancies on the Stonehouse District Council. Mr. Maitland, a Stonehouse chemist, is already on the Council. Mr. Maunder, chemist, has been elected on the Stonehouse Board of Guardians.

MR. J. R. D. BARFOOT, chemist and druggist, Chesterfield, has dissolved partnership with Mr. G. Sampson, and opened a new place of business at West Bars. The old business will be carried on by Mr. Sampson.

THE ADMINISTRATION OF HYPODERMIC INJECTIONS.—On March 23, an inquiry was held as to the death of Frederick Weatherall, thirty-nine years of age, a fish hawker, who died in the Birmingham Workhouse Infirmary on the 18th inst. The deceased had been ordered a hypodermic injection of strychnine, but Nurse Harris, in mistake, injected a small quantity of morphine solution. She quickly found out her mistake, and called Dr. Smyth, but the deceased died two hours later. Medical evidence showed that the injection accelerated death. A verdict of death from misadventure was returned, and the jury added that in their opinion, so far as practicable, all poisonous subcutaneous injections should be given under the superintendence of the resident medical officers.

SINGULAR DEATH OF A RELIEVING OFFICER.—On Monday, March 9, Mr. R. Jones-Roberts, Coroner for Anglesey, held an inquiry at Dwyran, touching the death of Captain Ellis, relieving officer for the Llanidan district of the Carnarvon Union. On the 28th ult. he met a mole-catcher named Hugh Morris, and in the course of conversation the latter said he had in his pocket a bottle containing hydrochloric acid and camphor for the purpose of curing mole skins. Deceased asked to see the bottle, and drank some of the contents, from the effects of which he died, after stating that he had no intention of harming himself. The Jury found that death had ensued from inflammation of the lungs, caused by the consumption of poison unintentionally taken.

ROYAL INSTITUTION.—The following are the lecture arrangements after Easter:—Professor James Sully, of University College, London, three lectures on "Child-Study and Education"; Mr. C. Vernon Boys, three lectures on "Ripples in Air and on Water"; Professor T. G. Bonney, two lectures on the "Building and Sculpture of Western Europe" (the Tyndall lectures); Professor Dewar, three lectures on "Recent Chemical Progress"; Mr. W. Gowland, three lectures on the "Art of Working Metals in Japan"; Dr. Robert Monro, two lectures on "Lake Dwellings"; Professor W. B. Richmond, R.A., three lectures on "The Vault of the Sixtine Chapel"; Mr. F. Corder, Curator of the Royal Academy of Music, three lectures on "Three Emotional Composers"—Berlioz, Wagner, Liszt (with musical illustrations); Mr. E. A. Wallis Budge, of the British Museum, two lectures on "The Moral and Religious Literature of Ancient Egypt." The Friday evening meetings will be resumed on April 17, when a discourse will be given by M. G. Lippmann on "Colour Photography"; succeeding discourses will probably be given by Professor G. V. Poore, Colonel H. Watkin, C.B., Professor Silvanus P. Thompson, Professor J. A. Ewing, Professor J. A. Fleming, and other gentlemen.

MR. OWEN I. JONES, chemist and druggist, Llanrwst, has been elected Vice-Chairman of the Denbighshire County Council.

FOOD PRODUCTS ADULTERATION.—A meeting of the House of Commons Committee on Food Products Adulteration was held on Wednesday, Mr. T. W. Russell in the chair, when Mr. R. Bannister, Analyst of the Inland Revenue Laboratory at Somerset House, gave rebutting evidence in reply to that tendered by the Society of Public Analysts, especially in regard to the analyses of butter and milk in those cases in which Somerset House analysts had differed from the conclusions arrived at by public analysts. He said that the Food and Drugs Act did not lay down any standard for butter or milk, and, therefore, there was nothing to prevent poor milk and poor butter being sold as genuine so long as they were not adulterated. He was of opinion that a great many traders had been convicted in those cases in which no appeal was made to Somerset House, owing to the incorrect standards adopted by public analysts. During the last five years Somerset House had instituted 1933 prosecutions, of which only 14 had failed, and fines were inflicted to the amount of £17,223. Referring to the difference between the Somerset House analysis of a sample of vinegar and that of a public analyst, the Chairman said that when he found that analysts of eminence differed so over the analysis of an ordinary sample of vinegar, he was bound to say, speaking as a member of the public, that his confidence in the whole system was destroyed.

USE AND STORAGE OF PETROLEUM.—A Select Committee of the House of Commons, presided over by the Right Hon. A. J. Mundella, sat on Wednesday to inquire into questions connected with the use and storage of petroleum. Colonel Sir Vivian Majendie, Her Majesty's Chief Inspector of Explosives, who was the first witness, stated that the great mass of petroleum used in this country was not regulated in any way by law, but only that kind which had a flash point below 73° Fahr., close test. Thus, while the sale of that form of petroleum known as benzoline was regulated, that form which was burned in lamps was under no restriction. He was decidedly of opinion that the present law did not sufficiently provide for the public safety, even as regards that form of petroleum which was regulated. The law was very incomplete, and gravely deficient in elasticity. There was no statutory disability which would prevent anybody from storing any number of thousands of barrels in any part of London, or in any part of any other populous place. There was no regulation prescribing the use of suitable packages for the conveyance of the oil, and there was generally no power vested in any central authority to impose or require to be made regulations enjoining due precautions in the conveyance of petroleum, this being an omission which, in view of the increasing trade in bulk, was of a serious character.

THE "KEPLER" MUSICAL SOCIETY, the president of which is Mr. R. C. Sudlow, held a smoking concert at the Masons' Hall Tavern, Coleman Street, E.C., on Thursday evening last, and it is needless to say that the musical fare provided was of the usual high class.

MARKET REPORT.

[Specially compiled for the *Pharmaceutical Journal*.]

[The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.]

LONDON, MARCH 26, 1896.

A very quiet week in the produce markets must be reported, and changes have been but few, and not strikingly important. There is nothing new to report in the various alkaloids, cocaine being unchanged, opium alkaloids very firm, quinine and caffeine quite featureless. arsenic is still very scarce, and firmly held at nominal rates. Carbolic acid has not maintained its position, and crystal acid is particularly easier. Citric acid is dull of sale at unchanged rates, tartaric acid is quiet, whilst chrysophanic acid is very firmly held. Per. manganate of potash and sulphate of copper remain very firm. In the drug market we have to report a firm market in opium, which is advised dear from Smyrna, whilst the London market is also very firm. The insect flower market is very firm, stocks being reported very low in Trieste, whilst saffron has also a tendency to dearer rates. Peruvian balsam is easier, whilst on the other hand tolu balsam inclines to dearer rates. Cod-liver oil from its present position does not seem likely to reach the price which was predicted, and the market is decidedly easier. The heavy oil market is unchanged, and the same applies to spices, whilst shellac is rather slow of sale. The essential oil market is featureless. Full details will be found below:—

ACACIA (GUM).—There has been a steady demand for *Persian* so-called insoluble gum, and a fair business has been done in good sorts up to 15s. per cwt, and in best pale selected gum at 22s. There is a strong tendency to hold for higher prices.

ACID, CARBOLIC.—The market has a decidedly easier tendency, especially for *crystal acid*. The following are now the current quotations:—*Crystals*: 34° to 35° C., 7d.; 39° to 40° C. 7½d.; 39° to 40° C. (*detached crystals*) 8½d. per lb. *Crude* is still quoted at 2s. 3d. per gallon for 60 per cent., and 2s. 7d. for 75 per cent. *Liquefied* and *eresylic* are unchanged at 1s. and 11½d. per gallon respectively.

ACID, CHRYSOPHANIC—Remains very firmly held. *English* makers ask 25s. per lb. for 28-lb. lots, and this price is also quoted

for *foreign* brands. Good quality *goa powder* is just as unobtainable as ever.

ACID, CITRIC.—The market remains unchanged. *English* acid still quotes at 1s. 2½d. per lb. in manufacturers' hands, whilst second hand holders offer at 1s. 2d. *Concentrated lemon juice* is quoted at £14 to £14 2s. 6d. per pipe *f.o.b.* Messina.

ACID, TARTARIC.—The market is quite inactive, *English* brands of acid are still quoted at 1s. 3d. per lb., whilst holders of *Foreign* acid (not guaranteed B.P.), both in *powder* and *crystals* offer at 1s. 2d. to 1s. 2½d. per lb. on the spot.

AMMONIA COMPOUNDS.—*Sulphate* is very dull of sale at easier rates, grey 24 per cent. being now quoted on the spot at £8 5s., with *Hull* and *Leith* at the same figure, and *Beckton* at £8.

ARSENIC.—The scarcity of this article is as pronounced as ever. Good white *powder* is quoted on the spot at 21s. to 22s. per cwt. nominally, according to package, but there is only a small quantity available. *Lump* is quoted at 28s.

BORAX.—There is no alteration to announce in the price of this article. The *Convention* price is still 20s. for *crystals*, and 21s. for *powder*, but outside makers quote 19s. 6d. and 20s. respectively.

CAMPHOR (CRUDE).—No business appears to have been done in this article during the last week, but the market is decidedly easier. *Formosan* camphor March to May and April to June shipment is quoted at 160s. per cwt., *c.i.f.*, whilst *Japan* offers at 175s., same shipments.

COAL DISTILLATION PRODUCTS.—*Toluol* is quiet at 2s. per gallon for *pure*. *Benzole* is firm, 50 per cent. being quoted at 1s. 8d., and 90 per cent. at 2s. 3d. per gallon. *Creosote*: 1½d. per gallon. *Solvent Naphtha*: 95 per cent. at 160° C. quotes at 1s. 6d.; 90 per cent. at 160° C. at 1s. 3d.; and 90 per cent. at 170° C. at 1s. 1½d. per gallon. *Pitch*: 34s. per ton *f.o.b.* *Tar* is quoted at 12s. per barrel free price.

COCA LEAVES.—Business has been done privately in good quality *Truxillo* leaves at 1s. 2d. per lb. The shipment quotation is 1s. per lb. *c.i.f.* terms. Sound *Bolivian* leaves are in exceedingly small supply, and firmly held.

COPPER SULPHATE—Is very firm at steady rates, and there is little available in first-hand for prompt delivery. The current quotations are £18 to £19, according to brand.

CREAM OF TARTAR—Is still a very weak market, and fine white *French crystals* are quoted at 92s., with *German* brands of *powder* at 94s. per cwt. For shipment from Bordeaux, 80s., *f.o.b.*, is quoted, and 84s., *f.o.b.*, from Barcelona.

GINGER.—*Cochin* is dull of sale, and in auction the small amount of business done was mostly confined to cut root, which sold at 43s. to 45s. per cwt., washed rough being bought in at 34s. to 35s. Of native cut kinds, good bold sold at 56s. 6d. to 57s. 6d.; bold and medium at 53s., and small at 45s. per cwt. *Bengal* was bought in at 17s. 6d., and limed *Japan* at 23s. *Jamaica* root was rather easier, 68s. to 71s. being paid for small and medium dull, and 65s. to 67s. for mouldy.

INSECT FLOWERS—The London market is very firm, especially for *closed* and *half-closed* flowers, which are inclined to dearer

rates. It is said that the stock in Trieste is only about one-third of what it was at this time last year. The following are the current quotations:—Closed wild flowers, 145s.; closed cultivated flowers, 135s.; half closed, 102s. 6d. to 105s., and open, 85s. per cwt., all *c.i.f.* terms.

MENTHOL.—Slow of sale at fairly steady rates. During the week 13s. per lb. has been paid on the spot for single cases, and 12s. 9d. to 13s. is the current quotation. The last shipment price we heard of was 12s. 6d. *c.i.f.*

OIL (COD-LIVER)—The market is easier. This state of things is due to the favourable weather, which has enabled a good catch to be secured in the fishing districts during the last week. In addition, the spring season having now fairly commenced, the most important demand is practically over. Finest new season Norwegian oil is quoted at various prices, according to holder, but 225s. *c.i.f.*, may be regarded as a fair value, whilst 212s. 6d. is the highest price which we have heard paid for good 1895 oil. For Newfoundland oil of good quality 6s. 6d. has been paid during the week, and 7s. per gallon is now asked.

OILS (ESSENTIAL).—*Star Anise* oil is fairly steady. Most of the holders ask 10s. 6d. per lb., although an offer of 10s. would probably be entertained in some quarters. Dementholised Japan *peppermint* oil is quoted at 5s. 3d. to 5s. 6d. per lb. on the spot. The Italian oil market is said to be tending towards higher prices.

OILS (FIXED) AND SPIRITS.—*Cotton* is quiet but steady, and refined oil is still quoted at £16 5s. to £16 10s. on the spot. *Coco-nut* remains at prices which are practically unchanged. *Ceylon* being if anything a trifle firmer at £23 5s., whilst *Cochin* is quoted at £26 15s. on the spot. *Linseed*: The market is very flat, and the current rates show a decline of 7s. to 7s. 6d. per barrel, the spot price being now £19 5s. *Rape* is also very slow of sale, refined oil close; at £24 to £24 10s., a decline of 5s. to 10s. *Turpentine* is quiet but steady, *American* spirit being still quoted at 20s. on the spot. *Petroleum* is quiet at rather easier prices, *American* oil being quoted at 5½d. to 5¾d., *water white* at 6¾d. to 6¾d., and *Russian* at 5¼d. to 5¾d. on the spot. *Petroleum spirit*: Ordinary quotes at 9d. to 9¼d., and *deodorised* at 9¼d. to 9¾d. per gallon.

OPIUM.—The London market is very active, and prices are generally advanced about 6d. per lb., whilst reports from Smyrna advise a rise equivalent to about 8d. per lb. The current quotations are as follows:—*Soft shipping*, 12s. 6d. to 13s. 3d.; *Smyrna*, 9s. to 9s. 6d.; *Constantinople*, 9s. to 9s. 6d.; and *druggists' seconds*, 8s. 6d. to 9s. per lb. Business has been done in fine *Persian* bricks to the extent of a few cases at 13s. per lb., showing a firm market.

PERU (BALSAM).—Decidedly firmer. During the week 7s. 9d. has been accepted on the spot for genuine balsam in importers' hands.

QUICKSILVER—Is firm at unchanged rates, the importers' price being still £6 17s. 6d., whilst second-hand holders offer at £6 16s. 6d.

QUININE SULPHATE—Is very quiet, and devoid of any feature of interest, *German*

brands being quoted nominally at 1s. 1¼d per oz on the spot.

SAFFRON.—The market is firm, and there is every indication of a tendency to higher prices. At the present time finest *Valencia* saffron is quoted at 26s. 6d. to 30s., and *Bajo* at 23s. 6d. to 25s. per lb. on the spot.

SEEDS (VARIOUS).—*Canary*: At the spice sales on Wednesday 100 bags of *River Plate* seed sold without reserve at 28s., also 5 bags of *Japan* at 31s. 6d. per cwt. *Coriander*: Coarse *Bombay* seed sold in auction without reserve at 8s., and small brownish *Russian* at 13s. 6d. to 14s. per cwt. *Stavesacre*: Quoted at 85s. per cwt. for good quality on the spot. *Aniseed*: *Spanish* seed is quoted at 26s. to 28s., and *Russian* at 22s. per cwt. on the spot. *Cumin*: Rather firmer. 35s. is now asked for good *Mogador* seed.

SHELLAC.—The market has been quiet during the past week, and only a small business has been done at about steady rates. At the weekly sales a small catalogue was offered. *Second Orange* sold at about previous prices, *TN* basis at 95s. to 96s. *Button* and *Garnet* had an easier tendency. The following were the quotations:—*Second Orange*: All was bought in, *Y* in diamond at 100s., and *MM* in double triangle pale curly at 100s. *TN Orange*: Good bright cakey and blocky sold at 94s. to 96s., and fair free reddish at 94s. to 95s. *Garnet*: Flat glassy *AC* sold at 89s. *Button*: Good pale sold at 105s. to 106s.; good strong firsts at 100s. to 101s.; blocky at 86s.; and ordinary dark firsts at 77s. per cwt. Since the sales there has been a good inquiry for *Button* at full rates, but *Second Orange* and *Garnet* are very quiet. The arrival market is dull, with sales of *Second Orange*, January to March shipment, at 93s. *c.i.f.*

SPICES (VARIOUS).—*Cloves* are quiet. In auction fair *Zanzibar* sold at 2½d., whilst picked *Penang* were bought in at 9d. *Cassia lignea*: Broken quality sold without reserve at 16s. to 17s. per cwt. *Chillies*: *Zanzibar* are cheaper, 25s. 6d. to 26s. being paid in auction for fair mixed, whilst extra fine bright *Japan* realised 60s. to 60s. 6d. per cwt. *Capsicums* are slow of sale. In auction 26s. 6d. was paid for bold and medium dull off-stalk *Japan*. *Pimento* is quiet, but fairly steady, 2¾d. being paid for medium, and 2½d. for fair quality. *White Pepper*: In auction *Penang* was bought in at 3d. to 3½d., whilst fine bold *Singapore* sold at 4¾d., and extra fine ditto at 3¾d. per lb. *Arrow-root* is still dull of sale, and in auction all the *St. Vincent* was bought in at 1½d. to 2½d. for ordinary to good quality, except 5 barrels, which sold at 1¼d. per lb.

TOLU (BALSAM).—Reported rather firmer. For good, genuine quality balsam 2s. per lb. is now asked privately.

TRAGACANTH (GUM).—The market is decidedly easier, and the business which has been done has been for the most part restricted to the lower grades. The current quotations are as follows:—Firsts (fine pale druggists' gum), £14 10s.; seconds, £12 10s. to £13 10s.; thirds, £11 to £11 10s.; fourths, £8 10s. to £10, and other qualities, £8 down to £2. *Hoq* has sold at 75s. per cwt.

WAX.—*Japan* wax is firm at full rates, the current quotation being 37s. 6d. on the spot for good pale squares. *Paraffin*: The current quotations are 1¼d. to 2¼d. for *crude*, and 2¼d. to 3¼d. for *refined*.

REMEDIES INTRODUCED IN 1895.*

(Continued from p. lxi.)

Lanichol.—Purified wool-fat.—Ointment base.

Lignosulfit.—Side product in the manufacture of cellulose.—Inhalation antitubercular.

Lysolum Bohemicum.—"Derivative of tar."—Antiseptic.

Magnesium Sulphocarbonate.—(C₆H₅SO₄)₂ Mg.—Laxative and intestinal antiseptic. Dose: 1-2 Gm.

Mallein.—Specifically active metabolic products of the bacillus of glanders.—Diagnostic of glanders.

Marrol.—Dietetic preparation said to consist of ox marrow, malt extract, and hop extract.

Medulladen.—Extract of spinal cord, used against gout.

Mercuriodohemol.—Mercuriodised hemol.—Anti-syphilitic. Dose: 0.2-0.5 Gm.

Mercury Oxycyanide.—HgO·HgCy₂—Surgical antiseptic.

Methylpyridine Sulphocyanate.—Antiseptic.

Mydrine.—Combination of ephedrine and homatropine.—Mydriatic.

Myronin.—Mixture of soap, carnauba wax, and chenoceti oil.—Ointment base.

Neurosin.—Generic name of a number of French preparations containing calcium glycerinophosphate.

Noitol.—Proprietary eczema remedy.

Nosophen.—Tetraiodophenolphthalein.—Surgical antiseptic, like iodoform.

Oil Ledum palustris.—External anti-rheumatic and alterative.

Oxysparteine.—From sparteine by slight oxidation. Cardiac tonic. Dose: 0.02-0.04 Gm.

Paracetamidophenol Ethylcarbonate.—Antipyretic and analgesic. Dose: 0.5-1 Gm.

Parachlorsalol.—Parachlorphenol salicylate.—Intestinal antiseptic, like salol. Dose: 2-4 Gm. per day.

Peptone Paste.—Mixture of Adam Kiszewicz's peptone, "wax-paste," acacia, zinc oxide, and starch.—Dressing-fixer.

Phanero-gen.—Photographic developer.

Phenosucein.—Obtained by the action of succinic acid on para-amidophenol.—Analgesic and antipyretic.

Phosphergot.—Generic name given to a mixture of sodium phosphate and ergot, occurring in three modifications.—Tonic. Dose: 0.5-1 Gm.

Piperovatine.—Alkaloid from *Piper ovatum*.—Spastic.

Pixol.—"Spirit of Liquid Tar."—Proprietary remedy against influenza.

Potassium Glycerinophosphate.—Nervine. Dose: 0.2-0.3 Gm.

Potassium and Aluminum Salicylate.—Astringent antiseptic.

Propylamine, Anhydrous.—Antichoreic. Dose: 2-5 Gm. per day.

Prostaden.—Extract of prostate gland used in enlarged prostate.

Quinosol.—Quinoline compound, said to possess bactericidal powers.

Rhinalgin.—Mixture of alumnol, menthol, valerian oil, and cacao butter in suppository form.—Coryza remedy.

(To be continued.)

* Reprinted from *Merck's Market Report*.

EXCHANGE.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

A book of 180 Well-tried Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

What offers? Atfield's 'Chemistry,' fifteenth edition; 'Pharmacopœia,' reprint, 1893, and 'Addendum.' All good as new.—Thomson, care of Hay, 137, Shields Road, Glasgow.

'Pharmaceutical Journal,' from commencement in 1842, 15 thick vols., well bound, 30s.; Woodville's 'Medical Botany,' 3 quarto vols., over 200 beautifully coloured plates, 21s., free.—Davis, "Chestnuts," Gordon Hill, Enfield.

Post Free. 'MacNish's Drunkenness,' scarce, 3s. 6d.; 'Greck Euripidis,' 6 vols., 3s. 6d.; 'Parker's Zootomy,' 3s. 6d.; 'Faraday's Chemistry of Candle,' 2s. 6d.; 'Golding Bird's Natural Philosophy' (12s. 6d.), 3s. 6d.—Davies, 33, Eglinton Road, Bow.

Miscellaneous.

100 ounces Howard's Sulphate of Quinine in 4-oz. bottles; offers wanted for part or whole.—G., 172, Albany Street, N.W.

Offers for 3-4 gal., 2-1 gal. Carboys; 15 Oil., 50 Oil. shop rounds; 4 glass-cupd. oils, Oil.; 9 Oil. blue syrups, gold-labelled, practically new.—Mallett, Mill Hill Road, Norwich.

What offers for Howard's Quin. Sulph. in 4-oz. bottles; also 'Pharmaceutical Journals' bound in cloth, 1870-95.—Rose, 38, Calcott Road, Brondesbury

NEWCASTLE CHEMICAL REPORT.

[From our own Correspondent.]

MARCH 24, 1896.

Coasting and inland orders for soda crystals and alkali just keep business moving. So far little contracting for the upper Baltic ports for bleaching powder is reported. Sulphate of ammonia and other products are practically unchanged in values. Prices are:—BLEACHING POWDER: In softwood casks, £7 5s.; hardwood casks, £7 10s. SODA CRYSTALS: In bags, 36s.; in casks, 45s. CAUSTIC SODA: 76 to 77 per cent., £9 5s.; 70 per cent., £7 10s. to £7 15s. RECOVERED SULPHUR: £3 17s. 6d. SODA ASH: 48 per cent., £3 15s. ALKALI: 48 per cent., £4 10s. to £4 15s. HYPOSULPHITE OF SODA: Casks, £6 5s.; 1-cwt. kegs, £7. SULPHATE OF AMMONIA (Leith): £8 7s. 6d. PITCH: 34s. SOUTH DURHAM SALT: 9s. per ton *f.o.b.* Tees.

LIVERPOOL MARKET REPORT.

[From our own Correspondent.]

MARCH 25, 1896.

LINSEED: 100 tons *River Plate* to arrive, sold at 30s. 9d. per 416 lbs. CANARY SEED: *Turkish*, 30s. per 464 lbs. KOLA NUTS: Plentiful, good dried, 4d. to 4½d.; "poor" dried, 2d. to 4d.; fresh, 7d. CHILLIES: *Sierra Leone*, 24s. to 25s. GINGER: *Bombay*, 35s. CARNAUBA WAX: Finest yellow, 127s. 6d. to 130s. BEESWAX: *Chilian*, £7 17s. 6d., and a small lot of *Ceará* on private terms. GUM ARABIC: Price for "sorts" advancing. CASTOR OIL: *French*, 1st pressure, and *Madras*, 2¾d. to 2½d.; good seconds, *Calcutta*, 2 15/32d. to 2½d. OLIVE OIL: *Malaga*, £30; *Seville*, £29 to £29 10s.; *Syrian*, £28 10s. LINSEED OIL: 19s. 9d. to 21s. COTTONSEED OIL: 17s. SPIRIT OF TURPENTINE: 21s. 3d. PETROLEUM: *Russian*, 5¾d.; *American*, 6¾d. to 7¾d. SAL AMMONIAC: First quality, 39s. CARBONATE OF AMMONIA: 3¾d. to 3½d. SULPHATE OF AMMONIA: Good grey, £8 11s. 3d. ARSENIC: Lump, £28; powder, £20 to £21. BLEACHING POWDER: £7 to £7 5s. COPPERAS: *Lancashire*, 38s.; *Welsh*, 36s. SULPHATE OF COPPER: £20. POTASHES: 21s. to 21s. 6d. PEARLASH: 37s. 6d. CREAM OF TARTAR: 98s. for spot parcels. PRUSSIAN OF POTASH: 8d. CHLORATE OF POTASH: 4¾d. BICROMATE OF POTASH: 4¾d. SALTPETRE: 23s. 6d., in kegs. BICARBONATE OF SODA: £6 15s. SODA CRYSTALS: £2 7s. 6d. to £2 10s.

TRADE NOTES AND NEWS.

MESSRS. ROSS and Co., manufacturing opticians, 111, New Bond Street, London, W., submit copies of their new catalogues. Catalogue No. 1 includes illustrated descriptions and other particulars of the high-class photographic apparatus—lenses, cameras, etc.—manufactured by the firm; and Catalogue No. 2 gives prices and descriptions of microscopes and objectives, telescopes, opera glasses, barometers, thermometers, surveying and drawing instruments, etc., etc. Either of these catalogues will be sent post free on receipt of six stamps.

MESSRS. BURROUGHS, WELLCOME AND Co., have added to their list of novelties, compound caffeine tabloids. These contain caffeine, 1 grain, and antipyrin, 3 grains, each, and are supplied in tubes containing 25 and 100 respectively. Like all other tabloids intended for internal administration, they disintegrate immediately on coming into contact with water or the juices of the stomach. As pointed out by the makers, the specific action of caffeine on the secreting cells of the kidney is well known, and as a diuretic, analgesic, and cardiac tonic this alkaloid has many important uses. In addition, the analgesic action of small doses of antipyrin has been frequently proved, and it is hoped that the above combination will prove very useful in many forms of neuralgia in which it is inadvisable to give antipyrin without an accompanying heart tonic.

MESSRS. DUNCAN, FLOCKHART AND Co. ask us to state that their London branch will not be open till May 4, and that they do not propose to carry on a general drug business there, their object being to bring their capsules and other special preparations before the medical profession in the metropolis. Orders should not, therefore, be left at 38, Snow Hill, but sent to the Edinburgh address as usual. In consequence of the announcement in the Journal for March 7, quite a number of orders have been left at the London address.

MESSRS. INGRAM AND ROYLE, of 52, Farringdon Street, inform the trade that they are now able to supply the Hunyadi Janos Water at the lowest carriage paid prices, with special terms for quantities, as fixed by the proprietor, Mr. Andreas Saxlehner, of Buda-Pesth.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

TUESDAY, MARCH 31.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.
Benevolent Fund Committee.
Finance Committee.
General Purposes Committee.

WEDNESDAY, APRIL 1.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.
Council Meeting.
MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION, at 8.30 p.m.
Musical and Social Evening.
PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION, at 7 p.m.
"Three Years in a South African Pharmacy," by Mr. R. S. Doble.
BRIGHTON JUNIOR ASSOCIATION OF PHARMACY, at 9 p.m.
Final Soc'ial Evening.

THURSDAY, APRIL 2.

LINNEAN SOCIETY OF LONDON, at 8 p.m.
"Monograph of the Genus *Stemona*, Lour," by C. H. Wright.
"On African Algae," by W. and G. S. West.
GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION, at 9.15 p.m.
Annual Business Meeting.

FRIDAY, APRIL 3.

ABERDEEN JUNIOR CHEMISTS' ASSOCIATION, at 9.30 p.m.
"Photography," by R. Urquhart.

NEW BOOKS AND NEW EDITIONS.

DIET IN SICKNESS AND IN HEALTH. By Mrs. ERNEST HART. With an Introduction by Sir Henry Thompson, F.R.C.S. 8vo., pp. 224. Price 3s. 6d. (Scientific Press, London.)

MEDICAL DIRECTORY FOR 1896: including the London Medical Directory, the Provincial Medical Directory, the Medical Directory for Wales, the Medical Directory for Scotland, the Medical Directory for Ireland, the Medical Directory of Registered Practitioners resident Abroad; the Medical Directory of the Naval, Military, and Indian Services; Licentiates in Dental Surgery; also Statistical and General Information of the Universities, Colleges, Schools, Hospitals, Dispensaries, Lunatic Asylums, Societies, Sanitary Medical Service, Public Services, etc. 8vo., pp. 1824. Price 14s. (J. and A. Churchill, London.)

SUPPLEMENT

TO THE

PHARMACEUTICAL JOURNAL.

MISCELLANEOUS NEWS.

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY, March 26.—Mr. T. S. Wokes, President, in the chair. A photographic communication was given by Mr. R. H. Mitchell to the effect that, in a magazine camera, holding twelve plates held in metallic slides numbered on the back with red oil colours, the negatives on development showed a faint number in the centre of each corresponding with that on the neighbouring slide. In another similar camera, with slides numbered in alike way, but with water-colours, the negatives showed no such impression. His theory was that the oil colour, containing probably metallic sulphides, had absorbed light, and by phosphorescence had affected the plate lying over it in the camera. An optician had explained it by saying it was due to the reducing action on the silver salt in the film of the turpentine in the paint. Mr. Cowley thought it was caused by reflection of light passing through the plate striking the shining surface of the oil colour, and was simply an instance of what is called "halation" by photographers.

The President mentioned that he recently had a pair of belladonna plasters to spread on moleskin for the breast, each of which measured the out-of-the-way size of twelve inches in diameter.

In a communication from Mr. John Welsh, a Chester member of the Society, the writer asked for information respecting a black coloured precipitate deposited from the following mixtures:—

℞ Syr. Ferri Phosph. Co.	ʒi.
Sp. Chlorof.	ʒiij.
Liq. Strychninæ	ʒss.
Quininae Hydrochlor.	gr. xxx.
Glycerini Pepsinæ Acidi	ʒiiss.
Aq. Destillatæ.	ad ʒviii.
℞ Sp. Chlorof.	ʒiij.
Liq. Strychninæ	ʒ 40.
Liq. Anserini Hydroch.	ʒ 30.
Quininae Hydrochlor.	gr. 16.
Syr. Ferri Phosph. Co.	ad ʒiv.

From various experiments he had tried he was led to believe that the disturbing cause was the quinine hydrochlorate, but he should like to know what the black colour was due to.

The President said it was an interesting point requiring elucidation, and he hoped a solution of the difficulty would be forthcoming. The explanation Mr. H. Wyatt, jun., gave was that the very soluble hydrochlorate of quinine in the presence of free phosphoric acid formed phosphate of quinine, much less soluble, but held in solution by the hydrochloric acid liberated, assisted by the phosphoric acid of the syr. ferri phosph. co. The ferrous phosphate on this withdrawal of part of the acid, which kept it in solution, was partly precipitated as greenish, partially oxidised ferrous phosphate, holding possibly a good deal of the colouring matter of the syrup mechanically as a kind of "lake." If

the original Parrish's syrup, containing but slight excess of free phosphoric acid, were used, the precipitate would form rapidly, but many commercial syrups would not give any precipitate from being strongly acid. The addition of a little extra acid to the mixture would remedy the difficulty.

The President then called upon Mr. Charles Sharp, F.L.S., to give an address on "Dickens and His Works," at the close of which a hearty vote of thanks was accorded Mr. Sharp for his happy innovation."

CHEMISTS' ASSISTANTS' ASSOCIATION.—The meeting held on the 26th ult., when the President (Mr. E. W. Hill) occupied the chair, was devoted to a musical and social gathering. There was an excellent attendance, and the programme, which had been arranged by Messrs. Hill and Guyer (Hon. Sec.) was thoroughly appreciated. Amongst those who contributed to the evening's entertainment were Messrs. Burgess, Latreille, Pasco, H. H. Robins, A. E. Robins, Summers, Walton, and Williams, whilst Mr. E. J. Eastes undertook the duties of accompanist at the piano. During the interval Dr. B. H. Paul and Professor H. G. Greenish were elected patrons of the Association. The general arrangements reflected credit upon those responsible for them.

MR. GORDON SMART, assistant to Mr. C. F. Henry, Brandon Terrace, Edinburgh, has purchased the business of the late Mr. Alexander Mair, at 162, Ferry Road, Leith.

MR. D. B. DOTT is leaving the laboratory of Messrs. Duncan, Flockhart and Co. and entering that of Messrs. J. F. Macfarlan and Co., an arrangement which has the full approval of both the firms mentioned.

MR. G. S. BALL, Pharmaceutical Chemist, Weston-super-Mare, has for a second time been elected to a seat on the Urban District Council for the West Ward of that town, this time heading the poll by securing a greater number of votes than any candidate in either ward. The election was contested on the question of constructing a marine lake on the foreshore, of which scheme Mr. Ball is an ardent supporter.

YORKSHIRE RELISH.—The appeal of the defendants in the action of Powell v. Birmingham Vinegar Brewery Co., Ltd., the hearing of which occupied the attention of Lords Justices Lindley, Kay, and Smith for five days, was dismissed with costs on Tuesday last. The plaintiff (who trades as Goodall, Backhouse and Co.) carries on business as a drysalter and druggist at Leeds, and he sought to restrain the defendants from using the words "Yorkshire Relish" in connection with sauce made by them without clearly distinguishing it from that manufactured by the plaintiff. Mr. Justice Stirling granted an injunction, and from this order the defendants appealed. It appeared that the plaintiff had for the last thirty-four years manufactured Yorkshire Relish, which had now enormous sale, due no doubt, to an expenditure of some £400,000 in advertising, and the defendants having succeeded in getting the register of trade marks rectified by the removal of the words "Yorkshire Relish" as a trade mark commenced to sell a sauce bearing a similar

name, which they alleged was the same sauce. A large body of evidence was given by chemical experts in the Court below to show that the two sauces were identical in composition. The defendants contended that the words "Yorkshire Relish" merely described a particular kind of sauce, which anyone was at liberty to make, whereas the plaintiff alleged that the sauce was made from a secret recipe, that the words denoted to the public the manufacture of his firm, and that the use of them by the defendants in connection with the label and general get-up was calculated to deceive. Mr. Moulton, Q.C.; Mr. Buckley, Q.C.; and Mr. Waggett appeared for the appellants; Mr. Hastings, Q.C.; Mr. John Cutler, and Mr. Hampson represented the respondent.

THE NEW PHOTOGRAPHY.—Professor Winkelmann and Dr. Straubel, of the University of Jena, have succeeded in discovering a new method of photographing with Röntgen rays, by which the length of exposure is reduced from ten or fifteen minutes to only a few seconds. The method is based on a conversion of the x -rays into rays of other undulations, by means of fluor spar crystal. If the Röntgen rays are allowed to fall upon a photographic plate, the sensitised film of which is turned away from them, and covered with fluor spar, the rays—after passing the film—will be absorbed by the fluor spar, and there undergo the modification spoken of. The new rays now act upon the photographic plate, and indeed much more strongly than did the Röntgen rays on passing through. As large fluor spar plates are to be had with difficulty, powder of the same crystal was tried in their place, and as this succeeded, nothing stands in the way of the further application of the method. The new rays emitted by the fluor spar were minutely examined by the discoverers. They succeeded in determining the frangibility, and from this the length of the undulations. The rays lie far beyond the ultra violet end of the visible spectrum.—*Daily News.*

DID TOO MUCH!—Dr. McWeeney, analyst to the Richmond Lunatic Asylum, Dublin, has been allowed to withdraw his resignation, which was sent in under a misapprehension as to the duties he was expected to perform.

AN ALCOHOLIC PRESCRIPTION.—Considerable discussion took place a few days ago at the meeting of the Ross (Co. Cork) Poor Law Guardians over a requisition of the medical officer for a month's supply of whisky to one patient (suffering from pneumonia) at the rate of five or six glasses per day. Finally, the supply was allowed to run for a fortnight.

PRESIDENCY OF THE ROYAL COLLEGE OF PHYSICIANS.—Dr. Samuel Wilks, F.R.C.P., has been selected to succeed Sir Russell Reynolds as President of the Royal College of Physicians. Dr. Wilks received his medical education at Guy's Hospital, and was gold medallist at the London M.D. examination in 1850. He is now a member of the Senate of the University of London, and consulting physician to Guy's Hospital, and to the Royal Hospital for Children, Waterloo Road, S.E.

THE EARLY CLOSING BILL.—The members who are hostile to the Shop Hours Bill, in the form in which it has left the Standing Committee, intend to offer a vigorous opposition to the provisions of the measure on Report. They will, in the first place, move the re-committal of the Bill; and, failing that, they will propose afresh most of the chief amendments which were defeated in Committee. A special effort will be made to carry an amendment, providing that the Bill shall not apply to shops where a mixed business is carried on, any branch of which is among the trades scheduled as exempt from the operation of the measure. . . . An endeavour will also be made to insert a better definition in regard to the classification of shops, and to provide that the "local authority" in London shall be the vestries, and not the County Council. A meeting of the London Unionist members will be held immediately after the Easter holidays to consider their action on the Report stage of the Shop Hours Bill. A large majority of the London Unionists are believed to be opposed to the measure in its present shape. An active canvass is also to be instituted among country members on the Unionist benches, with the object of ascertaining the general feeling in regard to the leading provisions of the Bill.—*Standard*.

An influential minority of the Grand Committee protest against the numberless blemishes that disfigure the Shops Early Closing Bill, and declare that the House of Commons will never permit the measure to become law in its present anomalous shape. It is pointed out that local veto of the most objectionable character is to be established; that jurisdiction which ought to be entrusted to the London vestries has been thrust upon the County Council, who are also called upon to do a variety of matters that Parliament should itself perform. . . . A sharp fight on the report stage is inevitable.—*Daily Telegraph*.

On the Shops Early Closing Bill, which has passed the Grand Committee on Trade, being reported to the House of Commons, a determined effort will be made to have it recommitted to a Committee of the whole House. It is not likely this attempt to shut out the services of a Grand Committee will prove successful.—*Daily News*.

THE SALE OF POISONED GRAIN.—At Beccles Police Court, on Friday, March 27, Samuel Bullen, of Ditchingham, was charged with unlawfully selling grain steeped in poison, at Beccles, on March 6. Police-constable James Philippo said he bought a packet of wheat of the defendant, and handed the packet to Supt. Shipp in the same state as when he bought it of the defendant.—Supt. Shipp said he took 30 grains from the packet and gave it to a live pigeon, on the 7th inst. It died in about five minutes. He sealed up the rest of the wheat and sent it to Mr. Napier, analyst, of Ipswich.—Mr. James Napier, county analyst, said on analysing the sample he found a large proportion of strychnine.—Defendant, who had pleaded guilty, said he had sold it all his lifetime, and his father before him.—Mr. Rix (Magistrates' Clerk) said defendant had been convicted of the same offence at Halesworth, Bungay, and

Norwich. The penalty for which he was liable was £10; the costs, £2 3s 8d.—Supt. Shipp said he had had complaints from all round the district—Lowestoft, Gorleston, and this neighbourhood as well. If people got poisoned wheat, it always came from Beccles.—The Chairman said it was a very serious offence, and defendant persistently defied the law. A repetition of the offence did not make it right.—Defendant was understood to say he supplied a dozen or fourteen magistrates, who regularly used it. He was fined £5, and £2 3s 8d. costs; or 21 days hard labour.

THE RÖNTGEN RAYS.—Mr. Swinton delivered a lecture on Tuesday on the Röntgen photography, at St. Thomas's Hospital, when there was a very large attendance. The tickets were issued on payment, and the results handed over to the funds of the Hospital. The Treasurer, Mr. Wainwright, stated that successful use had been made of the new shadow photography in several of the wards.

PROPRIETARY ARTICLES' TRADE ASSOCIATION.—A public meeting of South London chemists has been convened by a local committee to enable them to discuss the anti-cutting question, particularly with reference to the Proprietary Articles' Trade Associations. Mr. W. Johnston, of Brixton, is acting as honorary secretary, and the meeting will be held on Wednesday, April 8 next, at Gresham Hall, Gresham Road, near Brixton Station. The Secretary of the Proprietary Articles' Trade Association will attend to explain its objects and proposals, and will be accompanied by some of the members of the manufacturers and wholesale sections of its Council. The chair will be taken by G. R. Barclay, Esq., at 9.30 p.m., and all chemists and druggists are cordially invited to be present.

EDINBRO' PHARMACY ATHLETIC CLUB.—The Golfing Section of this Club held its monthly competition for the Dick Handicap Challenge Medal on Friday and Saturday last, when a large number of members competed. Mr. W. M. Manson was the winner with the net score of 92.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

WEDNESDAY, APRIL 8.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.
Library, Museum, School, and House Committee.
BRIGHTON JUNIOR ASSOCIATION OF PHARMACY, at 9 p.m.

General Meeting.
SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY,
at 8.30 p.m.
"Electricity," by T. Scott Anderson.

PROPRIETARY ARTICLES TRADE ASSOCIATION, at 9.30 p.m.
Public Meeting of South London Chemists at Gresham Hall, near Brixton Station.

THURSDAY, APRIL 9.

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY, at 8.30 p.m.
Musical and Social Evening.

FRIDAY, APRIL 10.

PHARMACEUTICAL CHEMISTS' AND APOTHECARIES' ASSISTANTS' ASSOCIATION OF IRELAND, at 8.30 p.m.
Ordinary Meeting.

MARKET REPORT.

[Specially compiled for the Pharmaceutical Journal.]

LONDON, APRIL 2, 1896.

We are unable to report any improvement in the produce markets connected with the drug trade since our last report, although one or two important changes have taken place. In the various alkaloids there is nothing new to report, cocaine being unchanged, caffeine and quinine very slow of sale, and opium alkaloids very firm. Carbolic acid is still quite easy, especially for crystal acid. Citric acid is very slow of sale at rather easier rates, whilst tartaric acid is also dull of sale. The most important point of interest is the fact that the makers of salicylic acid and salicylates have intimated the abolition of the special discount which has been given for some little time, and the prices now revert to their old conditions. The English camphor refiners lowered their prices a few days ago, and this move was followed by a corresponding drop yesterday by the German makers. In the drug market we have to report a very firm market in saffron, with a slight tendency to higher rates, whilst on the other hand, orris root is a trifle easier. Insect flowers are very firm at full rates, and the same applies to ipecacuanha root, which is, if anything, rather dearer. Gentian root, cascara sagrada bark, and Peruvian balsam are very quiet, whilst tolu balsam is very firmly held for genuine qualities. Cod-liver oil is steady, and in some quarters an advance is anticipated in the immediate future. The heavy oil market is quiet, and the remark applies to spices and shellac. Full details will be found below:—

ACACIA (GUM)—There has been an improved demand for *Persian* so-called insoluble gum in sympathy with the market in *Turkey* sorts. Business has been done in good sorts up to 17s. 6d. per cwt., whilst small sales of pale selected gum have been made at 22s. Contrary to what seemed probable from the result of the last week's gum sales, *Soudan* sorts have not been in very active demand, and quotations range from 67s. 6d. to 87s. 6d. per cwt., according to quality. On the other hand, there has been a good demand for *East Indian* gum at advanced prices, and sales are reported of *Mogador* up to 65s., of *Ghatti* up to 60s., and *Bombay* up to 52s. 6d. per cwt.

ACID, CARBOLIC—Is decidedly easy, especially for *crystal* acid, and the following are the current quotations:—*Crystals*, 34° to 45° C, 7d.; 39° to 40° C., 7½d.; 39° to 40° C. (*detached crystals*), 8½d. per lb. *Crude* is rather easier at 2s. 2d. for 60 per cent., whilst 75 per cent. is quoted at 2s. 7d. per gallon. *Liquefied* and *cresylic* are returned at 1s. and 11d. respectively.

ACID, CITRIC.—The market is rather easier. *English* acid now quotes at 1s. 2d. per lb. in manufacturers' hands, whilst second-hand holders offer at 1s. 1½d. Concentrated *Lemon juice* is quoted at £14 to £14 2s. 6d. per pipe, *f.o.b.*, Messina.

ACID, SALICYLIC.—A circular has been issued during the week to members of the wholesale drug trade and other interested parties to the effect that the special allowance of 15 per cent. discount from the net invoice prices will now be abolished. This, of course, does not effect the actual quotation of salicylic acid and its salts, which are as follows, the ordinary rates of discounts remaining as heretofore:—

	In 1 cwt. kegs.	In 1 b. cardboard boxes.	In 1 lb. bottles.
Salicylic acid:—	Per lb.	Per lb.	Per lb.
<i>Powder</i>	2s. 3d.	2s. 6d.	2s. 8d.
<i>Crystals</i>	—	2s. 9d.	2s. 11d.
<i>Phys. pure</i>	—	4s. 6d.	4s. 8d.
Sod. Salicylate:—			
<i>Powder</i>	—	2s. 7d.	2s. 9d.
<i>Crystals</i>	—	3s. 2d.	3s. 4d.
<i>Phys. pure</i>	—	—	4s. 4d.

ACID, TARTARIC.—Quite inactive. *English* makers still quote 1s. 3d. per lb., whilst holders of *foreign* acid (not guaranteed B.P.), offer at 1s. 2d. to 1s. 2½d. per lb. on the spot for both *powder* and *crystals*.

AMMONIA COMPOUNDS.—*Sulphate* continues to decline in price, and grey 24 per cent. now offers at £8 2s. 6d. on the spot, whilst *Hull*, *Leith*, and *Beckton* are all quoted at £8.

CAMPHOR (REFINED).—Since our last report the *English* refiners reduced their prices 2d. per lb., making the current quotations as follows for quantities of 1 ton:—*Bells*, 2s. 1½d.; *Blocks*, 1 lb., ½ lb., and ¼ lb., packed in 7, 14, and 28 lb. wooden boxes, 2s. 1½d.; 1 and 2 oz., packed in 7 and 6 lb. wooden boxes, 2s. 3d.; ½, ¼, and ⅛ oz., packed in wooden boxes, 2s. 3½d. per lb. If packed in tins, an extra charge of ¼d. to ½d. per lb. is made. *Flowers*: 2s. 1½d. if packed in 5 or 10 lb. boxes. If packed in 1 lb. boxes, 2s. 2½d. per lb. This change in price was taken with a view to meeting the competition of the *German* refiners, but the latter returned the lead by also reducing their price 2d. per lb. on the 1st inst., making the present quotation 1s. 11½d. for 1 ton quantities of *bells* and *flowers*, with *squares* at proportionate rates.

CAMPHOR (CRUDE).—The market is very quiet, and only a moderate amount of business has been done. During the week a few hundred piculs of *China* camphor have sold at 157s. 6d., but 150s. would probably be accepted now. *Japan* is quiet, but steady at 167s. 6d. *c.i.f.* per cwt.

CANARY SEED.—In auction on Wednesday 100 bags of *River Plate* seed sold without reserve at 28s. per cwt.; also five bags of *Japan*, at 31s. 6d.

COCA LEAVES.—Very firm. Privately 1s. 2d. per lb. has been paid for good greenish broken leaves. For damaged *Bolivian* leaves, 1s. 6d. per lb. is asked.

CORIANDER SEED.—Coarse *Bombay* seed sold in auction at 8s. per cwt.; also small brownish *Russian* at 13s. 6d. to 14s. per cwt.

ERGOT OF RYE.—Is still very slow of sale. Business has been done privately in fair

Russian at 6½d. per lb., showing a steady rate.

GINGER.—Tending easier. In auction *Cochin* root was in poor demand, and the majority of the catalogue was bought in. Of native cut kinds, good bold half-cut sold at 56s. 6d. to 57s. 6d.; bold medium at 53s., and small at 45s. *Bengal* was bought in at 17s. 6d., and limed *Japan* at 23s. *Jamaica* root sold at easy rates, 68s. to 71s. being paid for low and small medium dull, and 65s. to 67s. for mouldy.

INSECT POWDER.—The market is very firm, and quotations are in some instances higher. The following prices are quoted:—Closed wild flowers, 145s.; closed cultivated flowers, 140s.; half-closed, 105s., and open, 90s. per cwt. all *c.i.f.* terms.

IPECACUANHA.—The market is very firm. Business has been done in *Carthagena* (*Columbian*) root during the week at 4s. 5d. for good damaged qualities, and 4s. 6d. is now the lowest price. *Rio* (*Brazilian*) root has also sold steadily at full rates.

JALAP.—Is tending slightly easier. Business was done recently in good *Vera Cruz* root at 8½d. per lb., but lower rates would now be accepted.

MASTIC (GUM).—The market is firm, but quiet. During the week, pale drop has sold at 1s. 8d. per lb.

OIL (COD-LIVER).—The market is steady. On the spot business has been done during the week in 1895 *Norwegian* oil at 220s. per barrel of 25 gallons, and 225s. is the price generally asked by importers. We have heard of business in second-hand at 210s. to 215s., but 220s. is the lowest price at which it would be possible to buy in first-hand. A very large business has been done during the last few weeks in 1895 oil, and the result is that the market is now practically cleared of all the parcels, offered. The spot price for good oil is 220s. Business has been done during the week in *Newfoundland* oil at 6s. 6d. per gallon, but the holder is not inclined to go on at the price, and now asks 7s. per gallon. From all accounts, it seems very probable that an advance will take place in 1896 *Norwegian* oil when the Easter holidays are over, since the latest official reports are very unfavourable and the Lofoten fishing season ends on the 3rd inst.

OILS (ESSENTIAL).—*Star Aniseed* is quiet, but steady. Most of the holders ask 10s. 6d., but little business has resulted, although there are ready buyers at 10s. 3d. *Peppermint* oils are very quiet, *H. G. Hotchkiss'* brand being quoted at 9s. 3d. to 9s. 6d., *Japan* oil, testing 40 per cent. of menthol, at 6s. 3d., and *dementholised* at 5s. to 5s. 3d. *Lemon grass* oil is quiet at 2½d. per oz., whilst *Citronella* is slow of sale at unchanged rates. *Italian* essences are reported rather easier, in consequence of the momentary unfavourable Italian exchange, but the drop is not likely to be of a permanent nature.

OILS (FIXED) AND SPIRITS.—*Cotton* is quiet, but steady. *Refined* oil being quoted at £16 to £16 10s. on the spot. *Coco-nut* is a trifle easier, *Ceylon* being now quoted at £23 and *Cochin* at £26 15s. to £27 on the spot. *Linseed*: The market during the last day or two has been very firm, and higher prices are anticipated. The closing quotation of £19 2s. 6d. shows, however, a slight decline upon last week's price. *Rape*

is steady, and a fair business is reported refined oil being quoted at £24 to £24 10s. on the spot. *Turpentine* is quiet but steady, *American* spirit being still quoted at 20s. on the spot. *Petroleum* is very firm, *Russian* being quoted at 5½d. to 5¾d., *American* at 5½d. to 5¾d., and *water white* at 6¼d. to 6½d. per gallon on the spot.

OLIBANUM (GUM).—Is rather easier in price, although more business has been done. In auction fair pale selected drop sold at 39s. to 42s. 6d. Garbling good at 16s. 6d., medium at 12s., and ordinary woody at 10s., whilst for fair to good siftings 12s. to 14s. 9d. per cwt. has been paid.

ORRIS ROOT.—Is reported to be rather easier owing to the present unfavourable Italian exchange. For fine selected *Florentine* root, 68s. per cwt. *c.i.f.* would now be accepted, whilst good sorts offer at 63s. On the spot good picked root offers at 72s. 6d., whilst of *Veronese* there is little or none to be had.

QUICKSILVER.—Is quiet at unchanged rates, and offers at £6 17s. 6d. per bottle in importers' hands, and £6 16s. 6d. in second hand.

QUININE SULPHATE.—The market remains very quiet, with *B & S* and *Brunswick* offering at 13¼d. per oz. on the spot.

SCAMMONY.—*Resin* is very firmly held. For fine *Turkish origin* 30s. to 32s. per lb. is asked, whilst business has been done in good seconds during the week at 28s. *Skillippe* is quoted at 10s. 6d. per lb. *Root* is very sparingly offered, the majority of the stock on the spot being held for higher rates.

SHELLAC.—There has been no improvement in the demand for *Second Orange*, and prices are rather easier, *T.V* being quoted at 95t. cash. Fine *Second Orange* is also dull of sale, *AA* in circle having sold at 101s. to 102s. *AC Garnet* is easier at 189s. for good free. At the weekly sales the supplies were small, *Second Orange* sold at fairly steady rates as compared with the last auction. Good firsts' *Buton* sold at a reduction, whilst *Garnet* was also easier.

SOY.—The market is very quiet at 10d. to 10½d. per gallon for fair *China*.

SPICES (VARIOUS).—*Cloves* are quiet, but steady. In auction on Wednesday fair *Zanzibar* sold at 2½d., whilst picked *Penang* were bought in at 9d. The delivery market has been firm, and a good business was done at full rates, but at the close the market is quiet. *Cassia lignea*: Broken quality sold without reserve in auction at 16s. to 17s. per cwt., whilst fair quality have sold privately at 29s. 6d. to 30s. *Pimento* is still slow of sale. Medium sold in auction at 2¾d., and fair quality at 2½d. *Chillies* are easier. In auction fairish mixed *Zanzibar* sold at 25s. 6d. to 26s., whilst extra fine bright *Japan* realised 60s. to 60s. 6d. per cwt. *White pepper*: In auction fine bold *Singapore* sold at 4½d., and extra fine ditto at 5½d. per lb.

TURMERIC.—The market is very quiet. A moderate business has been done in fair *Bengal* at 7s. 6d., whilst *Madras* has sold at 8s. to 8s. 6d. for dull finger, 9s. 6d. for good bright, and 7s. for bulbs. At the weekly sales, the whole of the *Bengal* root offered was bought in.

WAX (JAPAN).—The market is easier, and 35s. 6d. to 36s. would now be accepted on the spot for good pale *squares*.

EXCHANGE.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

All free. Coope's 'Surgical Dictionary,' well bound, 5s. (published 30s.); Scoresby-Jackson's 'Matr. Medica,' last edition, 5s. 6d. (published 12s. 6d.); Winslow's 'Mental Diseases,' 6s. (published 21s.).—Davies, 33, Eglinton Road, B.W.

A book of 130 Well-tried Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

'Pharmaceutical Journal,' from commencement in 1842, 15 thick vols., well bound, 30s.; Woodville's 'Medical Botany,' 3 quart. vols., over 200 beautifully coloured plates, 21s., free.—Davis, "Chestnuts," Gordon Hill, Enfield.

Miscellaneous.

Surplus Stock. One 10 lb. Copper Good Essence Lemon, 27s, carriage paid. Sample 4 stamps; or exchange anything saleable.—Hare, Chemist, Nottingham.

Four 3s. 9d. Professor Tuson's Sheep Dip, half price; "Enterprise" Tincture Press, 10s., delivered; Hancock Mixer, 7s. 6d.—Smith, Chemist, Stroud.

Disarticulated Skull, good condition, 10s. Fine Mahogany Case Chemical Balance Weights, 200 grms. to 1 mgr., with riders tweezers, etc.; new; price 27s. 6d.—Hatfield, Chemist, Limehouse.

WANTED.

Wanted, Complete vols. of 'Pharmaceutical Journal' from 1859 to date; 'Chemical News,' any volumes up to 1892; 'Year-Book of Pharmacy' (1892-93); 'American Chemical Journal,' vols. 1-6, 14-17 'American Chemical Society Journal,' any volumes; 'Analyst,' any volumes. Address offers—Atropis, 'Pharmaceutical Journal' Office, 5, Serle Street, W.C.

NEWCASTLE CHEMICAL REPORT.

[From our own Correspondent.]

MARCH 31, 1896.

The trade in a general way is slower, even in home business. Steamers, however, are now being put on the berth for Baltic and Continental ports, which will quicken matters somewhat. Prices all round are little changed, and are quoted thus:—SODA CRYSTALS: 36s. to 45s. in bags and casks respectively. BLEACHING POWDER: £7 5s. to £7 10s. CAUSTIC SODA: 76 to 77 per cent., £9 5s.; 70 per cent., £7 10s. to £7 15s. RECOVERED SULPHUR: £3 17s. 6d. SODA ASH: 48 per cent., £3 15s. ALKALI: 48 per cent., £4 10s. to £4 15s. HYPOSULPHITE OF SODA: £6 5s. to £7, according to packages. SULPHATE OF AMMONIA (Leith): £8 7s. 6d. PITCH: 34s. SOUTH DURHAM SALT: 8s. 6d.; agricultural purposes, 9s. per ton shipment.

LIVERPOOL MARKET REPORT.

[From our own Correspondent.]

APRIL 1, 1896.

LINSEED: advanced 3d. per 416 lbs. for forward delivery. CANARY SEED: *Turkish*, spot parcels, 30s. to 32s. per 464 lbs.; *River Plat*, 27s. PENUGREEK SEED: *Egyptian*, 7s. 6d. ex quay. KOLA NUTS: dried, 2½d. to 4d. BEESWAX: *Chilian* £7 17s. 6d., *Sierra Leone*, £6 15s. HONEY: *Chilian*, 30s. for Pile X; 21s. to 22s. for Pile 1; 20s. 6d. to 22s. for Pile 2; and 19s. 6d. to 20s. for Pile 3. GUM ARABIC: 25s. to 30s. OLIVE OIL: Steady at recent rates. CASTOR OIL: *Calcutta* good seconds, 2 15/32d.; *French* 1st pressure, 2¾d. to 2½d.; *Madras*, ditto. LINSEED OIL: *Liverpool* makes, 19s. 9d. to 21s. per cwt. COTTONSEED OIL: 17s. to 17s. 6d. SPIRIT OF TURPENTINE: Steady at 21s. 3d. PETROLEUM: *Russian*, 5¾d.; *American*, 6¾d. to 7½d. SAL AMMONIAC: First quality, 39s. SULPHATE OF AMMONIA: £8 5s. BLEACHING POWDER: £7 to £7 5s. COPPERAS: *Lancashire*, 38s.; *Welsh*, 36s. SULPHATE OF COPPER: £18 to £19; forward, £16 15s. to £17. POTASHES: 21s. to 21s. 6d. PEARLASH: 37s. 6d. CHLORATE OF POTASH: 4¾d. BICHROMATE OF POTASH: 4¾d. PRUSSIAN OF POTASH: 8d. CREAM OF TARTAR: Finest white, 96s. BICARBONATE OF SODA: £7. SODA CRYSTALS: £2 10s. BORAX: Lump, 19s. 6d.; powder, 20s. 6d. CAUSTIC SODA: 70 per cent., £7 12s. 6d. to £7 15s.; 60 per cent., £6 12s. 6d. to £6 15s.

LATE ADVERTISEMENTS.

Engagements Wanted.

MANAGER, TRAVELLER, or LOCUM TENENS. Qualified. Age 52. PHILO, 5, Serle St., W.C.

MANAGER or LOCUM. Qualified. Best London experience. Age 28. Good-class trade. E. C., 1, King St., Weymouth.

HOLIDAY LOCUM. 32. Disengaged. Highest references. Temperate. Could come at once. CHEMIST, Whitechurch, Fants.

ASSISTANT. 29. Dispenser. Counterman. Permanency or Locum. J. H., 6, St. Leonards Villas, St. Leonards Rd., Surbiton.

DURING May. South Africa preferred. Age 20. 4 years' excellent experience. Extractor. COOPER, Market Hill, Diss, Norfolk.

PART-TIME. London. DISPENSER or COUNTERMAN. Quick work preferred. Age 23. Height 5ft. 10in. Abstainer. J. EADES, 17, West Sq., Southwark, S.E.

AS LOCUM or TEMPORARY. Highly recommended. Qualified. Experienced. Trustworthy. Age 27. THOMAS care of Southall Bros. & Barclay, Birmingham.

PART-TIME JUNIOR or DISPENSER to Surgeon. Out-door. London only. Minor student. Age 22. Seven years' good experience. ARGON, 162, Kennington Park Rd., S.E.

Assistants Wanted.

JUNIOR ASSISTANT wanted. Age about 22. Accustomed to good-class Dispensing. Apply W. H. A. CARTER, 56, London Rd., Southampton.

JUNIOR, about 22 years of age, who can be well recommended. State age, experience, when disengaged, and salary expected. M., 346, Essex Rd.

EARLY in May.—Qualified out-door ASSISTANT, about 24, in an old-established Family and Dispensing business. Neat writing and Dispensing indispensable. A gentleman of quiet habits with some knowledge of Photography, and desiring permanency preferred. Height, terms, and references, with carte, to W. CLARK, Pharmaceutical Chemist, Dorking, Surrey.

AN ASSISTANT. Qualified. Single. Indoors. Permanency. One accustomed to a country business preferred. Apply, with photo if convenient (to be returned), and all usual particulars, to DEIGHTON & SMITH, Pharmaceutical Chemists, Bridgnorth.

TRADE NOTES AND NEWS.

MESSRS. HERTZ AND COLLINGWOOD, of 38, Leadenhall Street, E.C., are now stocking all their specialties in larger premises at 20, Bury Street, St. Mary Axe.

MESSRS. JOHN LEYLAND AND Co., of Byfleet, Surrey, the well-known growers of lavender, roses, peppermint, and other plants, have opened a London office at 110, Cannon Street, E.C.

HOFF'S MALT EXTRACT will henceforth be supplied in the United Kingdom by M. Hoff, of Hamburg, exclusively, an arrangement having been concluded with Johann Hoff, of Berlin, to that effect.

MESSRS. T. CHRISTY AND Co. have been appointed agents for a litmus pencil brought out by an American pharmacist. One end is red and the other blue, and the pencil is intended to replace litmus paper in testing for alkalies and acids.

THE ROSBACH SPRINGS, LIMITED, notifies the removal of the firm's warehouse from 4, Sussex Place, E.C., to 20, Bury Street, E.C. All deliveries of goods should be tendered there, but all communications should be addressed to the offices of the Company, 38, Leadenhall Street.

THE LIQUOR CARNIS Co. directs attention to Mr. A. W. Gerrard's recommendation of Caffyn's Liquor Carnis, which he reported "is quite a unique preparation, having a special value both as a food and medicine, which renders it far superior to ordinary meat extracts."

THE BON MARCHE (LIVERPOOL), LIMITED, was registered on March 19, by T. T. Hull, 22, Chancery Lane, W.C., with a capital of £3000 in £1 shares, the objects specified being to carry on business as chemists, druggists, and patent medicine vendors. The directors are L. S. Cohen, P. de Jong, and H. S. Levy. No qualification or remuneration is specified.

SUPPLEMENT

TO THE

PHARMACEUTICAL JOURNAL.

THE PROTOPLAST CELL.

You have caught me at last and caged me,
and think you can make me reveal
The secret of life's creation, of which I am
sign and seal.
Ho, gauge me by lineal inches, scarce seen in
your microscope;
I have clothed the earth with her beauty,
plain, valley, and mountain slope.
When the world from incandescent gases
congealed into form, I was there,
And the sea was without a tenant, the land
was lifeless and bare;
But I bore the infinite promise of verdure,
and flower, and tree,
I covered the living myriads that people air,
earth, and sea.
I, the all-bearing mother, transmitter to all
of life,
Have yet suffered no diminution, unfailling
through stress and strife;
Protophyte even as mammoth, and each as
the other complete,
In me finds its primal parent, in me all
divergents meet.
You stand against increase of matter! Why
not against increase of mind?
Since nothing is made out of nothing, can
the higher growth be defined?
Or of life? Can life be created, or spring
forth where none has been?
The word made flesh, if you trace it, comes
only through me I ween.
So, you fail to perceive a radiant where
higher and lower swerve!
You say that no sense of vision preceded an
optic nerve.
In your wild unrest with the future, while
trembling upon its brink,
You hesitate whether 'tis better to know or
only to think.
And still I go on increasing the visible forms
of life,
Fulfilling my primal function wherewith all
creation is rife.
Still unchanged amid all time's changes,
which carry an upward sway,
An impulse from simple to complex my off-
spring must all obey.
I know not a higher or lower throughout the
length of the line,
Macro- or micro-cosm no nearer is to the
Divine.
Protozoan, animal, vegetal, linked by un-
changeable law,
Are equally interdependent for the vital
breath which they draw.
From the inorganic is fashioned all living,
how varied or fair!
What, though, it is only the garment which
for a brief season they wear?
And even your leaders in science, who mar-
shal life's orders up,
Make the summit and crown of the ages
the child and the buttercup.

Glasgow.

ALEXR. LAING.

MISCELLANEOUS NEWS.

EXETER ASSOCIATION OF CHEMISTS AND DRUGGISTS.—The materia medica cabinet presented to the members of the Exeter Association of Chemists and Druggists by the Pharmaceutical Society of Great Britain has been placed in the Albert Memorial Museum for the use of students, the pharmaceutical classes, recently started in Exeter, being conducted there by Mr. Ware.

PRESCRIBING PROPRIETARY MEDICINES.—At the meeting of Glasgow City Parish Council, on Tuesday, the minutes of the Medical Committee stated that Mr. J. Anderson Russell (who is hon. secretary and treasurer of the Glasgow and West of Scotland Pharmaceutical Association) had drawn attention to the fact that one of the outdoor medical staff had again prescribed a proprietary cod-liver oil cream, notwithstanding the arrangement come to, and the inspector was instructed to write to the doctor asking for an explanation. At the same meeting, Dr. McLaughlin moved "That the resolution come to at this Committee on June 20 last, as to medicines being dispensed by qualified chemists only, which was approved at the meeting of Council on July 2, 1895, be rescinded." The previous question was carried by eight votes to four.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION held its quarterly meeting on April 1 at the Foresters' Hall, Octagon, Plymouth, Mr. C. J. Park, President, in the chair.—Mr. R. D. Doble, of Tavistock, gave a most interesting lecture, entitled "Three Years in a South African Pharmacy." The lecturer illustrated his remarks on the various places of note—including Cape Town, Johannesburg, Port Elizabeth, Table Mountains, and King William's Town—by means of some fifty excellent limelight views.

EDINBURGH PHARMACY ATHLETIC CLUB.—GOLFING SECTION.—Messrs. H. D. Alexander and Geo. Lunan met Messrs. Geo. Robertson and Jas. Stott in the final round in the T. and H. Smith Challenge Trophy competition on Friday, April 3, at the Braids. After a close game Messrs. Alexander and Lunan won by 2 up, and 1 to go.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.—The most highly successful smoking concert of the season was held on Wednesday, April 1. The best items of an excellent programme were those of Mr. Aston, who gave solos upon "the bones" and upon a single-stringed broomstick and a cigar box, and the recitations and sketch of Messrs. Firkin and Martin, which were much appreciated. Excellently rendered songs were given by Messrs. Judd, Firth, Firkin, Cornish, Wilson, Rushton, Aston, and Jones. Mr. Cartwright presided at the "box of dominoes," and banjo solos were given by Messrs. Rogers.

HUXLEY MEMORIAL MEDAL.—It has been decided by the Huxley Memorial Committee to strike a medal for award by the Royal College of Science, and the Committee desires to obtain the design for the medal,

if possible, by competition. Further particulars will be furnished on application, which must be sent in before May 1, to the Honorary Secretary of the Huxley Memorial Committee, Professor G. B. Howes, Royal College of Science, South Kensington.

INLAND REVENUE PROSECUTION.—William Thomas Blewett, chemist, Hayle, was charged at Camborne last week by the Inland Revenue with selling a bottle of brandy on December 16, without being properly licensed to do so.—Mr. Vivian Thomas appeared for defendant, who pleaded guilty.—The Supervisor of Excise (Mr. Williams) stated that defendant was Gilbert's agent, and as such held a licence for the sale of foreign wines, but he held no licence for the sale of spirits. If under this charge defendant was convicted, he would have to forfeit the wine licence now held, and could never take a licence under the Inland Revenue again. The cost of licences to sell spirits in the way defendant did on that day was thirteen guineas a year. By not having such licence he entered into unfair competition with others, and escaped the superintendence of the police.—Mr. Vivian Thomas stated that the servant of one of the defendant's customers asked him to sell a bottle of brandy to him for his master, who was ill. He replied that he had no licence and could not do so, but as the servant was excited and pressed for it, he took a bottle from his private stock and sold him. Several people had lately tried to induce defendant to sell spirits, but he had refused them, and this was the only case in which he had supplied spirits.—Fined two guineas.

WEED-KILLER FOR CIDER.—A mason named Turner died at Stockland, near Axminster. Becoming thirsty he drank from a jar what he supposed to be cider. At the inquest a verdict was returned that he died through accidentally drinking weed-killer from a stone jar in mistake for cider. The jar was labelled poison.

SENSIBLE ADVICE.—Our friends and subscribers, or those among them who do not happen to be registered chemists, ought by now, one might suppose, to understand that all proprietary articles which contain any of the scheduled poisons must not, under any circumstances whatever, be sold or offered for sale by them. If they do not understand it is surely due to no fault of ours, for we have drawn attention to the question several times. The various prosecutions which are continually being reported seem, however, to indicate that there are still many whose ignorance or perversity leads them into trouble. What is the use of it? The Pharmacy Act is a fact, a law, and it must be observed. Its provisions are not altogether popular, I know, but that will not save the man from penalties who is wrong-headed enough to go against it. Therefore, grocers and other "unregistered persons" should stop off all poisonous proprietaries. The above remarks apply to disinfectants, fly papers, etc., made with poisonous ingredients.—*Patent Medicines Journal*.

SIR JAMES H. HASLETT, M.P., chemist, Belfast, has been elected Vice-President of the Ulster Conservative Association.

DR. JOSEPH E. KENNY, a prominent Dublin apothecary and Parliamentary representative of the College Green Division, has been appointed to the Stewardship of the Chiltern Hundreds. Press of business is the cause of Dr. Kenny's retirement from the "House."

A FATAL SLEEPING DRAUGHT.—Thomas McCarthy, a labourer, obtained last week from Dr. Scannel's Medical Hall, Cork, a sleeping draught containing morphine, and died some hours after taking it. The viscera of deceased is being analysed to determine the quantity of morphine taken.

'THE PHARMACEUTICAL ERA,' one of the most important organs of the craft in the United States, was commenced on January 1, 1887, and the wonderful growth of the paper during the past nine years is shown by the fact that whilst the volume for 1887 weighed 3 lbs. 14 ozs., the two volumes published during 1895 weigh 20 lbs. 11 ozs.

THE RÖNTGEN RAYS.—The Paris correspondent of the *Daily News* writes: The Academy of Sciences met for a short time on Tuesday. The business of the day was the granting of the honours of the sitting to Professor Ramsey, the discoverer of argon, and Professor Sylvanus Thompson. The scientific subject discussed was the deviation of α -rays by the magnet. Professor Sylvanus Thompson read a paper on a means he has devised for concentrating and strengthening α -rays and getting clearer photographs.

APPOINTMENT OF PUBLIC ANALYST FOR SHEFFIELD.—The annual report of Mr. A. H. Allen, F.C.S., public analyst for Sheffield, was submitted to the City Council on Wednesday, April 8. Mr. Allen stated that he had received and analysed under the Sale of Food and Drugs Act, 311 samples, including 201 samples of milk, 45 of butter, 10 of lard, 6 of mustard, 10 of coffee, 10 of malt vinegar, 6 of paregoric, 6 of laudanum, and 17 of spirit. Mr. Allen's term of appointment as public analyst being about to expire, a resolution was passed by the Council appointing him for a further period of one year, at a salary of £100 for 150 samples analysed, and 10s. 6d. for each sample analysed over that number.

PRESENTATION AT BRADFORD.—Last Saturday an interesting presentation took place at the Infirmary Pharmacy, Bradford, Mr. T. G. Forshaw, M.P.S., being presented with a massive gold chronometer watch, by a few friends, to mark the completion of fifty-two years' connection with pharmacy.

ROYAL INSTITUTION.—On Tuesday next (April 14), Professor James Sully will begin a course of three lectures on "Child-Study and Education"; on Thursday (April 16), Professor Dewar will begin a course of three lectures on "Recent Chemical Progress"; and on Saturday (April 18), Professor W. B. Richmond, R.A., will begin a course of three lectures on "The Vault of the Sixtine Chapel." The Friday evening meetings will be resumed on April 17, when Professor G. Lippmann will deliver a discourse on 'Colour Photography.'

SUICIDE BY COCAINE.—An inquest was held by Mr. Troutbeck, on Wednesday last, in connection with the death of Reginald Norman, who died at 37, Gloucester Street, Pimlico, after taking a quantity of cocaine. It was stated in evidence that deceased, who had been intemperate of late, had swallowed the contents of a bottle in which 5s. worth of cocaine had been supplied by the Civil Service Stores, Bedford Street, London, to a girl of sixteen. The coroner commented upon the loose system which enabled such a transaction to be effected, and the jury returned a verdict of suicide while temporarily insane.

REMEDIES INTRODUCED IN 1895.*

(Concluded from p. lxxi.)

Rubrol.—Solution boric acid, thymol, and some "coal-tar derivative."—Injection in gonorrhœa.

Salactol.—Sodium salicyl-lactate.—Antidiphtheritic.

Salazolol.—Synonym of salipyrine.

Saligenin.—Ortho-oxybenzylic alcohol; salicylous alcohol.—Anti-rheumatic. Dose: 0.5-1 Gm.

Salipyraxolin.—Synonym of salipyrine.

Salithymol.—Thymol salicylate.—Antiseptic.

Septentrionaline.—Alkaloid from *Aconitum septentrionale.*—Sensory paralyzant and antitetic.

Serum Paste.—Serum powder with wax and zinc oxide.—Wound protective.

Serum Powder.—Dried, powdered, and sterilised blood-serum.—Wound protective.

Silver Fluoride.—AgFl.—Antiseptic and caustic.

Sodium Cinnamate.—Topical antitubercular.

Sodium Glycerinophosphate.—Nervine. Dose: 0.2-0.3 Gm.

Sodium Phenosuccinate.—Sodium salt of anthoxylphenylsuccinamic acid.—Analgesic and antipyretic.

Stypticin.— $C_{12}H_{13}NO_3 + H_2O \cdot HCl.$ —Hemostatic. Dose: 0.03-0.2 Gm.

Tetania.—Tetanotoxin, ptomaines isolated from tetanus cases.

Thiotone.—Solution ammonium sulphide, used for toning silver-chloride gelatin prints.

Thyraden.—Concentrated extract of thyroid gland, used against gôitre, myxœdema, etc.

Thyroantitoxin.—Crystalline substance from thyroid extract after removal of the albuminoids.— $C_7H_{11}N_3O_5.$

Traumamol.—Iodocresol, $C_7H_7IO.$ —Surgical antiseptic.

Tribromsalol.— $C_6H_4 \cdot OH \cdot COO \cdot C_6H_2Br_3.$ —Intestinal antiseptic, like salol.

Triphenin.— $C_6H_4 \cdot C_2H_5O \cdot NH \cdot (CH_2 \cdot CH_2 \cdot CO).$ —Antipyretic and antineuralgic. Dose: Antipyr., 0.3-0.6 Gm. ($4\frac{1}{2}$ -9 Grn.); antineur., 1 Gm. (15 Grn.).

Urotropin.—Hexamethylenetetramine, $C_6H_{12}N_4.$ —Uric-acid solvent. Dose: 0.5-2 Gm. per day.

Zinc Subgallate.—Astringent and antihidrotic. Dose: 0.05-0.25 Gm.

Zincohemol.—Zincated hemol.—Antichlorotic and antidiarrhœic. Dose: 0.5 Gm.

MAXIMUM DOSES OF SOME OF THE NEWER REMEDIES.*

COMPILED BY A. SCHREIBER, OF NEUKIRCH.

	Dose (Gm.).	
	Single.	Daily.
Acetal	8.0	16.0
Acid, Creosotinic	0.5	5.0
Cubebic.....	1.0	2.0
Düodosalicylic	1.0	3.0
Dithiosalicylic	1.0	1.5
Hydrobromic	0.5	2.0
Adonidin	0.005	0.03
Agathin	0.5	1.0
Alphol	0.5	2.0
Analgen	1.0	4.0
Anemonin	0.03	0.1
Antinervin	0.5	2.0
Antiseptin	0.05	0.2
Antispasmin	0.05	0.2
Antithermin	0.2	0.8
Apocodeine	0.02	0.1
Arbutin	1.0	4.0
Asaprol.....	1.0	4.0
Aspidospermine Hydrochlor....	0.003	0.006
Baptisin	0.03	0.1
Benzanilide.....	0.5	2.0
Benzonaphtol	0.5	2.0
Benzosol	0.75	3.0
Betol.....	0.5	2.0
Boldol	0.25	1.0
Caffeine-chloral	0.4	2.0
Carniferrin	0.5	2.0
Chloral Hydrocyanate	0.02	0.1
Chloralimide	1.0	4.0
Chloralose	0.75	3.0
Cornutin	0.005	0.02
Creosote Carbonate	1.0	6.0
Cresalol	0.5	2.0
Daturine	0.001	0.003
Diuretin	0.5	4.0
Ergotinine	0.001	0.015
Ethoxycaffeine	0.25	1.0
Euphorin	0.5	2.0
Exalgin	0.02	0.1
Extr. Adonidis vern., fl.	0.5	2.0
Boldo, fl.....	0.5	2.0
Cacti Grandiflor., fl.....	0.75	3.0
Coto, fl.	0.5	2.0
Gelsemium, fl.	0.2	0.6
Ferratin	0.5	2.0
Formanilid	0.25	1.0
Gaduol	0.2	0.8
Guaiacol Salol	1.0	5.0
Guaiacol Carbonate.....	1.0	6.0
Helenin	0.3	1.0
Helleboreine	0.03	0.12
Hemalbumin	1.0	5.0
Hemogallol	1.5	4.0
Hemol.....	0.5	1.5
Hydracetin	0.2	0.4
Hydrargyr. Thymol. Acet. ...	0.005	0.02
Hydrastinine.....	0.05	0.2
Hydroquinone	0.5	2.0
Hypnal	1.0	4.0
Hypnone	0.05	0.2
Iridin	0.3	1.0
Iodocaffeine	0.5	2.0
Iodotheobromine	0.5	2.0

(To be continued.)

* Reprinted from *Merck's Market Report.*

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MARKET REPORT.

[Specially compiled for the *Pharmaceutical Journal*.]

LONDON, APRIL 9, 1896.

Business has naturally been greatly restricted since our last report, and, in spite of this, one or two important changes have taken place in the chemical market. The English camphor refiners have again lowered their prices 2d. per lb., which move will probably lead to a further reduction in the price of the German article. The market in crude camphor is flat, and prices are tending lower. There is nothing to report in the alkaloids, quinine being quite featureless, the same remark applying to caffeine, whilst morphine and codeine are firm. Carbolic acid is rather firmer for crystals, but the crude acid is easier. Citric acid is dull of sale at unchanged rates, whilst tartaric acid is also quite neglected. The manufacturers of mercurials to-day announced a reduction in the price amounting to 3d. per lb., with a view to greater uniformity between the quotations for large and small contracts. In the drug market we have to report a firm market in orris root and saffron, with a slight tendency to higher rates. Carthagena ipecacuanha continues to sell privately at very firm rates, whilst a good business has been in Alexandrian sena for which there is still a brisk inquiry. Insect flowers are firm and the same applies to Peruvian balsam. There is nothing of note to report in gum arabic, which is firmly held at late rates. Cod-liver oil is steady, and the same applies generally to the heavy oil market, whilst shellac, and the spice and essential oil markets do not present any features of interest. Full details will be found below:—

ACACIA (GUM).—The market for *Soudan* sorts is firm, but quiet. Pale hard gum has sold privately during the week at 85s. per cwt. For *Persian* so-called insoluble gum there has again been a fair inquiry, and good palish sorts have sold at 18s. per cwt. Holders are very firm.

ACID, CARBOLIC.—The market for *crystals* is very firm, but *crude acid* is rather easier. The current quotations are as follows:—*Crystals*, 34° to 35° C., 7½d.; 39° to 40° C., 8d.; 39° to 40° C. (*detached crystals*), 9d. per lb. *Crude* is again easier at 2s. 1d. for 60 per cent., whilst 75 per cent. is returned at 2s. 6d. per gallon. *Liquefied* and *creylic* are unchanged at 1s. and 11d. per gallon respectively.

ACID, CITRIC.—The market is flat. *English acid* is still quoted at 1s. 2d. per lb. in manufacturers' hands, whilst second-hand holders offer at 1s. 1¼d. *Lemon juice* is quoted at £14 to £14 2s. 6d. per pipe, *f.o.b.*, *Messina*.

ACID OXALIC.—Still quoted at 3½d. per lb., delivered free in London.

ACID TARTARIC.—The market is quiet. *English* manufacturers still quote 1s. 3d. per lb., whilst *foreign acid* (not guaranteed

B.P.) both in *powder* and *crystals* is returned at 1s. 2d. per lb.

AMMONIA COMPOUNDS.—*Sulphate* is very slow of sale, grey 24 per cent. being quoted at £8 2s. 6d. on the spot, whilst *Hull* and *Beckton* are quoted at £8, and *Leith* at £7 17s. 6d. *Sal Ammoniac* is unchanged at 39s. for firsts, and 37s. for seconds. *Carbonate* quotes at 3½d. to 3¼d. per lb., according to package. *Liquor*: Unchanged at 3¼d. to 3½d. per lb. less 5 per cent.

ASAFOETIDA (GUM).—The prices now asked by holders are quite prohibitive to business, and buyers are not disposed to make any advance upon the rates paid at the last drug sales.

CAMPHOR (CRUDE).—The market is very quiet, and quotations are lower. For arrival, *Formosan* camphor offers at 145s., and *Japan* at 160s. per cwt. *c.i.f.*, but there are no inquiries whatever.

CAMPHOR (REFINED).—To-day the *English* refiners again reduced their quotations 2d. per lb. all round, making the present quotations for *bells* and *flowers* in half-ton lots 1s. 11½d. per lb, with *squares* at 2s. 0½d., and proportionate rates. This decline was occasioned by a desire to bring the prices on a par with those of *German* camphor, but it is expected that a drop in the latter variety will be announced in a day or two, although at present the quotations are the same as those for *English* camphor.

COAL DISTILLATION PRODUCTS.—*Toluol* quotes at 2s. per gallon for *pure*. *Benzole* 50 per cent. is quoted at 1s. 8d., and 90 per cent. at 2s. 1d. per gallon. *Creosote*: 1¼d. per gallon. *Crude naphtha*: 30 per cent. at 120° C. quotes at 10d. per gallon. *Solvent naphtha* is lower; 95 per cent. at 160° C. is quoted at 1s. 5d.; 90 per cent. at 160° C. at 1s. 2d., and 90 per cent. at 190° C. at 1s. 1d. per gallon. *Anthracene*: 13A quotes at 11d., and B at 9d. per gallon. *Pitch*: 33s. per ton, *f.o.b.* *Tar*: 12s. per barrel for *crude*, and 12s. 6d. for *refined*.

COPPER SULPHATE.—Is firm, the current spot quotations being £17 10s. to £18 15s., the latter being the price asked for the *Anchor* brand.

CREAM OF TARTAR.—Is very slow of sale. On the spot, best white *French* crystals are quoted at 90s. to 91s. per cwt., whilst *German* brands of *powder* are returned at 92s. to 93s. For shipment from *Bordeaux* the current quotation is 84s. to 85s., *f.o.b.*

GALLS.—The market is firm, but there is only a moderate inquiry for all varieties. *Persian* galls quote at 53s. to 54s. for *blues*, 42s. 6d. to 47s. 6d. for *greens*, and 42s. to 45s. for *whites*.

LIQUORICE ROOT.—The current quotations for fine quality *Russian* decorticated root is 28s. 6d. per cwt., *c.i.f.* terms, whilst ordinary rough *Persian* root offers at 6s. to 7s. 6d. per cwt. on the spot.

MERCURIALS.—To-day the manufacturers of *Mercurials* announced a reduction of 3d. per lb. all round, and the following are now the current quotations for not less than 56 lbs.:—*Calomel*, 2s. 7d.; *corrosive sublimate*, 2s. 3d.; *red precipitate*, 2s. 10d.; *white ditto*, 2s. 10d.; *red ditto (levigated)*, 2s. 10d.; *yellow subsulphate*, 2s. 10d.; *persulphate*, 2s. 11d.; *sulphur with sulphur*, 1s. 10d. per lb. This drop was in some degree occasioned by the need for less disproportion between the rates fixed for large and small quantities of these chemicals.

OIL (COD-LIVER).—The position is unchanged. The leading brands of new season's *Norwegian* oil are quoted at 220s. to 225s. per barrel of 25 gallons, whilst good quality 1895 oil is firmly held at 212s. 6d., and is in but poor supply. For *Newfoundland* oil of good quality 7s. per gallon is asked.

OILS (FIXED) AND SPIRITS.—*Castor*: *Italian* oil is very firm, and fine quality oil is still quoted at 30s. 6d. to 31s. per cwt. *Cotton* is steady, but quiet. *Refined* oil is still quoted at £16 to £16 10s. on the spot. *Coconut* is quiet, but unchanged, *Ceylon* being quoted at £23 and *Cochin* at £26 15s. to £27 on the spot. *Linseed*: The market is firm, and the quotation for oil in barrels is unchanged at £19 2s. 6d. *Rape* is quiet but firm, *refined* oil being still worth £24 to £24 10s. *Turpentine* is dearer, and *American* oil is now quoted at £20 3s. on the spot. *Petroleum*: The market is very slow. *Russian* is now quoted at 5¼d. 5½d., *American* at 5½d. to 5¾d., and *water-white* at 6¼d. to 6½d. per gallon on the spot.

OPIUM.—The London market is firm, but quiet. The following are the current quotations:—*Soft shipping*, 12s. to 13s.; *Smyrna*, 9s. to 9s. 6d.; *Constantinople*, 9s. to 9s. 6d.; and *druggists' seconds*, 8s. to 8s. 6d. per lb. *Persian* opium is firm, 13s. per lb. for best brics.

ORRIS ROOT.—The market is firm, and best *Florentine* root is quoted at 67s. 6d., with good sorts at 63s. 6d., and small ditto for grinding purposes at 57s. 6d. (*c.i.f.* terms) per cwt. For good quality *Veronese* root 56s. 6d. per cwt., *c.i.f.*, is asked.

PERU (BALSAM).—The market is quite cleared of first-hand parcels, there having been a fair business done during the week at 7s. 3d. to 7s. 6d. per lb. Holders now ask 7s. 9d. to 8s.

QUICKSILVER.—Is quiet at the unchanged rate of £6 17s. 6d. in *importers'* hands, whilst £6 16s. 6d. is still the price asked by second-hand dealers.

QUININE SULPHATE.—The market is very quiet, and best *German* makes are unchanged at 13¼d. per oz. on the spot.

SENNA.—A good demand is reported for *Alexandrian* leaves, in which a large business has been done privately at fully steady to rather dearer rates.

SHELLAC.—The market is quiet, but steady. Privately moderate sales of *Second Orange* have been made at 90s. to 96s. per cwt. for ordinary to good *TN*, and 107s. for fine quality ditto, whilst *AC Garnet* has sold at 88s. for free and ordinary thirds *Button* at 79s.

SPICES (VARIOUS).—*Cloves*: Privately the market is barely steady. Business has been done in fair *Zanzibar* to arrive at 2 11/32d. per lb., *c.i.f.* terms. *Pepper*: The arrival market is very firm, and advanced rates have been paid, including 2½d. for fair *Singapore* April to June shipment.

TRAGACANTH (GUM).—The market is firm, but moderate sales only are reported. Fine pale firsts quote at £14 10s., seconds at £12 10s. to £13 10s., thirds at £11 to £11 10s., fourths at £8 10s. to £10, and other grades at 35s. to £7. The supply of *hoj* is very large, and prices are merely nominal at 30s. to 80s. per cwt.

EXCHANGE.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

All free. Plesse's 'Art of Perfumery,' scarce, 8s. 6d.; Professor Parker's 'Zootomy,' illustrated (8s. 6d.), 4s.; Newman's 'British Ferns' (pub. 12s.) and three other illustrated fern books, 7s. 6d.—Davies, 33, Eglinton Road, Bow.

A book of 130 Well-tryed Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

Gray's 'Supplement to Pharmacopœia,' very scarce book, 10s. 6d.; another copy, imperfect, 6s.; Gray's 'Operative Chemist,' 100 plates, 5s.; Daniel Hanbury's 'Pharmacological Papers' (16s.), 6s. 6d. All free.—Davis, "Chestnuts," Gordon Hill, Enfield.

Miscellaneous.

Caligraph No. 2, excellent condition, cost us £22, will sell for £9.—The Liquor Carnis Co. (London), apply Head Office, Aston Clinton.

WANTED.

Wanted, complete set of 'Pharmaceutical Journal,' from 1841 to 1888, preferably unbound. State price

to—M. D. C., 'Pharmaceutical Journal Office,' 5, Serle Street, W.C.

Wanted, Complete vols. of 'Pharmaceutical Journal' from 1859 to date; 'Chemical News,' any volumes up to 1892; 'Year-Book of Pharmacy' (1892-95); 'American Chemical Journal,' vols. 1-6, 14-17; 'American Chemical Society Journal,' any volumes; 'Analyst,' any volumes. Address offers.—Atropa, 'Pharmaceutical Journal' Office, 5, Serle Street, W.C.

Wanted, latest editions, cheap, Ganot's 'Physics'; Remsen's 'Organic Chemistry'; John's 'Flowers of the Field'; cash.—E. O. T., 10, Clarendon Avenue, Leamington.

LIVERPOOL MARKET REPORT.

[From our own Correspondent.]

APRIL 8, 1896.

LINSEED is very firm in tone. Sellers have advanced their demands 3d. to 6d. per 416 lbs. over recent rates. 200 bags *Samsorn* sold at 33s. 6d., and ordinary *Turkish* at 34s. 6d. per 416 lbs. *ex quay*. CANARY SEED is quiet, with no change in prices to report. TURMERIC: *Cochin* finger and bulb have been selling well at late rates. GINGER: 25 tons of *African* new crop have been sold on private terms. A marked improvement in quality is noticeable in this last crop. GUM ARABIC continues very firm, and full prices are asked for the little offering. BEESWAX: 10 sacks of *Chilian* sold at £7 15s. per cwt. CASTOR OIL quiet at the following rates:—*Calcutta* good seconds, 2 $\frac{7}{8}$ d. to 2 15/32d. per lb.; *French* 1st pressure and *Madras*, each 2 $\frac{3}{4}$ d. to 2 $\frac{7}{8}$ d. per lb. OLIVE OIL: Slow demand, but recent prices well maintained. LINSEED OIL is firmer, but price is as last week, 19s. 9d. to 21s. per cwt. for *Liverpool* makes in export casks. COTTON-SEED OIL: *Liverpool* refined, 17s. to 17s. 6d. in export barrels. SPIRIT OF TURPENTINE: 21s. 3d. per cwt. PETROLEUM: *Russian*, 5 $\frac{3}{4}$ d. per gallon; *American*, 6 $\frac{3}{4}$ d. to 7 $\frac{1}{2}$ d. per gallon. CREAM OF TARTAR: Neglected, but price is nominally as last week. POTASHES: 21s. to 21s. 6d. per cwt. PEARLASH: 36s. 6d. per cwt. SALTPETRE: 100 bags *Calcutta* sold *ex quay* at 16s. 6d. to 16s. 9d. per cwt. NITRATE OF SODA: 8s. to 8s. 3d. per cwt.

MARRIAGES.

SMITH—EAST.—On April 2, at Tonbridge, by Rev. T. Hancocks, assisted by Rev. J. H. Blake, R. Sidney Smith, pharmaceutical chemist, of Loughton, to Laura, only daughter of Mr. Frank East, J.P.

WEST—HANCKETT.—On April 2, at St. Matthew's Church, Stretford, by the Rev. Dudley Hart, M.A., Rector, Henry Thomas, eldest surviving son of Thomas West, chemist, Stretford, to Fanny Victoria, only daughter of Mr. William Hanckett, of Belmont Place, Stretford.

TRADE NOTES AND NEWS.

MESSRS. BURROUGHS, WELLCOME AND Co. have considered it advisable to issue cerium oxalate in compressed form, owing to its constantly increasing administration in the treatment of the vomiting of pregnancy and of sea-sickness. As the tonic and sedative properties of cerium oxalate seem to be commending it more and more to prescribers, they anticipate that these new "tabloids," each containing five grains of the salt, will give excellent results in the treatment of pyrosis, gastrodynia, and various forms of dyspepsia, and of chronic, spasmodic, or phthisical cough. It is claimed that while the "tabloid" method of administering cerium oxalate equals all others in efficacy, it far surpasses them in convenience.

MESSRS. A. AND M. ZIMMERMANN are introducing a new preparation, called GLUTOL, for use as a surgical dusting powder. It is prepared by acting upon gelatin with formalin, and gives off formic aldehyde when dusted upon wounds, thus serving as an antiseptic.

MESSRS. EVANS, GADD AND Co., of Exeter, are issuing an attractive special summer circular, in which they give particulars of their spring and summer specialties, including toilet preparations, spring tonics, effervescent preparations, and flavouring essences. The articles are put up in good style, and provision is made for printing the retailer's name and address on the label if desired.

LATE ADVERTISEMENTS.

Business for Disposal.

CHEMISTS' BUSINESS, City, leading thoroughfare, commanding shop, low rent, for sale. Write to TRUSTEE, 21, Childebart Rd., Upper Tooting, S.W.

Assistants Wanted.

ISLE OF WIGHT.—A good JUNIOR. Apply, stating age, salary, and usual particulars, to VECTIS, care of Hearon, Squire & Francis, 38, Southwark St., S.E.

QUALIFIED ASSISTANT for Dispensing business, of good address. Apply, giving experience, salary, height, &c., to W. C. RICHARDSON, Promenade, Blackpool.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

MONDAY, APRIL 13.

ROYAL INSTITUTION OF GREAT BRITAIN, at 5 p.m.
General Monthly Meeting.
ROYAL GEOGRAPHICAL SOCIETY, at 8.30 p.m.
"Popocatepetl and the Volcanoes of the Valley of Mexico," by O. H. Howarth.
SOCIETY OF CHEMICAL INDUSTRY, at 8 p.m.
Election of Officers for the Session 1896-7.
(1) "The Estimation of Moisture in Wood-Pulp," by R. W. Tindall.
(2) "A Study of Comparative Affinities in the Case of Certain Salts of Ammonia" (II.), by Watson Smith.

TUESDAY, APRIL 14.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.
"Child-Study and Education" (I.), by Professor James Sully.
ROYAL COLONIAL INSTITUTE, at 8 p.m.
"One Hundred Years of British Rule in Ceylon," by L. B. Clarence.
ROYAL PHOTOGRAPHIC SOCIETY, at 8 p.m.
Ordinary Meeting.
MIDLAND PHARMACEUTICAL ASSOCIATION, at 8 p.m.
Paper by J. Barclay, at Mason College.

WEDNESDAY, APRIL 15.

PHARMACY CLUB, at 6.45 p.m.
Dinner at the Café Royal, Regent Street.
GRESHAM COLLEGE, at 6 p.m.
"The Latency of Disease" (II.), by Professor E. Symes Thompson.
ROYAL MICROSCOPICAL SOCIETY, at 8 p.m.
Ordinary Meeting.
WESTERN CHEMISTS' ASSOCIATION, at 8.30 p.m.
Musical and Social Evening at the Westbourne Restaurant, 1, Craven Road, W.
MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION, at 9 p.m.
Discussion on the Shops (Early Closing) Bill and other matters.

THURSDAY, APRIL 16.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.
"Recent Chemical Progress" (I.), by Professor Dewar.
LINNEAN SOCIETY OF LONDON, at 8 p.m.
"Berkeley's Types of Fungi Re-described," by G. Massee.
"The Internal Anatomy of *Bdella*, Latr.," by A. D. Michael.
CHEMISTS' ASSISTANTS' ASSOCIATION, at 8.30 p.m.
Short Papers by Members.

FRIDAY, APRIL 17.

ROYAL INSTITUTION OF GREAT BRITAIN, at 9 p.m.
"Colour Photography," by M. G. Lippmann.
GRESHAM COLLEGE, at 6 p.m.
"The Latency of Disease," by Professor E. Symes Thompson.
EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION, at 9.15 p.m.
Annual Business Meeting.
ABERDEEN JUNIOR CHEMISTS' ASSOCIATION, at 9.30 p.m.
General Meeting.

SATURDAY, APRIL 18.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.
"The Vault of the Sixtine Chapel" (I.), by Professor W. B. Richmond.

SUPPLEMENT

TO THE

PHARMACEUTICAL JOURNAL.

MISCELLANEOUS NEWS.

NEW ADMIRALTY ORDER.—The Admiralty has within the past week issued a notice to medical dispensers engaged in the naval hospitals, placing those who have passed the Minor examination on an equal footing with those who have acquired the Major certificate. The order takes effect from April 1, 1896, and the average naval hospital dispenser will undoubtedly regard it with a kindly eye. Up to the present time only those who have passed the Major have been eligible to take charge of stores, and so become entitled to 2s. a day in home service, and 1s. a day abroad. It frequently happens, however, that on a foreign station only one dispenser is necessary, and unless he is a "Major" man he does not become entitled to the extra 1s. a day, although he may have full charge of a store, and have to do the extra work due to a storekeeper. To such individuals the new Admiralty order will come as a boon, but to those naval dispensers who have devoted time and money to preparing for the Major examination it is a trifle disappointing.

CASE UNDER THE SALE OF FOOD AND DRUGS ACT.—A case was heard at Clerkenwell Police Court on April 15, before Mr. Bros, in which Mr. J. C. Meacher, of 61, Stroud Green Road, N., was charged by the Islington Vestry with supplying the following mixture, deficient in iodine to the extent of 14.8 per cent., and containing an excess of 9.3 per cent. of potassium iodide:—

R Pot. Iodidi	grs. 99.
Iodini.....	grs. 66.
Aq. destil. ad	ʒij.
Ft. lotio.	

Defendant had maintained the accuracy of his dispensing when the case was first heard on March 25, and the trial was therefore deferred pending an analysis by the Somerset House authorities. As a result the proportion of iodine was found to be equal to 92.4 grains, and of potassium iodide 103.8 grains, in the 3 fluid ounces, both in excess of the quantities ordered. The magistrate decided to dismiss the case, and allowed the defendant 10s. 6d. costs.

THE KINNINMONT PRIZE.—Intending candidates are reminded that the competition will take place in May or June. Names should be sent before the end of April to Mr. William L. Currie, 223, Byres Road, Dowanhill, Glasgow, from whom all information may be obtained.

GLASGOW AND WEST OF SCOTLAND SCHOOL OF PHARMACY STUDENTS' ASSOCIATION, April 13.—Mr. P. Thomson read a paper on fermentation, in which he briefly sketched the present day theories, dealing with the subject to the advantage of those present. After a short discussion a hearty vote of thanks was awarded to Mr. Thomson for his instructive paper.

MIDLAND PHARMACEUTICAL ASSOCIATION AND CUTTING IN PRICES.—On Wednesday last a well-attended meeting was held under the auspices of the Midland Pharmaceutical Association, at the Grand Hotel, Birmingham, for the purpose of considering the report of the Trade Committee on the question of undue cutting. Mr. R. Darton Gibbs (President), occupied the chair, and a deputation was present from the Proprietary Articles Trade Association. Mr. W. Jones presented the report, which stated that the Committee had made various suggestions to the London Association, and in the majority of cases these had been adopted, notably the rejection of the rebate scheme, and the substitution of a scheme on lines similar to that of Elliman's. The Committee also suggested modifications of the composition of the P. A. Trade Association's Council, on which they thought the retail trade was insufficiently represented. These they regretted to say were not carried, but they hoped to see their modification adopted at some future time. The Committee offered the following recommendations to the meeting:—1.—That the members of our Association should become members of the Proprietary Articles Trade Association, as this being a National Association would have a greater weight and influence than a local one. 2.—That individual pressure should be brought to bear upon manufacturers who have not as yet joined the P. A. Trades Association, to supplement the efforts of the London Committee. 3.—That any scheme dealing with the guarantee of profit should not contain any system of rebate, which system they consider unworkable and unsatisfactory. 4.—That the system of bonus given by co-operative societies to their customers be fully considered and arranged for before any scheme of guaranteed profit is definitely settled. 5.—That members pledge themselves not to distribute handbills nor in any way assist the sale of any proprietary articles upon which a profit is not guaranteed, or whose proprietor has not joined the Proprietary Trades Association. 6.—That a Trade Committee of the Midland Pharmaceutical Association be permanently appointed. After a lengthy discussion it was unanimously agreed that the report should be received and adopted, and it was subsequently stated that every member of the retail trade present had joined the P. A. Trade Association.

IRISH DRUG CONTRACTS.—The annual drug contracts are now in full swing throughout Ireland, and local Boards of Guardians are busily engaged in examining tenders and reporting thereon. The majority of the contracts have up to the present been secured by Dublin chemical and drug firms, but owing to the severe competition, prices all round are "cut" to the finest possible margin.

A DIRECT SOLVENT FOR COTTON.—A chemical discovery of enormous public interest has just been made by a London analyst, who has already secured the assistance of the British Government for a practical test of its charms. This is no less than a direct solvent for cotton, which is itself volatile, and leaves behind it nothing but pure cotton cellulose—that is to say,

cotton fibre reduced to an amorphous pulp. This substance differs radically from nitro-cellulose, the highly inflammable and odorous compound which in one of its forms becomes gun-cotton and in another vegetable ivory. The possible uses of the new material are innumerable. It has already been experimentally moulded into buttons and billiard balls, being less than half the price of celluloid or xylonite, while the fact that it is incombustible will enable it to be adopted for many domestic uses for which the camphorated material is unsuited. When it is added that the specific form of the departmental encouragement above referred to is a definite contract for sacks in this new cotton pulp, to which the name of viscose is given, it will be understood that we are on the threshold of a new industry, in which Manchester is not unlikely to find itself directly interested. — *Manchester Evening News.*

WESTERN CHEMISTS' ASSOCIATION (OF LONDON).—The meeting of the Association held on Wednesday last, the 15th inst., at the Westbourne Restaurant, 1, Craven Road, W., was a "Musical and Social Evening," and there was, as usual on such occasions, an excellent programme of vocal and instrumental music.

ROYAL INSTITUTION.—A general monthly meeting of the members of the Royal Institution was held Monday, April 13, Sir James Crichton-Browne presiding. The following were elected members: Mr. Robert James Forrest, Major-General Sir Francis Grenfell, K.C.M.G., K.C.B., and Mr. M. W. Zambra.

MANCHESTER LITERARY AND PHILOSOPHICAL SOCIETY.—At a meeting of this Society, on April 14, Professor Reynolds exhibited a slab of Itacolomite, a flexible stone which is associated with the presence of the diamond. Mr. R. L. Taylor exhibited a simple form of apparatus for liquefying some of the more easily liquefiable gases by means of the compressed gas in an ordinary cylinder of oxygen. Mr. Barnes read an extract from a paper in the "Philosophical Transactions," for 1826, by Jacob Perkins, "On the progressive compression of water by high degrees of force, with some trials of its effects on other fluids," in which the writer described the liquefaction of air at 1000 or 1200 atmospheres, and of carburetted hydrogen at 40 atmospheres and upwards. As no cooling of these gases was described, it is obvious that the liquefaction could not possibly be accomplished, the temperatures being far above the critical points. Professor Dixon suggested that it was the aqueous vapour which condensed. This explanation seems most probable in the absence of any special attempt to dry the gases. Mr. Alfred Brothers exhibited two ruled plates containing 132 lines to the lineal inch, the plates when revolved on each other producing remarkable diaphragm effects. Dr. Bowman exhibited two receipts by Dr. John Dalton, dated respectively June 24 and September 29, 1831, for payments for private lessons in chemistry at 1s. 6d. each, as illustrating the low cost of scientific education sixty-five years ago.

MARKET REPORT.

[Specially compiled for the *Pharmaceutical Journal*.]

LONDON, APRIL 16, 1896.

There are only a few important changes to be noted in the Chemical Market this week. Citric and tartaric acids are quiet, whilst carbolic acid has declined in value. Cream of tartar is quite neglected. Copper sulphate is firm and arsenic still scarce. Amongst fine chemicals, the German camphor refiners have reduced their prices again, as seemed likely to occur last week, and the crude camphor market is very quiet. Menthol is very slow of sale, whilst of the various alkaloids, those of opium are very firm, caffeine and quinine being, on the other hand, quite neglected. The drug sales held to-day after a month's interval passed off very quietly without very startling changes. Both varieties of ipecacanha are cheaper, and the same applies to buchu leaves, and guaiacum gum. On the other hand, cardamoms and senna leaves are fully steady, whilst all varieties of acacia are dearer. Opium is very firm. Cod-liver oil quiet but steady, and Italian castor oil likely to go dearer. The spice, shellac, and oil markets do not present any very striking features. Full details will be found below:—

ACACIA (GUM).—The London market is very active for all varieties. There has been a very good demand for *Persian* so-called insoluble gum, which has sold privately at prices ranging up to 18s. for good sorts and 22s. to 26s. for fine picked. *Soudan* sorts have sold privately at prices ranging up to 120s. for fine soft. At to-day's drug sales a large catalogue was offered amounting to about 1100 packages, but holders were very firm, and only a moderate portion sold. *Trieste* gum was in small supply, and of eight cases £8 7s. 6d. to £8 12s. 6d. was paid for medium pale, £6 15s. for medium yellowish, and £6 15s. for pale grain. All the *Persian* and *Indian* gum was held for extreme prices except 5 cases of *Bombay* gum, which sold at 70s. per cwt. Cabled reports from Bordeaux advise a very strong market, and during the last few days an advance equivalent to about 12s. per cwt. has taken place in the prices of *Senegal* gum. The stock now on the spot is about 12,000 bags.

ACID, CARBOLIC.—The market is quiet, and quotations for *crystals* are easier, the following being the current rates:—*Crystals*: 34° to 35° C., 7d.; 39° to 40° C., 7½d.; 39° to 40° C. (*detached crystals*) 8½d. per lb. *Crude* is still quoted at 2s. 1d. per gallon for 60 per cent., with 75 per cent. at 2s. 6d. per gallon. *Liquefied* and *Cresylic* are unchanged at 1s. and 11d. per gallon respectively.

ACID, TARTARIC.—Remains quiet. *English* manufacturers quote 1s. 3d. per lb., whilst *foreign acid* (not guaranteed B.P.), both in *powder* and *crystals*, is offered at 1s. 1¼d. to 1s. 2d. on the spot. At the drug sales a parcel of *Cape argol* was offered, part of which sold at 45s. to 55s. per cwt.

ALOES.—A very moderate supply, amounting to about 200 packages, was offered to-

day. *Cape aloes*, of which 32 cases were shown, sold at an advance of fully 1s. per cwt., 24s. to 25s. being paid for good to fine bright hard, and 22s. to 23s. for medium ditto, part slightly drossy. No *East Indian* aloes was sold, 31 kegs of *Socotrine* being bought in at 35s. to 85s. per cwt. *Curaçoa*, in boxes, was bought in at 42s. for fair livery down to 20s. for damaged grades, whilst *Zanzibar* aloes, in tins, was withdrawn at 34s. per cwt.

ANNATTO SEEDS.—This article was again in large supply to-day, 79 cases being offered, but only seven found buyers, 1½d. being paid for dull *Ceylon* of damaged quality, and ¼d. for bad mouldy ditto. Good bright *Madras* seed was bought in at 6d. per lb. The spot stock is now greatly in excess of the demand.

ARECA NUTS.—Dearer. To-day five bags of good bold *Ceylon* nuts sold at 12s. 6d. per cwt.

ASAFŒTIDA (GUM).—Was represented in auction by 215 packages. The majority of this was however, withdrawn, but fourteen cases of ordinary soft block sold at 28s. to 30s. per cwt.

BENZOIN (GUM).—Continues slow of sale. To-day about 360 packages were shown. *Siam* gum, which was represented by 27 cases, sold at £20 15s. for medium pale loose almonds, £9 7s. 6d. for small pale almonds in block, and 49s. to 52s. 6d. for dark siftings in block, whilst pale siftings in block were bought in at 70s. per cwt. *Sumatra* gum was mostly bought in, but £8 7s. 6d. was paid for good pale almondy seconds well packed, £7 to £7 15s. for medium ditto, slightly false packed, and £6 5s. to £6 10s. for ordinary seconds, fair centres, false packed sides. Ordinary seconds *Palembang* were bought in at 35s. per cwt.

BUCHU.—About 130 bales were offered to-day, and for this only a moderate demand was shown, the prices paid showing a decline of fully 1d. per lb. For good round green leaves 3d. to 3¼d. was paid, whilst 2d. to 2¾d. was accepted for fair greenish ditto, and 1¾d. for round stalky leaves of fair colour. No long leaves were offered.

CACAO BUTTER.—Slightly firmer. In auction on Tuesday 500 cases, representing 50 tons of Cadbury's make, sold at 12¼d. to 13d. against an average of 12½d. per lb. at the March sales.

CALUMBA ROOT.—No inquiry is shown for this article in auction. To-day, ordinary *Zanzibar* sorts were bought in at 7s. per cwt.

CAMPHOR (CRUDE).—The market is quite devoid of interest, and prices are merely nominal. For arrival, *Iormosan* camphor is quoted at 142s. 6d., and *Japan* at 162s. 6d. per cwt., *c.i.f.* terms, April to June shipment. At the drug sales 70 tins of *Japan* camphor sold at 165s. per cwt.

CAMPHOR (REFINED).—In accordance with the general expectation, the *German* refiners have also reduced their prices following the drop in *English* camphor, and now quote as follows:—*Bells* and *flowers*, 1-ton lots, 1s. 10½d.; ½-ton ditto, 1s. 11d.; and small quantities 1s. 11½d. per lb. *Squares* are quoted at proportionate rates. The *English* refiners generally adhere to last week's prices of 1s. 11½d. for ½-ton lots of *bells* and *flowers*, but one of them on Monday fixed his price at 1s. 10½d.

CANELLA ALBA.—Three bales of fair

mixed quill imported from New York sold in auction at 22s. per cwt.

CANNABIS INDICA.—Brown stalky tops were bought in to day at 2d., and greenish ditto at 3½d. per lb.

CARDAMOMS.—The supply offered in auction to-day was again large, amounting to over 200 packages, and a fully steady market was shown on the average prices, although in some cases the better kinds were rather easier. The following prices were paid. *Ceylon-Mysore*: Medium full palish, 3s. 1d.; medium long pale, 2s. 9d. to 2s. 10d.; small to medium broad, 2s. 4d. to 2s. 7d.; small to medium brownish, 1s. 8d. to 2s. 2d. down to 1s. 1d. for small shrivelled and split. *Ceylon-Malabar*: Medium round palish sold at 2s. 1d. per lb. *Seed*: Fully steady, from 3s. to 3s. 2d. being paid in auction.

CASCARILLA.—This article is rather irregular in price, but sold somewhat cheaply to-day, 20s. being paid for two bales of damaged greyish stringy bark. Privately 60s. per cwt. has been paid for good quality silvery quill, which shows a firmer market.

CASSIA FISTULA.—Fourteen baskets of lean wormy pods sold to-day at 17s. to 17s. 6d. per cwt.

CINCHONA.—A moderate catalogue was offered at the monthly sales. The majority consisted of *East India* growths, mostly comprising good manufacturers' bark, but no *Ceylon* was offered. The result of the sales shows a fully steady market, although at the outset bidding was slow. The average unit remains unchanged at ½d. per lb. The following prices were paid: *East India*: *Succirubra* chips and shavings, ¾d. to 1¼d.; renewed ditto, 1½d. to 2½d.; fine mossy quill 8½d.; ordinary damaged ditto, 3½d. *Officinalis* stem chips and shavings, 1½d. to 2½d.; renewed ditto, 2d. to 3¼d. *Java*: *Ledger* natural stem, 3¼d. to 3½d., branch, 2½d. to 3d., and root: 1½d. per lb. *South America* *Calisaya* quills 3¼d.; *Carthagena* 1¼d. *Africa*: Broken to fair quill 1½d. to 2¼d. At the drug sales 14 serons of *Crown* bark sold at 7d. to 8d. for sound, and 5d. for damaged quill.

COAL DISTILLATION PRODUCTS.—Are mostly unchanged. *Toluol* is returned at 2s. per gallon for *pure*. *Benzole*: 50 per cent. is still worth 2s. 8d., and 90 per cent., 2s. 1d. per gallon. *Creosote*: 1½d. per gallon. *Crude Naphtha*: 30 per cent., at 120° C., quotes at 10d. per gallon. *Pitch*: 33s. per ton, *f.o.b.* *Tar*: Refined quotes at 12s. 6d., and *crude* at 11s. 6d. per gallon.

COCCULUS INDICUS.—A parcel of 102 bags offered to-day, imported from *Cochin*, were bought in at 8s. per cwt.

COLOCYNTH.—*Turkey* colocynth is decidedly easier. To-day, when about 33 packages were offered, 2s. 2d. to 2s. 4d. was paid for fair quality apple. Privately 1s. is still asked for sound Spanish.

COPAIBA (BAISAM).—Good qualities are firmly held, and none was offered in auction. Privately, bright *Para* is quoted at 1s. 5d., good *Maranhã* at 1s. 4d., and *Bahia* at 1s. to 1s. 4d. per lb. for dark and mixed quality.

CROTON SEEDS.—This article, which is very scarce, and whenever offered in auction is readily bought up, was represented to-day by 10 bags, which sold at 65s. per cwt.

CUBEBS.—No inquiry is shown for this drug in auction. To-day fair *Singapore*

berries without stalk were bought in at 32s. 6d. to 35s. per cwt.

DRAGON'S BLOOD.—An average supply of about 30 cases was offered. Of this a few lots sold at £7 10s. for fairly bright *Singapore* lump, but the majority was bought in at £6 for dark saucers, £8 for dull reeds, and £7 17s. 6d. for lump.

ERGOT OF RYE.—Very slow of sale. To-day 5½d. was paid for fifteen bags of fair *Russian* ergot, and 1½d. to 2d. for very wormy *Spanish*. Sound *Spanish* was bought in at 9d. to 10d. per lb.

GAMBOGE.—About 70 packages were offered to-day, but proved very slow of sale. For fair mixed blocky pipe, £8 17s. 6d. was paid, whilst fair to common pickings sold at £7 5s. to £6 5s. per cwt.

GENTIAN ROOT.—Steady, but slow of sale. Twenty-three bales of good *French* root were bought in to-day at 23s. per cwt.

GINGER.—In auction *Cochin* proved slow of sale, and the majority of the rough kinds were bought in, except 20 bags, which sold at 34s. per cwt. Bold cut *A* sold at 30s., and medium, part cut, at 43s. *Jamaica* root was in good demand, and nearly all was sold at fully steady rates for low qualities, whilst better kinds realised dearer rates.

GUAIACUM (GUM).—This article sold at a big drop to-day, 10½d. to 1s. 1d. being accepted for fair glassy block, according to fracture. These prices show a decline of about 40 per cent.

HONEY.—Very dull of sale. Not a single package found a buyer out of about 350 offered. *Californian* was bought in at 35s.; *Jamaican* at 20s. to 24s.; *Australian* at 21s.; and *Italian* at 26s. to 37s. per cwt.

HYDROKINONE.—*Schering's* price for 28 lb. quantities of this developer has been raised 2d. per lb, but the quotation for 56 lb. lots still remains 6s. 6d. per lb.

IPECACUANHA.—The market is decidedly easier, but prices are irregular. At the commencement of the sale *Rio* (Brazilian) root sold at a decline of quite 2d. per lb., but afterwards it firmed up and closed at a decline of about 1d. only. The prices paid to-day were 5s. 9d. for fine annulated plump root, 5s. 3d. to 5s. 6d. for fair to good sound annulated, 5s. to 5s. 2d. for ordinary, and 4s. 7d. (subject) for low damaged root. *Carthagena* (Columbian) root was also decidedly easier, 4s. 1d. being accepted for fair stout root in good condition.

JUNIPER BERRIES.—To-day 50 bales of good quality fine *Leghorn* were bought in at 20s. per cwt.

KINO (GUM).—A case of astringent gum catalogued under this name was bought in to-day at 20s. per lb. after a bid of 12s. 6d. had been refused.

KOLA NUTS.—Very dull of sale. To-day out of 78 packages, the only lot sold was 2 bags of good sound *Grenada* nuts, which fetched 1s. per lb. Undried kolas were bought in at 6d. to 7d., after 4¾d. had been refused.

LIME JUICE.—*Jamaican* juice was bought in to-day at 1s. 3d. per gallon, whilst 5 barrels of *Antiguan* sold at 1s. 1d. Twenty-four pipes of *lemon juice* were bought in at 1s. 3d. per gallon.

MENTHOL.—The market is exceedingly flat. On the spot, 12s. 3d. has been paid for small lots of *crystals* during the week, and this price to 12s. 6d. is now the current

quotation. The last shipment quotation was 11s. 6d., *c.i.f.* terms. At the drug sales 10 cases of *Raspe's* menthol (from *Yokohama*) were bought in at 12s. 3d., and *Cocking's* at 17s. per lb.

MYRRH (GUM).—Still very quiet. Although 113 packages were offered, only a single case of fair pickings sold, which realised 30s. per cwt.

OIL (COD-LIVER).—The market is rather quiet, but prices are firm generally, although the fact that some of the prominent brands have recently been brought more on a par with the others leads to an impression that the market is much easier. There is still little to be had under 225s., this being the price generally asked for new season's *Norwegian* oil. The fishing season in *Lofoten* is now practically over, and fish are becoming scarce. The last report states that the production of steam refined oil in this district amounts to 6650 barrels. Holders on the spot ask 215s. per barrel for 1895 oil, but there is only a small amount available. *Newfoundland* continues to sell privately at 6s. 6d. per gallon for good quality.

OILS (ESSENTIAL).—*Star Anise*: The market is easier, and although 10s. 3d. has been refused earlier in the week, this price would now be generally accepted. *Japan* peppermint oils are very slow of sale, and oil testing 40 per cent. of menthol now offers at 6s. to 6s. 3d. per lb. on the spot, with *dementholised* at 4s. 6d. *Citronella* (in drums) offers at 1s. 7d. to 1s. 8d. per lb. on the spot. *Cassia* is quoted at nominal rates, oil of 65 to 70 per cent. aldehydic strength being offered at 6s. 6d. per lb. *Juniper wood* fine quality *Hungarian* oil offers at 1s. 4d. per lb. on the spot. At the drugs sales two cases of oil labelled *Pimento* oil (English) sold at 3s. 5d. per lb. *Rose* oil fetch 4d., and settlings ½d. per oz. In addition, *Eucalyptus* was bought in at 1s. 6d. per lb. for the *Cygnat* brand, *White Japan Camphor* oil (from *Kobé*) at 47s. 6d. per cwt., *Cinnamon leaf* oil at 7d., and *Cinnamon bark* oil at 1s. per oz.

OILS (FIXED) AND SPIRITS.—*Castor*: It is said that owing to the bad prices now obtainable for *Italian* oil only a small acreage will be sown this year, and in consequence higher prices are likely to follow. At present fine quality oil quotes at 30s. 6d. to 31s. per cwt. *c.i.f.* terms. *Cotton* is very firm at an advance of about 5s. *Refined* oil being now quoted at £16 5s. to £16 15s. on the spot. *Coco-nut* is rather easier. *Ceylon* being now worth £21 15s. to £23; and *Cochin* £22 15s. to £27 on the spot. *Linseed* is quiet at the unchanged rate of £19 2s. 6d. for oil in barrels on the spot. *Rape* is rather easier, *refined* oil being now quoted at £23 15s. to £24 5s. on the spot. *Turpentine* is a very firm market at a further advance, and *American* spirit is now quoted at 20s. 4½d. to 20s. 6d. on the spot. *Petroleum* oil is quiet, but steady, *Russian* oil being quoted at 5½d. to 5¾d., *American* at 5¾d. to 5½d., and *water white* at 6¾d. to 6½d. *Petroleum spirit*: *Ordinary*, 9d. to 9¼d.; *deodorised*, 9¼d. to 9¾d. per gallon.

OPIUM.—The London market is very active, and quotations are about 6d. dearer all round, the following being the current quotations for *Turkey* opium:—*Soft shipping*, 12s. 6d. to 13s. 3d.; *Smyrna*,

9s. 6d. to 9s. 9d.; *Constantinople*, 9s. 6d. to 10s.; and *druggists' seconds*, 8s. 6d. to 9s. *Persian* opium is steady at 13s. for fine bricks. *Opium alkaloids* are exceedingly firm, and although prices are at present unchanged, an advance is very probable. At to-day's drug sales ten cases of *powdered opium*, a portion of the salvage of the ss. "Missouri," the drug being more or less damaged by water, sold at 7s. 3d. to 7s. 6d. per lb. Another case, offered as "opium," but which was almost entirely composed of "hashish," was bought in without a bid.

ORANGE PEEL.—A very large supply was catalogued, but only a few bales found buyers, 2¼d. being paid for ordinary dark, and 4d. for fair thin *Maltese* peel.

ORRIS ROOT.—Lean dark *East Indian* root from *Aden* was bought in to-day at 35s., and good pale *Florentine* root at 70s. per cwt. A cask of *orris root* in small pieces sold without reserve at 44s. per cwt.

RHUBARB.—Very quiet, but prices are unchanged. About 25 cases out of 166 sold, 10½d. being paid for flat medium pinky *high dried*, 8¾d. to 9d. for medium and bold ditto very slightly wormy, 1s. 1d. for *Canton* trimmings, and 1s. 5d. for good medium flat *Shensi*.

SARSAPARILLA.—Very quiet. *Honduras* of damaged quality sold to-day at 1s. to 1s. 1d. per lb., whilst 4 bales of "Smilax" (*East Indian sarsaparilla*) realised ¾d. per lb.

SEEDS (VARIOUS).—*Coriander*: On Wednesday ordinary coarse *Bombay* seed was bought in at 10s. per cwt. *Canary*: *Turkish* was bought in at 31s. per 64 lbs., whilst *River Plate* sold without reserve at 26s. 6d. *Fennel*: Fifty bags of *Turkish* sold at 16s. 6d. per cwt. *Aniseed*: *Spanish* seed sold at 30s. per cwt.

SHELLAC.—The market is slow. Privately business has been very slack, although for arrival a rather firmer tone is noticeable, and *Second Orange* has sold in second hand at 91s. 6d. to 92s. *c.i.f.* terms. The sales went off quietly, and only about one-third of the catalogue was sold, the prices showing a decline of about 2s. on the last sale rates of *second orange*, whilst *Garnet* was firm, but *Button* easier. The following prices were paid:—*Fine Second Orange*: Good bright *AA* in circle, 95s. to 96s., and ditto part hard block, 91s. *TN Orange*: Good bright cakey, 91s., dull flat free, 90s., and hard block, 86s. to 88s. *Garnet*: Fine free *AC*, 89s.; *Button*: Fair *BL2*, 86s. to 87s., circle is 80s., and resinous block, 80s. to 81s.

TAMARINDS.—Slow of sale. At the spice auctions, new *Barbadoes* were bought in at 20s. per cwt., whilst 14s. 6d. was paid for part of another parcel.

TURMERIC.—Continues very slow of sale. In auction on Wednesday, lean *Bengal* of fair quality was bought in at 8s. per cwt., and good bright *Madras* at 10s. 6d. per cwt.

WAX (BEES).—Very firm. To-day *Jamaican* sold at £8 7s. to £8 10s. 6d.; *Zanzibar* at £6 10s.; *Madagascan* at £6 15s.; *African* at £6 15s.; *East Indian* at £6 2s. 6d.; *San Domingo* at £6 7s. 6d.; and *Australian* at £7 7s. 6d.

WAX (JAPAN).—The market is very firm, and for good pale *squares* 37s. 6d. is still asked on the spot, whilst for delivery 42s. 6d., *c.i.f.*, is the current quotation.

EXCHANGE.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

All free. Plesse's 'Art of Perfumery,' scarce, 8s. 6d.; Professor Parker's 'Zootomy,' illustrated (8s. 6d.), 4s.; Newman's 'British Ferns' (pub. 12s.) and three other illustrated fern books, 7s. 6d.—Davies, 33, Eglinton Road, Bow.

What offers? 'Pharmaceutical Journal' from 1842 to 1867, 25 vols., all neatly bound; 'Year-Book,' 1871 to 1895, complete.—Garva, Chemist, Lower Clapton Road, N.E.

A book of 130 Well-tryed Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

Pratt's 'Poisonous Plants,' coloured plates, 3s.; John's 'Flowers of the Field,' 2 vols., 6s.; Tyas' 'Wild Flowers of England,' coloured plates, 3s. 6d. All like new. Free.—Davis, "Chestnuts," Gordon Hill, Enfield.

Soda-Water Appliances.

Soda-Water Machine, Barnett and Foster's, No. 2; list price £45; sell for £15; good condition.—Apply to H., 1, Southwick Street, Hyde Park.

Miscellaneous.

Chemist's Stock, Utensils, etc. Offers are invited for the stock, fixtures, and working utensils of a chemist's shop; in good condition.—A., 33, Fernhead Road, Paddington.

Sulphur Tablets 6-7 lb. boxes, 1 box 6½d.; 6 boxes at 6d. lb.; Tinnevelly Senna, 9d. lb., unpicked ditto, 6d. lb.—Johnson, Chemist, Edward Street, New Cross.

WANTED.

'Veterinary Counter Practice,' 'Minor Ailments,' set of extraction forceps, or single ones. Send fullest particulars and lowest price to—Alford Rogers, Chemist, Llanelly.

Wanted, Roscoe's 'Elementary Chemistry'; 'The Art of Dispensing'; and Ince's 'Latin Grammar'; must be latest editions, cheap, and in good condition.—Address offers "Cerofox," 5, Serle Street, W.C.

Wanted, second-hand, Atfield's 'Chemistry,' and Prantl and Vines' 'Botany.'—M. S. Rostrevor, Eaton, Norwich.

Wanted, Chemical Balance, second-hand, must be perfect.—Particulars and price, W. Forster, Railway Street, Seaham Harbour.

NEWCASTLE CHEMICAL REPORT.

[From our own Correspondent.]

APRIL 14, 1896.

Shipping orders from the Baltic upper ports are now more in evidence, but not to any material extent. Bleaching powder is inquired after. Caustic soda and alkali coming in rotation. Soda crystals are slow, except for home business. Sulphate of ammonia is moving a shade more freely. Prices on the whole little altered:—BLEACHING POWDER: £7 5s. to £7 10s., according to packages. SODA CRYSTALS: In bags, 36s.; in casks, 45s. CAUSTIC SODA: 76 to 77 per cent., £9 5s.; 70 per cent., £7 10s. to £7 15s. SULPHUR: £3 17s. 6d. to £4. ALKALI: 48 per cent., £4 10s. SODA ASH: 48 per cent., £3 15s. HYPOSULPHITE: £6 10s. to £7. SULPHATE OF AMMONIA (Leith): £8 10s. PITCH: 35s. SOUTH DURHAM SALT: For agricultural purposes, 8s. 6d.; shipment, 9s., *f.o.b.*, Tees.

LIVERPOOL MARKET REPORT.

[From our own Correspondent.]

APRIL 15, 1896.

KOLA NUTS: Dried, 3¼d. to 4¼d.; fresh, 6d. CHILLIES: *Sierra Leone*, 32s. 6d. GINGER: 20s. to 20s. 3d. GUM ARABIC: Extreme prices asked for "sorts." BEES-WAX: *Sierra Leone*, £6 17s. 6d. CASTOR OIL: *Calcutta* good seconds, 2¾d. to 2⅞d.; *French* 1st pressure and *Madras*, 2¾d. to 2⅞d. OLIVE OIL: Better class *Spanish* oils, £29 to £29 10s.; *Syrian*, £28 to £28 10s. LINSEED OIL: *Liverpool* makes, 19s. 9d. to 21s. COTTON-SEED OIL: *Liverpool* refined, 17s. to 17s. 6d. TURPENTINE: 21s. 6d. PETROLEUM: *Russian*, 5¼d.; *American*, 6¼d. to 7¼d. SAL AMMONIAC: First quality, 39s. COPPERAS: *Lancashire*, 38s. SULPHATE OF COPPER: £18. BLEACHING POWDER: £7 to £7 5s. PRUSSIAN OF POTASH: 7½d. CREAM OF TARTAR: Prices uncertain and only nominal. POTASHES: 21s. PEARLASH: 36s. 6d. CHLORATE OF POTASH: 4¼d. BICHRIMATE OF POTASH: 4¼d. BICARBONATE OF SODA: £7. SODA CRYSTALS: £2 10s. CAUSTIC SODA: 70 per cent., £7 12s. 6d. to £7 15s.; 60 per cent., £6 12s. 6d. to £6 15s.

TRADE NOTES AND NEWS.

MESSRS. BURROUGHS, WELLCOME AND Co. have a few spare copies of the 'Chemists' Vest Pocket Diary for 1896,' and it will give them great pleasure to forward one of these to any apprentice or assistant who will send a post-card requesting a copy, stating at the same time the name of the pharmacist with whom he is living.

MESSRS. DOWDEN AND Co., LIMITED, of St. Paul's Lane, Bournemouth, supply a saleable novelty in their CONCENTRATED FRUIT CRYSTALS. These are flavoured with citron, clove, ginger, lemon, lime, raspberry, etc., and only require mixing with boiling water and sugar to make agreeable drinks for summer weather.

MR. J. H. HAYWOOD, of Nottingham, is the patentee of a new seamless pad for trusses, which can easily be detached for washing, an extra pad replacing it meanwhile.

MESSRS. ARNOLD AND SONS, of West Smithfield, E.C., make a clinical thermometer with flattened back, the case of which is similarly shaped, so that neither thermometer nor case can roll off the table when placed thereon. The scale is on the back, and it is thus rendered more easy to take accurate readings, the mercury column not being obscured by the figures and graduations, or shadows cast by them.

APENTA WATER is found by Professor Tichborne to contain per gallon—

Magnesium sulphate	1474 grains.
Sodium sulphate	1307 "
Calcium sulphate	184 "
Sodium chloride	123 "
Magnesium bromide	traces.
Lithium salts	} weighable quantities.
Iron salts	
Potassium	

He describes it as a strong purgative, bitter water, most pleasant to the palate, and possessing special properties, which are found combined in very few natural mineral waters.

DIARY OF THE WEEK.

MONDAY, APRIL 20.

SOCIETY OF ARTS (CANTOR LECTURES), at 8 p.m.
"Precious Stones," by Professor H. A. Miers.

TUESDAY, APRIL 21.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.
"Child-Study and Education" (II.), by Professor J. Sully.

WEDNESDAY, APRIL 22.

PROPRIETARY ARTICLES' TRADE ASSOCIATION, at 8.30 p.m.

Meeting of Local Chemists in the Masonic Hall, Goldsmith Street, Nottingham, to consider the Anti-Cutting Question.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION, at 9 p.m.

"The Spectroscope and some of its Work," by F. Smith.

BRITISH PHARMACEUTICAL CONFERENCE at 4.30 p.m.
Meeting of Executive Committee, at 16, Bloomsbury Square.

THURSDAY, APRIL 23.

CHEMICAL SOCIETY (BURLINGTON HOUSE), at 8 p.m.

"On the Temperature of Certain Flames," by Professor W. N. Hartley, F.R.S.

"Halogen Additive Products of Substituted Thiosinnamines," by Augustus E. Dixon, M.D.

"The Constitution of Cereal Celluloses," by C. F. Cross, E. J. Bevan, and Claud Smith.

"An Apparatus for the Detection of Boric Acid," by W. M. Doherty.

"Ethereal Salts of Optically Active Malic and Lactic Acids," by Professor Purdie, F.R.S., and S. Williamson, Ph.D.

CHEMISTS' ASSISTANTS' ASSOCIATION, at 8.30 p.m.
"Cinderella Dance" at the Portman Rooms.

LIVERPOOL CHEMISTS ASSOCIATION.
"Notes on Cream of Tartar, Sodium Bromide and Extract of Malt," by M. Conroy.

FRIDAY, APRIL 24.

ROYAL INSTITUTION OF GREAT BRITAIN, at 9 p.m.
"The Circulation of Organic Matter," by Professor G. V. Poore.

SATURDAY, APRIL 25.

ROYAL INSTITUTION OF GREAT BRITAIN, at 8 p.m.
"The Vault of the Sixtine Chapel" (II.), by Professor W. B. Richmond.

ROYAL BOTANIC SOCIETY, at 3.45 p.m.
Ordinary Meeting.

LATE ADVERTISEMENT.

Engagement Wanted.

ASSISTANT or Branch MANAGER. Unqualified. Married. Out-door. Good London experience, prescriber and extractor. Good salesman. Disengaged early in May. Address, STEWART, Assistant Manager, care of Portway & Co., 225, Jamaica Rd., S.E.

SUPPLEMENT

TO THE

PHARMACEUTICAL JOURNAL.

MISCELLANEOUS NEWS.

PETITIONS continue to be deposited on the table of the House of Commons in favour of legalising the metric system of weights and measures in this country. The latest additions are from Newcastle, Leicester, and Hull. Six memorials adverse to the Early Closing Bill have also been recently received. Five of these are London memorials.

REPORTED NEW SOURCE OF PLATINUM.—If the reports to hand are true, there ought shortly to be a big drop in the price of platinum, for it is stated that a rich seam of platiniferous lead over a mile long has been discovered in New South Wales. The ore is said to yield seventy-five per cent. of platinum. This ought to be a good thing for the users of platinotype paper.—*Photography.*

REFUSAL OF A CHEMIST'S APPLICATION FOR A WINE LICENCE.—The annual licensing Court for Dingwall burgh was held on April 14th, when the only new application before the court was one by Mr. J. M. Frew, chemist, for a "medicated wine" licence. Mr. Frew said he had been informed that the case had been somewhat prejudged, and he asked the Justices to dismiss from their minds the opinions of newspapers or persons interested. The Provost said the Justices were there to do their duty, irrespective of any comments from any quarter. He had made inquiries on the subject, and had ascertained that in law there was no such thing as a "medicated wine" licence. Any licence that would be given would require to be a wine licence purely and simply. He had ascertained that there was no inconvenience felt in the matter by the other chemists in town, and the application must therefore be refused.

VOLUNTARY EARLY CLOSING.—The mid-week half-day holiday is now extensively adopted by Hunslet shopkeepers, the latest recruits to the movement being the chemists and druggists, who have decided to close their premises every Wednesday afternoon up to the last Wednesday in October.

DAMAGE TO AERATED WATER BOTTLES.—A number of lads were summoned at the Sheffield Police Court, on April 17, on a charge of doing wilful damage to mineral water bottles. The prosecutor was Mr. B. Chapman, mineral water manufacturer, of Sheffield, who stated that the mineral water manufacturers were heavy losers by the mischievous practice of boys in destroying bottles in order to obtain the indiarubber rings and the stoppers. They played at marbles with the stoppers and made chains of the rings. The lads in question were discovered smashing a number of Mr. Chap-

man's bottles in order to obtain the rings and stoppers. Mr. Chapman having stated that he brought the case as a warning and did not wish to press it, a fine of 2s. 6d. each defendant was imposed.

DEATH UNDER CHLOROFORM.—On Saturday, April 18, a protracted inquiry was held at Idle, near Bradford, before Major Taylor, district coroner, into the circumstances attending the death of Lavinia Sawdon, 15, a domestic servant, who died while under the influence of chloroform, administered by Joseph Priestley, who has practiced dentistry at Idle for about seven years, but whose name does not appear on the register. Priestley used about half an ounce of chloroform, which was administered in two doses. The patient's condition suddenly became alarming, and medical aid was summoned, but death occurred before the doctor arrived. Dr. Honeyburne stated that he had conducted a post-mortem examination of the body, and in his opinion the cause of death was chloroform. There was nothing else that could account for it, no traces of weakness or disease. Having regard to the healthy condition of the deceased and the quantity of chloroform administered, he was not surprised at the result. The jury, after deliberating in private, returned a verdict of manslaughter against Priestley, who was immediately placed under arrest.

PROFESSOR LOISETTE, of the School of Memory, 200, Regent Street, W., is forming special correspondence classes for matriculation, Civil Service, and Privy Council Certificate students, which will be continued during the summer session.

NEW LABORATORY AT BATH.—In the new municipal buildings, opened by the Right Hon. Sir William Hart-Dyke at Bath, last week, is a chemical and physical laboratory, situated on the second floor. It is arranged for twenty-four students in chemistry, and for the same number in physics.

BEESWAX NOT A DRUG.—At the Neath County Police Court, on Friday, April 17, Elizabeth Morgan, described as a grocer, of Aberdulais, was charged with selling four ounces of beeswax, which was not of the requisite quality, to P.S. Evans, on the 17th March. The majority of the Bench decided that beeswax was not a drug, and the case was dismissed.

MR. W. H. PASSMORE, son of Mr. E. Passmore, late of Grilstone, Northmolton, has been appointed demonstrator in materia medica at the Charing Cross Hospital.

NEW CHEMICAL LABORATORY AT BIDEFORD.—In the Bideford New Science, Art, and Technical School, in aid of which a bazaar was held last week, is a chemical laboratory, 25 feet by 20 feet. It is fitted with fume closets and Hooftman hood and there are benches, elaborately fitted with gas jets, connections and tubes, etc., for sixteen students.

PHARMACEUTICAL CHEMISTS AND APOTHECARIES' ASSISTANTS' ASSOCIATION OF IRELAND, April 17.—Mr. J. B. Alister, M.P.S.I., President, in the chair.—Mr. G. T. Nagle, L.P.S.I., read a paper on—

PLASTER SPREADING.

Mr. Nagle introduced his subject by a brief allusion to the growing fashion for drugs and medicinal compounds prepared by machinery instead of by hand. Since the introduction of machine-made plasters the art of spreading had become more honoured in the breach than in the observance, and at present it threatened to become lost. But as candidates for the licence of the Pharmaceutical Society occasionally found the subject of plaster spreading cropping up in the questions on practical pharmacy, it might be well to consider the art of spreading blisters, etc., as one likely to survive. They all knew that plasters were substances intended for external use, and of such consistence that they adhere to the skin, and required the aid of heat in spreading. The word plaster was applied not only to the solid substance used in spreading upon the muslin, leather, or other substance which served to hold it, but to the spread plaster itself. The basis of most of the official consisted either of lead plaster, gum resin, or Burgundy pitch.

Care was requisite in the preparation of plasters lest the heat applied be too great, as this would produce decomposition, and if long continued would drive off any volatile ingredient which might be contained in the plaster. A good plaster when spread should remain soft, pliable and adhesive, and ought not to melt at the heat of the human body. When plasters were kept any length of time they were liable to become brittle and hard and an alteration of colour took place, commencing on the surface of the plaster. It was evident from this that the atmosphere had something to do with the change, and it was therefore necessary to protect the plaster from air as much as possible by placing antiseptic muslin over the face of the plaster and afterwards storing in suitable cardboard boxes or air-tight presses. Should the plaster become hard despite these precautions, it might readily be softened by lightly brushing it with spirits of camphor or olive oil, and then gently warming it.

Leather seemed to be the most used for spreading plasters upon, especially those known in trade as hemlock splits, and the leather answered the purpose admirably, especially when the plaster was to be applied to the sound or unbroken surface, but muslin was preferable when the application was to be made to an abraded surface, or for drawing together the edges of cuts, because of its greater pliability as compared with leather: it could, moreover, be adjusted more easily to the shape of the part to which it was to be applied.

Brown paper spread with tallow or Burgundy pitch formed a favourite household plaster amongst the inhabitants of rural districts, and the power of healing pains, ague, and banishing witchcraft was ascribed to it. This kind of plaster was not, however useful, sufficiently elegant for the pharmacy, but it served the apprentice admirably for practice in the laboratory on account of its inexpensiveness. Silk only turned in for the finer descriptions of plaster, such as court

plaster, etc. The porous linen plasters did not seem to be any better than the ordinary ones, as the holes became choked up as soon as the plaster got heated. Sheet-tin shapes were the best for plasters, and a liberal stock of them should be kept in every pharmacy. The use of these shapes saved time and trouble, and obviated the necessity for fastening the foundation of the plaster to the counter, as was sometimes done. An adhesive margin should in all cases be attached. The plaster iron most to be recommended was that which was heated by means of gas. The iron had a detachable india-rubber tube, one end of which was attached to a gas burner, and the other end to the handle of the iron, and the gas was lighted at the back of the blade, thereby ensuring a uniform heat, and the iron could be used to spread any quantity of plasters desired without the necessity of heating and cleaning, as had to be done with the old style of iron. A sufficient portion of the plaster to be spread should first be melted by the heated iron, and having been received on a piece of coarse stiff paper or in a shallow tin tray open at one side, should, when nearly cool, be transferred to the leather and applied quickly and evenly over its surface. By this plan the melted plaster was prevented from penetrating the leather, as it would be apt to do if applied too hot.

When sending out a plaster the surface should be covered with antiseptic muslin, over which might be placed a sheet of specially prepared paper with printed directions for its removal before applying the plaster, and also the length of time the plaster was to be kept on the user. Specially prepared plasters should bear no advertising matter, as such smacked too much of the machine-made article. The plaster should be made up for transmission in a cardboard box to prevent crushing in transit. Explicit directions as to use should also be given, and if this were invariably observed the joke about the country joiner who applied a plaster to his chest—of tools—would not have arisen. The essayist here showed a quantity of specimen shapes cut out of cardboard and painted with a solution of permanganate of potash to resemble the genuine article, and commented at some length on an important plaster for face-ache and neuralgia of the fifth nerve, called "emplastrum hirudo," from its resemblance to a leech; this plaster was composed of menthol spread on linen. Another plaster for the breast was exhibited. This should always have a slit let into the sides to fit the convexity of the breast, and have an aperture for the nipple to be uncovered, a desideratum which machine-spread plasters did not possess. A plaster for the kidneys attracted much attention. It was saddle-shaped, the wings covering the region of the kidneys and the main portion extending along the spine.

The paper was well received and discussed by a number of members. Mr. Payne disagreed with the use of sheet-tins, and deprecated the practice of nailing the foundation of the plaster to the counter. This method interfered with the turning round of the groundwork. He suggested the use of an artist's board, and thought the plaster could be attached thereto by means of drawing pins. He would

include chamois leather as a plaster back. English physicians greatly approved of this leather. Mr. Hardy, L.P.S.I., thought the new belladonna plasters in the British Pharmacopœia were inferior to those prepared under the old method, which ensured a more uniform temperature and consequently better melting. Mr. Ewing's plan was to melt his ingredients in a galley-pot heated on a warm bath. He deprecated the use of the plaster iron, and preferred to use a spatula. He gave his opinion as to the correct method of spreading a plaster. Mr. Hunt, L.P.S.I., strongly condemned the machine-made plaster. He believed they were not prepared in accordance with the official formulæ, as something had to be added to keep them from decomposing. The "thumb" spreading practice, and also the use of vaselin paper in connection, were condemned by Mr. Nagle, to whom a vote of thanks was accorded for the paper.

Messrs. D. GALBRAITH, pharmacists, Londonderry, and Leslie and Co., wholesale druggists, Dublin, have been appointed drug and medicine contractors to the Letterkenny Union and the South Dublin Union respectively. On each occasion six tenders were received. In the case of Dublin the highest tender was £1321, and the cheapest (Leslie's) £974 for the same articles.

PHARMACEUTICAL SOCIETY OF IRELAND.—At an examination for Registered Druggist Licence held at Queen's College, Belfast, the following have passed:—Messrs. W. C. Adams, J. S. Balmer, J. Goudy, and J. Moore. Five candidates were rejected.

A SERIOUS ACCIDENT occurred at Dublin to Dr. Alexander Gordon, L.P.S.I., on Friday, the 17th instant, while driving. The doctor had just turned into the crowded thoroughfare of College Green when he observed an old man right before him, whom he only avoided running over by pulling his horse down, but in doing so was himself thrown on the roadway—fracturing one of his legs. He is at present under the care of Surgeon Hulston, M.D., and is progressing favourably.

PROFESSOR DIXON has returned from the United States, and has resumed his duties as conductor of the botany class in the Pharmaceutical School, Dublin.

DRUG AND MEDICINE TENDERS AND THE LOCAL GOVERNMENT BOARD.—The Dispensary Committee of the South Dublin Union has addressed a strong protest to the guardians on the subject of the drug and medicine tender which has been revised by the Local Government Board and returned to them for correction. The Committee fails to see upon what principle many items, B.P. preparations, have been struck out of the tender, and with regard to "spread plasters" it is stated that it is nowadays well known that such plasters can be had much more cheaply owing to machine work. The advance of medical science is so rapid in these days that a pharmacopœia issued this year becomes in two years inadequate to supply the necessary requirements of surgeons and physicians, and the Committee

protests against any curtailment of its rights, as it is the best judge of what medicines are most needed for the requirements of the patients. The Local Government Board has been asked to allow the Committee a free hand in this matter.

A TRIFLING MATTER is how Professor Birmingham, the Registrar of the Catholic University School of Medicine, Dublin, refers to "the art and mystery of an apothecary" in a "Guide for Medical Students," and he declares that "it is folly wasting several months in a chemist's shop to pick up what can be learnt later in one-tenth of the time." The learned professor seems to be very ignorant on this subject, although no doubt a very able teacher of anatomy and rather hazy as to the way in which an apprentice in a pharmacy is generally instructed in the art of compounding. Certainly if all medical men had received a thorough training in pharmacy in good chemists' shops, pharmacists would probably not be troubled with such "trifling matters" as incompatibilities and overdoses in prescriptions.

REASONABLE REMUNERATION.—At the quarter sessions, Cootehill, on Friday last, Dr. Moorehead, *locum tenens* for Dr. McQuaide, apothecary, sued the Cootehill Board of Guardians to recover £12 due for services rendered. He refused to take £8 tendered for four weeks' work as dispensary officer, and brought the present action. The judge gave a verdict, with costs, for the plaintiff, and said the claim was a reasonable one.

LIVERPOOL MARKET REPORT.

[From our own Correspondent.]

APRIL 22, 1896.

CANARY SEED.—*Turkish*, 29s. 6d. per 464 lbs. COCHINEAL black *Teneriffe*, 1s. 1½d. KOLA NUTS: Fresh, 6d. to 7d. dried, 4½d. to 4¾d. CARNAUBA WAX: 92s. 6d. to 120s. GINGER: *Sierra Leone*, 20s. to 20s. 3d. BEESWAX: *Sierra Leone*, £6 15s.; *Gambia*, £7 7s. 6d.; *Chilian*, £7 10s. CASTOR OIL: *Calcutta* good seconds 2¾d. to 2¾d.; 1st pressure, *French* and *Madras*, 2¾d. to 2¾d. OLIVE OIL: *Syrian*, £28 10s.; fine clear *Spanish*, £29 to £30. LINSEED OIL: *Liverpool* pressed, 19s. 9d. to 21s. COTTON-SEED OIL: 17s. to 17s. 6d. in export barrels. SPIRIT OF TURPENTINE somewhat scarce at 22s. 3d. PETROLEUM: *Russian* refined, 5¾d.; *American*, 6¾d. to 7¾d. SAL AMMONIAC: Firsts, 39s.; seconds, 37s. CARBONATE OF AMMONIA, 3¾d. to 3¾d. BLEACHING POWDER: Soft, £7; hard, £7 to £7 5s. COPPERAS: *Lancashire*, 38s.; *Welsh*, 36s. SULPHATE OF COPPER: Prices very irregular; second-hand, £18 to £18 10s.; June delivery, £16 15s. to £17. PRUSSIAN POTASH: 7¾d. CREAM OF TARTAR: Firm at 92s. 6d. to 95s. CHLORATE OF POTASH: 4¾d. BICHROMATE OF POTASH: 4¾d. SALTPETRE: 23s. 6d.; barrels, 23s. POTASHES: 21s. PEARLASH: 36s. 6d. BICARBONATE OF SODA: £6 15s. SODA CRYSTALS: £2 7s. 6d. to £2 10s. CAUSTIC SODA: 70 per cent., £7 10s.; 60 per cent., £6 10s. HYPOSULPHITE OF SODA: £6 15s. to £7 5s. BORAX: £19 10s.

MARKET REPORT.

[Specially compiled for the *Pharmaceutical Journal*.]

LONDON, APRIL 23, 1896.

Business in the produce market can only be described as dull, but in spite of this one or two rather important changes have occurred in the Chemical Market. The English camphor refiners have again reduced their prices 1d. per lb., which change brings them on a level with those of the Germans. The market in crude camphor has been flat, and the prices show a serious drop, but at the close the market is rather firmer. Menthol continues on the down line, and there is nothing to report in the alkaloid market except that quinine is offering at easier rates. Caffeine is quiet, but steady, and opium alkaloids are firm. Carbolic acid is decidedly easier, whilst citric and tartaric acids are both slow of sale. On the other hand, cream of tartar has revived considerably in price during the last few days, and closes firm at a marked advance. The importers of quicksilver reduced their quotations on Wednesday. In the Drug Market a firm market is to be reported in orris root, insect flowers, ipecacuanha, and saffron, whilst, on the other hand, cascara sagrada bark and senega root are tending easier. Cod-liver oil is rather easier, and the same remark applies to shellac, whilst the heavy and essential oil markets do not present any important changes. Full details will be found below:—

ACID, CARBOLIC.—The market is easier, and the current quotations are now as follows:—*Crystals*: 34° to 35° C., 6¾d. to 7d.; 39° to 40° C., 7½d.; 39° to 40° C. (*detached crystals*), 8½d. per lb. *Crude* is now quoted at 1s. 11d. per gallon for 60 per cent., with 75 per cent. at 2s. 4½d. *Liquefied* and *resylic* are unchanged at 1s. and 11d. per gallon respectively.

ACID, TARTARIC.—Very dull of sale, but quotations are unchanged. *English* manufacturers quote 1s. 3d. per lb., whilst *foreign* makers of acid (both in *powder* and *crystals*), not guaranteed B.P., offer at 1s. 1¾d. to 1s. 2d. per lb.

AMMONIA COMPOUNDS.—*Sulphate* is very slow of sale, at a decline, and grey 24 per cent. now offers at £8 on the spot, whilst *Hull* is quoted at £7 15s. to £7 16s. 3d., *Leith* at £7 15s., and *Beckton* at £8. *Sal ammoniac* is unchanged at 39s. for *firsts*, and 37s. for *seconds*. *Carbonate* has been lowered in price by the *English* makers, and is now quoted at 3d. to 3¾d. per lb., according to package. *Liquor* is unchanged at 3¾d. to 3½d. per lb., less 5 per cent.

BELLADONNA ROOT.—There is very little good *Hungarian* root obtainable, and 36s. per cwt. is now the current quotation on the spot.

CAFFEINE.—Is quiet, but steady, and the previous quotation of 18s. to 19s. per lb. is maintained.

CAMPHOR (CRUDE).—This article continues to be much neglected, and quotations show a considerable drop on last week's prices. For arrival, *Formosa* camphor is now quoted at 132s., and *Japan* at 152s. 6d. per cwt. *c.i.f.* terms, April to June shipment.

CAMPHOR (REFINED).—This article con-

tinues to decline in price, and at the beginning of the week the *English* refiners again lowered their prices by 1d. per lb., and now quote 1s. 10½d. for 1 ton lots of *bells* and *flowers*, with squares at 1s. 11½d. and proportionate rates. This alteration brings the quotations for both *English* and *German* refined camphor on to a level.

CASCARA SAGRADA.—Decidedly easier. Good quality bark is readily obtainable now at 18s. to 19s. per cwt. on the spot, whilst for shipment from San Francisco it is quoted at 16s. 6d., *c.i.f.* terms.

CASCARILLA BARK.—Good quality bark is very scarce on the spot and firmly held, 50s. to 60s. being now asked for second-hand parcels.

CREAM OF TARTAR.—During the last few days this chemical has revived considerably in price, and quotations show an all-round advance of fully 5s. per cwt. On the spot best white *French* crystals are now quoted at 95s. per cwt., whilst for *German* brands of powder 97s. to 100s. is asked. The last quotation for shipment from Bordeaux was 93s. per cwt. *f.o.b.*

GALLS.—Are quiet, and difficult of sale. In auction plum-shaped *China* were bought in at 60s. to 62s. 6d. per cwt. *Persian* galls are quoted at 52s. to 54s. for *blues*; 42s. 6d. to 47s. 6d. for *greens*, and 40s. to 45s. for *whites* per cwt.

MENTHOL.—Continues to decline in price, and good crystals now offer at 12s. per lb. on the spot, and probably a shade lower figure would buy.

OIL (COD-LIVER).—The market is easier. Fine new season's *Norwegian* oil can now be bought at 210s., and there have been one or two offers of cheap parcels at 205s., but we are unable to speak of the quality of the latter. For good *Newfoundland* oil, 7s. per gallon is still asked.

OILS (ESSENTIAL).—*Star Anise* oil is slow of sale, and is now readily obtainable at 10s. 3d. per lb. *Peppermint* oils are all dull of sale. *H. G. Hotchkiss'* oil is offered at 9s. 3d. on the spot, whilst the *Mc. & R.* brand is quoted at 7s. 9d., with *dementholised* Japan oil at 4s. 3d. to 4s. 9d., and 40 per cent. at 6s. to 6s. 6d. nominally. *Citronella* offers at 1s. 7d. to 1s. 8d. per lb. on the spot in drums. *Cassia* has sold during the week at 7s. 5½d. per lb. *c.i.f.* terms, for oil testing 75 to 80 per cent. of aldehyde. *Otto of Rose*: It is said that a heavy fall of snow during the past week in the Balkans has done a considerable amount of damage to the rose buds.

OILS (FIXED) AND SPIRITS.—*Castor*: *Italian* oil is very firm at an advance of about 6d. per cwt., fine quality being now quoted at 31s. to 31s. 6d. per cwt. *Cotton* is again a very firm market, and *refined* oil is now quoted at £16 10s. to £17 on the spot, which shows an advance of about 5s. *Coco-nut* is steady at unaltered rates, *Ceylon* being quoted at 23s. and *Cochin* at £26 15s. to £27 on the spot. *Linseed* is a trifle easier, oil in barrels being now quoted at £19 on the spot. *Rape* is again easier by 5s., and *refined* oil is now quotable at £23 10s. to £24 on the spot. *Turpentine* is a very strong market at an advance of fully 6d., *American* spirit being now worth 21s. on the spot. *Petroleum* is easier, and *Russian* oil quote at 5¾d. to 5½d., whilst *American* is worth 5¾d. to 5½d. and *water white* 6¾d. per gallon.

OPIUM.—The London market continues to be very firm, and the following are the current quotations for *Turkey* opium:—*Soft shipping*, 12s. 6d. to 13s. 3d.; *Smyrna*, 9s. 6d. to 10s.; *Constantinople*, 9s. 6d. to 10s.; and *druggists' seconds* 8s. 6d. to 9s. *Persian* opium is very firm at 13s. for fine *bricks*.

QUICKSILVER.—On Wednesday the importers reduced their quotations 2s. 6d. per bottle, making the present quotation £6 15s. A good business is reported during the last few days.

QUININE SULPHATE.—The market is quite devoid of interest, and there are now sellers of the best *German* brands at 1s. 0½d., but no buyers above 1s. 0½d.

SEEDS (VARIOUS).—*Coriander*: Small to medium *Russian* were bought in at 13s. to 13s. 6d., and coarse *Bombay* at 8s. per cwt. *Canary*: For *River Plate* seed 27s. to 27s. 6d. was paid in auction. *Mustard*: *Bombay* seed realised 6s. 3d. per cwt.

SENEGA ROOT.—Is tending lower, and 1s. 2½d. per lb. would now buy good quality root on the spot.

SHELLAC.—The market is flat. Privately, a small amount of business has been done at about steady rates, *TN Orange* being quoted at 89s. per cwt., *c.i.f.*, April to June shipment. In auction the small supply offered sold at irregular rates, *TN Orange* showing a decline of about 2s., whilst common qualities were still cheaper. *Garnet* was bought in at steady rates, whilst *Button* was quiet. *Seedlac* was bought in at 100s. per cwt. for clean bright red. *Sticklac* was also all bought in; fair free Siam at 62s. 6d. to 65s.; siftings at 60s., and block at 50s. per cwt.

SPICES (VARIOUS).—*Cloves* are very dull of sale, and in auction on Wednesday the whole of the *Zanzibar* were bought in, medium to fine at 2½d. to 3d. per lb. For fair *Amboyna* 4½d. was paid, and for ordinary mixed ditto 3¾d. per lb. *Nutmegs* are still very dull of sale, and only ten cases of *Penang* found buyers, 8d. being paid for part wormy quality. *Pimento*: All were bought in for 2½d. per lb. *Capsicums*: Dull red *Japan* were bought in at 28s., long red off-stalk *Ceylon* at 23s., good bright *Madras* at 25s., and ordinary thin *Bombay* at 12s. *Chillies* are dearer. In auction a good demand was shown for *Zanzibar*, which were nearly all sold at 35s. for ordinary quality; 33s., for medium brownish, and 30s. for ordinary ditto; in addition good bright *Japan* sold at 66s. per cwt. *Cinnamon chips* sold at 3½d. per lb. in auction. *White pepper* is in slow demand. *Penang* were bought in at 3½d. to 3¾d., and *Siam* at 4½d., whilst for good *Singapore*, 4¼d. was paid.

TURMERIC.—Is still slow of sale. In auction 100 bags of *China* root were bought in at 11s., in addition to a quantity of *powder* and *chips*.

TRAGACANTH (GUM).—It is reported that there has been rather more business doing in this article during the week, and prices are quite steady. *Firsts* (fine pale "druggists'" gum) are quoted at £14 10s., *seconds* at £12 15s. to £12 10s., *thirds* at £11 to £11 10s., and *fourths* at £8 10s. to £10.

WAX (JAPAN).—Is firm at 37s. on the spot for pale *squares*, whilst for arrival business has been done during the week at 35s., *c.i.f.* terms.

EXCHANGE.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

All free. Piesse's 'Art of Perfumery,' scarce, 3s. 6d.; Professor Parker's 'Zootomy,' illustrated (8s. 6d.), 4s.; Newman's 'British Ferns' (pub. 12s.) and three other illustrated fern books, 7s. 6d.—Davies, 33, Eglinton Road, Bow.

A book of 130 Well-tried Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

Soda-Water Appliances.

Soda-Water Machine, Barnett and Foster's, No. 2; list price £45; sell for £15; good condition.—Apply to H., 1, Southwick Street, Hyde Park.

Miscellaneous.

Surgeon, having purchased chemist's retail, has a few patents to dispose of, in good condition.—Foster, M.R.C.S., 139, Great Suffolk Street.

Carboys.—Four upright (Fig. 2, Evans), one damaged; capacity, 10 quarts. Also two; capacity, 3 quarts. What cash offers?—J. Lambert, Chemist, Medical Hall, Durham.

Two doz. 3s., 1 doz. 5s. 6d. Dobson's Black-leg Drinks. What offers?—Barrat, Chemist, Sevenoaks.

Violas! Violas!! Violas!!! should be grown by all who have a garden, they bloom freely all the summer; 12 beautiful varieties, suitable for exhibition, free for 2s. 6d.—Henry Pattison, chemist, Shrewsbury.

Three gross of each, Tincture and Pilules, Keel. J. Ashwell's Homœ. Medicines, perfect condition; Southall's Materia Medica Cabinet and Materia Medica. Cash offers wanted.—Spinks, Chemist, 97, Westminster Road, Liverpool.

WANTED.

Wanted, Reynolds Green's 'Botany,' latest edition, State lowest price to—Smith, 45, Wilson Road, Camberwell, S.E.

NEWCASTLE CHEMICAL REPORT.

[From our own Correspondent.]

APRIL 21, 1896.

A trifle steadier tone prevails in this market, but prices as a whole are unchanged. Enquiries for over-season delivery over-sea are moving with more freedom. Prices are:—SULPHUR: £3 17s. 6d. CAUSTIC SODA: 76 to 77 per cent., £9 5s.; 70 per cent. £7 10s. to £7 15s. BLEACHING POWDER: £7 5s. to £7 10s., according to markets. SODA ASH: 48 per cent., £4. ALKALI: 48 per cent., £4 10s. HYPOSULPHITE OF SODA: £6 5s. to £7 per ton, according to packages. SODA CRYSTALS: 37s. 6d. in bags, 45s. in casks.

LATE ADVERTISEMENTS.

For Disposal.

TO Chemists and others with leisure.—An absolute cure for Eczema. Formula, treatment and considerable connection to be disposed of through the death of late proprietor, who cleared over £500 per annum for some years. Could be worked as a patent medicine. Thorough investigation invited. Address, W. E. C., "Pharm. Journal" Office, 5, Serle St., W.C.

Dental Pupil.

TO Parents and Guardians.—Mr. C. W. LARGE, Dental Surgeon, has a vacancy for an ARTICLED PUPIL. 60, Holland Park Avenue, W.

Engagements Wanted.

JUNIOR. Season. 3½ years' experience. 6ft. Well up in Photography. Photo sent. ANILINE, 5, Serle St., W.C.

LOCUM. Disengaged after Whitsun. Qualified. 25. First-class West-end and South Coast experience. Moderate terms. Town or country. COCAINE, 3A, Market Pl., Oxford Market, London, W.

Apprentice Wanted.

APPRENTICE.—A vacancy occurs in a good class Retail Pharmacy. A thorough practical knowledge gained. Time for study and recreation allowed. Moderate premium. Apply, F. E. PALMER, 12, Carr St., Ipswich.

TRADE NOTES AND NEWS.

MESSRS. BURROUGHS, WELLCOME AND Co. have made an important addition to the list of "Soloids" of Compressed Antiseptics, by the introduction of a safe and convenient method of carrying definite quantities of undiluted carbolic acid, ready for the instant preparation of the many antiseptic solutions used in surgical, gynaecological and sanitary work. These new "Soloids" are supplied in blue bottles containing 25 and 100 respectively. They contain exactly five grains of crystallised carbolic acid each and are made of a characteristic shape and colour to distinguish them from "Tabloids" intended for internal administration, being flat on one side and yellowish brown in colour. The distinctive colour is communicated to the liquid in which they are dissolved, so that it cannot be confused with any other solution in general use at the operating table or in the sick room. For use as an escharotic one "Soloid" may be held in a small piece of cotton wool and gently rubbed over indolent and foul ulcers or applied for the removal of growths. Dissolved in five ounces of water, one "Soloid" makes a solution suitable for use as a disinfectant or antiseptic spray for application to the mucous membranes of the mouth, pharynx, larynx, nasal cavities, etc., etc.

MESSRS. BROWN BROTHERS AND Co., wholesale chemists, Glasgow, are re-organising their business. Mr. G. Macfie Smith, who has had an extensive commercial experience at home and abroad, has been intrusted with the management, while Mr. Alexander Bruce, a gentleman with a large circle of friends among chemists and medical practitioners in Glasgow and the West of Scotland, has been engaged to travel. Mr. Colvin Gates, a well-known laboratory assistant and possessing the Major qualification of the Pharmaceutical Society, joins the firm to undertake the supervision of the laboratory, and Mr. William Hindman, who has been for a number of years in the firm's employment, has now charge of the warehouse and attends to the buying. The firm of Brown Brothers and Co. has been in existence since 1827, and has always been favourably known in the trade. We understand that its present head,

Mr. Robert Brown, B.Sc., intends to enlarge the firm's business in various directions, but that the firm will remain, as at present, strictly in the wholesale line.

MARRIAGE.

ROBERTSON—WALKER.—At the Windsor Hotel, Glasgow, April 20, by the Rev. James B. Johnston, B.D., the Free Church, Falkirk, assisted by the Rev. Thomas Adamson, B.D., Free Anderston Church, Glasgow, George Robertson, chemist, Partick, to Jane, daughter of the late William Walker, file manufacturer, Larbert.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

MONDAY, APRIL 27.

ROYAL GEOGRAPHICAL SOCIETY, at 8.30 p.m.
"Journeys in the Native Malay States," by H. Clifford.

"A Journey Round Siam," by J. S. Black.

TUESDAY, APRIL 28.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.
"Child-Study and Education" (III.), by Professor J. Sully.

WEDNESDAY, APRIL 29.

SOCIETY OF ARTS, at 8 p.m.
"Fruit Drying or Evaporation," by E. W. Badger.
PROPRIETARY ARTICLES' TRADE ASSOCIATION, at 8.30 p.m.

Meeting of Local Chemists at Queen's Gate Hall, Harrington Road, South Kensington, to consider the Anti-Cutting Question.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION, at 9 p.m.
Musical and Social Evening.

THURSDAY, APRIL 30.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.
"Recent Chemical Progress" (III.), by Professor Dewar.

CHEMISTS' ASSISTANTS' ASSOCIATION, at 8.30 p.m.
Paper by T. H. W. Idris.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.
"Foreign Prescriptions and Dispensing," by C. J. Park.

FRIDAY, MAY 1.

ROYAL INSTITUTION OF GREAT BRITAIN.
Annual Meeting, at 5 p.m.
"Chronographs and their Application to Gun Ballistics," by Colonel H. Watkin, at 9 p.m.,

PROPRIETARY ARTICLES' TRADE ASSOCIATION, at 10.30 p.m.

Meeting of Local Chemists at 36, York Place, Edinburgh, to consider the Anti-Cutting Question.

SATURDAY, MAY 2.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.
"The Vault of the Sixtine Chapel" (III.), by Professor W. B. Richmond.

SUPPLEMENT

TO THE

PHARMACEUTICAL JOURNAL.

MARKET REPORT.

[Specially compiled for the *Pharmaceutical Journal*.]

[The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.]

LONDON, APRIL 30, 1896.

There are few changes to note in the chemical market, but these are of importance. Citric and tartaric acids are quiet, whilst carbolic acid has declined still further in price. Cream of tartar continues a very strong market at a marked advance, whilst copper sulphate is firm. Amongst fine chemicals, the English camphor refiners have further reduced their prices by 1d. per lb., making the current quotation 1s. 10½d. for bells and flowers. Crude camphor is quiet and neglected. A large parcel was cleared off to-day in public sale. [Menthol is much cheaper, whilst of the various alkaloids morphine is dearer, codeine unchanged, and quinine quite neglected. The drug sales passed off to-day fairly briskly. The principal changes were as follows:—Guaiacum, gum elemi, cascarilla, cardamom seeds, areca nuts, buchu leaves, and Japan wax sold at easier rates. On the other hand, Jamaica ginger, Cape aloes, Sumatra benzoin, and calumba root are dearer. Ipecacuanha, cotton seeds, senna, and cubebes are fully steady. In the essential oil market star anise [oil is easier, cassia firmly held, and peppermint oils very flat. The heavy oil and shellac markets do not present any important features. Full details will be found below:—

ACACIA (GUM).—The market is flat. To-day a total of 341 packages were offered, but the high views of holders prevented business, and not a single package changed hands. The general impression seems to be that the prices now asked are not warranted and buyers refuse to sell on the present terms, which will probably be greatly reduced shortly. *Trieste* gum was held to-day for high prices, £14 for fine pale picked, down to £7 for yellow mixed. *Soudan* sorts were bought in at 70s. to

100s. per cwt. *Persian* gum is very firmly held, but the high prices asked stop business to a great extent. Nominally fine pale picked gum is quoted at 25s. to 30s., with sorts at 20s. to 22s. for fair to good, 17s. for siftings, and 10s. to 12s. for block.

ACID, CARBOLIC.—Is still a very weak market, and prices are again lower, the current quotations being now as follows:—*Crystals*: 34° to 35° C., 6¼d.; 39° to 40° C., 7¼d.; 39° to 40° C. (*detached crystals*), 8¼d. per lb. *Crude*: 60 per cent. is quoted at 1s. 11d. and 75 per cent. at 2s. 4d. per gallon. *Liquefied* is unchanged at 1s. for 95 per cent., whilst *eresylic* is easier at 10d. per gallon.

ACID, TARTARIC.—The market is quiet, but steady. The *English* makers still quote 1s. 3d. per lb., but *foreign* acid (in both *powder* and *crystals*) can be bought at 1s. 1¾d. to 1s. 2d. At the drug sales 41 bags of *Cape Argol* sold at 55s. to 58s. for pink, and 47s. to 51s. for greyish.

ACONITE (JAPAN).—To-day a parcel of 15 bales from *Kobé* were bought in at 21s. per cwt.

ALOES.—In moderate supply only to the amount of 203 packages. *East Indian* aloes, which was represented by 42 packages sold at 80s. per cwt. for good soft brown, whilst *East Indian* aloes in skins was bought in at 70s. per cwt. *Cape* aloes sold at fully steady to dearer rates, 25s. to 25s. 6d. being paid for good bright hard, 22s. 6d. to 23s. 6d. for fair ditto, slightly drossy, and 19s. for ordinary dull. *Curacoa* aloes were mostly bought in, but 25 boxes of dark dull quality sold at 25s. per cwt., subject to approval.

AMBERGRIS.—One tin out of five offered sold at 55s. per cwt.

AMMONIACUM (GUM).—Sixteen packages were offered to-day, but none found buyers. Good to fine pale drop was bought in at 55s. to 70s., bids of 50s. and 61s. being respectively refused, whilst seedy block, partly loose, with a few almonds, were withdrawn at 25s. to 32s. 6d. per cwt.

ANNATTO SEEDS.—A large supply, amounting to 65 packages, was again offered to-day, but no demand was shown. Fair bright *Madras* and *Jamaican* seed was bought in at 4½d. to 5½d. per lb. whilst nine cases of mouldy damaged seed offered without reserve sold at prices ranging from ¼d. up to 1¼d. per lb.

ARECA NUTS.—Rather easier. To-day 10 bags of good quality *Colombo* nuts sold at 12s. per cwt.

BENZOIN (GUM).—A good demand was shown to-day for *Sumatra* gum, which was represented by 140 packages. Good pale, almondy seconds, slightly false packed fetched £8 to £8 7s. 6d., which shows a marked advance, whilst £5 12s. 6d. to £6 2s. 6d. was paid for ordinary dull ditto, with false-packed sides part offered without reserve, and £4 10s. to £5 15s. for very false packed dull seconds. Only 16 cases of *Siamese* gum were shown, and £6 was accepted for two cases of small almondy brown block. *Penang* gum sold at 95s. for fair almondy block. *Palembang* was mostly bought in at 37s. 6d. for fair seconds in tins, and 27s. 6d. for dull thirds, but 38 cases of dull seconds sold cheaply at 25s. per cwt.

BUCHU.—An average supply of 133 bales was offered to-day, but the demand is very moderate and the market weakened ½d. per lb., for although 3d. was paid for a few bales

of fine bright green, 2½d. was afterwards accepted, whilst 2¼d. to 2½d. was paid for fair greenish *round* leaves, and 1¼d. to 2¼d. for yellowish.

CALUMBA ROOT.—Good bold root was bought in to-day at 20s. per cwt., whilst 8s. 6d. was paid for 20 bags of ordinary dark *Zanzibar* sorts—a very good price.

CAMPOR (CRUDE).—This article has been quite a dead letter since our last report, and no business whatever is reported. *Formosan* camphor is now quoted for arrival at 130s., and *Japan* at 142s. 6d. per cwt. *c.i.f.* terms, April to June shipment. At the drug sale a parcel of *Formosan* camphor, offered without reserve, all sold at 22s. 6d. to 25s., whilst 217 cases sold under ordinary conditions at 129s. per cwt.

CANNABIS INDICA.—Greenish tops were bought in to-day at 3½d., and brownish stalky ditto at 2d. per lb.

CARDAMOMS.—An average supply, amounting to about 170 packages, was offered to-day, and sold with fair inquiry at fairly steady rates, but *seed* showed a decline of 3d. to 4d. per lb. The prices paid were as follows:—*Ceylon - Mysore*: Fine bold plump pale, 3s. 7d.; medium to bold pale, 3s.; medium long pale, 2s. 8d. to 2s. 9d.; medium yellowish, 2s. 4d. to 2s. 6d.; small to medium brownish, 1s. 7d. to 2s. 2d. *Ceylon-Malabar*: Small to medium good, 2s. 3d. to 2s. 6d. per lb. *Seed*: 2s. 8d. to 2s. 9d. per lb.

CASCABILLA.—This article was again rather irregular in price, and if anything slightly cheaper. Fair silvery quill sold in auction at 45s. to 50s. per cwt., whilst 30s. was paid for dull brown thin bark. For ten barrels of *siftings*, 35s. per cwt. is asked.

CASSIA FISTULA.—Thirty bags of very lean wormy pods sold to-day at 8s. 6d. to 9s. 6d. per cwt.

CHIRETTA.—Ten bales of this drug imported from *Calcutta* sold without reserve to-day at 2d. per lb.

COCCULUS INDICUS.—A parcel of 50 bags imported from *Cochin* were bought in at 7s. 6d. per cwt.

COLOCYNTH.—*Turkey* colocynth was bought in at 2s. 7d. for good bold apple, and fair quality *Spanish* at 1s. 2d. A case of broken colocynth imported from *Malaga* sold at 9d. per lb.

COPAIBA.—Very firm. To-day 4 kegs of good pale thin *Para* balsam sold at 1s. 11d. per lb., whilst 1s. 2d. was accepted subject to approval for six cases of cloudy thick balsam of the same variety, imported from *Savanilla*.

COWHAGE.—Five tins imported from *Bombay* were bought in at 4d. per oz.

CREAM OF TARTAR.—Has continued a very strong market during the week, and prices have advanced considerably. On the spot 100s. is now asked for best white *French* crystals, whilst *German* brands of *powder* are quoted at 102s. to 105s. per cwt.

CROTON SEEDS.—Very firm. Five bags of this drug sold in auction at 65s. per cwt.

CUBEBS.—Firm. Four bags of good quality *Singapore* berries without stalk sold to-day without reserve at 33s. per cwt.

DRAGON'S BLOOD.—Twenty-five cases were offered in auction, but none sold, dark saucers being bought in at 90s. to 95s., reeds at £9, and fair bright lump at £6 10s.

ERGOT OF RYE.—Still very dull of sale, but the market is steady. To-day 5½d. was

paid for 5 bags of small *Russian* ergot, whilst ordinary wiry ditto realised 4d. per lb. Wormy to good sound *Spanish* was bought in at 5d. to 7½d. per lb.

ELEMI (GUM)—So d at a large decline to-day, 21s. per cwt. being accepted for 4 cases of fair yellowish gum.

GAMBOGE.—About 50 packages were shown to-day, but the demand was very slow. For 3 cases of good mixed clean pipe and block £10 was paid, subject to approval, whilst £8 15s. was accepted for fair mixed blocky pipe, and £7 5s. (subject) for fair pickings.

GINGER.—*Cochin* root is still slow of sale. At the weekly sales, 25s. was paid for cuttings; 32s. 6d. for dull-washed rough; 34s. to 34s. 6d. for small brown ditto. In addition, bold rough cut realised 61s. 6d., and fair to good bold A cut, 65s. to 70s. per cwt. *Bengal* was bought in at 16s., whilst limered *Japan* sold at 22s. per cwt. A good demand was shown for *Jamaican* root, and the whole of the catalogue sold at an advance of 2s. to 5s. per cwt.; fine to fine bold bright fetching 101s. to 111s.; medium to good washed, 79s. to 95s.; ordinary medium ditto, and scraped, 69s. 6d. to 78s. 6d.; and ordinary small and brown, 57s. to 69s. per cwt.

GUAIACUM (GUM).—Good bright almondy block was bought in to-day at 2s. 2d., whilst six boxes of drossy sorts sold without reserve at 5½d. per lb.

GUARANA.—Lower. To-day a single box sold at 1s. 10d. per lb., which shows a marked decline over the rates paid privately.

HONEY.—Was again in large supply, at to-day's sales, 314 packages being offered. The only variety which attracted attention, however, was *Jamaican*, which sold at 17s. 6d. to 23s. 6d., according to condition. A hogshead of *French* honey sold at 15s. subject, and 15 casks of *Californian* at 25s. to 27s. per cwt.

IODINE.—For the last few months the price of iodine has not been regulated by the Convention, and makers of iodides have been supplied with iodine without any fixed rates being invoiced. It has been a matter of surprise that such a long delay has occurred before some official intimation of the Syndicate's intention in regard to prices. This was settled on Friday last, when it was stated that 9d. per oz. would, until further notice, be the price of iodine. Since then one of the makers of iodides has stated in his prices current that the price is fixed as above mentioned.

IPECACUANHA.—Is quiet, but steady. At to-day's sales 49 bales only of *Rio* (Brazilian) root were offered, and 5s. to 5s. 3d. was paid for fair to good annulated, and 4s. 10d. to 4s. 11d. for ordinary rather thin. No *Carthagena* (Columbian) root was sold, 21 bags being bought in at 4s. to 4s. 2d. per lb.

KOLA NUTS.—Were in moderate supply, and selling at fairly steady rates, 1s. being paid for good bright *Grenada* nuts, and 8d. for fair sound ditto.

MENTHOL.—Sold at a remarkable drop to-day, 6 cases of *Raspes'* brand of *Japan* menthol fetching only 9s. 6d. to 9s. 9d. per lb.

MUSK.—The only lot sold in auction was one tin of *Tonquin* pile II, which realised 40s. per oz.

MYRRH (GUM).—Is still in large supply, ut very slow of sale. To-day 85s. was aid for 7 cases of fine native picked gum,

whilst chips were bought in at 60s. to 70s.; siftings at 30s., and pickings at 25s. per cwt.

NUX VOMICA.—Twelve bags of fine bold *Bombay* nuts sold in auction at 7s. 6d. per cwt, with pickings at 4s. 6d.

OIL (COD-LIVER).—The market is easier. There would be no difficulty now in buying fine new season's *Norwegian* oil at 200s. per barrel of 25 gallons. To-day 10 barrels of new oil were offered in auction, and bought in at 235s., after 210s. had been bid, the limit being said to be 220s. *Newfoundland* oil was also bought in at the drug sales at 6s. 6d. per gallon.

OILS (ESSENTIAL).—*Star Anise* oil is much easier, and although 9s. 9d. is now quoted, it would no doubt be quite possible to buy at 9s. 7½d. per lb. on the spot. *Cassia* is quoted 9s. 6d. per lb. for 80 to 85 per cent. oil, and 8s. for 70 to 75 per cent. *Citronella* is quoted at 1s. 6½d. per lb. in tins, and 1s. 5d. in drums on the spot. *Peppermint* oil sold at 3s. 10d. per lb. in auction for *Raspes'* brand of *Japan dementholised* oil. *Kananga*: A case sold in auction at 1s. per oz. *Eucalyptus*: *Platypus* oil was bought in at 2s. 6d., whilst 1s. per lb. was paid for the *Cygnat* brand. *Lavender*: Ten cases of *Lavande des Alpes Maritimes* were held for 6s. 3d. per lb. *Bay* oil was bought in at 10s. per lb.; *Cinnamon* at 1s.; *Cinnamon leaf* at 9d., and *Ylang Ylang* at 5s. per oz.

OILS (FIXED) AND SPIRITS.—*Castor* remains very firm, 31s. to 31s. 6d. *c.i.f.*, being still quoted for best quality *Italian* oil. *Cotton* is again a firm market at unchanged rates, £16 10s. to £17 being quoted for *refined* oil on the spot. *Coco-nut* is a trifle easier. *Ceylon* being now quoted at £22 15s., and *Cochin* at £26 15s. on the spot. *Linseed* is if anything rather firmer, £19 2s. 6d. being now asked for oil in barrels, landed terms. *Rape* is unchanged, £23 10s. to £24 is quoted for *refined* oils. *Turpentine* is very firm at an advance of 3d. *American* spirits being now worth 20s. 3d. on the spot. *Petroleum* is very dull of sale and a trifle easier in price. *Russia* oil being quoted at 5½d. *American* at 5½d. and *water white* at 6½d. per gallon on the spot.

OPIUM ALKALOIDS.—The firm position of opium has caused an advance of 2d. per oz. in the price of *morphine*, and manufacturers' quotations are now 4s. 9d. per oz. for *powder*, and 4s. 11d. for *crystals* in 1000-oz. lots. *Codeine* is very firm at the unchanged rate of 10s. 6d. to 11s. per oz., according to quantity.

ORRIS ROOT.—*Florentine* root was bought in to-day at 70s. to 72s. 6d., and *East Indian* at 21s. to 25s. per cwt.

QUASSIA WOOD.—About 7 tons sold at £4 5s. per ton.

QUININE SULPHATE.—Is still quite neglected, and the best *German* makes offer at 12½d. per oz., but no business is reported. Fifteen cases of the *Imperial* brand of *English* quinine, representing 7500 ozs., were bought in to-day at 1s. 4d. per oz.

RHUBARB.—Still very dull of sale. Of 157 cases about 20 sold, at the following rates:—*Shensi*: Fine bold round pinky, 1s. 9d.; fine round trimmings 1s. 7d.; medium round part pinky, 1s. 4d.; medium flat ditto, 1s. 5d.; and pickings, 10d. per lb. *Canton*: Medium round sold at 7½d. per lb. *High dried*: Medium pinkish flat, slightly

wormy, sold at 10½d., and small flat at 10d. per lb.

SARSAPARILLA.—*Jamaican* root was in large supply to-day, and sold at full to dearer rates, 1s. 4d. to 1s. 5d. being paid for sound grey and 1s. 3d. for bright red. In addition, a few bales of damaged *Jamaican* sold at 11½d. to 1s., whilst *Honduras* was bought in at 1s. to 1s. 1d. per lb.

SEEDS (VARIOUS).—*Coriander*: Ordinary coarse *Bombay* were bought in at the spice sales at 7s. and *Morocco* at 11s. per cwt. *Canary*: 27s. 6d. per quarter was paid for 30 bags on Wednesday. *Cumin*: Ten bags of *Maltese* seed sold at 29s. per cwt. *Anniseed*: *Russian*, sold at 18s. to 18s. 3d. per cwt. *Musk* was bought in at 1s. to 1s. 3d. per lb. *Strophanthus*. *Kombe* seed was bought in at 3s. 6d. to 3s. 9d. per lb.

SHELLAC.—Firmer. A moderate business has been done privately at rather firmer rates, including *TN Orange* at 91s. At the weekly sales about half the catalogue was sold, fair to good *Second Orange* showing an advance of 1s. per cwt., whilst low grades sold irregularly at about firm rates. *Garnet* sold at easy rates, *AC* being quoted at 88s., whilst all the *Button* was withdrawn. Since the sales the market has been rather firmer, but little business has been done. *Second Orange* has sold at 93s., *c.i.f.*, June delivery, whilst *TN* is quoted at 89s. to 90s. on the spot.

SOY.—Good *China* soy was bought in to-day at 1s. per gallon, whilst 8½d. was paid for 4 casks which had been filled with odd lots.

SPICES (VARIOUS).—*Cloves*: No *Zanzibar* cloves were offered in auction. Medium to fair *Amboyna* were bought in at 4d. to 4½d., and *Java* kind at 4¼d. per lb. Good picked *Penang* sold at 7d. per lb. without reserve, which shows a decline, whilst 4d. was paid for *Ceylon*. *Pimento* is still slow of sale. In auction medium to fair quality was bought in at 2½d. to 2¾d. per lb. *Chillies* are firm, 33s. being paid for medium dull *Zanzibar*. *Cassia vera* was bought in at 24s. for coarse *Padarg* quill. *White pepper*: Slow of sale. All the *Siam* and *Penang* kinds were withdrawn or bought in. For fair to good *Singapore* 4¼d. to 4¾d. was paid, and 5½d. to 5¾d. for fine bright ditto. *Arrowroot*: Very dull. A few barrels of *St. Vincent* sold in auction for 2½d. per lb.

TAMARINDS.—About 40 casks of *Barbados* tamarinds sold to-day at 15s. per cwt.

TONQUIN BEANS.—Frosted *Para* beans were bought in at 2s. per lb., whilst 4d. to 7d. was paid for 16 cases of dark and foxy quality.

TURMERIC.—Still slow of sale. At the spice sales, fair bright split *Cochin* bulbs sold at 5s. 6d. to 5s. 9d. per cwt.

WAX (BEES).—Very firm and in good demand. *Jamaican* wax sold to day at full rates, £8 to £8 10s. being paid. In addition, *West Indian* sold without reserve at £6 10s., *Madagascar* at £6 5s. to £7, *East Indian* at £4 16s. to £6, *Spanish* at £6 15s., and *Australian* at £6 17s. 6d., whilst *Zanzibar* was bought in at £6 10s. to £6 15s., and *Mogador* at £6 per cwt.

WAX (JAPAN).—The market is a trifle easier. To-day 36s. was accepted for three cases of pale *Japan* squares, whilst 50 cases were bought in at 40s. per cwt.

LIVERPOOL DRUG AND CHEMICAL MARKET.—Our Liverpool correspondent writes as follows:—April 29.—Linseed: very firm; *River Plate*, 32s. per 416 lbs. ex quay. Canary-seed: *Turkish*, 29s. 6d. to 31s. per 364 lbs. Chillies: *Sierra Leone*, 30s. Ginger: *Sierra Leone*, 20s. to 20s. 3d. Kola Nuts, dried 4d. to 5d. Beeswax: *Chilian*, £7 10s. to £8; *Peruvian*, £7 15s. Gums: *Arabic* varieties at extreme prices. Hog Tragacanth, 52s. 6d. Carnauba Wax: good yellow 2s. 6d. Castor oil: Slow of sale, good seconds *Calcutta*, 2½d. to 2¾d.; *French* first pressure and *Madras*, 2½d. to 2¾d. Olive oil: Firm. *Malaga*, £29 to £30; *Seville*, £28 to £29; *Syrian*, £28 to £28 10s. Linseed oil: 19s. 9d. to 21s. for *Liverpool* pressure. Cotton-seed oil, slow of sale at 17s. to 17s. 6d. Spirit of turpentine: Supply short, 22s. 6d. per cwt. Petroleum: *Russian*, 5¼d.; *American*, 6¼d. to 7¼d. per gallon. Bleaching powder: £7 to £7 5s. Sal ammoniac: 39s., first quality. Copperas: *Lancashire*, 38s.; *Welsh*, 36s. Sulphate of copper: £18; July and August delivery, £16s. 15s. Borax: Lump, 19s. 6d.; powder, 20s. 6d.; *Tinca* small sales at 19s. 6d. ex quay. Bicarbonate of soda: £7. Soda crystals: £2 10s. Caustic soda: 70 per cent., £7 12s. 6d. to £7 15s.; 60 per cent., £6 12s. 6d. to £6 15s. Nitrate of soda: 8s. to 8s. 3d. Chlorate of potash: 4¼d. Bichromate of potash: 4½d. Prussiate of potash: 7½d. Potashes: 21s. 3d. Pearl ashes: 36s. 6d.

NEWCASTLE CHEMICAL MARKET.—Our Newcastle correspondent writes as follows:—April 28.—New export business moves slowly. Against this, however, may be set that home orders for soda crystals, alkali, and soda ash are in circulation, and as a restricted produce for some makes continues, prices are firmly quoted. Sulphur still very scarce, and a better demand for South Durham salt is experienced for shipment. Prices are:—Sulphur: £3 17s. 6d. Hyposulphite: £5 10s. to £7, according to packages. Soda crystals in bags, 36s.; in casks, 42s. 6d. to 45s. Soda ash: 48 per cent., £4 to £4 5s.; 52 per cent., £4 10s. to £4 12s. 6d. Alkali: 48 per cent., £4 10s. to £4 15s.; 52 per cent., £5 to £5 5s. Caustic soda: 70 per cent., £7 5s.; 76 per cent., £8 10s. to £9. Bleaching powder: £7 5s. to £7 10s., according to markets.

MANCHESTER CHEMICAL MARKET.—Our Manchester correspondent writes as follows:—April 28.—There is a better feeling prevalent here, and prices are tending higher. No doubt the inquiry for spring shipments to the North has much to do with this. There is no change in sulphate of ammonia, but in other respects the feeling forward is better. Sulphate of copper is in fair request at £18, with 10s. less asked for re-sale lots, and £17 June delivery. Heavy chemicals are without change. Soda crystals are dull at 42s. per ton in bags delivered Manchester. Yellow prussiate is easier at 7¼d. per lb., delivery U.K.; a lower quality, suitable for calico printers, is about a farthing less. Both Glauber and Epsoms are dull. Acids are without change. Oxalic, for local makes, sells at 3¼d., notwithstanding lower figures quoted elsewhere. Cream of tartar is at 104s. to 105s. per cwt. for best white powdered here.

MISCELLANEOUS NEWS.

GUY'S HOSPITAL.—The Treasurer acknowledges with grateful thanks the receipt of a donation of 100 guineas towards the special re-endowment fund from the Liebig's Extract of Meat Company, Ltd.

EXPOSING POISON.—At the Londonderry Record Court on April 16, Judge Overend decided, in a case affecting the poisoning of lands, that a landowner is not justified in placing poison on his grounds, even though he notify the police beforehand of his intention to do so.

EDINBURGH PHARMACY ATHLETIC CLUB.—The annual general meeting of the Club took place on Friday, April 24, at 9.15 p.m., Mr. John Brown, President, in the chair. The Secretary's report showed that there was an increased membership, now numbering ninety-four, and that the past year had been a most successful one. The Treasurer's report showed an income of £119, and an expenditure of £93 8s. 2d., leaving a balance in hand of £15 11s. 10d. On the motion of Mr. Welsh, seconded by Mr. Stott, the reports were adopted, and it was agreed to send a letter of thanks to the Executive of the North British Branch for the privilege of meeting in the Pharmaceutical Society's House. The office bearers for the ensuing year were then elected, as follows: Honorary President, Donald Mackenzie (T. and H. Smith and Co.); President, John Brown; Vice-President, James McBain; Hon. Secretary, J. P. Gibb, 8, Buccleuch Place; Assistant-Secretary, A. G. Paterson; Treasurer, A. S. Birnie; and as members of Committee, Messrs. G. F. Anderson, Bart, Hugh France, R. K. Kinnimont, J. D. Sinclair, Somerville, and J. Stott.

The golf section held their monthly competition on the Braid Hills course for the "Dick Handicap Challenge Medal" on Friday and Saturday, 24 and 25 April, when over thirty members competed. Mr. George Lunan was the winner, with the score of 101 less 10—91.

DEATH OF MR. WILLIAM HUTTON, OF EDINBURGH.—The death occurred, at 8, Bath Street, Portobello, on Sunday, April 26, of Mr. William Hutton, who was for several years principal assistant in the West-End establishment of Messrs. Duncan, Flockhart and Co., and retired a few years ago owing to a chest affection which has now proved fatal, at the early age of 40 years. He acted for some years as Honorary Treasurer to the Edinburgh Chemists', Assistants', and Apprentices' Association, and has been an associate of the Pharmaceutical Society for seventeen years. He leaves a widow and family.

MR. PHILIP FLOOD, L.P.S.I., Dublin, has been presented with a handsome address and substantial souvenir on the occasion of his departure for London, wherein he intends to practise medicine. The address was read by Mr. H. C. McWeeny, F.R.U.I., and kindly wishes for Dr. Flood's success in his new sphere of life were general. Dr. Flood suitably responded. Melody and monologue succeeded.

MINERAL WATER TRADE PROTECTION ASSOCIATIONS AND THEIR RIGHTS.—A case of the utmost interest to the mineral water trade was heard at the Manchester County Court on Monday before His Honour Judge Parry. The Heywood Mineral Water and Bottling Company, Limited, are members of the Manchester District Mineral Water Trade Association, which is as is well known, formed to protect the interests of the mineral water trade, and more especially to prevent the practice by which bottles are indiscriminately collected and filled with the waters of other manufacturers promiscuously. The Inspector of the Manchester Association made a complaint against the Heywood Company for a breach of the rule by which this practice was sought to be prevented. The summons was accordingly issued for them to attend a meeting of the Manchester Association, and the Heywood representatives declined to sign a paper whereby the matter would be dealt with by the Council of the Association. The Chairman of the Heywood Company, however, was a member of the Council, and he having signed a paper, the Council fined his company ten guineas, and the action was brought to recover that amount. The case turned mainly on the point whether the Manchester Association had power by their articles of association to inflict fines of this character. His Honour was not at all satisfied as to this, and gave a verdict for the defendant company with costs.

CHEMISTS' ASSISTANTS' ASSOCIATION.—The fourth and last Cinderella dance of the season was held at the Portman Rooms, Baker Street, on April 23, and was equally as enjoyable in every detail as the preceding ones, a large company putting in an appearance to assist at the winding up of the social programme. The conspicuous success which has attended this innovation reflects credit on those responsible for the arrangements, and will, no doubt, lead to it becoming a permanent institution.

PROPRIETARY ARTICLES TRADE ASSOCIATION.—The following meetings have been arranged to be held next week under the auspices of the Local Associations: At Leeds, on Tuesday, May 5, at 8 p.m., in the Law Library, Albion Place; at Bradford, on Wednesday, May 6, at the Mechanics Institute, at 8 p.m.; and at Halifax, on Thursday, May 7, in the Old Hall, Old Cock Hotel, at 8 p.m. A meeting will also be held at Sheffield, in the Montgomery Hall, at 8.30 p.m., on Friday, May 8, independently of the Local Association.

ANOTHER DUBLIN PHARMACIST, Mr. Isaac Bernard, Member of Council, has met with a driving accident, involving the fracture of his left arm. Both he and Dr. Gordon, are however, progressing most favourably towards recovery.

A CORRECTION.

"THE PHARMACOLOGY OF IZAL."—Dr. Tunnicliffe points out that by an oversight in correcting the proof of his paper, the toxicity of biniodide of mercury was printed (see p. 303) as .15 gramme instead of .015 gramme.

 Owing to pressure on our space, a number of news items are left over.

EXCHANGE.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

Books, etc.

A book of 130 Well-tryed Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

Dr. Miller's 'Elements of Chemistry,' complete, in 3 vols., cloth, published £2 12s. 6d., interleaved with many brilliantly hand-coloured plates of cube system, unique, 21s.—Davis, "Chestnuts," Gordon Hill, Enfield.

McLaren's 'Atlas of Venereal Diseases,' ten parts, beautiful plates, unsoiled, cost £3, accept £2 or offers; useful to medical student or chemist beginning business.—A. Richardson, Chemist, Hessle Road, Hull.

Free.—Pratt's 'Poisonous Plants,' 44 coloured plates (6s.), 3s. 6d.; Paxton and Lindley's 'Botanical Dictionary,' new edition, 5s.; 'Through Kew Conservatories,' illustrated, 1s. 6d.; Tyndall's 'Faraday,' 3s. 6d.—Davies, 33, Eglinton Road, Bow.

Miscellaneous.

Three 4-gal. Pear-shaped Carboys, any reasonable offer accepted.—H. P. Mallett, 85, Mill Hill Road, Norwich.

Two gross Kent's 5-row gents' tooth-brushes; Kelly's 'Chemists' Directory,' 1885; Brande's 'Chemistry,' 2 vols.; Masseur's 'British Fungi,' new; 'Nature,' 10 vols., May 2, 1889, to March 15, 1894, clean; what offers?—Dobson, Chemist, Leicester.

Brass Counter Scales on mahogany stand, with drawer, 12-inch beam, Avery's make, no weights. What cash offers?—Smith, Chemist, Coleford, Glos.

Soda Water Appliances.

Soda-Water Machine, Barnett and Foster's, No. 2; list price £45; sell for £15; good condition.—Apply to H., 1, Southwick Street, Hyde Park.

ADDRESS WANTED.

Wanted, the address of Mr. Noyes, lately at S Leonard's and Eastbourne, prescriptions signed R. H.—Address, Hasselby, St. Leonard's.

TRADE NOTES AND NEWS.

MESSRS. B. J. EDWARDS AND CO., the well-known photographic plate makers, supply a special plate, the Edwards "Cathodal" plate for x-radiography. These plates are made on lines suggested by Professor Oliver Lodge, of University College, Liverpool.

THE ACETYLENE GAS COMPANY, Hythe Road, Ashford, Kent, make the Simplex generators and gasometers, which, on account of their freedom from complicated mechanism or skill in using them, must rank amongst the very first on the market. The chief characteristic of the Simplex generator is its automatic action and consequent safety. The pressure in gasometer never exceeds 2 lbs. to the square inch, and when the gasometer is full it stops generating until the contents are used up.

MESSRS. CHAS. M. HIGGINS AND CO., of 106, Charing Cross Road, W.C., are the makers of HIGGINS' PHOTO MOUNTER, the new adhesive for mounting photographs, etc. This is not a starch or flour paste, but a "Vegetable Glue," semi-fluid, and always ready for use without preparation. It is absolutely uniform, free from lumps, of soft and unctuous consistency and pure white colour, and never spoils or changes; spreads very smoothly and easily, adheres at once, dries quickly, does not warp, cockle, or strike through the mount, and is warranted by the makers not to injure the tone or colour of any mount.

MESSRS. RAPHAEL AND CO., manufacturing opticians, are removing from 13, Oxford Street, London, to 51, Clerkenwell Rd, E.C., their old premises being required in connection with the proposed Central London Railway. The case, Raphael v. Central London Railway, was settled on Friday, April 25, at the Westminster Guildhall, when the Company was represented by Mr. Freeman, Q.C., and counsel for Messrs. Raphael were Mr. Cripps, Q.C. and Mr. McCall, Q.C. In consequence of this forced removal the firm will be clearing their stock of spectacles, field-glasses, operas, thermometers and barometers, at very reduced rates within the next few days.

MESSRS. BURROUGHS, WELLCOME AND CO. draw attention to purified ox-bile tabloids, a recent addition to their list of compressed drugs. These are prepared from ox-bile from which the tissue, *débris*, mucilaginous bodies, and unnecessary colouring matter have been separated. The emulsifying, antiseptic, and stimulating principles in the bile are supplied, therefore, in an active and compendious form. In order to avoid the irritating effect of bile on the mucous membrane of the stomach, these "tabloids" are keratin-coated, so that they do not disintegrate until they reach the alkaline contents of the intestines. Another useful addition to the firm's list of products is their new effervescent lithia citrate tabloid, containing exactly four grains of lithium citrate. This tabloid may be administered (a) by dissolving in water, the solution being swallowed after effervescence has ceased; (b) by crushing, stirring with a wineglassful of water, and taking as an effervescent draught; or (c) by placing on the tongue and allowing it to dissolve slowly. Probably the last method is the most pleasant and, at the same time, most convenient, the piquant effervescence on the tongue entirely covering the peculiar taste of the drug.

MESSRS. MARION AND CO., Soho Square, London, are now issuing a new edition of the firm's exhaustive and handsome catalogue. It is sent post free for 1s., and constitutes a most useful stock book of reference.

MESSRS. R. AND J. BECK AND CO., 68, Cornhill, London, have made their catalogue for the current year exceedingly attractive. It contains some seventy pages, which are fully illustrated and indexed.

LATE ADVERTISEMENT.

Assistant Wanted.

QUALIFIED ASSISTANT, about 25, with good experience, speaking French. Apply with full particulars to MELLIN'S Pharmacy, 48, Regent St., W.

PERSONAL.

MR. D. M. INGRAM, who for some time was with Messrs. Fasset and Johnson, is now representing Messrs. C. R. Harker, Stagg and Morgan of 15, Laurence Pountney Lane, E.C., in the north of England and part of Scotland.

MR. G. T. W. NEWSHOLME, the new Chairman of the Sheffield Board of Guardians, is one of the best known and most respected of local pharmacists, and a member of the Pharmaceutical Council. Mr. Newsholme has been from the beginning a warm supporter of the famous scheme of the guardians for providing isolated cottage homes in the suburbs of the city for the pauper children. These little waifs are now entirely removed from the workhouse taint. They never go near that institution, but are brought up in homes containing about a score under the care of foster-parents, and attend the ordinary elementary and Sunday schools.

DIARY OF THE WEEK.

- MONDAY, MAY 4.
SOCIETY OF CHEMICAL INDUSTRY, at 8 p.m.
"The Reproduction of Colour by Photography," by E. J. Wall.
"Artificial Silk," by Messrs. Cross and Bevan.
- TUESDAY, MAY 5.
PHARMACEUTICAL SOCIETY.
Benevolent Fund Committee.
Finance Committee.
General Purposes Committee.
SOCIETY OF ARIS (FOREIGN AND COLONIAL SECTION), at 8 p.m.
"Australia's Prospects in British Markets," by J. F. Dowling.
- WEDNESDAY, MAY 6.
PHARMACEUTICAL SOCIETY.
Council Meeting.
- THURSDAY, MAY 7.
SCHOOL OF PHARMACY STUDENTS' ASSOCIATION, at 7 p.m.
Social Evening.
"Fossil Plants," by A. C. Seward.
LINNEAN SOCIETY OF LONDON, at 8 p.m.
"On the Tooth-genesis of the *Canida*," by Dr. H. Marett-Tims.
"Lantern-slides Illustrative of the Habits of the Tiger Beetle, *Cicindela campestris*," by F. Enock.
"Preparations of the Hermaphrodite Glands of *Apus*," by H. M. Bernard.
- CHEMISTS ASSISTANTS' ASSOCIATION, at 8.30 p.m.
Annual General Meeting and Election of New Council.
- CHEMICAL SOCIETY, at 8 p.m.
"Luteolin" (II.), by A. G. Perkin.
"Morin" (I.), by Hermann Bablick and A. G. Perkin.
Ballot for Election of Fellows.

SUPPLEMENT

TO THE

PHARMACEUTICAL JOURNAL.

MISCELLANEOUS NEWS.

PHOTOGRAPHS OF THE SOCIETY'S PREMISES.—The Pharmaceutical Society has been presented by the Sandell Works Company, of South Norwood, with a series of photographs of the Society's premises, including the Examination Hall, Laboratory, Museums, and Council Chamber. The photographs measure 15 by 12 inches and 12 by 10 inches, and were taken by Mr. J. T. Sandell, an Associate of the Pharmaceutical Society, on the Sandell Multiple-Coated Plates. They illustrate fully the perfection in the rendering of perspective and gradation of tones that can be obtained by the use of a combination of films of varying degrees of sensitiveness. We understand that the Sandell Works Company intends shortly to bring out an album of these views in colotype at a very reasonable price, but it will be issued to subscribers only.

EXCISE PROSECUTIONS.—At Dublin last week Mr. John Gerrard, chemist and druggist, was prosecuted by the Excise authorities for selling S.V.M. without a licence. Evidence of the purchase was given. The stuff was divided into three parts in compliance with the Act of Parliament. Mr. Holmes, analyst, Somerset House, deposed that the sample examined by him contained methylated spirit prepared for sale. It contained no gum resin as alleged. Finish should contain three ounces of gum resin in solution to the gallon. Defendant said he had purchased the stuff from Messrs. Hayes, of Grafton Street, as finish, and he sold it as such. He asked and was granted permission to have the sample in his possession analysed. Mr. Joliffe, who represented the Excise authorities, said if the defendant's statement be true, he had his remedy against the wholesale house. The case was adjourned for a week.—Two traders were fined £12 10s. each at the Coolock Petty Sessions last week for selling methylated spirit without a licence.

THEFT FROM A CHEMIST.—At the Plymouth Police Court on April 26, William Edwards (13) and James Luke (11) were charged with stealing about 10s. from a till in the shop of Mr. J. G. Netting, chemist, North Road. Edwards went into the shop during the evening twice, and the second time purchased a packet of salts. Complainant afterwards left the counter for about a minute, and on returning found the till open and the silver left in the bowl for change gone. Mr. Netting's errand boy, named Rapson, said he was sweeping the front at the time, and the boy Luke talked with him. He saw the elder defendant enter the shop three times, and shortly afterwards witness went into the shop and saw the hatchway leading behind the counter open. The Bench dismissed the case, the Chairman observing that although there was not sufficient evidence to convict the elder boy, a good deal of suspicion attached to him.

CHEMISTS' AND DRUGGISTS' INDEMNITY INSURANCE.—The Directors of the Northern Accident Insurance Company, Limited, have recently had brought pointedly under their notice certain striking examples of the risks connected with the dispensing and sale of drugs and medicines by chemists and druggists. These were most forcibly illustrated by the action that was heard at the Birmingham Assizes in December last, when damages to the extent of £2800 and costs were awarded, strychnine having been supplied in mistake for phenacetin under circumstances that are generally known. Another case of interest was recently heard in the Court of Session, Edinburgh, when an action against a druggist in Glasgow for £2250 was decided, the ground of action being an alleged mistake in dispensing. The case, as it happened, was successfully defended, but the expenses amounted to a very considerable sum. Another striking case is recorded in which compensation was awarded to the widow and family of the victim of another error in dispensing. This Directors of this Company are prepared to grant protection against such occurrences, undertaking to indemnify policyholders to the extent of a sum to be agreed upon. If the defence of any action should be necessary, the Company will undertake the same, and be liable for the payment of the costs in connection therewith, and the amount of the verdict returned (if any) to the limit referred to. The premium is based on the number of persons engaged in the dispensing and sale of drugs and medicines, and the limit required—a rate of 2s. 6d. per head being charged, with an additional 10s. per cent. on the amount of limit to be covered. The General Manager and Secretary of the Company is Mr. R. W. Thompson, 19, West Nile Street, Glasgow.

ROYAL SOCIETY CONVERSAZIONE.—Electricity and photography again held the first place at the Conversazione of the Royal Society on Wednesday, observes the *Daily Telegraph*. In their combined form in the Röntgen rays they naturally constitute an absorbing theme. Mr. A. C. Swinton gave some excellent demonstrations, and Mr. Sydney Rowland exhibited a fine series of the new photographs. A remarkable demonstration was that of Professor Worthington and Mr. Cole, who by means of instantaneous photographs taken by electric sparks, which lasted "less than three-millionths of a second," produced a set of plates showing exactly what happens when a drop of water or a small solid body is allowed to fall into a liquid. Lastly, Mr. Friese-Greene exhibited a "Rapid Photographic Printing Machine," which, combined with an apparatus for type-setting that actually dispenses with type altogether, will, if its inventor's anticipations are realised, revolutionise the art of printing. Mr. Norman Lockyer and Mr. McClean each sent a number of noteworthy astronomical photographs. Mr. Ives explained how to combine "positivos" so as to produce coloured pictures, and Professor Meldola repeated the pretty demonstration of Lippmann's colour photographs. For geologists, Mr. Seton-Karr and Sir John Evans showed some fine palaeolithic implements from Somaliland. Late at night Professor Dewar delighted the company by some of his experiments with liquid air. He

showed the savants the ordinary atmosphere of London condensed into milky fluid, owing to its impurities, and in its distilled, wholesome state a translucent blue. More striking than any other fact of the demonstration was the ease and rapidity with which the Professor produced the liquid air and oxygen, one hundred cubic centimetres—about the tenth-part of a pint—being yielded in a few minutes.

THE DISPENSING OF DRUGS AT EXETER WORKHOUSE.—At the last meeting of the Exeter Corporation of the Poor, the resolution passed by the court on March 3 last (see *Ph. J.* of March 7, page 197) "That if the medical officer required assistance in dispensing, the duties should be performed by a person from outside the workhouse and not by nurses," was, on the motion of Mrs. Chorley, rescinded, and the matter left in the hands of the doctor.

THE CHEMIST'S CLUB.—A smoking concert is announced to take place in the Club Room, 2, Farringdon Avenue, E.C., on Thursday next, May 14, to commence at 8 p.m. All members are cordially invited. Chemists who are non-members will be admitted on production of their business cards.

THE RÖNTGEN X-RAYS IN DUBLIN.—There was a very large gathering of scientists at St. Vincent's Hospital on Friday April 24, when Professor Barrett and Surgeon McArdle demonstrated the chief features of interest connected with the x-rays, the professor dealing with the experimental science part of the programme and the surgeon treating the subject in its application to the practice of surgery. In the course of a number of interesting demonstrations, the hand of Mrs. Quinlan, wife of the Professor of Pharmacy at the Catholic University School, was successfully photographed by means of the rays.

ACCIDENT TO A SHEFFIELD CHEMIST.—A serious accident occurred recently to Mr. Thomas Strain, chemist and druggist, of Upper Allen Street, Sheffield, who was driving with his wife and sister into the country in a light vehicle when the horse slipped upon some granite paving and pitched the occupants of the trap out upon the road. Mr. Strain was considerably injured, and, in addition to the shock, is suffering from a dislocated wrist, a bruised face and shoulder. The ladies escaped injury.

PHARMACY APPEAL.—At Newry Quarter Sessions on Saturday, April 25, David Wilson, grocer, Church Street, Rathfriland, appealed against orders of the justices sitting at Rathfriland, on the 3rd day of January, 1896, whereby he was fined in two sums of £5, with £1 costs in each case—first, for having, on the 17th October, 1895, sold cantharides contained in a bottle of Leeming's essence; and secondly, for having kept open his shop for the retailing and dispensing of poisons on the same date. The appeals were fully heard at last sessions by Mr. Craig, Q.C., who reserved judgment on that occasion. His Honour now affirmed the two convictions, but did so without costs.

BEEF TEA AND INSANITY.—A whole family in Ballinasloe, named Kane, with one exception, a young girl aged 19, have been committed to the County Galway Lunatic Asylum suffering from advanced insanity. The cause of the malady is said to be traceable to beef tea (*sic*) of which all the members of the family, save the girl mentioned, partook a few days ago. At present the lunatics are dangerous. Up to their partaking of the beef tea none of the family had ever shown the slightest sign of insanity.

ACCIDENTAL POISONING BY LAUDANUM.—An inquest was held at Sheffield on Tuesday respecting the death of a three-month-old child named Hancock. The child's mother administered to it about twelve drops of laudanum in mistake for Hawksworth's mixture. Two doctors were called in, but their efforts to save the child were unavailing. The verdict was to the effect that death was due to an overdose of laudanum given by misadventure.

INTERNATIONAL EXHIBITION AND COMPETITION AT BADEN-BADEN.—An international exhibition will take place during the months of August and September next in the world-famed watering-place, Baden-Baden. The competition will include hygiene, food for the people, army requisites, sporting and tourist articles. There will also be a special international department for beer, bottled wines for export, brandy, etc.; champagne and effervescing drinks; cigars, cigarettes and tobacco, also all things necessary for sea voyages and the navy; gas cooking and heating apparatus, etc. This undertaking has the support of the Government and town authorities, and the Committee consists of the leading men of the country. It is the first enterprise of the kind in South Germany, and intending exhibitors must announce themselves to the Exhibition Committee at Baden-Baden by June 15, 1896, at latest. The Secretary is Herr Ph. Bussemer, Kaufmann, Stadtverordneter und Vorstand der Handelsgenossenschaft Baden-Baden.

CARBOLIC ACID INSTEAD OF BRANDY.—The Rev. E. Templeman, late rector of Pitecott, who was not in the habit of taking alcoholic stimulants, agreed to do so on the advice of his wife, as he felt weak and giddy. He had a peculiar habit of drinking directly out of a bottle, and it is assumed that, having a fit of faintness, he went to the storeroom adjoining the dining-room, and owing to the darkness could not distinguish the difference between the brandy bottle and one kept for carbolic acid, so that he drank out of the wrong bottle. On being called for dinner he was found to all appearances in a dead faint. The doctor was called for, but on his arrival death had already taken place. The post-mortem examination showed a quantity of carbolic acid in the stomach, and that the mouth and stomach were charred by the action of the crude acid. The jury brought in a verdict that the deceased had been accidentally poisoned, but thought there had been great neglect in allowing a poison bottle to be mixed with liquor bottles.—*Eastern Morning News.*

MARKET REPORT.

[Specially compiled for the *Pharmaceutical Journal.*]

[The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.]

LONDON, MAY 7, 1896.

Business in the produce markets, directly or indirectly connected with drug trade, has been quiet since our last report. The market in crude camphor is in a very uncertain condition, and prices have declined considerably. No change has, however, occurred in the refined article. Menthol is very quiet, quinine rather firmer, with a better enquiry and opium alkaloids very steady. Caffeine is unchanged but quiet. Carbolic acid is again easier, tartaric acid firm, citric acid unchanged, cream of tartar steady on the spot but easier for delivery, whilst arsenic is still scarce. In the drug market opium, insect flowers, ipecacuanha, coca leaves, and orris root are firm, jalap quiet, and senegar offering at easier rates. Cod-liver oil is neglected, shellac very firm, whilst the heavy and essential oil markets are but little changed. Full details will be found below:—

ACID, CARBOLIC.—This market continues to weaken, especially for *Crystals*, and the current quotations are now as follows:—*Crystals*: 34° to 35° C., 6½d.; 39° to 40° C., 7d.; 39° to 40° C. (*detached crystals*), 8d. per lb. *Crude*: 60 per cent. is now quoted at 2s. with 75 per cent. at 2s. 4½d. per gallon. *Liquefied* and *Cresylic* are quiet at 1s. and 11d. per gallon respectively.

ACID, CITRIC.—Is quiet, and uncharged in price, 1s. 2d. being still quoted on the spot for *English acid*. *Concentrated juice* offers at £13 5s. per pipe, *f.o.b.*, Messina.

ACID TARTARIC.—The market is very firm at an advance in price, the bottom price for *foreign acid* on the spot being now 1s. 2¼d. per lb., and 1s. 2½d. is quoted by the agents of some of the makers. *Laves'* and *Kemball's* brands of *English acid* are still quoted at 1s. 3d. per lb. on the spot.

AMMONIA COMPOUNDS.—*Sulphate*: The market is quiet but steady, grey 24 per cent. being quoted at £8 2s. 6d. on the spot, whilst *Hull* is quoted at £8, *Leith* at the same figure, and *Beckton* terms at £8 2s. 6d. forward terms. *Sal ammoniac* is unchanged at 39s. for *firsts*, and 37s. for *seconds*. *Carbonate* quotes at 3d. per lb. in casks, 3½d. in kegs, 3¾d. in jars, with *powder* ¼d. per lb. extra. *Liquor* is unchanged at 3d. to 3¾d. per lb., less 5 per cent.

CACAO BUTTER.—*Easier*. In auction on Tuesday 600 cases, representing 60 tons of *Cadbury's* make, sold at an average of

12½d. per lb., against 12¾d., the price paid at the April sale.

CAMPHOR (CRUDE).—This article has attracted considerable attention during the week, which was naturally accentuated by the death of Col. North, and developments will be awaited with considerable interest. Much uncertainty prevails as to the line of action which the Syndicate, of which the deceased was one of the principal members, will pursue, but at the present time appearances seem to indicate a "slump." *Formosan* camphor closed last week with buyers at 125s., *c.i.f.*, May to July shipment. On Tuesday 120s., *c.i.f.*, was paid for 300 piculs, followed by 400 piculs on Wednesday at 114s., down to 112s. 6d., *c.i.f.*, a sale being reported at the close at 110s., *c.i.f.*, May to June shipment. At the last price there are ready sellers, and a further decline is very probable. *Japan* camphor has not attracted any attention, and the quotation of 125s. *c.i.f.*, is quite nominal. The shipments of *Japan* camphor during April are cabled as 900 piculs.

CINCHONA BARK.—A parcel of fine mossy *Madras* quill, recently arrived, will be offered in auction next week. For this the holder hopes to get 1s. 6d. per lb.

COAL DISTILLATION PRODUCTS.—*Toluol* quoted at 2s. per gallon for *pure*. *Benzo* is quiet at 1s. 8d. for 50 per cent., whilst 7 per cent. offers at 2s. per gallon. *Creasote*: 1s. 8d. per gallon. *Crude Naphtha*: 30 per cent., at 120° C., offers at 10d. per gallon. *Solvent Naphtha*: 95 per cent., at 160° C., quotes at 1s. 5d.; 90 per cent., at 160° C., at 1s. 3d.; and 90 per cent., at 190° C., at 1s. 1d. per gallon. *Anthracene*: *13A* is quoted at 10½d. and *B* at 9d. per unit. *Pitch*: 33s. per ton, *f.o.b.* *Tar*: *Refined* quotes at 12s. per barrel.

COCA LEAVES.—A parcel of good *Truxillo* leaves recently arrived have been sold during the week at 1s. 2d. for good green, and 1s. 1d. for yellowish. *Bolivian* cocas, of ordinary quality, offer at 1s. 4d. per lb. on the spot.

COPAIBA (BALSAM).—The market is firm. For good *Maranhm* 2s. is asked, whilst a parcel of genuine balsam of *Para* character offers at 1s. 6d. per lb. on the spot.

CREAM OF TARTAR.—On the spot the market is steady, best white *French crystals* being quoted at 100s. per cwt., whilst for *German* brands of *powder* 102s. to 105s. is asked. The forward market is, however, easier, and *crystals* offer at 94s. per cwt., *f.o.b.*, for shipment from Bordeaux.

GALLS.—The market is quiet. In *Persian* galls a moderate business has been done in *blues* at full rates, whilst for other descriptions no inquiry is shown. The current quotations are:—*Blues*: 52s. 6d. to 54s. 6d.; *greens*, 42s. 6d. to 47s. 6d., and *whites*, 40s. to 45s. per cwt.

GINGER.—Is dull of sale for *Cochin* root, but the prices are about steady. For medium and small washed, 32s. to 32s. 6d. was paid, whilst limed native cut realised 32s. 6d. to 42s. 6d. for ordinary to small half cut, and 43s. for medium ditto. *Jamaica* root was in excellent demand, the whole of the catalogue being disposed of at an advance of 1s. to 3s. per cwt. for ordinary kinds, whilst medium and fine ditto were steady. The prices paid were as follows:—*Rhatoon*: Fine bright, 99s. to 110s.; medium to medium bright, 79s. to 90s. 6d.;

ordinary medium brownish, 71s. to 78s., and common, 58s. to 69s. per cwt.

IPECACUANHA.—The market is firm. There has been a steady demand privately from *Rio* (Brazilian) root, whilst *Carthagena* (Columbian) root is quoted at 4s. to 4s. 1d. per lb.

JALAP—Is offering at low rates on the spot in spite of the reports from New York to the effect that the market is advancing. For fair *Vera Cruz* root, 6½d. is now the current quotation, and this price is not likely to see any improvement yet awhile, as there are plenty of offers from Hamburg at 5d. per lb. *c.i.f.* terms.

LIQUORICE ROOT.—*Persian* root is very slow of sale, ordinary rough quality being quoted nominally at 2s. to 3s. 6d. per cwt. Decorticated *Russian* root offers at 29s. per cwt, *c.i.f.* terms.

OIL (COD-LIVER).—The market is very quiet, the demand being now very small. The spot quotation for fine new *Norwegian* oil is 200s., and although one or two holders ask more, this price may be regarded as the value. A parcel of fine 1895 oil has been offering during the week at 195s. per barrel, but we have not heard of any business. *Newfoundland* oil is only in small supply, and for good quality oil, 6s. 6d. per gallon is asked.

OILS (ESSENTIAL).—*Star Anise* oil is dull of sale at 9s. 7½d. to 9s. 9d. per lb. on the spot, according to holder. *Peppermint* oils are still devoid of interest, *American* being offered at 9s. 1½d., and *Wayne County* at 7s. 3d. on the spot. *Eucalyptus* has sold at 1s. 6d. during the week for the *J. & Co.* brand. *Sassafras* seems to be the only oil to attract interest, and prices are likely to advance. Concerning *Otto of Roses*, more hopeful news has come to hand in regard to the new crop. The *Italian* essence market is unchanged.

OILS (FIXED) AND SPIRITS.—*Castor* is steady, but unchanged in price, 30s. to 31s. 6d. per cwt., *c.i.f.*, being still quoted for fine quality *Italian* oil. *Cotton* is very quiet at a decline of 5s., £16 5s. to £16 15s. being now quoted for *refined* oil on the spot. *Coco-nut* is slow of sale, but prices are unchanged, *Ceylon* being worth £22 15s. and *Cochin* £26 15s. on the spot. *Linseed* is steadier at the close, but the current quotation of £19 shows a slight decline on last week's price. *Rape* is a trifle firmer, £23 10s. to £24 5s. being now quoted for *refined* oil. *Turpentine* is steady at the unchanged rate of 21s. 3d. on the spot, but the market for forward delivery is quiet. *Petroleum* is still very dull of sale, and, if anything, a trifle easier, *Russian* oil being quoted at 5½d. to 5¼d., *American* at 5¾d. to 5½d., and *water-white* at 6½d. per gallon on the spot.

OPIUM.—The London market continues very firm. *Persian* opium was sold during the week at 13s. per fine bricks. The current quotations for *Turkish* opium are as follows:—*Soft shipping*, 12s. 6d. to 13s. 3d.; *Smyrna*, 9s. 6d. to 10s.; *Constantinople*, 9s. 6d. to 10s., and *druggists' seconds* 8s. 6d. to 9s.

ORRIS ROOT.—The market is quiet. Small root for grinding offers privately at 58s. per cwt., *c.i.f.*, whilst good *Veronese* quotes at 57s. 6d. On the spot 70s. to 72s. 6d. is asked for best *Florentine* root.

POTASH COMPOUNDS.—*Permanganate* is very firm and scarce on the spot at 67s. 6d.

to 70s. for small and 72s. 6d. to 75s. for large *crystals*. *Chlorate* is quiet at 4½d. on the spot. *Prussiate* (yellow) quotes at 7¾d. for *English* and 7d. for *Beckton*.

QUININE SULPHATE.—On the spot the market is quiet, but prices are steady, and there are buyers of *B. and S.* and *Brunswick* at 12½d. per oz. For forward delivery there has been a fair business done in the best German makes, 12¾d. having been paid on Wednesday for 10,000 ozs., August delivery. The market closes firm. The landings during April were *nil* ounces, and the deliveries, 48,024 ozs., making the stock, on April 30, 1,817,224 ozs., against 2,427,200 at the corresponding date in 1895.

SENEGA ROOT—Is offering at extremely low prices, fair quality root being quoted at 1s. 1d. per lb. on the spot.

SHELLAC.—A firm market. No public sales were held this week, the 150 cases advertised being withdrawn. Privately there has been a good demand for *Second Orange*, with sales of *TN* at 93s. *Button* is firm and rather more active, but *Garnet* is quiet at 87s. for fair free, and 84s. to 85s. for other marks.

SPERMACEI.—Is very quiet. Good refined *American* offers at 1s. 4½d. per lb. on the spot, and 1s. 3 d. *c.i.f.* for shipment from New York.

SPICES (VARIOUS).—*Cloves*: In small supply, and no demand shown, *Zanzibar* being bought in at 2½d., and good to fine bright *Penang* at 8d. to 10d. per lb. For delivery *Zanzibar* is quoted at 2½d. *c.i.f.* per lb. nominally for June to September shipment. *Nutmegs* are quiet. A few cases of *Penang* sold at 1s. 9½d. for 81's, whilst common broken *Bombay* realised 3d. to 3¼d., and *Travancore* 7d. to 8d. for shrivelled, 1s. for 136's, and 1s. 5d. for 106's. *Mace* continues dull of sale at easier rates, *Penang* selling at 1s. 4d. for wormy, and 1s. 2d. for pickings; whilst 1s. 2d. to 1s. 3d. was paid for *Travancore*, and 1s. 2d. to 1s. 5d. for ordinary, and 2s. 10d. for fine pale *West Indian*. *Cassia buds*: *Wild Bombay* sold in auction for 20s. per cwt. *Cinnamon quillings*: Good broken realised 9d.; clippings, 8¼d., and featherings, 6d. to 6¾d. per lb. *Pimento* is still dull of sale, but fairly steady, 2¾d. being paid in auction for ordinary quality, 2½d. for fair, and 2¾d. for good clean ditto. *Chillies* are steady. Medium dull *Zanzibar* realised 34s. 6d. to 35s., and good bright red *Japan*, 56s. 6d. to 62s. per cwt. *White pepper* sold at 5½d. for very fine bold *Singapore*. *Pepper*: For dull *Singapore* 2½d. was paid, and 2½d. to 2¾d. for good fair ditto, showing an easier rate. *Arrowroot*: Flat. *St. Vincent*: sold at 1½d., and *Bermuda* at 1s. 7d. per lb.

TAMARINDS—Are still dull of sale, and in auction all the new *Barbados* were bought in. A few barrels of *Antiquan* sold at 14s.

TOLU BALSAM.—The market is firm although there does not seem to have been much business done. On the spot 2s. 2d. to 2s. 6d. per lb. is asked for genuine old-fashioned balsam, according to holder. Cabled advices from New York point to a firm market there, the supply being very limited.

WAX.—*Japan* is quiet at 36s. per cwt. on the spot, 34s. per cwt., *c.i.f.* being quoted for forward delivery. *Paraffin* is quoted at 1¾d. to 2¼d. for *crude*, and *refined* at 2¼d. to 3¼d. per lb.

NEWCASTLE CHEMICAL MARKET, May 5.—A shade more business is passing in caustic soda and alkali. Over-sea orders are a trifle better. Soda ash is a trifle scarce and Sulphur is much in the same position. Prices are little changed and stand thus:—Bleaching powder: £7 5s. to £7 10s. Sulphur: £3 17s. 6d. to £4. Caustic soda: 70 per cent., £7 5s.; 76 per cent., £8 10s. to £9. Hyposulphite of soda: £5 10s. to £7, according to package. Alkali: 48 per cent., £4 10s. to £4 15s.; 52 per cent., £5 to £5 5s. Soda crystals in bags, 36s.; in casks, 42s. 6d. to 45s. Soda ash: 48 per cent., £4 to £4 5s.; 52 per cent., £4 10s. to £4 12s. 6d. South Durham salt 9s. per ton *f.o.b.* Tees.

MANCHESTER CHEMICALS AND DRY-SALTERIES, May 5.—Now that it is well known that the United Alkali Company will continue to book orders for heavy chemicals up to the end of June, there is some pressure to secure orders for prompt delivery. Bleaching powder can be readily purchased at £6 17s. 6d., soft wood casks on rails. In drysalteries there is very little doing. Epsom salts are quoted 55s. per ton delivered. Manchester and Glaubers (two ton lots), 23s. 6d., on rails here. Pitch is lower, and can be bought at 30s. alongside Salford docks. Sulphate of copper, which closed firmly at the end of the week at £18 10s., has gone down to £18 and £18 5s. Owing to the reduced demand for South Africa, the market has been flooded with foreign yellow prussiate, which can be had at 7d.: local makers, however, hold for 7½d. Sulphate of ammonia remains flat at £7 12s. 6d. to £7 15s., here; £8, *f.o.b.*, Liverpool. Bicarbonate of soda, £6 15s. per ton, one cwt. kegs; Industrial bi-carbonate (for mineral waters), £4 4s. per ton, in bags, on rails at works, Northwich. Naphthas are lower, both miscible and solvent wood. Benzols dull, but carbolic steady.

LIVERPOOL MARKET REPORT, May 6.—Linsced: Flat. *River Plate*, 31s. per 416 lbs.; *Turkish*, 36s. 6d. Canary-seed: *Turkish*, 29s. 6d. to 31s. per 464 lbs. Calabar beans: 1½d. *ex store*. Kola Nuts: Plentiful. Fresh, 6d. to 7d.; dried, 4d. to 5d. Ginger: *Sierra Leone*, 20s.; *Bombay*, 32s. Jaborandi leaves: 2s. 1d. Honey: *Chilian*, Pile 2, 20s. 3d. Beeswax: *Sierra Leone*, £5 15s. Olive oil: Very firm, and prices rising, especially best *Spanish* varieties; *Candia*, £31 10s.; *Malaga*, £30; *Seville*, £29 10s. Castor oil: Steady, good seconds *Calcutta*, 2½d. to 2¾d.; first pressure *French* and *Madras*, 2½d. Linseed oil: *Liverpool* makes 19s. 6d. to 20s. 6d. Cotton-seed oil: 17s. to 17s. 6d. per cwt. Spirit of turpentine: Scarce at 22s. 6d. Petroleum: *Russian*, 5¾d.; *American*, 6¼d. to 7¼d. Carbonate of ammonia: 3½d. to 3¾d. Sal ammoniac: firsts, 39s.; seconds, 37s. Sulphate of ammonia: £8 5s. to £8 6s. 3d. Bleaching powder: Hard, £7 to £7 5s. Copperas: *Lancashire*, 38s.; *Welsh*, 36s. Sulphate of copper: £18 10s. to £19 for May shipment. Chlorate of potash: 4¾d. Prussiate of potash: 7¾d. Bichromate of potash: 4¾d. Potashes: 21s. 3d. Pearl-ash: 35s. Saltpetre: 23s. 6d., kegs; 23s., barrels. Cream of tartar: Finest white is steadily held at 100s. Bicarbonate of soda: £6 15s. Soda crystals: £2 7s. 6d. to £2 10s. Borax: Crystals, 20s.; powder, 21s. Tincal, 19s. 6d.

EXCHANGE.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

A book of 130 Well-tried Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

Thorpe's 'Chemistry,' 2 vols.; Clowes' 'Quantitative Analysis,' in good condition. What offers?—Davies, 22, Rumsey Road, S.W.

Dr. Miller's 'Elements of Chemistry,' complete, in 3 vols., cloth, published £2 12s. 6d., interleaved with many brilliantly hand-coloured plates of cube system, unique, 21s.—Davis, "Chestnuts," Gordon Hill, Enfield.

All free. Piesse's 'Art of Perfumery,' scarce, 7s. 6d.; Woodville's 'Medicinal Plants,' 3 vols., 210 coloured plates (published £4 4s.), 21s.; Cooper's 'Surgical Dictionary' (30s.), 5s.; Daniel Hanbury's 'Pharmacological Papers' (16s.), 7s. 6d.—Davis, "Chestnuts," Gordon Hill, Enfield.

Miscellaneous.

Marble Mortars, one 6 pint capacity and one 3½ gallons, perfect condition. What offers?—Du Var, 13, Orford Hill, Norwich.

Complete Wall Fitting, 12 ft. long, sixty mahogany fronted drawers, glass labels, cut glass knobs, bottle lockers under, shelving, pilasters, cornice over, £12 10s.—Philip Josephs, 54, Old Street, City Road, London, E.C.

Student's microscope, 1-in. and 1/6-in. objectives (Crouch), two eye-pieces, sub-stage condenser, with iris diaphragm, polariser, camera lucida (Beale), £5.—"A.," 30, Conduit Street, W.

India-rubber Mats, Manufacturers' surplus, half cost, per contra account; one each, 36 in. by 24 in., unlettered; 33 by 24, lettered "Drug store"; 36 by 24, "Store prices."—"Chemist," 4, Commercial Road, Peckham, S.E.

What offers, cash? 5 ozs. Otto rose virgin; 100 ozs. Howard's quinine sulphate, 4-oz. bottles.—Sinclair, Chemist, Alfreton Road, Nottingham.

Soda Water Appliances.

Soda-Water Machine, Barnett and Foster's, No. 2; list price £45; sell for £15; good condition.—Apply to H., 1, Southwick Street, Hyde Park.

PERSONAL.

PROFESSOR EHRLICH has been appointed Director of the new State Institute at Berlin, for the testing of therapeutic serum.

DR. A. P. LUFF, Analyst to the Home Office, has been elected a Fellow of the Royal College of Physicians.

DR. W. H. SYMONS, D.P.H., who recently retired from the London Board of Examiners of the Pharmaceutical Society, has been appointed Medical Officer for Bath.

SIR JOSEPH LISTER, President of the Royal Society, is the latest addition to the series of "Scientific Worthies," a biographical sketch and photogravure appearing in *Nature* this week.

DR. J. E. AITCHESON, C.I.E., who has for the past four years or more been investigating the flora and fauna of North-West India and Kashmir, has now returned to London.

MR. E. B. FORD, chemist, Pontypool, has been elected chairman of the Pontypool Urban District Council, and Mr. H. M. Davies, chemist, Blaenavon, re-elected chairman of the Blaenavon Urban District Council.

MR. CORNELIUS HANBURY recently had his portrait, by Mr. Percy Bigland, presented to him by the employes of the firm of Allen and Hanburys, Limited, and we understand that the picture is one of the exhibits at the Royal Academy this season, and will be reproduced in this week's *Illustrated London News*.

MR. PERCIVAL TURNER, medical and dental transfer agent, 4, Adam Street, Adelphi, has just added the department of chemists' transfer agency to his business, which he has placed under the management of Mr. Frederic Durant, pharmaceutical chemist, late of 137, Queen's Crescent, N.W.

TRADE NOTES AND NEWS.

THYRO-IODIN—the new thyroid preparation—discovered by Professor Baumann and Dr. Roos, and prepared by Messrs. Fr. Bayer and Co., of Elberfeld, can be now obtained in London from the Farbenfabriken Company, 19, Dunstan's Hill, E.C.

IN response to several inquiries we have ascertained that EUCAINE, the new substitute for cocaine introduced by the Schering Company, is supplied by Messrs. A. and M. Zimmermann, 6 and 7, Cross Lane, London.

MR. WILLIAM POPPELREUTER, of Manchester, has published, in pamphlet form, an extract from Heinrich Haensel's quarterly report for April on essential oils and fruit essences, in which interesting information is given respecting a large number of oils.

MESSRS T. NEWBERRY AND SONS' annual catalogue of druggists' sundries, etc., for 1896, is a portly volume of five hundred pages or more. An exceedingly useful section of the book is that devoted to "Remarks on the Medicine Duty," with extracts from official documents bearing upon the practical administration of the Acts of Parliament regulating sales of proprietary medicines. Lists are also given of wines, etc., which may or may not legally be sold by vendors holding an Excise wine licence. Every chemist and druggist should send for a copy of this catalogue.

MESSRS. BURROUGHS, WELLCOME AND COMPANY now supply pancreas substance tablets, 5 grains in each, in bottles containing 100. They represent the whole substance of the gland in a pure reliable form, and contain all the active principles in an unchanged state. They are keratin-coated, so that they pass unchanged through the stomach, and are not dissolved until they reach that part of the alimentary tract where their action is required. The same firm is supplying a new effervescent tabloid of lithium bitartrate, also in bottles containing 100 5-grain tabloids. The preparation of this salt in the compressed effervescent form has been suggested, because it is held that the acid tartrate increases the normal alkalinity of the blood, eliminat-

ing uric acid. Further, it is said not to have those unpleasant after-effects sometimes attributed to alkaline combinations of lithia.

MESSRS. W. WATSON AND SON, 313, High Holborn, W.C., make a special feature of apparatus for work with the Röntgen rays. They have also made a number of electrographs of difficult subjects, and announce that surgical cases will be undertaken at short notice. The firm's list of x-ray apparatus, in which the essentials are described and priced, includes vacuum tubes, coils, batteries, etc., as well as complete outfits, from £9 upwards.

MESSRS. WILCOX AND Co., who have been established for fifty years in Oxford Street, W., are being disturbed by the Central London Railway, and the matter was to be argued at the Guildhall, Westminster, on Friday, this week.

DIARY OF THE WEEK.

MONDAY, MAY 11.

ROYAL GEOGRAPHICAL SOCIETY, at 8.30 p.m.
"Through the Central Soudan to Sokoto," by W. Wallace.
"Hausaland," by Rev. Chas. H. Robinson.

TUESDAY, MAY 12.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.
"Ripples in Air and on Water" (II.) by E. Vernon Boys.
ROYAL COLONIAL INSTITUTE, at 8 p.m.
Ordinary Meeting.

WEDNESDAY, MAY 13.

PHARMACEUTICAL SOCIETY.
Library, Museum, School, and House Committee.

THURSDAY, MAY 14.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.
"The Art of Working Metals in Japan" (II.), by W. Gowland.

FRIDAY, MAY 15.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.
"Cable Laying on the Amazon River," by A. Siemans.

LATE ADVERTISEMENT.

Assistant Wanted.

JUNIOR wanted. Qualified for light Retail and Dispensing business in West-end. In-doors. State full particulars as to former experience. G. H., care of Barron, Harvey & Co., Giltspur St., E.C.

SUPPLEMENT

TO THE

PHARMACEUTICAL JOURNAL.

MARKET REPORT.

[Specially compiled for the Pharmaceutical Journal.]

LONDON, MAY 14, 1896.

Business in the produce markets connected with the drug trade can only be described as slack. The crude camphor market continues very uncertain, but there is no notable change. On the other hand, the German refiners have lowered their quotations 4d. per lb., and this move has been followed by one of the English refiners. Menthol is very quiet, cinchonine dearer, morphine and codeine very firm, and quinine inclined to go better, whilst caffeine is quiet. Cocaine is reported in good demand and likely to advance in price. Carbolic acid has firmed up somewhat, tartaric acid is very firm, cream of tartar easier, whilst arsenic is still very scarce. At the drug sales held to-day no notable changes occurred. Both varieties of ipecacuanha are cheaper, and the same applies to ergot, whilst on the other hand benchn leaves, Jamaican wax, gum elemi, better quality senna leaves, and sarsaparilla are dearer. Cod-liver oil is easier. Shellac is quiet whilst the spice and oil markets show no important features:—

ACACIA (GUM).—The market has again been exceedingly quiet. To-day the moderate amount of 91 packages were offered, but no sales were effected and the views of holders seem far too high to lead to any business. *Trieste* gum, which is in moderate supply only, was bought in at £15 for fine picked greyish, £8 for medium yellowish, and £7 for pale grain. *Soudan* sorts were bought in at 80s. for small sorts, to 100s. for medium yellowish. In *Persian* so-called insoluble gum, no business is reported and quotations remain nominally 25s. to 30s. for fine pale picked, 20s. to 22s. for fair to good sorts, and 17s. to 18s. for siftings.

ACID, CARBOLIC.—Since our last report the market for *crystals* has firmed up somewhat, and the current quotations are now as follows: *Crystals*: 34° to 35° C., 6¼d.; 39° to 40° C., 7¼d.; 39° to 40° C. (*detach ed crystals*), 8¼d. per lb. *Crude*: 60 per cent. is quoted at 2s., and 75 per cent. at 2s. 4d. per gallon. *Liquefied* and *creylic* are unchanged at 1s. and 11d. per gallon respectively.

ALOES.—In auction the average supply of 298 packages was offered. *Cape* aloes, which was represented by 55 cases, sold at fully steady rates, 25s. to 25s. 6d. being paid for good bright hard, 22s. 6d. to 24s. 6d. for ordinary to fair ditto, partly drossy, and 20s. 6d. to 21s. 6d. for ordinary softish. No *East Indian*

aloes was sold, ten tins being bought in at 50s. per cwt. Of *Curacoa* aloes ordinary dark to good brown, in gourds, sold at 24s. to 37s. per cwt., whilst fair capey in boxes realised 17s. to 19s., and drossy quality, 8s. 6d. per cwt.

AMMONIACUM (GUM).—Three cases of fine selected pale drop were bought in at 60s. per cwt., whilst a case of ordinary seedy mixed gum, with a few almonds, was also withdrawn at 35s. None was sold in auction.

ANNATTO SEEDS.—None were sold, although a good supply was again offered. Fair bright *Madras* seed was bought in at 5¼d. per lb. Fifteen cases of *annatto paste* from New York sold at 1s. 10d. per lb.

BENZOIN (GUM).—A fair supply, amounting to nearly 300 cases, was offered. For *Sumatra* gum of good quality fair inquiry was shown and about steady rates were paid, £8 5s. being the price of 4 cases of good pale almondy seconds, slightly false packed. In addition, £6 10s. was paid for fair almondy centred seconds, but largely false-packed sides, and £3 5s. to £3 15s. for low thirds. Of *Siam* gum, some remarkably fine parcels were shown, exceptional prices being realised. For a small case of very fine bold clean pale drop £36 10s. was paid, whilst £33 10s. was accepted for a similar lot, but in this case the almonds were not so fine. For medium loose drop £18 10s. was paid, and £11 for small ditto, and £4 14s. to £4 15s. for very small loose ditto. *Penang* gum, which has been in very moderate supply of late, was represented by 6 cases of glassy seconds, which fetched 97s. 6d. per cwt., whilst good *Palembang* seconds realised 52s. 6d., and low thirds 20s. per cwt.

BIRDLIME.—Nine cases of this article imported from Japan sold without reserve at 6d. to 6¼d. per lb.

BUCHU.—The supply offered to-day was only moderate, amounting to about 90 bales. A good demand was shown, and the bulk of the catalogue sold at an advance of about ¼d. per lb., 2¼d. to 3d. being paid for fair green round leaves, and 2½d. for yellowish ditto.

CALUMBA.—Firmer. A parcel of 94 bags of brownish sorts from Bombay sold to-day at 9s. to 9s. 6d. per cwt. Twenty bags of small pieces were bought in at 15s., and a parcel of picked root at 17s. per cwt.

CAMPHOR (CRUDE).—There has been nothing in this article since our last report, but the tone of the market is decidedly weaker. Nominally *China* camphor is quoted at 107s. 6d., and *Japan* at 117s. 6d. per cwt., *c.i.f.* terms. To-day several parcels were offered, but no business was done. In one instance 288 cases of *Formosan* camphor were bought in at 110s., after 87s. 6d. had been bid. Probably a moderate advance only on the buying-in price would have led to business.

CAMPHOR (REFINED).—On Tuesday the *German* refiners reduced their quotations by 4d. per lb. This move was followed by a corresponding reduction on the part of one of the *English* refiners, making the current quotation 1s. 5d. for ½-ton lots of *bell & flowers*

CANTHARIDES.—Very slow of sale in auction. To-day 115 cases of dusty *Chinese* flies were bought in at 1s. to 1s. 2d. per lb.

CARDAMOMS.—An average supply was catalogued to-day amounting to about 110 packages. The prices paid show a steady market, whilst *seed* also realised full rates.

The quotations are as follows:—*Ceylon-Mysore*: Good pale bold, 3s. 1d.; small pale long, 2s. 4d.; small yellowish, 2s. 1d.; small to very small pale, 1s. 11d. to 1s. 8d. per lb. *Seed* sold at 2s. 10d. per lb.

CASCARILLA.—A good supply was offered, amounting to about 48 packages, and about half sold at steady rates, 47s. being paid for fair grey quill, 40s. to 42s. for small grey and brown ditto, and 35s. 6d. to 38s. for thin brown bark. Ten barrels of *siftings* were bought in at 35s. per cwt.

CASSIA FISTULA.—In auction 86 baskets of lean, mouldy and wormy pods sold without reserve at 5s. 6d. to 5s. 9d. per cwt. Fair quality were bought in at 18s. per cwt.

CINCHONA.—A moderate catalogue was offered at the monthly sale, and keen competition was shown, the bulk consisting of *East Indian* barks, selling at fully steady rates to an advance for good bark and quills. The unit remains unchanged at ½d. per lb. The prices paid were as follows:—*Ceylon Succirubra*: Ordinary to good stem chips, ¾d. to 2¼d. per lb. *Indian*: *Succirubra* chips and shavings, 1¼d. to 1¾d.; ditto root, 1¾d. to 2d.; ditto fair quill, 2½d., and good to fine silvery, 4¼d. to 7¼d. per lb. *Officinalis*: Fair to good chips and shavings, 1¼d. to 2½d.; ditto root, 1¼d. to 2¼d. *Ledger*: Stem chips and shavings, ¾d. to 2¼d.; good rich ditto, 2¼d. to 3½d. *African*: Sound quills, 2¼d. to 2½d., and broken, 1¼d. to 2d. per lb. At the drug sales a parcel of flat *Calisaya* was bought in at 6d. to 10d. per lb.

COCA LEAVES.—A single bale of fair greenish *Truxillo* leaves sold in auction at 1s. per lb. Damaged *Ceylon* were bought in at 1s. 6d.

COCAINE.—A good demand is reported for this article, and there is said to be a probability of an advance on the present quotation.

COLOCYNTH.—*Turkey* colocynth is very firmly held. Business has been done privately in good apple at 2s. 6d. per lb. Fair *Spanish* was bought in to-day at 1s.

COPAIBA (BALSAM).—Three barrels of bright brown *Para* balsam were bought in at 1s. 9d. per lb.

CUTTLEFISH.—Twenty-one casks of small grey, part-broken, bone from Bombay sold to-day at ¼d. to 1½d. per lb.

DRAGON'S BLOOD.—Very slow of sale. About 27 packages were bought in to-day, including damp bright lump at £6 10s., and dark saucers at 85s.

ELEMI (GUM).—A total of seventy-nine cases were offered to-day. A parcel of clean *Singapore* gum of good aroma, sold at 24s. to 28s. per cwt.

ERGOT OF RYE.—Is tending slightly easier. Sixty-six bags of good sound *Russian* ergot sold at 5¼d. per lb. in auction. This price was refused for the same quality at the last sale. A parcel of wormy *Spanish* was bought in at 6d. per lb.

GALLS.—The market in *Persian* galls remains very dull, and the new crop is held for advanced rates. Quotations are: *Blues*, 52s. to 54s. 6d.; *greens*, 42s. 6d. to 47s. 6d.; and *whites*, 40s. to 45s. per cwt. To-day 6 bags of *Turkey* galls sold at 47s. 6d. per cwt.

GAMBOGE.—Quite neglected. Of thirty-one packages not a single case was sold. Partly broken pipe of good fracture was bought in at £10 10s., and fair quality ditto at £9 per cwt.

GINGER.—*Cochin* root remains dull of sale. In auction about two-fifths of the catalogue sold at a decline of about 1s., 32s. to 32s. 6d. being paid for fair medium washed, and 31s. to 31s. 6d. for brownish rough, whilst limed native cut realised 49s., and bold rough cut 65s. per cwt. For *Jamaican* root there was again a good demand, but the prices paid were irregular, fine qualities selling at full rates, medium to good at a decline of 2s., whilst low grades realised steady prices.

GUAIACUM (GUM).—Twelve boxes of ordinary quality gum sold at 6d. to 6½d. for dusty mixed gum, and 9d. for slightly better quality.

HONEY.—*Jamaican* honey again sold to-day at very low rates, 20s. per cwt. being paid for 10 casks of good yellow, whilst thin dark ditto realised 18s. 6d. per cwt. *Honolulu* honey was bought in at 26s., and *New Zealand* at 45s. per cwt.

IPECACUANHA—Thirty-nine bales of *Brazilian* root were offered to-day. The prices paid show a decline of about 1d. per lb. Fair sound root realised 5s. 2d. down to 5s. per lb. and damaged ditto 4s. 11d. down to 4s. 8d. per lb. *Carthagena* (Columbian) root, of which 18 bags were offered, was mostly bought in, but five sold at 3s. 10d. to 4s. for sound damaged quality.

KOLA NUTS.—A moderate supply was offered and sold at steady rates, 11d. to 1s. being paid for sound *Grenada* and *Demerara* nuts; whilst undried kolas were bought in at 7d., and the new crop at 1s. per lb.

MENTHOL—Very slow of sale. To-day *Raspe's* menthol was bought in at 9s. 9d., and another brand at 10s. per lb.

OIL (COD LIVER). Very quiet and quoted nominally at 195s. to 200s. per barrel for new season's oil, ascending to holder.

OILS (ESSENTIAL).—*Star Anise* oil is dull of sale at 9s. 6d. to 9s. 7½d. per lb. on the spot. *Cassia*: Ten cases testing 63.5 per cent. of cinnamic aldehyde, offered without reserve, sold at 5s. 1d. to 5s. 3d. per lb. *Eucalyptus* was bought in at 1s. 6d., for the *Cygnets* brand; and 1s. 2d. for the *J.T.C.* brand. *Lavender*: *Peidmontese Alps* oil was bought in at 7s. per lb. *Citronella* was bought in at 1s. 4d. to 1s. 6d. per lb., and *Peppermint* at 6s. 6d. for *Cockings'*, and 7s. for *Wayne County* oil.

OILS (FIXED) AND SPIRITS.—*Castor*: The market remains firm in spite of the unfavourable *Italian* exchange. For best quality oil 31s. to 31s. 6d. per cwt., *c.i.f.*, is still quoted. *Cotton* is still very quiet, and refined oil has again declined 5s., £16 to £16 10s. being now quoted on the spot, according to brand and package. *Coco-nut* is quiet but unchanged in price, *Ceylon* being quoted at £22 15s., and *Cochin* at £26 15s. on the spot. *Linseed* is quiet, at a decline of 9s. 6d. to 5s., £18 15s. to £18 17s. 6d. being now quoted for oil in barrels on the spot. *Rape* is much easier, and is now quoted at £23 to £23 10s. on the spot. *Turpentine* is steady at the unchanged rate of 21s. 3d. on the spot for *American* spirit. *Petroleum* is still very dull. *Russian* oil being quoted at 5¾d. to 5¼d., *American* at 5½d. to 5¼d., and *water-white* at 6½d. per gallon on the spot.

ORRIS ROOT—Was in fair supply. To-day a large amount of good *Florentine* root was offered, but all was bought in at 70s. to 72s. per cwt. Lean palish *Mogador* root was

bought in at 53s. to 54s. per cwt., and dark lean *East Indian* at 20s. per cwt.

QUININE SULPHATE—The market is quiet but there has been rather more inquiry for *B. and S.* and *Brunswick*, with reported sales at 1s. 0½d., but the amount of business done at this rate has been limited, there being few sellers under 1s. 0¼d.

RHUBARB.—In auction only 88 cases were offered, of which 13 sold. *Shensi* trimmings realised 1s. 9d., and medium round, rather dull coat, 1s. 2d. per lb. *Canton*: Bold rough root sold at 10d., mixed ditto at the same figure, and pickings at 9d. per lb.

SAFFRON—Continues to advance in price. Finest *Valencia* saffron is now quoted at 27s. 6d. to 28s. per lb. according to holder, whilst seconds are quoted at 25s. 6d. to 26s.

SARSAPARILLA—In excellent demand to-day, especially for *Jamaican* root, which sold at an advance of 1d. per lb., 1s. 6d. being paid for genuine sound grey root, and 1s. 4d. to 1s. 5d. for damaged quality. For 13 bales of *Lima-Jamaican* root, 1s. to 1s. 1d. was paid, and 1s. 1d. for *Honduras*.

SEEDS (VARIOUS).—*Fennel*: Seventy-six bags of *Bombay* seed were bought at 17s. 6d. per cwt. *Musk*: Five barrels from New York were bought in at 1s. 3d. *Anise*: 107 bags of *Russian* seed sold at 18s. to 18s. 3d. per cwt. *Coriander*: 100 bags of seed fine *Fiume* were bought in at 18s. per cwt. *Star Aniseed*: One case sold without reserve at 53s. per cwt. *Cumin*: Maltese seed was bought in at 35s. per cwt.

SENNA.—Good quality *Tinnevelly* leaves are very scarce, and command good prices whenever obtainable. To-day the small catalogue offered sold at full to slightly advanced rates. No *Alexandrian* leaves were offered.

SHELLAC.—The market is quiet. Privately *Second Orange* has sold at a slight advance on the last auction rates, but the arrival market is dull, there being second-hand sellers of *TN Orange*, April to June shipment, at 90s. *c.i.f.* At the weekly sales *TN Orange* sold at barely steady rates, whilst *Button* was quiet. The prices paid were as follows:—*Second Orange*, good bright curly '95 ditto, matted and cakey, 91s. to 92s.; fair bright ditto, 90s. to 91s.; mixed livery ditto, 88s. to 89s. *Garnet* was all bought in, *OCC* at 87s., and *MGG* at 86s. *Button* sold at 89s. for fair blocky firsts, and 83s. for good seconds.

SPICES (VARIOUS).—*Cloves*: *Zanzibar* was bought in at 2½d. to 2¼d. in auction. The market is very flat. *Cinnamon*: For 48 bales of broken *Tellicherry* 9d. to 9¼d. per lb. was paid. *Chillies*: *Zanzibar* were bought in at 37s. 6d. to 40s., and medium to good *Sierra Leone* at 36s. to 42s. per cwt. *Capsicums*: *East Indian* (1895 import) sold without reserve at 13s. 6d. for medium long yellow off stalk, 11s. to 15s. for ordinary to medium large red, and 8s. for lean yellow. *Pimento*: Still dull of sale, but steady, 2½d. to 2¼d. being paid in auction for medium to fair.

TURMERIC.—The market is quiet. In auction *Madras* sold at improved rates, 9s. per cwt. being paid for dull finger and 7s. for *Chinese* mixed finger and bulb.

WAX (BEES).—Again in good demand, and selling at advanced rates for *Jamaican* wax, £8 12s. 6d. to £8 15s. being paid for fine yellow quality. In addition, *Zanzibar* brought £6 5s., *West Indian* £6 15s., *Zanzibar* £6 7s. 6d., and *Australian* £7 7s. 6d.

LIVERPOOL DRUG AND CHEMICAL MARKET, May 14.—Ginger: *Sierra Leone*, 19s. 6d. Castor oil: *Calcutta*, good seconds 2½d. *ex quay*; 2¾d. to 2½d. *ex store*; *Madras* and *French*, first pressure, 2¼d. to 2½d. Olive oil: *Seville*, £29 10s.; *Candia*, £31 10s.; finest oils, £35. Linseed oil: 19s. 6d. to 20s. 6d. in export casks. Cottonseed oil: 16s. 6d. to 17s. 3d. in export barrels. Spirit of turpentine: Scarce, 22s. 6d. Petroleum: *Russian* at 5¼d.; *American* at 6¼d. to 7¼d. Sal ammoniac: 39s.; seconds, 37s. Sulphate of ammonia: £8 2s. 6d. Bleaching powder: £7 to £7 5s. Copperas: *Lancashire*, 38s.; *Welsh*, 36s. Sulphate of copper: £19, prompt delivery. Cream of tartar: Finest white firmly held at 100s. Potashes: 21s. 3d. Pearl-ash: 35s. Prussiate of potash: 7¼d. Bichromate of potash: 4½d. Chlorate of potash: 4¼d. Bicarbonate of soda: £7. Soda crystals: £2 10s. Caustic soda: 70 per cent., £7 12s. 6d. to £7 15s.; 60 per cent., £6 12s. 6d. to £6 15s. Nitrate of soda: 8s. to 8s. 3d. Borax: Lump, £19; powder, £20.

MANCHESTER CHEMICALS AND DRY-SALTERIES, May 14.—There is no change to report in heavy chemicals, and drysalteries are still quiet. Tartaric and citric acids, no doubt influenced by the sudden spell of fine weather, tend upwards, and oils generally are firm. Gum arabic is slow, but of gum tragacanth small stocks are reported. Best re-distilled glycerin is quoted 65s. on rails, Manchester. Lime salts are easier, but unchanged in price; 58 per cent. ammonia alkali, £3 7s. 6d. per ton in bags on rails at works; £3 17s. 6d. Dublin, and £3 12s. 6d. Belfast. Soda crystals, 37s. 6d. per ton in bags on rails; £2 7s. 6d. Dublin, and £2 2s. 6d. Belfast; barrels, 7s. extra. Bicarbonate of soda, £6 15s. per ton, 1-cwt. kegs, *f.o.b.* Liverpool. Industrial bicarbonate (for mineral waters), £4 5s. per ton in bags, and £5 10s. in 1-cwt. kegs on rails at works, Northwich; 2s. 6d. extra *f.o.b.* Liverpool. Bleaching powder, £6 17s. 6d. per ton on rails, softwood casks; £7 2s. 6d. Belfast, and £7 7s. 6d. Dublin; 70 per cent. white caustic soda, £7 7s. 6d., *f.o.b.*, Liverpool; £7 10s. Belfast; and £7 15s. Dublin. White powdered arsenic, scarce and dearer, at £24 17s. 6d. to £25, here. Chlorate of soda tends downwards. Yellow prussiate: *Lancashire*, 7¼d.; *Foreign*, 7d., all U. K. delivery. Chlorate of potash, 4¼d. Alum, £5 2s. 6d. per ton, in tierces, on rails, Manchester. Tartaric acid, 1s. 2d. per lb., *foreign*, and 1s. 3d., *English*. Citric, 1s. 3d. Oxalic acid, 3¾d. here, and 4d. Dublin or Belfast. Sulphate of copper, £18 to £18 10s. per ton best brands, delivered Manchester. Cream of tartar, 103s. to 104s. per cwt., best white powdered, Manchester. Carbolic acid unchanged, but crystals a trifle easier.

NEWCASTLE CHEMICAL MARKET, May 14. Bleaching powder: £7 5s. and up according to markets and packages. Soda crystals in 2 cwt. bags, 38s. to 40s.; in casks, 42s. 6d. to 45s. according to markets. Caustic soda: 70 per cent., £7 10s. to £7 15s.; 76 to 77 per cent., £9 to £9 5s. Sulphur: £3 17s. 6d. to £4. Soda ash: 48 per cent., £4; 50 per cent., £4 5s.; 52 per cent., £4 10s. Alkali: 48 per cent., £4 10s.; 50 per cent., £4 15s. Pitch, 34s. to 35s. South Durham salt 9s. per ton *f.o.b.* Tees.

MISCELLANEOUS NEWS.

The Pharmaceutical Journal will have a large extra circulation next week, copies being sent to all Chemists and Druggists in business throughout Great Britain and Ireland. The total number issued will exceed 11,000 copies.

INDECENT ADVERTISEMENTS—At a recent meeting of the Society of Berlin Pharmacists, Herr Froelich, President of the Apotheker-Verein, called attention to the objectionable procedure of manufacturers of articles which have hitherto only been advertised in obscure corners, but are now commonly announced in the daily papers, as being sold by all pharmacists, druggists, and the better class of barbers. He thought it was the duty of that Society, as representing pharmacists, to protest against the shameless proceeding, and he was supported in that opinion by the President of the Society, Dr. Batcke, whilst the meeting was entirely in accord with both speakers.

FIRE AT A WHOLESALE DRUGGIST'S.—A fire broke out at about 3 o'clock on Tuesday morning, the 12th instant, in the packing-case store of Messrs. Hugh Moore and Co., Linen Hall, Dublin. Fortunately the fire brigade were quickly on the scene, and prevented the flames extending to the other premises.

PLYMOUTH CHEMISTS' OUTING—A meeting of Plymouth, Devonport, Stonehouse and District Chemists' Association was presided over by Mr. J. G. Netting (vice-president) last Tuesday evening. The meeting was called to make the final arrangements for the summer outing which will take place on June 10. The members, together with their friends—including ladies—will journey to St. German's, Cornwall, by train, and will be met there by wagonettes which will convey them to St. German's Hut and eventually to Dowerry; a high tea at the latter place to be followed by a musical programme. Mr. A. D. Breeze has been elected hon. sec. and treasurer of the outing committee, and the tickets are 5s. inclusive.

REMARKABLE DISCLOSURES ABOUT A DRUG BUSINESS.—At the Hanley County Court, on May 12, Judge Jordan—in giving judgment in an action brought by Hugh William Hulme, of Market Street, Fenton, to recover from William Edwin Ward, of High Street, Fenton, the sum of £25, which formed the balance of the purchase money for the sale of a drug business which had been purchased by the defendant for the plaintiff—said the evidence disclosed a very extraordinary state of things. It was alleged by the defendant that the plaintiff had carried on a criminal business by making up medicines for an improper purpose, and he had produced the prescriptions which Hulme left behind him, and were in Hulme's own handwriting. This was a very serious thing for Hulme, for although he denied having prescribed the medicine, his apprentice swore that he made it up weekly. Doubtless, if Hulme had carried on a business of that kind, it would be a very profitable

one, and his statement of the takings might be true. Most unpleasant facts had transpired, for if the evidence for the defence was true, and he was inclined to think it was, plaintiff had been carrying on a nefarious business. He gave judgment for the plaintiff for the amount due, and the same sum for the defendant for fraudulent misrepresentation, but without costs to either side.

THE "PRESERVED PEAS" CASE.—At the London County Sessions, on April 28, before Mr. G. Somes, sitting at Newington, an appeal was heard against a conviction by Mr. Fenwick, at Southwark Police Court, in the "coppered peas" case, which occupied the attention of the magistrates for several days, and resulted in a fine of 40s. and costs (see *Pharm. Journ.*, Jan. 18 and 25 and Feb. 1 and 8).—Mr. Bonsey and Mr. Elliott appeared for the appellant, a provision dealer in the borough, and Mr. Frank Dodd and Mr. Clarke Hall were for the respondent, a sanitary inspector in the service of the St. Saviour's District Board of Works.—Evidence having been given by the respondent and his daughter as to the purchase of the peas, Mr. Bodmer, public analyst, spoke to the result of his analysis, and the testimony of medical and chemical experts was then proceeded with.—Dr. Stevenson, analyst to the Home Office, gave it as his opinion that peas containing such a proportion of copper were injurious to health. There was no case of poisoning from them recorded in the books, but Dr. Dupré had informed him of one which occurred at Edmonton. Drs. Leonard Wilde, F. J. Waldo, B. H. Paul, and F. J. Smith also gave evidence, and were followed by Mr. Richard Bannister, of Somerset House, and Drs. Hine, Biss, and Burney Yeo. Judgment was deferred until Wednesday last, when Mr. Somes said the evidence as to whether or not the quantity of copper present—three grains per pound—was innocuous was very conflicting. After the most careful consideration, he was forced to the conclusion that where the opinions of eminent authorities were still in a state of uncertainty, it would be mischievous to countenance an addition of this foreign substance to articles of food in a larger proportion than that which they suggested. The quantity in this case was considerably in excess of that quantity. He was, therefore, of opinion that the conviction should be upheld, and the appeal was dismissed with costs.

A LECTURER IN CHEMISTRY WANTED.—In connection with the County Borough of Salford Municipal Technical Institute, the appointment is about to be made of a Chief Lecturer in Chemistry, at a salary of £200 per annum. Forms of application and particulars of the duties may be obtained upon application to the Secretary, at the Institute, Peel Park, Salford.

BOTANICAL RAMBLES IN DEVONSHIRE.—The first of the series of botanical rambles in connection with the junior section of Plymouth, Devonport, Stonehouse and District Chemists' Association took place on the 6th inst., when there was a capital attendance. Conducted by Mr. Reade, the members spent a pleasant and instructive afternoon.

GLASGOW HUMOUR.—An itinerant vendor of pills named William Wallace was brought up at the Glasgow Central Police Court recently, charged with causing an obstruction at the entrance to the Green, where he was surrounded by a crowd. Police Judge Morrin, addressing the accused, said:—"You are taking away the legitimate trade from the apothecaries, and you do not pay a farthing of rent or taxes. You cure the people, and then they do not require to consult a doctor." Wallace was dismissed from the Bar on promising not to stand selling at the same place again.

SALE OF POISONED GRAIN.—At Halesworth Petty Sessions on May 7, Samuel Bullen pleaded guilty to selling to Wm. Balls, of Cookley, farmer, grain steeped in poison, at Halesworth, and several previous convictions having been notified to the Bench, some of them of recent date, the Chairman characterised the case as one of the worst that had come before them. Defendant appeared to have bid the law defiance, and the magistrate had decided to inflict the full penalty of £10, and costs £1 17s. 4d., in default of distress, six weeks' hard labour.

THE NEW PHOTOGRAPHY.—At the spring meeting of the Fifeshire Medical Association, held at St. Andrews on May 8, Professor Butler gave a demonstration in the natural philosophy classroom of the United College, illustrative of the practical application of the new photography as applied to surgery and other interesting subjects. A variety of plates were shown on the screen, the negatives having been taken by Professor Butler and his assistants. Afterwards those present were invited to inspect the Crookes' tube and phosphorescent screen in operation. A lady present, who had been troubled with a portion of a needle in her thumb for the last eight years, was operated upon. Seating herself on the bench, the rays were turned on, and in a very few minutes Mr. Robson, assistant to the professor, returned to the classroom with a well-developed negative, showing very plainly the shadow of the metallic object. Professor Butler explained the Röntgen rays, and pointed out that the University is in possession of one of the largest coils.

CASE UNDER THE IRISH PHARMACY ACT. At the Newry Quarter Sessions, Mr. J. Walker Craig, Q.C., delivered judgment in the appeal brought by David Wilson, a Rathfriland trader, against the decision of the lower court, imposing on him fines amounting to £10 for alleged breaches of the Pharmacy Act, consisting of the sale of cantharides contained in a bottle of Leeming's essence, and for retailing and dispensing poison. The case was fully gone into at the last sessions, and the appellant at the time pleaded ignorance of the knowledge that the sale of Leeming's essence was contrary to law, and submitted that as both offences related to but one transaction the justice of the case might be met by reversing one conviction and affirming the other. His Honour now regretted his inability to do so, and affirmed both convictions without costs.

EXCHANGE.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

All free. Piesse's 'Art of Perfumery,' scarce, 7s. 6d.; Woodville's 'Medicinal Plants,' 3 vols., 210 coloured plates (published £4 4s.), 21s.; Cooper's 'Surgical Dictionary' (30s.), 5s.; Daniel Hanbury's 'Pharmacological Papers' (16s.), 7s. 6d.—Davis, "Chestnuts," Gordon Hill, Enfield.

Gray's 'Operative Chemist,' 1831, scarce work, 4s. 6d.; Gray's 'Supplement,' slightly incomplete, also scarce, 5s.; Ure's 'Chemistry,' 1831, 2s. 6d.; Semple's 'Materia Medica,' 3 vols., 6s. All free.—Davies, 33, Eglinton Road, Bow.

A book of 130 Well-tryed Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

 The Journal of May 23 (next week) will have a large extra circulation, and will be sent to all Chemists and Druggists in business throughout Great Britain and Ireland. The total number issued will exceed 11,000 copies.

Spotton's 'Structural Botany,' 'Canadian Plants,' and 'Examination Papers,' 3s. 6d.; John's 'Flowers of the Field,' and 'Forest Trees of Britain,' 4 vols., profusely illustrated. 8s. 6d., cost 16s.; as new. Free.—Davis, "Chestnuts," Gordon Hill, Enfield.

For sale, Southall's Materia Medica Cabinet, cost £2; capital Microscope, as recommended by South Kensington Science and Art Department, cost three guineas, good as new; full particulars on letter of inquiry. Peretra 'Selecta e Præscripta'; Oliver's 'Botany'; Wills' 'Materia Medica.'—Address, Oliver, Chemist, Chard, Som.

Lawrance's Spectacles and Folders, nett cost £14, will accept any reasonable cash offers.—Pritchard, Ebenezer, Carnarvon.

Four gross heavy flat, 10½ oz. capacity, 42s., delivered; leather bottle, three antique jars, lamp and shade, brazier, old mortar, lot 10s.; list of old books.—R. C. Mason, Bromsgrove.

Miscellaneous.

Fifteen quires Oakey's 0 emery cloth, 10s.; 1 each 4s. 6d. Cavanaugh's lotion, lotion powder, tapeworm powder, 1 each 2s. 9d. Abyssinian ointment, worm powder, French drops, Canadian pills, cough pills, 1 ls. 1½d. worm powder, good condition, 10s.—Jones, Swinton, Rotherham.

Forty half-gallons Hayward's Specific, 12 dozen 5s. Cattle Oil, and 3 gross Foot-Rot Paste, some slightly soiled; 25 per cent. off cost price to clear.—Timothy White Company, Chemists, Portsmouth.

Soda Water Appliances.

Soda-Water Machine, Barnett and Foster's, No. 2; list price £45; sell for £15; good condition.—Apply to H., 1, Southwick Street, Hyde Park.

WANTED.

Pair Swan-Neck Carboys, matched, cut spiral stoppers, 4 or 6 galls., perfect. Cash.—Glass, 193, Morningside Road, Edinburgh.

PERSONAL.

MR. F. W. DOWN, chemist and druggist, Northam, having disposed of his business, is taking up his residence at Plymouth.

MR. F. BIRD, chemist, Spon Street, Coventry, together with his son, F. W. Bird, A.P.S., has taken the old-established business of Mr. David Mason, Swanswell Street, Coventry. The business will be carried on in the name of F. Bird and Son, under the management of Mr. F. W. Bird.

DR. H. SALZMANN will in future act as editor of the *Apotheker Zeitung*, Dr. Thoms having resigned the post.

MR. JOHN GERRARD, whose case was reported in last week's Supplement, page xciii., is neither a "chemist and druggist" (as stated) nor a "registered druggist."

MR. ROBERT BARRON, L.P.S.I., having had occasion to cross a well which was boarded over, the boards gave way, and he was precipitated to the bottom, severely injuring one of his knees.

MR. ROBERT JOHN MONTGOMERY, apothecary, Dublin, has been elected examiner of languages to the Royal College of Surgeons in Ireland.

PROFESSOR C. O. CURTMAN, M.D., of the St. Louis College of Pharmacy and Missouri Medical College, and a member of the U.S.P. Revision Committee, died of influenza after a few days' illness, on April 22. His death is a great loss to American pharmacy.

PROFESSOR HENRY SIDGWICK, of Cambridge, is to receive from the University of Buda-Pesth the honorary degree of Doctor of Political Economy; Sir Joseph Lister, the honorary degree of Doctor of Medicine; Professor James Bryce, M.P., Mr. Herbert Spencer, Professor Lord Kelvin, and Professor Max Müller the honorary degree of Doctor of Philosophy.

MR. JAMES STENHOUSE was presented with a gold albert and appendage on April 30. He has been for ten years chemist at New Street Gas Works, and the presentation was made by the officials at the works, the occasion being his leaving to be assistant chemist under Dr. Clark, of Messrs. Duncan, Flockhart, and Company. The presentation was made by Mr. Robert Mitchell, engineer and manager.

A WELL-KNOWN PHARMACEUTICAL COUNCILLOR in Dublin is stated to have realised the sum of £5000 within the last week or so over the sale of pneumatic tyre shares.

LATE ADVERTISEMENTS.

Assistant Wanted.

BRANCH MANAGER. Qualified. In-doors. By 26th. None but good business men need apply to WILLIAMS, Chemist, King's Rd., Canton, Cardiff.

Business Wanted.

WANTED to purchase a thoroughly sound BUSINESS, provincial or suburban, showing a clear income of about £1000. Principals or their Solicitors only treated with. References given and required. Address, PHARMACIST, "Pharm. Journal" Office, 5, Serle St., W.C.

Businesses for Disposal.

SURREY.—First-class Light Retail and Dispensing BUSINESS. Return £1200. Net profit £400. Dispenses about 9000 prescriptions yearly. Elegantly fitted Pharmacy. Central position. Price £950. Fullest investigation allowed. HYDRATE, "Pharm. Journal" Office, 5, Serle St., W.C.

£225, or offer will buy a nice compact ready-money BUSINESS in northern health resort. Doing last year over £400 at exceptional profits. P.O. attached. Residential population. Small house attached. Apply REX, 582, Mile End Rd., London.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

MONDAY, MAY 18.

SOCIETY OF ARTS (CANTOR LECTURES), at 8 p.m.
"Applied Electro-Chemistry" (IV.), by J. Swinburne.

TUESDAY, MAY 19.

PHARMACEUTICAL SOCIETY.
Annual Dinner at the Holborn Restaurant, W.C., at 6.45 p.m.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.
"Ripples in Air and on Water" (III.), by C. Vernon Boys.

SOCIETY OF ARTS (APPLIED ARTS SECTION), at 8 p.m.
"Bronze Casting in Europe," by G. Simonds.

ROYAL PHOTOGRAPHIC SOCIETY, at 8 p.m.
"Photo-Mechanical Methods in Austria," by Ignatz Herbst.

MIDLAND PHARMACEUTICAL ASSOCIATION, at 7.30 p.m.
Annual Meeting and Election of Council, at Mason College.

Annual Supper at the Grand Hotel, Birmingham.
WEDNESDAY, MAY 20.

PHARMACEUTICAL SOCIETY.
Meeting of Council at 11 a.m.
Annual General Meeting at 12 noon.

WESTERN CHEMISTS' ASSOCIATION OF LONDON.
"The Anti-Cutting Movement." Discussion at the Westbourne Restaurant, 1, Craven Road, at 9 p.m.

SOCIETY OF ARTS, at 8 p.m.
"Orthochromatic Photography," by Captain W. de W. Abney.

ROYAL MICROSCOPICAL SOCIETY, at 8 p.m.
Ordinary Meeting.

NOTTINGHAM AND NOTTS CHEMISTS' ASSOCIATION, at 9 p.m.
Annual Meeting at the Masonic Hall, Goldsmith Street, Nottingham.

THURSDAY, MAY 21.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.
"The Art of Working Metals in Japan" (III.), by W. Gowland.

CHEMICAL SOCIETY, at 8 p.m.
"The Diphenylbenzenes I Meta Diphenylbenzene," by F. D. Chattaway, and R. C. T. Evans.

"Derivatives of Camphoric Acid," by Dr. F. S. Kipping.

"Some Substances Exhibiting Rotatory Power, both in the Liquid and Crystalline States," by W. J. Pope.

FRIDAY, MAY 22.

ROYAL INSTITUTION OF GREAT BRITAIN, at 9 p.m.

"Hysteresis," by Professor J. A. Ewing.
SATURDAY, MAY 23.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3 p.m.
"Liszt," by F. Corder.

NEW IDEAS.

INSURANCE AGAINST RISKS CONNECTED WITH DISPENSING.

In connection with the chemists' and druggists' indemnity insurance scheme, formulated by the Northern Accident Insurance Company, Limited, particulars of which were recently published in the *Ph. J. Supplement* (*ante*, p. xciii.), it may be pointed out that in France similar ground is covered by the Société Mutuelle d'Assurance contre les Accidents de Pharmacie (see *Ph. J.*, Jan. 18, p. 58). The members of that Society pay an entrance fee of twenty francs, and an annual subscription of five francs, the charges against the insurance fund thus provided being totalled at the end of the year, and levied in equal shares upon the members. No such scheme appears, however, to have been brought forward in this country up to the present, and the Northern Accident Insurance Company is therefore the pioneer in assuring chemists and druggists against the risk of errors which, though fortunately exceedingly rare, are apt to entail very serious consequences when they do occur. As is well known, too, proprietors of pharmacies are liable for accidents due to mistakes on the part of their assistants, and it seems well worth the while of chemists and druggists in business to consider carefully whether or not the advantages offered by this novel insurance scheme are such as to warrant the outlay on premiums. Full information will be supplied on application to the chief offices of the Company, 19, West Nile Street, Glasgow; the London office, 23, Coleman Street, E.C.; or any of the numerous branch offices.

EDME MALT EXTRACT.

This preparation is one which is not as well known to the retail chemist as some that could be mentioned, but examination of it shows that it possesses claims which entitle it to extended patronage. When digested with a mucilage of arrowroot starch at a temperature of 99° to 100° F., it is capable of converting five times its weight in twelve minutes. The result of this test proves the extract to be of unusually high diastasic value, and it is equally satisfactory in all other respects. The makers are the English Diastasic Malt Extract Company, whose factory and maltings are situated at Mistley, Essex.

THE LANTERN IN EDUCATIONAL WORK.

The great advances made in photography in recent years have enabled lecturers to produce lantern slides readily and cheaply, and thus illustrate their lectures, even when delivered in the daytime, in a way that was quite out of the question a few years ago. Amongst others, Mr. Charles Turner, of the Manchester School of Pharmacy, who is an enthusiastic working botanist, has taken advantage of recent developments to supplement the courses of instruction at that institution by lantern illustrations, and an inspection of some lantern slides and photographs prepared by him for class work in botany is instructive as showing how considerably the ordinary methods of tuition are improved by their use. Some three hundred slides are used to illustrate the

lecture course at this school, and the result of their employment is that difficulty of perception on the part of students becomes less and less of a stumbling block. The testimony thus afforded as to the value of lantern illustrations is fully confirmed by experience at the Pharmaceutical Society's School, where the materia medica lectures are regularly illustrated by means of lantern slides, depicting typical pieces of crude drugs, sections, etc., etc., and there is little doubt that the time is approaching when the lantern will be regarded as an essential auxiliary of most courses of lectures.

SUMMER TOURS IN SCOTLAND.

The approach of the holiday season is indicated by the publication of a new edition of Mr. David MacBrayne's official guide-book and tourist programme of excursions to the Scottish Highlands. This well-written and beautifully illustrated little work is published at the nominal price of sixpence, and gives detailed information—including fares, hotel, steamers, etc.—regarding excursions from Glasgow, Oban, Ardrishaig, Banavie, Ullapool, Gairloch, Portree, and Stornoway, to the most delightful spots in the northern kingdom.

PHARMACEUTICAL SPECIALTIES.

Everything tends at the present day to confirm the view, long acted upon by many, that it is much more profitable in the long run for a chemist and druggist to sell his own specialties than to act as an agent for those of other people. In numerous instances, however, it is scarcely profitable to put up the limited number of articles required in a retail business, and to meet this difficulty Messrs. Lorimer and Co. have produced a series of specialties which for quality and finish are not likely to be easily beaten. Most of these are supplied ready labelled with the retailer's own name and address, so that they are to all intents and purposes his own specialties, and they all yield a satisfactory profit. The medicinal preparations proper include a palatable Coca Wine, made apparently with Tarragona port; a well-made Petroleum Emulsion, containing 50 per cent. of odourless and tasteless mineral oil, with the hypophosphites of lime, soda, and potash; Magnesia Milk or "Saccharised Hydrate of Magnesia"; Granular Effervescent Sulphate of Sodium in small but uniform granules; a pleasant and refreshing Effervescent Saline Aperient; Syrup of Figs, a specially attractive laxative for children; Bland's Pills, both white and pink; and a pleasantly perfumed Arsenical Soap for toilet purposes. Castile Soap is also supplied in conveniently shaped tablets. Liebig's Extract of Meat, manufactured in South America, "Our Own Sauce," Egg Julep for cleansing the hair; the Royal Furniture Polish, and Rennet Tablets are other articles on the list. The last-named act satisfactorily, but they are being improved on and will shortly be produced better as regards shape, appearance, and stability. A specially fine line of preparations is seen in the well-made Fruit Syrups—Black Currant, Red Currant, Lime Fruit, Cherry, Ginger, Lemon, Orange, Strawberry, Raspberry, Raspberry and Red Currant, and Pineapple. These are guaranteed to be

made from the juice of sound, ripe fruit and the finest English refined sugar, and it is difficult to imagine how the bottles containing them could be made more attractive. Finally, there is a fragrant "Old English Lavender Water;" "Lavender" Toilet Ammonia that should prove exhilarating in use; "Dulcipedo," an antiseptic dusting powder for the feet; and delicately flavoured "Floral Lozenges," the shape and size of ordinary compressed tablets.

FLUORESCENT SCREENS.

The prevalence of the "new photography craze," as it has been termed, may best be judged perhaps from the continually increasing number of announcements of special apparatus and appliances for work with the *x*-rays. Later experiments tend to remove the subject from the domain of photography to a considerable extent, since the use of fluorescent screens enables observers to see the images of the objects revealed by the rays, and so save all the trouble of exposing and developing plates. Elaborately mounted screens are expensive luxuries, however, and Messrs. Harrington Brothers, of Cork, the noted manufacturers of fine chemicals, are doing a public service by placing upon the market unmounted screens at a moderate price. They are coated with platino-cyanide and very sensitive. The price of a 6½ in. × 4½ in. screen, unmounted, is 10s. only, and larger sizes can be supplied at proportionate prices, which can be obtained by applying to the London office, Oliver's Yard, 55A, City Road, E.C. The screens are easily fitted up for use, simply requiring to be mounted on a cigar-box or something similar to make them ready for use.

A HANDY INDICATOR.

The new litmus pencil (Tyree's), for which Messrs. T. Christy and Co. are agents, should be found particularly useful by medical practitioners and others who find it desirable to carry indicators for acids and alkalies in their pockets. They are much handier for that purpose than litmus books, the more especially as both blue and red litmus are contained in the same pencil, one at each end. The pencil is sharpened in the ordinary way, the point moistened, and a mark made upon paper, which is then used in the same way as ordinary litmus paper. If care be taken not to make very heavy marks on the paper this will be found to be at least as sensitive as the prepared paper. The maker claims that by the use of the pencil, a much smaller proportion of acid or alkali may be detected, on account of the special purity of the litmus employed, and experiments certainly seem to show that much less of this is required than ordinary litmus to produce an equivalent effect.

A BOOK ABOUT DOCTORS.

How Mr. G. du Maurier, as personified in "A Patient," found out from studying the pages of the *Lancet* and consulting various medical dictionaries, that there was not a disease "in the whole system of Nosology" from which he had not suffered in turn, ought to interest numerous pharmacists who can doubtless "cap" many of the stories he relates. The big-wig of Harley Street, the specialist, "my lady doctor," the country doctor, the homœo-

path, and the dentist are all admirably hit off to the life, and the concluding chapter of anecdotes serves as a piquant sauce to the rest of the book. Messrs. Skeffington and Son, of Piccadilly, W., are to be congratulated, no less than the author, in so speedily getting the book into its tenth edition.

TRADE NOTES AND NEWS.

MESSRS. BURROUGHS, WELLCOME AND Co. have been awarded a Diploma of Honour for their exhibit of Wyeth beef juice, beef and iron wine, Kepler extract of malt, Kepler solution of cod-liver oil in malt extract, tea tabloids, Fairchild peptonising tubes, peptogenic milk powder, panopepton, and pepsencia, by the Executive Council of the Universal Food and Cookery Exhibition, held at the Imperial Institute in May of this year.

THE CHEQUE BANK, LIMITED, 93, Bishopsgate Within, London, E.C., has published a new edition of the Bank's 'Handbook,' which shows that a large number of additional agents have been appointed for the sale and encashment of the Bank's cheques. There are now few places in the civilised world where the Bank is not represented, and the list is being reduced daily. It is needless to point out the increased convenience to travellers and those having home and foreign remittances to make, which the Bank now affords even in the most remote districts.

MESSRS. R. W. GREEFF AND Co, 3, Eastcheap, E.C., have been entrusted with the sale of the following serums prepared at the Bacteriological Institute of the Société Chimique des Usines du Rhone, Lyons: Anti-venomous serum, anti-diphtheritic serum, and vaccine (Jenner), prepared by Dr. Calmette of the Pasteur Institute, Lille, the last named being specially prepared for warm climates. Also anti-streptococcic serum, prepared according to Marmorek's method by Mérieux and Carré, ex-assistants of the Pasteur Institute, Paris.

MESSRS. SINGLETON AND COLE, LTD, of Cannon Street, Birmingham, are issuing a new price list containing more than 200 pages, which is the largest and most comprehensive list ever issued in connection with the tobacco trade. It is profusely illustrated, and will be a most valuable work of reference for all people dealing in tobaccos, cigars, and cigarettes, or tobacco-merchants' fancy goods, the items being so classified that the many thousands listed can be got at without any difficulty. The classification of the various discounts is also arranged on such a simple principle that a school boy can lay his hand upon any quotation or discount at a moment's notice. Chemists throughout the country are notified that they may get this new price list, post free, by applying for it.

MESSRS. A. and M. ZIMMERMANN have removed to more convenient and spacious premises at 9 and 10, St. Mary-at-Hill, Eastcheap, E.C.

MESSRS. FR. BAYER AND Co. submit a sample of the new thyroid preparation—Thyro-iodin—in which the separated active principle of the gland is diluted with milk sugar.

MESSRS. WARRICK BROTHERS are removing from Old Swan Lane to 7, Portpool Lane (off Gray's Inn Road), where they have taken larger premises.

MESSRS. BARCLAY AND SONS, LTD, of 95, Farringdon Street, E.C., send a copy of their 1896 list, which contains particulars of the thousand and one articles that the chemist and druggist of to-day is accustomed to sell, to eke out his none too great profits from legitimate pharmacy. The list of druggists' sundries, photographic requisites, and miscellaneous articles stocked by the firm is conveniently arranged, well illustrated, and deserves a place in every pharmacy.

MESSRS. HARRINGTON BROTHERS, of the Shandon Chemical Works, Cork, furnish copies of their price lists of fine chemicals—inorganic and organic. Much valuable information is contained in these lists, concerning the chemistry and physical properties of uncommon chemicals, as well as those in everyday demand.

MR. J. HICKISSON, of "John Bond's Marking Ink" fame, also manufactures rubber stamps and endorsing inks on a large scale, and a very cursory inspection of his illustrated price list suffices to convince the reader that no one can supply them on better terms. Those who doubt this statement should write to 75, Southgate Road, London, N., for a copy of the list. JOHN BOND'S MARKING INK still keeps to the fore, last year's sales of the ink having constituted a record, and the proprietor continues his endeavours to interest chemists and druggists in the article by offering sample rubber stamps to those who will trouble to send him their trade cards. He is also offering extra good terms to the trade.

THE SHARP BROTHERS' SOAP AND PERFUMERY COMPANY, LIMITED, Red Lion Square, W.C., offers a large variety of toilet soaps, perfumery, and other toilet goods in a twelve-page price list, and many of the items should appeal to chemists who do a "fancy" business.

THE LIEBIG EXTRACT OF MEAT Co., LIMITED, holds its thirty-first annual meeting at the Cannon Street Hotel, E.C., on Thursday, June 4, at 2 p.m. The thirtieth annual report and balance sheet which will then be presented show that the Company's business is in a satisfactory condition. The balance of profit for the year 1895 is shown to be £104,757 12s. 11d., out of which an interim dividend of 5 per cent. was paid on February 15 last. The directors now propose to pay a final dividend of 12½ per cent, making in all 17½ per cent. free of Income Tax for the year. In addition, the sum of £1000 is carried to the Employés' Provident Fund, and £7171 2s. 3d. carried forward to Profit and Loss New Account, as against £5653 16s. 3d. brought forward a year ago.

LEGAL INTELLIGENCE.

ACTION FOR DAMAGES AGAINST A CHEMIST.—On Friday, the 18th inst., His Honour Judge Whitehorse, Q.C., and a jury, tried an action at the Birmingham County Court, in which Samuel Darby, 12, Chestnut Place, Highgate, sued Josiah Blackwell, Bull Street and Moseley Road, chemist, to recover damages for injuries sustained through the alleged unskilful treatment of defendant's assistant in the extraction of a tooth. Mr. Vachell stated that on June 24 last year plaintiff was suffering from toothache, and having seen a notice in defendant's shop window, in Moseley Road, to the effect that teeth were extracted there, he entered the shop and requested Mr. Place, the assistant, to extract a troublesome double tooth from the right lower jaw. The assistant used the forceps, and after a considerable struggle a portion of the tooth came away. Dr. Mackay, his club doctor, came to the conclusion that in addition to half the tooth having been broken off, the jawbone had also been splintered. Plaintiff became an out-patient at the Queen's Hospital, and underwent several operations, necrosis having set up as the result of the injury to the bone. Evidence having been taken, counsel for the defence argued that there was nothing to show that the plaintiff's injury was the result of defendant's assistant's action, and there was absolutely nothing to show incompetence or want of skill on the part of Mr. Place. After a brief consultation the jury found a verdict for defendant.

FINANCIAL DIFFICULTIES OF AN UNREGISTERED DEALER IN DRUGS.—An interpleader of a more than ordinarily interesting character came before His Honour Judge Parry, at the Manchester County Court, on May 14, the debtor being James Street, Hyde Road, Gorton, described as a chemist, but not on the Register of Chemists and Druggists. The debtor, in his transactions with the plaintiff, Mr. William Spibey, drysalter, Ashton-under-Lyne, got into his debt, and Spibey, being anxious to secure himself, issued a writ in the Court of Record for the amount of promissory notes which Street had given him, representing payments for rent and certain debts and costs he was liable for. Judgment was entered in his favour for £22 5s., execution was levied on the goods on the same day, and on March 6 the head bailiff of the Salford Hundred Court of Record got an order to sell the goods by private treaty, and Spibey paid over £25 5s. 7d., the amount at which the goods were valued. A week afterwards the plaintiff entered into a hiring agreement with Street. The hiring agreement was not for the hire purchase of the goods, for there was to be no change of the property at any time, and provision was not made even for purchase. It was submitted, therefore, that the beneficial interest was vested in Spibey. The plaintiff said he had never heard of Sanderson and Co., who now appeared as execution creditors, and did not know there were any creditors at all. Street told him there were none. Those creditors whom he had subsequently discovered he had paid. His Honour said he should give judg-

ment for plaintiff, but he did so only because he believed Mr. Spibey's statement that money was owing to him, and that he was really endeavouring to secure himself for money advanced. Great care would need to be exercised by the High Bailiff of the Salford Hundred Court in granting private sales. It was perfectly obvious that most dishonest transactions might be carried through in that way.

ACCIDENTALLY POISONED BY ESSENCE OF ALMONDS.—At Kendal, on May 19, Miss Edith Thwaites, daughter of a bank manager, poisoned herself by misadventure, having taken essence of almonds by mistake for essence of ginger, which she was using as a remedy for an internal complaint.—The jury at an inquest yesterday returned a verdict of accidentally poisoned.

COPPER IN GREEN PEAS.—At the Carnarvon Borough Police Court, on May 18, the police summoned the Star Supply Company for selling green peas adulterated with $2\frac{1}{2}$ grains to the pound of sulphate of copper. The case had been adjourned pending the decision on appeal of a similar case in England. Mr. Lloyd Carter, for the defence, said that as the appeal had gone against the appellants, he would plead guilty, and in view of the fact that the sale of the peas had been stopped, he asked that only a nominal fine should be imposed. There were two charges, and the Bench inflicted a fine of 5s. and costs in respect of each.

DEATH FROM AN OVERDOSE OF CHLORODYNE.—At Kensington Town Hall, Mr. Luxmore Drew held an inquiry, on Saturday, May 9, touching the death of Eliza Sheehan, aged 31, a housemaid in the service of Lady Leach, the wife of Lieut.-Colonel Sir George Leach, of 6, Wetherby Gardens, South Kensington, who died from an overdose of chlorodyne on Wednesday. Mary Brown, kitchenmaid, said that on Tuesday deceased complained of neuralgia, and said she had heard that chlorodyne would relieve the pain. Witness purchased her a 1s. bottle at a chemist's at Gledhow Terrace, and the same evening she took a dose of thirty drops. She could not be roused next morning, and a doctor was sent for. William John Bickle, a registered chemist, and assistant to Mr. Spiers, at 13, Gledhow Terrace, said he sold the chlorodyne, which did not require an entry of the sale. He could not say how much morphine it contained, but the label said thirty drops was the maximum dose. Dr. Augustus W. Addinsell, of 30, Ashburn Place, said death was due to coma from morphine poisoning. The deceased had taken nearly the bottle full of chlorodyne, which contained about two and a half drachms. He believed it was a case of misadventure, and that the girl took it not knowing how fatal it was. The jury returned a verdict of death from misadventure.

MARRIAGE.

COLLEY—THOMPSON.—May 20, at Marton-in-Cleveland, by the Rev. G. W. Trevor, Herbert William Colley, chemist and optician, Grimsby, to Eliza Margaret, youngest daughter of the late Joseph Thompson, of Marton Farm.

ENGLISH NEWS.

WESTERN CHEMISTS' ASSOCIATION OF LONDON.—At a largely attended meeting of this Association, held on Wednesday evening last, the chair was taken by Mr. J. C. Hyslop, and an animated discussion took place on the anti-cutting movement. No definite result had been arrived at, however, when the meeting terminated.

THE RÖNTGEN RAYS.—At Plymouth a practical illustration of the great value in surgical operations of Professor Röntgen's discovery was recently given at the Technical Schools. Some time ago part of a needle penetrated the hand of a sempstress, preventing her from following her occupation. By aid of a radiogram taken at the Technical Schools the position of the needle was very clearly indicated, and the surgeons at the hospital were enabled to operate with confidence, and eventually succeeded in removing the piece of needle, five-eighths of an inch in length.

INSTITUTE OF CHEMISTRY.—The next examinations for the membership of this Institute will be held on Tuesday, July 21, 1896, and three following days. In consequence of the increase in the number of candidates whose applications for examination have been accepted by the Council, it is probable that more than the two ordinary examinations (January and July) may be held this year. All candidates must produce evidence of having passed a Preliminary examination in subjects of general education, and of having taken a systematic course of at least three years' study in one of the colleges approved by the Council, or of having been engaged for two years in the laboratory of a Fellow of the Institute, and for two other years in one of the approved colleges. The Council desires it to be understood that the right to use the letters A.I.C. and F.I.C. belongs only to persons who have passed through the course of study and the examinations prescribed by the Institute. A prospectus containing full particulars of the regulations for admission to the membership of the Institute may be obtained from Messrs. Blundell, Taylor, and Co., 173, Upper Thames Street, London, E.C., price one shilling.

COMPETITION AT PLYMOUTH.—The Plymouth, Devonport, Stonehouse and District Chemists' Association is offering prizes to the Junior Section for competition in elementary practical chemistry for unqualified members of that section. Mr. Brown, B.Sc., has very kindly consented to conduct the examination, which will take place on Wednesday, June 3, from 7 to 9 p.m., at the Technical Schools, Plymouth. We are asked to state that May 27 is the latest date for receiving competitors' names.

THE USE OF DRUGS AT EXETER HOSPITAL.—At the annual meeting of the Governors of the Devon and Exeter Hospital, held at the Institute on Thursday (May 7), the annual report of the Committee stated that the amount expended under the heading of drugs was £1083 12s., an increase of £68 7s. 8d., as compared with last year's report. The President (Mr. A. M. H.

Walrond) said he regretted this increase, and hoped the medical staff would see their way to reduce the quantity of drugs used. He understood that the "modern" medicines now used cost more than those used formerly.

ROYAL INSTITUTION.—On Tuesday next, May 26, Professor T. G. Bonney, D.Sc., LL.D., F.R.S., will begin a course of two lectures at the Royal Institution, on "the building and sculpture of Western Europe." The Tyn-dall lectures.—On Thursday, May 28, Mr. Robert Munro, M.D., M.A., Secretary of the Society of Antiquaries of Scotland, will deliver the first of two lectures on "Lake dwellings"; and on Saturday, May 30, Dr. E. A. Wallis Budge, Keeper of the Egyptian and Assyrian antiquities, British Museum, will begin a course of two lectures on "The moral and religious literature of ancient Egypt." The Friday evening discourse on May 29 will be delivered by Mr. Augustine Birrell, Q.C., M.P., his subject being "John Wesley: some aspects of the eighteenth century." That on June 5, will be on "Electrical and magnetic research at low temperatures," the lecturer being Professor J. A. Fleming, F.R.S.

SCOTTISH NEWS.

THE EDINBURGH PHARMACY ATHLETIC CLUB'S fifth annual sports come off on Tuesday evening next, and a rare night's sport will be provided for the club members and those patronising the meeting. The proceedings will commence at 6.45 and will continue till 9 o'clock. There will be a 220 yards, 300 yards, and half-mile handicaps, confined to those in the drug trade, as well as a one mile bicycle handicap. The final football tie will also be played and should rouse the enthusiasm of those present. To give a fillip to the evening's proceedings there are also a 120 yards and one mile flat race handicap, and a one mile handicap open to all amateurs. It is satisfactory to learn that all the events have filled well, and it is to be hoped that masters will stretch a point that night and let off their assistants and apprentices a little earlier to assist in the good work done by the athletic club. Mr. D. Mackenzie, of Messrs. T. H. Smith and Co., will preside at the presentation of prizes, and Messrs. D. B. Dott and Geo. Coull will be among the officials.

THE SALE OF INSECT POWDER.—At the Court of Sessions, Edinburgh, last week, Lord Moncreiff closed the record in an action brought by Thomas Keating, manufacturer and vendor of insect powder, against Alexander Malcolm, chemist, 124, Victoria Road, Dundee. Declarator is asked that the defender is not entitled to sell as the pursuer's powder a powder which is not his as his, and interdict is asked of his doing so. There is also a conclusion for £100 as damages. The defender is said to have sold powder which was not the pursuer's in August, September, October, and January last. Defender denies that he has sold powder as the pursuer's. He maintains that the pursuer has no right to sue, and states that insect powders consist of flowers of the *Pyrethrum roseum*, or the

Pyrethrum carneum ground to powder. A large number of insect powders are made from those flowers, and are sold under different names at different prices.

IRISH NEWS.

WAS IT POISON?—A herd of cattle in County Kerry having taken suddenly ill, and eleven having died, malicious poisoning is suspected, and the intestines have been forwarded to Sir Charles Cameron, the Dublin Corporation Chemist, for analysis.

PRUSSIC ACID OR HEART DISEASE?—Mr. Daniel Corcoran, surgical instrument maker, Dublin, was found lying dead in his shop on the 15th inst., with an empty prussic acid bottle beside him, which with other circumstances gave rise to a suspicion of suicide; but the coroner's inquest proved that death was due to cardiac syncope.

AN OVERDOSE OF LAUDANUM caused the death of a man named Thomas Shannon, at Armagh, on the 15th inst. At the inquest held on the following day, evidence was given that the laudanum (about half-ounce) was supplied to deceased's daughter in a tea-cup, and was not labelled.

MEDICAL STUDENTS AND LADY EXAMINERS.—The Dublin medical students object to the appointment of a lady examiner in midwifery to the R.C.S.I. and have held a mass meeting about the matter. They threaten to go elsewhere for their lectures if the appointment is not cancelled.

ALLEGED IMPURE DRUGS.—In his report to the Local Government Board on the quality of the drugs supplied by Messrs. Leslie and Co., Dublin, to the South Dublin Union, Sir Charles Cameron, public analyst, effectually dispels the mistaken notion, which led to the inquiry, that the drugs were of inferior quality.

CONTRACTS FOR THE SUPPLY OF DRUGS, medicines, surgical and medical appliances have been entered into by the following poor-law boards:—Ballinrobe workhouse and five dispensaries, Messrs. P. A. Leslie and Co., chemists, Dublin; Ballyshannon union and five dispensaries, Messrs. J. Clark and Co., Limited, chemists and druggists, Corporation Street, Belfast; Boyle workhouse and five dispensaries, Messrs. P. A. Leslie and Co., Dublin; and Castlerea board of guardians, Mr. W. J. Hartnett, Castlerea. The competition in each case was very keen, as many as seven drug houses competing for one of the vacancies.

A DUBLIN PHARMACIST'S ALLEGED LUNACY.—The Lord Chancellor, Dublin, is holding an inquiry into the alleged lunacy of Mr. Thomas Collins, apothecary and ex-councillor of the Pharmaceutical Society of Ireland, whose transfer of £2096 India stock to the Charitable Bequests Commission in 1895 is disputed by his relatives on the ground that at the time of the transfer he was mentally incapable of transacting business.

MARKET REPORT.

LONDON, MAY 21, 1896.

We have to report a very quiet week, and, indeed, this is only to be expected with the proximity to the holidays. There are few changes to report in the heavy chemicals. Citric and tartaric acids are firm at unchanged rates, cream of tartar is again considerably lower, whilst arsenic is easy. Borax is firm, permanganate of potash very scarce, and glycerine steady. Carbolic acid is easier, quinine is quiet at unchanged rates, and caffeine is steady without any alteration in price. Crude camphor continues to decline in price, although the market at the close is firmer. The refined article is very quiet. In the drug market saffron, orris root, insect flowers, and ipecacuanha are firm, but there is little business doing. Cod-liver oil is neglected, shellac is quiet, whilst the heavy and essential oil markets present no important features. Full details will be found below:—

ACID, CARBOLIC.—The market is again very quiet, and crystals have slightly weakened in price since our last report. The current quotations are now as follows:—Crystals: 34° to 35° C., 6½d.; 39° to 40° C., 7d.; 39° to 40° C. (detached crystals), 8d. per lb. Crude is rather easier at 1s. 11d. per gallon for 60 per cent., with 75 per cent. still quoted at 2s. 4d. per gallon. Liquefied and cresylic are unchanged at 1s. and 11d. per gallon respectively.

ACID, CITRIC.—The market is quiet, but prices are unchanged. English manufacturers quote 1s. 2d. per lb. on the spot, but it would no doubt be possible to buy at 1s. 1¾d. Concentrated juice offers at £13 5s. per pipe, f.o.b., Messina.

ACID, TARTARIC.—The market is firm. Laves' and Kembal's brands of English acid still quote at 1s. 3d. per lb., whilst foreign acid, both in powder and crystals, is quoted at 1s. 2½d. to 1s. 2¾d. per lb., according to brand.

ALUM.—The current quotations are £5 12s. 6d. to £5 15s. per ton for lump, and £6 5s. for powder on the spot.

AMMONIA COMPOUNDS.—Sulphate is steady, grey 24 per cent. being still offered at £8 2s. 6d. per ton on the spot, whilst Hull has sold at £8 2s. 6d. for June delivery, Leith being quoted at £8 spot, Beckton at £8 10s. forward, and Beckton terms at £8 2s. 6d. Sal Ammoniac is unchanged at 39s. for firsts, and 37s. for seconds. Carbonate quotes at 3d. per lb. in casks, 3¾d. in kegs; 3¾d. in jars, with powder ¼d. per lb. extra. Liquor is unchanged at 3d. to 3¾d. per lb., less 5 per cent.

BORAX.—The syndicate rates are now 20s. for crystals, and 21s. for powder, but outside makers offer at 19s. 6d. and 20s. 6d. respectively.

CAFFEINE.—The market is quiet but steady. The manufacturers still quote 18s. per lb. for quantities not less than 1 cwt., with smaller quantities at proportionate rates.

CAMPHOR (CRUDE).—Since our last report 200 cases of China camphor have been sold out of sale at 95s. per cwt., and since then the market has been rather steadier, with

sales of Formosan camphor, May to July shipment, at 95s. to 97s. 6d. c.i.f., mostly the latter figure.

CAMPHOR (REFINED).—The market is very quiet, and quotations are unchanged. The English refiners still offer bells and flowers at 1s. 5d. per lb. in 1-ton lots, with ½-ton ditto at 1s. 5½d., and smaller quantities at 1s. 6d., whilst German refined camphor is offered at ½d. per lb. less all round. Tablets are quoted at proportionate rates.

COAL DISTILLATION PRODUCTS.—Toluol is firmer, being now quoted at 2s. 2d. per gallon for pure. Benzole is also much dearer, 50 per cent. being quoted at 2s. 1d., and 90 per cent. at 2s. 3d. per gallon. Creosote: 1s. 8d. per gallon. Crude naphtha: 30 per cent. at 120° C. is quoted at 11d. per gallon. Solvent Naphtha quotes at 1s. 6d. per gallon for 95 per cent. at 160° C.; 1s. 4d. for 90 per cent. at 160° C.; and 1s. 1d. for 90 per cent. at 190° C. Anthracene: 13 A quotes at 10½d. per lb., and B at 9d. per lb. Pitch: 33s. per ton f.o.b. Tar: 12s. per barrel for refined.

CREAM OF TARTAR.—Shows a marked decline since our last report, and best white French crystals now offer at 95s. per cwt. on the spot, whilst German brands of powder are quoted at 98s.

EUCAINE.—Messrs. A. & M. Zimmermann, 9 and 10, St. Mary-at-Hill, report that they are now in a position to supply this substitute for cocaine promptly, packed in 1 gramme bottles at 9s. per oz.

GALLS.—China are very slow of sale and quoted at 58s. to 59s. per cwt. In Persian galls a small business has been done with greens at 45s. 6d. to 47s. 6d. per cwt. There is no demand for blues or whites.

GINGER.—The market in Cochín root is very quiet, and only a small proportion of the catalogue offered on Wednesday found buyers, prices being about steady. The prices paid were as follows:—Rough cuttings, 22s. to 22s. 6d.; dull to good bright washed rough, 32s. 6d. to 35s.; and bold native cut, 73s. Bengal was bought in at 16s., and limed Japan at 20s. Jamaica root was in good demand, and all sold at full rates, including fine bold bright at 96s. to 111s., ordinary medium to good washed, 73s. 6d. to 83s. 6d.; ordinary small to medium brownish, 63s. 6d. to 72s. 6d., and low root, 60s. to 63s. per cwt.

OIL (COD LIVER).—The market is very quiet, the consuming season being now practically over. There have been offers of fine new season's Norwegian oil at 180s. per barrel, but we have not heard of any business being done. Newfoundland oil is quoted at 6s. per gallon nominally.

OILS (ESSENTIAL).—Star Anise oil is offering at lower rates. Nominally 9s. per lb. is quoted on the spot but there would be no difficulty in buying at 8s. 9d. and perhaps less. Citinella is firmer. Business has been done during the week at 1s. 4½ per lb. c.i.f. terms. The current spot quotation for oil in drums is 1s. 4½d. to 1s. 5d. per lb. Peppermint oils are all dull of sale. H. G. Hotchkiss' brand of American oil being quoted at 9s., whilst Japan oil has sold during the week at 4s. 6d. on the spot for dementholised oil. No business is reported in 40 per cent. oil.

OILS (FIXED) AND SPIRITS.—Castor is firm, best quality Italian oil being still quoted at 31s. to 31s. 6d. per cwt., c.i.f. terms,

Cotton is steady at unchanged rates, refined oil being quoted at £16 to £16 10s. on the spot, according to brand and package. *Cocunut* is quiet, but fairly steady, *Ceylon* being quoted at £22 10s. to £22 15s., and *Cochin* at £26 15s. on the spot. *Linseed* is quiet and rather easier in price, oil in barrels being worth £18 15s. on the spot. *Rape* is firm at unchanged rates, refined oil being still quoted at £23 to £23 10s. on the spot. *Turpentine*: The market is quite demoralised, and business has been done on the spot at rates ranging from 21s. 3d. down to 20s. 3d. for *American* spirit. The market is very weak. *Petroleum* is dull of sale at easier rates. *Russian* oil being quoted 5½d. to 5¾d.; *American* at 5½d. to 5¾d., and *water white*, at 6½d. to 6¾d. per gallon.

OPIUM.—The London market is quiet, but firm. The current quotations for Turkish opium are as follows:—*Soft shipping*, 12s. 6d. to 13s. 6d.; *Smyrna*, 9s. 6d. to 10s. 6d.; *Constantinople*, 9s. 6d. to 10s. 6d.; and *druggists' seconds*, 8s. 6d. to 9s. 6d. per lb. *Persian* is steady at 13s. for fine bricks.

OPIUM ALKALOIDS.—Manufacturers' quotations are firm at 4s. 9d. per oz. for powder, and 4s. 11d. for crystals in quantities of 1000 ozs. Crystals are unchanged at 10s. 6d. per oz. in quantities of 100 ozs.

ORRIS ROOT.—The market is firm. Good pale *Florentine* root is still quoted at 68s. *c.i.f.*, whilst seconds are worth 64s. per cwt., also *c.i.f.* terms.

QUICKSILVER.—The market is quiet. Importers still ask £6 15s., whilst second-hand holders offer at £6 14s. per bottle.

SAFFRON.—The market continues exceedingly firm, and prices are tending higher. Finest *Valencia* saffron is now quoted at 29s. to 30s. 6d. per lb., and second quality at 26s. 6d. to 27s. 6d. per lb.

SHELLAC.—The market is very flat. Little demand was shown at the weekly sales, when the supplies consisted chiefly of good to fine *Orange* and low grades. For good marks there was no demand, but sellers were firm. Medium and common livery were fully 3s. lower, *TN* basis being quotable at 87s. Of *Garnet* no *AC* was offered, whilst *ruby G* was all bought in.

SPICES (VARIOUS).—*Cloves* are slow of sale. In auction medium *Zanzibar* sold at 2d. per lb. *Mace* is flat. In auction 1s. 4d. was paid for ordinary brownish *Penang*, and 1s. 2d. for pickings. Ordinary *West Indian* sold at 1s. 3d. to 1s. 4d., and fine pale at 1s. 11d. per lb. *Cinnamon chips*: Good *Ceylon* sold at 3¾d. to 3¾d. per lb. *Cassia vera*: Coarse quill was bought in at 23s. per cwt. *Cassia lignea*: Broken quality was bought in at 20s. per cwt. *Pimento* is still slow of sale. In auction medium quality sold at 2¾d. and fair ditto at 2½d. per lb. *Chillies*: *Zanzibar* were bought in at 45s., and extra fine bright *Japan* at 55s. to 60s. per cwt. *Arrowroot* is still dull of sale, *St. Vincent* being bought in at 1¾d. per lb.

TRAGACANTH (GUM).—A rather improved demand is reported in this article, and a fair amount of business has been done at fairly steady rates. The current quotations are £14 10s. for firsts, £12 10s. to £13 10s. for seconds, £11 to £11 10s. for thirds, £8 to £10 for fourths, and £6 10s. to £7 10s. for yellow and pink.

MANCHESTER CHEMICALS AND DRY-SALTERIES, May 20.—The shadow of the forthcoming holidays seems to be hanging over Manchester, for Whitsuntide is near, and it is then that Mancunians hold high carnival with zest and relish, unsurpassed by any other community in the country. Already travellers are beginning to complain that in the city orders are not to be had, except in small quantities, and drysalters are even in worse case. The alkali trade is not by any means brisk, but prices are fairly maintained, though in some minor articles the tendency is downwards. Generally speaking, the following quotations are current:—70 per cent. caustic soda, £7 7s. 6d., *f.o.b.*, Liverpool; £7 17s. 6d., Dublin; £7 12s. 6d., Belfast. 58 per cent. ammonia alkali, £3 7s. 6d. on rails in bags; £3 12s. 6d. Belfast; and £3 17s. 6d., Dublin. Bicarbonate of soda, £6 15s. per ton, *f.o.b.*; £7 2s. 6d., Dublin; and £6 17s. 6d., Belfast, 1-cwt. kegs. Industrial bicarbonate, £5 10s. on rails at works, Northwich; £6 2s. 6d., Dublin; £5 15s., Belfast. Sulphate of ammonia is unchanged. Soda crystals are dull. For sulphate of copper quotations vary, best brands being £18 10s. to £19 Liverpool, with 20s. less next month's delivery. Naphthas are dull and offering freely at lower prices. Recovered sulphur firm at £3 12s. 6d. to £3 17s. 6d. Lancashire prussiate (yellow) maintains its price, and local makers firm at 7¼d. to 7½d. Chlorate of soda down to 6d. Chlorate of potash unchanged at 4¼d. Green copperas firm. Manganese scarce. Acids are improving. Tartaric, English, 1s. 3d.; foreign, 1s. 2½d. Citric, 1s. 2½d. Oxalic acid, 3¾d.

NEWCASTLE CHEMICAL REPORT, May 20.—More shipping orders are in circulation for the upper Baltic ports, principally for bleaching powder. Soda crystals are moving a trifle better against home requirements. Some makes of chemicals keep on the scarce side. Prices in general, however, go practically unchanged. Such are:—Bleaching powder: £7 to £7 5s., according to markets and packages. Soda crystals in 2 cwt. bags, 38s. to 40s.; in casks, 42s. 6d. to 45s. according to markets. Caustic soda: 70 per cent., £7 10s. to £7 15s.; 76 to 77 per cent. strength, £9. Sulphur: £3 17s. 6d. to £4. Soda ash: 48 per cent., £4; 50 per cent., £4 5s.; 52 per cent., £4 10s. Alkali: 48 per cent., £4 10s. to £4 15s. Pitch, 34s. to 35s. South Durham salt 9s. per ton *f.o.b.* Tees.

LIVERPOOL MARKET REPORT, May 20.—Canary seed is in fair demand at low prices, 29s. being asked by holders for Turkish per 464 lbs. Ginger: African has been selling briskly; 60 bags best Sierra Leone sold at 19s. 6d. per cwt., and 400 bags medium at 19s.; later Sierra Leone medium sold at 18s. 3d. per cwt. Beeswax: Peruvian has sold at £8 per cwt., and some Chilian privately at late rates. Honey: 100 barrels Peruvian Pile 3 sold at 18s. 6d. per cwt.; rates now ruling are, for Chilian Pile 3, 20s.; Pile 2, 20s. 6d.; Pile 1, 22s. to 23s.; and Pile X, 28s. to 30s. per cwt. Calabar beans: 22 bags went for 1½d. per lb. *ex-store*. Oils: Castor oil continues steady at fully the recent prices, 2nds Calcutta 2¾d. to 2¾d. per lb, French 1st pressure and Madras 2¾d. to 2¾d. per lb. Olive oil is very firm; *Malaga* has advanced to £29 10s. per tun. Linseed oil remains

at 19s. 6d. to 20s. 6d. per cwt. for *Liverpool* pressed. Cotton-seed oil: Steady at 16s. 6d. to 17s. per cwt. *Liverpool* refined, and 17s. *American*. Spirits of turpentine: 22s. 3d. to 22s. 6d. per cwt. Petroleum: Quiet. *Russian*, 5¼d.; *American*, 6¼d. to 7¼d. per gallon. Carbonate of ammonia; 3¾d. to 3¾d. per lb. Sal ammoniac: Firsts, 39s.; seconds, 37s. per cwt. Sulphate of ammonia: £8 5s. per ton. Bleaching powder: Hard, £7 to £7 2s. 6d. per ton *f.o.b.* Copperas: *Lancashire*, 37s.; *Welsh*, 35s. per ton. Sulphate of copper: £18 15s. to £19 per ton; forward, June and July, £17 10s. to £18. Potashes: 21s. 3d. per cwt. Pearl-ash: 35s. Cream of tartar: Remains steady at 100s. per cwt. for best white. Saltpetre: 23s. 6d. per cwt. Prussiate of potash: 7¼d. per lb. Chlorate of Potash: 4¼d. per lb. Bichlorate of potash: 4¼d. per lb. Bicarbonate of soda: £6 15s. per ton. Soda crystals: £2 7s. 6d. to £2 10s. per ton. Caustic soda: 70 per cent., £7 3s. 9d. per ton; 60 per cent., £6 8s. 9d. Hyposulphite of soda: £5 12s. 6d. to £6 2s. 6d. per ton.

PHARMACISTS AS PHOTOGRAPHERS

MARTIN AND CO.'S GENERAL PHOTOGRAPHIC WORKS.

The widespread taste for photographic manipulations and the "dreadful facility" of the camera has obliged many pharmacists to add to their more legitimate business that of dealers in photographic chemicals and apparatus, and this has led to their receiving from amateurs negatives for printing and enlarging. These are usually passed on to those who specially undertake such work for the convenience of dealers. One such firm is that of J. Martin and Co., of New Southgate, London, N., and an extreme case of the pharmaceutical photographer is that of Mr. James Martin, the head of the firm, who, was at one time engaged in the Pharmaceutical Society's laboratory and acted as assistant to the late Professor Redwood. Later, he worked for a firm of manufacturing chemists, then for several leading firms of photographers, and finally founded the business which he now carries on in conjunction with his son and a large staff. The specialties of the firm are enlarging and finishing, and the well-fitted works afford accommodation for exposing nearly a thousand printing frames at one time. There are large and well-lighted mounting and drying rooms, with broad benches and the latest machines for rolling and burnishing. Fresh sensitised paper is prepared every day, plate-glass dishes being used for this purpose, whilst the constant increase of work has necessitated considerable extension in the enlarging department. Everything is done under the personal superintendence of Mr. James Martin, who recalls the days when pyrogallic acid was sold at ten shillings per drachm, and hyposulphite at three shillings per pound. He has travelled round the world and spent some years in Australia, and has been a constant attendant at photographic meetings and contributor to photographic journals. A recent specialty of this firm is that of copying, by a special process, letters and manuscripts in facsimile for legal and other purposes.

EXCHANGE.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

Offers requested for 'Pharmaceutical Journal,' complete set from 1841, mostly well bound, or for single volumes or odd numbers; 19x., 1s.; 2x., 7s. 6d., "Ilford P.O.P.," not quite perfect condition.—Griffin, Chemist, Kidderminster.

Each work free for 15s., about half price:—Barnes great illustrated work on 'Obstetric Medicine and Surgery,' 2 thick volumes, 1885; Boag's 'Imperial Illustrated Lexicon,' 2 large vols., well bound.—Davis, "Ches'nuts," Gordon Hill, Enfield.

2s. 6d. each, free: Pratt's 'Poisonous Plants,' 44 cold. plates; Druitt's 'Surgeons' Vade Mecum'; Hooper's 'Anatomists' Vade Mecum'; 'Nomenclature Diseases,' last; South's 'Emergency Surgery'; Daventer's 'Midwifery,' plates.—Davis, "Ches'nuts," Gordon Hill, Enfield.

Wills' 'Special Chemical Lectures,' as used only in College, printed, Wills' 'Prescriptia,' Olivers' 'Botany,' Edmunds' 'Botany.' A bargain, 4s.—'Retlas,' 12, Plainmoor Terrace, St. Mary Church, Torquay.

Thirty-six vols. 'Pharmaceutical Journal,' bound, good condition, 1842 up.; twenty-four unbound, clean, suitable present for a library; 'Pharmaceutical Times,' 2 vols., 1847; offered cheap.—Miller, 46, Clarendon Square, London, N.W.

A book of 180 Well-tryed Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

Soda Water Appliances.

Soda-Water Machine, Barnett and Foster's, No. 2; list price £45; sell for £15; good condition.—Apply to H., 1, Southwick Street, Hyde Park.

Miscellaneous.

Lens, Clement and Gilmour's ½-plate snap-shot, new, cost 50s. What cash offers?—Taylor, 39, George Street, Perth.

Bargain in Spectacles and Folders.—Lot of 1s., 1s. 6d., 2s., and 2s. 6d. ones at quarter retail price, or offers in exchange. Also 35s. counter spectacle case at half price.—Griffin, Chemist, Kidderminster.

Bargains.—60 1s. Hayward's Sheep Dip for 30s.; 6 2s. Bigg's Sheep Dip, 6s.; 60, 1s. Mellin's Emulsion, 40s.; 36 2s. 6d. for 48s., or offers in exchange.—Griffin, Chemist, Kidderminster.

About 2 cwt. finest English honey; best procurable for pharmaceutical purpose. Small quantities, 6d. per pound. Reasonable offer accepted for the whole, packed free.—Address, Davies, Park Farm, Wallingford.

Violas! Violas!! Violas!!! should be grown by all who have a garden, bloom freely all the summer; 12 beautiful varieties, suitable for exhibition, free for 2s. 6d.—Henry Pattison, Chemist, Shrewsbury.

Pansies! Pansies!! Pansies!!! 12 of the best exhibition varieties, good roots, correctly named, sent post free for 3s. 6d.—Henry Pattison, Chemist, Shrewsbury.

Maw's Pillar Dispensing Scales, Figure 9, 12s.; Waterlow's Lithographic Press, 35s.; 11 Victoria Pills, 6s.; 10 2s. 6d. Faraday's Hair Dye, 17s.; 4s. 6d. Jayne's Expectorant Dusat Syrup, 1s. 9d.—Cooke, Chymist, Surbiton.

Garden Tent (circular), in splendid condition, originally cost £5, complete with all accessories, 25s.—Aukland, Homeopathic Chemist, 46, Camden Road, London, N.W.

Job Lines.—Bargains. Lovely, perfect, velvety, dispensing corks, 6 gross vials for 5s.; 4 gross 6 and 8-oz. ditto, 5s. Samples free; nothing better cut. Fancy coloured Japanese Baskets, for bazaars, etc., 5 gross package (4 gross large, 1 gross small) for 6s. 6d. Six black, polished, seamless Enemas, complete in box, 12. 6d.; 3 for 6s. 6d. All carriage paid.—Tom Brooks, Chemist, Hornsey, London, N.

To be sold, Drugs, stock and fittings of chemists in one lot, red lamp, carbons, and sundries.—Walter Roberts, 23, Handel Street, Brunswick Square.

Four gross 12-oz. heavy Flats, 10½ oz. capacity, 48s. lot, delivered.—Mason, Chemist, Bromsgrove.

Recipes.—The following Ten Specials are most certain money-makers and custom-retainers:—"The Golden Tonic" (quina, etc.); elegant preparation, keeps indefinitely, pleasant to take, non-constipating, 6-oz. bottles cost 5d. "Vincopona," infallible embrocation for rheumatism, etc.; rubs in nicely, acting instanter, 4-oz. bottles for 1s., stamped, pay half. "Peptonic Elixir," pepsin, bismuth, etc., an ideal remedy for indigestion; pleasant and rapidly efficacious. "Tobranol," antiseptic absorbent powder, for tender feet and unpleasant perspiration; nothing better offered. "Maltussine," a splendid bright, pleasant-tasting cough-mixture, with malt and glycerine; sells on its merits. "Mist. Copaiba Comp.," one bottle often cures; will keep for some time; less nauseous than similar ones; 8-oz. bottle costs 4d. "Aurean Fluid," or golden gloss; an improved golden hair-dye; gives a richer colour than peroxide; less like tow; keeps better. "Parolia," a new hair cream and gloss; contains paraffin and glycerine, but is neither sticky nor greasy; profitable and liked. "Aromatic Cloudy Ammonia," as good as any in the market; decidedly sweeter and more liked than many; cheap. "Hair-curl." This is the best preparation of the sort in the market; it does what it professes. One bottle will prove its worth; quickly and easily made. Recipes, with full instructions, together with a sample label for each. The lot for 15s.; five for 10s.; odd ones 2s. 6d., post free.—Tom Brooks, Chemist, Hornsey, London, N. Lists free.

WANTED.

Bougie mould, 1-drachm pessary mould, a good sifting machine to hold about 4 lbs., recess labelled bottles and extract pots.—F. G. Curris, Pharmaceutical Chemist, Sandgate Road, Folkestone.

PERSONAL.

PROFESSOR BARRETT, of the Royal College of Science, Dublin, has been very busy lately with the x-rays, and gave two demonstrations recently to crowded audiences. He has been able to convince the most sceptical of the great aid the discovery is to surgical diagnosis.

MR. CLEMENTS ROBERT MARKHAM, C.B., President of the Royal Geographical Society, has been promoted to be K.C.B., on the occasion of the Queen's birthday. Mr. Markham is perhaps best known as the introducer of cinchona cultivation into India.

MR. EDWARD CHARLES ANGEL, chemist and druggist, who started last August to fill a four years' engagement with the Colombo Apothecaries Company, died suddenly about three weeks ago at Colombo. Previous to taking the foreign appointment he was engaged at Clapham and Bath. Death was due to the excessive heat. During the time he was at Colombo he had become a great favourite.

MESSRS. BERNARD AND GORDON, the two Dublin pharmacists who are suffering from a broken arm and leg respectively, owing to carriage accidents within the past few days, are reported to be making satisfactory progress.

MR. J. WELLESLEY DOUGLAS, A.P.S., will give a musical and dramatic entertainment, in conjunction with Mr. Leonard Howard, at the Victoria Mansions Restaurant, Westminster, on Thursday next, May 28. The performance is timed to begin at 8.15 p.m., an exceedingly attractive programme is offered, and the doors will be kept closed during the performance of each item.

DR. THOMAS COLLINS, L.A.H., one of the founders of the Pharmaceutical Society of Ireland, has been adjudged by the Lord Chancellor of Dublin to be of unsound mind, memory and understanding, at the time he transferred, twelve months ago, the sum of £2096 5s. 8d. to the Commissioners of Charitable Donations and Bequest. Dr. Collins is an octogenarian.

MR. T. SPRING SMYTH has transferred the business carried on by him at 117, Westbourne Grove to Mr. William Andrew, of 14A, Garway Road, W.

MR. HOSEASON, of Owen's College, Manchester, and Mr. LOTHIAN, of Edinburgh, have taken over the Glasgow School of Pharmacy, successfully conducted for sixteen years past by Dr. David Lees. The transfer will take effect at the commencement of the winter session in October.

MR. EX-PRESIDENT HAYES has left Dublin for St. Petersburg, en route for Moscow, to attend the coronation of the Czar.

DIARY OF THE WEEK.

- MONDAY, MAY 25.
LINNEAN SOCIETY OF LONDON.
Anniversary Meeting.
- TUESDAY, MAY 26.
ROYAL INSTITUTION, at 3 p.m.
"The Building and Sculpture of Western Europe" (Lecture I.), by Professor T. G. Bonney.
- WEDNESDAY, MAY 27.
PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION (JUNIOR SECTION).
Botanical Excursion to Beer Ferrers, Devon.
- THURSDAY, MAY 28.
SCHOOL OF PHARMACY STUDENTS' ASSOCIATION, at 6 p.m.
"Report on Botany," by C. E. Ashby.
"Report on Physics," by T. A. Henry.
CHEMICAL SOCIETY, at 8 p.m.
"Lothar Meyer: Memorial Lecture," by Professor P. Phillips Bedson.
- THE PROPRIETARY ARTICLES' TRADE ASSOCIATION, at 3 p.m.
A Meeting of the Chemists of Cardiff, Newport, and District will be held at Cardiff Mayer's Court, Town Hall.
- FRIDAY, MAY 29.
ROYAL INSTITUTION, at 9 p.m.
"John Wesley: Some Aspects of the Eighteenth Century," by Augustine Birrell.

LATE ADVERTISEMENTS.

Assistants Wanted.

AN experienced ASSISTANT, about 25. In-door. Apply to W. F. PASMORE, 320, Regent St., London, W.

PART-TIME (Out-door). Wanted an ASSISTANT for the West-end. Apply to H. M., "Pharm. Journal" Office, 5, Serle St., W.C.



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Each Tablet containing two grains Citrate of Lithia affords a convenient method for administering a definite quantity of soluble Lithia in a pleasant form, besides the advantage of having fresh water with each dose; presenting a therapeutic value of a higher standard than the various spring waters which often contain but an indefinite quantity of the needed salt. The dose is usually one Tablet in a glass of pure water three times daily.



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Their well-merited success has given rise to numerous imitations, under various titles. Unscrupulous competition renders it necessary for the profession to particularly specify PARVULES, and thus to avoid unworthy efforts at substitution.



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Chemists are invited to send for new and full list of W. R. Warner & Co.'s Soluble Coated Pills and other "Galenicals," revised to current date, with complete formulæ.



Chemists are reminded that the season for effervescent is approaching. Bromo Soda and the various Salines of W. R. Warner & Co. are in frequent request for dispensing.

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Sal Volatile, Spirits Nitre, Tinctures, Liniments, Flavouring Essences, and Perfumes of English Manufacture in Bond.

PRICES CURRENT] ON APPLICATION [SAMPLES

MARKET REPORT.

[Specially compiled for the *Pharmaceutical Journal*.]

[The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.]

LONDON, MAY 28, 1896.

Whitsuntide has had the natural effect upon business this week, and although the drug sales were held, the catalogues were very small. In fine chemicals carbolic acid is unchanged, refined camphor is quiet, and offering in second hand at a further decline upon last week's rates. Citric and tartaric acids are steady, but without change. In the alkaloid market quinine is quiet, but steady opium alkaloids are firm, and caffeine unchanged. In heavy chemicals cream of tartar is rather easier, arsenic offering cheaply, and soda and potash salts unchanged. A good demand has been shown lately for crude glycerin. At the drug sales to-day there were few changes noticeable. Aloes sold at steady rates, and the same applies to ipecacuanha, whilst cardamoms fetched rather higher prices, and senna sold freely. Ergot of rye is steady, and the same may be said of Turkey colocyth. The essential and heavy oil markets show little change. Full details will be found below of the various articles of interest:—

ACACIA (GUM)—There is very little inquiry for any variety. In auction only seventy-three packages were offered, and the majority of this moderate supply was bought in, the only parcel sold being ten serons of mixed hardish *Soudan* sorts, which realised 70s. per cwt. *Trieste* gum was all bought in, medium greyish picked at £7 10s., and pale yellowish grain at £6 10s. per cwt. Privately the market in *Persian* so-called insoluble gum remains unchanged. Fine picked gum is quoted at 24s. to 26s.; good sorts at 18s. to 20s. per cwt.

ACID, CARBOLIC.—The market is firm but quiet, and quotations are unchanged as follows:—*Crystals*: 34° to 35° C., 6½d.; 39° to 40° C., 7d.; 39° to 40° C. (*detached crystals*), 8d. per lb. *Crude* quotes at 2s. for 60 per cent., whilst 75 per cent. is worth 2s. 4½d. per gallon. *Liquefied* and *cresylic* are unchanged at 1s. and 11½d. per gallon respectively.

ACID (TARTARIC).—Their is no change to report in the position of this article, but the market is firm. *English* makers still quote 1s. 3d. per lb. on the spot, whilst *foreign* brands of acid both in *powder* and *crystals* are offered at 1s. 2¼d. to 1s. 2½d. per lb. At to-day's drug sales twelve bags of *Cape Argol* sold at 56s. to 57s. for pinkish, whilst for brown, 48s. was paid.

ALOES.—The moderate supply of 224 packages of all varieties was offered to-day, but the market generally was firm. *Cape* aloes, which was represented by 60 cases, sold to the extent of 40 of this number at 25s. 6d. for good bright hard, 23s. to 24s. for fair bright, and 21s. to 22s. for ordinary part drossy and softish. 37 kegs of very soft *West Indian* aloes in kegs, of sour flavour sold at 57s. 6d. for fair quality, 35s. to 42s. for ordinary ditto, and 9s. for common drossy. *Curacao* aloes in boxes was in fair supply, and sold at 21s. for dark brown, and 19s. down to 17s. for fair capey.

ANNATTO SEEDS—Are very slow of sale. To-day none were sold out of 48 packages, fair bright *Coconada* and *Madras* seed being bought in at 5d. to 5½d. per lb.

AMMONIACUM (GUM)—Three cases of dark mixed almondy lump sold in auction at 29s. per cwt. subject to approval, whilst the same quantity of pale free drop was bought in at 60s.

BENZOIN (GUM)—Was in average supply to-day, about 270 cases being offered. Moderate inquiry only was shown for *Sumatra* gum, but fairly steady rates were paid, good pale almondy centred seconds, with slightly false-packed sides, realising £8, whilst £7 2s. 6d. to £7 5s. was paid for fair seconds with good centres but brown sides. Some very fine *Siam* gum was again shown, similar to that which realised such a high price at the last sale. The first case, which consisted of large pale loose clean almonds, some of which were about 2 inches in length, was bought in at £40, whilst for the second, which was made up of medium pale loose drop, £22 was accepted. In addition, £11 was paid for small palish, partly blocky gum, small bright almonds in brown block being bought in at £13, and siftings at 60s. to 80s. per cwt. *Palembang* gum was all bought in, good almondy seconds in tins at 50s., and ordinary ditto in cases at 26s. to 35s. per cwt.

BIRDLIME—Nine cases of this article offered without reserve sold at a decline of about 1d. on the rates paid at the last auction, 5d. to 5½d. being accepted to-day for firsts and 4d. to 4¼d. for seconds.

BUCHU LEAVES.—The moderate supply offered, amounting to 52 bales, was only in moderate demand. For fair *round* greenish leaves 3d. was paid, which shows a steady market. In addition, 2d. was accepted for ordinary yellow quality.

CALUMBA ROOT—Is dearer. In auction 95 bags of ordinary dark wormy sorts sold at 11s. per cwt. A parcel of small sound washed root was bought in at 18s., whilst 11 bales of fair washed realised 13s. 6d. per cwt.

CAMPHOR (CRUDE).—The market is if anything rather firmer than at the close of last week, but there has been little business doing. The closing quotation for *Formosan* camphor is, sellers at 92s. 6d. and buyers at

92s. 6d. per cwt. *c.i.f.* terms. There is nothing to report in *Japan* camphor.

CAMPHOR (REFINED).—The *English* refiners have made no change in their prices, and still quote *bells* and *flowers* in 1 ton lots at 1s. 5d., with ½ ton ditto at 1s. 5½d., whilst smaller quantities are quoted at 1s. 6d. The majority of their *German* competitors offer at 1d. per lb. less, but the agent of one of them has been offering ½-ton lots of *bells* and *flowers* during the week at 1s. 4d. This is, however, a second-hand parcel, and there has been no further general reduction. At to-day's drug sales three casks of *German* camphor in *bells* sold at 1s. 3¾d. per lb. subject to approval.

CANTHARIDES—This drug is very difficult of sale in auction. To-day six cases of dusty *Chinese* flies were bought in at 1s. 2d. per lb.

CARDAMOMS—Were in average supply to-day to the amount of about 110 packages. The prices paid show a very firm market, *seed* especially being in good demand. The quotations were as follows:—*Ceylon-Mysore*: Fine bold pale plump, 3s. 3d. to 3s. 4d.; good bold pale, 3s.; medium pale, 2s. 6d. to 2s. 9d.; small ditto, 2s. 3d. to 2s. 4d.; small yellowish, 2s. to 2s. 2d., down to 1s. 8d. for brownish shrivelled. *Ceylon-Malabar* sold at 1s. 11d. for medium yellowish shrivelled. *Seed* sold at 2s. 9d. to 3s. 2d. per lb.

CASCARILLA—Was in moderate supply, and no demand was shown, thin brown bark being bought in at 37s. 6d., fair greyish quill at 50s., and siftings at 35s. per cwt.

CASSIA FISTULA.—Thirty bags of ordinary quality lean pods sold in auction to-day at 17s. 6d. per cwt.

CINCHONA.—Several parcels were offered to-day, and a fair proportion was sold. For 2 serons of damaged bark imported from *Payta* of *Lova* character, 1¾d. was paid, whilst 27 out of 101 bales of flat *Calisaya* quills sold at 1s. 4d. to 1s. 6d. per lb.

COCA LEAVES—Good sound green *Truxillo* leaves were bought in to-day at 1s. 6d., and brownish *Ceylon* at 1s. 4d. per lb.

COCCULUS INDICUS.—Five bags of this drug imported from *Cochin* sold in auction at 8s. per cwt.

COLOCYNTH.—*Turkish* is fully steady. To-day 3 barrels of fair sound apple sold at 2s. 3d. to 2s. 5d. per lb. *Spanish* was bought in at 1s. 2d. per lb.

COPAIBA (BALSAM).—Good quality balsam is rather scarce and firmly held. For thin pale *Maranham* 1s. 11d. is asked privately, whilst good *Para* is quoted at 1s. 9d. To-day two cases of bright red balsam were bought in at 1s. 10d. per lb.

CREAM OF TARTAR.—Is very quiet, and if anything easier in price. *French Crystals* still offer at 95s. per cwt., whilst for *German* brands of *powder* 97s. is quoted.

DRAGON'S BLOOD.—In very moderate supply. The only parcel offered to-day was two cases of dull *Singapore* saucers, for which 80s. was paid when offered without reserve.

ERGOT OF RYE.—The market is dull, but quiet. To-day 14 bags of fair *Russian* ergot sold without reserve at 4¾d. per lb., whilst in addition 5¾d. was paid for 17 bags of good quality. No *Spanish* ergot was sold, and good quality of this variety is in very poor supply at present, and firmly held, 9d. per lb. being asked privately.

ELEMI (GUM).—To-day 20 cases out of a

parcel of 87, consisting of fair quality gum, not very clean, from *Singapore* sold without reserve at 20s. per cwt.

GALLS.—The market in *Persian* galls remains quiet, the only kind attracting notice being *greens*, in which a small business has been done at steady rates. The current quotations are: *Blues*, 52s. to 54s.; *sorts*, 48s. to 50s.; *greens*, 44s. to 47s.; and *whites*, 42s. to 45s. per cwt. Several lots of *Turkey* galls were bought in to-day at 50s. to 60s. per cwt.

GAMBOGE.—In very moderate supply to the amount of 11 cases only. Two cases of fair clean *Singapore* pipe sold without reserve at £9 2s. 6d. per cwt., whilst pickings were bought in at £9 5s. per cwt.

GUAIACUM (GUM).—The market is steady. For a case of fine, bright, clean, glassy block 1s. 10d. per lb. was paid in auction.

HONEY.—About 100 packages were shown to-day, and the only lot sold was 3 cases of *Australian*, for which 21s. per cwt. was paid. *Honolulu* honey was bought in at 28s. per cwt.

IPECACUANHA.—In auction thirty-five packages of *Rio* (Brazilian) root were offered, and a few of these sold at fully steady rates, but the majority were bought in. For fair to good sound annulated root, 5s. to 5s. 3d. was paid, and 4s. 10d. for damaged ditto. One bag of *Carthagenia* (Columbian) root out of 10 which were offered sold at 3s. 9d. for sound damaged quality, which shows a steady rate.

LIQUORICE ROOT.—*Russian* root is quoted dearer, and for decorticated 30s. per cwt., *c. i. f.*, is now asked.

KOLA NUTS.—Were rather freely offered to-day, but none were sold. Fair *West Indian* were bought in at 1s., and ordinary ditto at 6d. to 9d. per lb., whilst 33 baskets of fresh kolas were also bought in at 5d. per lb.

MUSK.—A rather improved inquiry was shown in auction to-day, and two tins (pile I) sold at 58s. to 67s. 6d. per oz.

MYRRH (GUM).—Is very difficult of sale except when offered without reserve. In this instance a few barrels of fair pickings sold to-day at 31s., and drossy ditto at 14s. per cwt., whilst for siftings 31s. was paid. Good native picked gum was bought in at £5 10s. per cwt. and chips at 7s.

NUX VOMICA.—For 102 bags of sound quality nuts 7s. per cwt. was paid in auction.

OILS (FIXED) AND SPIRITS.—*Castor*: *Italian* is steady at 31s. per cwt., *c. i. f.*, for fine tasteless. *Calcutta* oil was bought in to-day at 3¼d. per lb. for the best quality. *Cotton* is steady at unchanged rates, *refined* oil being quoted at £16 to £16 10s. on the spot, according to brand and package. *Coco-nut* is quiet, but prices are unaltered, *Ceylon* being worth £22 10s. to £22 15s., and *Cochin* £26 15s. on the spot. *Linseed* is again easier in price, oil in barrels being now worth £18 10s. on the spot. *Rape* is firm at unchanged rates, *refined* oil being quoted at £23 to £23 10s. on the spot. *Turpentine*: The market is quiet at a further decline, *American* spirit being now quoted at 19s. 10½d. on the spot. *Petroleum* is very dull, *Russian* being quoted 5½d. to 5¾d.; *American*, 5½d. to 5¾d.; and *water white* at 6½d. to 6¾d.

OILS (ESSENTIAL).—*Star Anise* oil is still very dull of sale, and offering at 9s. nominally, though less would be accepted.

Cassia: 10 cases testing 63 to 65 per cent. of cinnamic aldehyde sold in auction to-day at 4s. 8d. to 4s. 9d. per lb. *Sassafras* oil (*D. & O.* brand), sold in auction at 1s. 9d. Nine cases of *Eucalyptic* oil sold at 1s. per lb. *Russian aniseed* oil of guaranteed purity offers at 8s. 6d. per lb. *Ligualoes* oil was bought in at 4s. 6d. per lb. *Nutmeg* at 3¼d. per oz., whilst *Cedarwood* sold at 1s. 10d. per lb. subject to approval.

ORRIS ROOT.—The market is firm, but there seems to be very little business doing in this article. At the drug sales a few parcels of lean dark *Aden* sorts were bought in at 20s., whilst *Italian* was bought in at 72s. 6d. to 77s. 6d. per cwt.

QUILLAIA BARK.—Is rather easier, £11 17s. 6d. being accepted to-day for four tons.

RHUBARB.—Very slow of sale. Although some 80 chests were shown to-day, the only lot sold was 3 cases of good medium round *Shensi*, for which 1s. 5d. to 1s. 6d. per lb. was paid.

SAFFRON.—Continues a very firm market, and on the spot holders now quote 30s. to 32s. per lb. for best *Valencian*, 28s. to 29s. for good ditto, and 25s. to 27s. for ordinary ditto.

SARSAPARILLA.—A parcel of grey *Jamaican* root sold to-day at the steady rate of 1s. 4d. to 1s. 5d. per lb. No *Honduras* or *Lima* root was offered.

SEEDS (VARIOUS).—Several parcels of seed were offered and bought in to-day, including *Aniseed* from Marseilles at 25s., *Fennel* from Bombay at 18s., and from Koenigsberg at the same figure, Bombay *Dill* seed at 11s. per cwt., Maltese *Cumin* at 40s., and genuine China *Star Anise* at 92s. 6d. per cwt.

SENNA.—Good quality *Tinevelly* leaves are hardly procurable, and command high prices. In auction to-day the supply was of poor quality, but good prices were paid, including 2d. for yellowish, and 1¼d. to 1¾d. ordinary yellowish and dark. For *Pods*, 3d. was paid.

TAMARINDS.—Are in large supply but difficult of sale. To-day *Montserrat* tamarinds sold at 10s. to 11s. whilst *Antiguan* were bought in at 13s. to 15s. per cwt.

WAX (BEES).—*Jamaican* beeswax was in very moderate supply, only one barrel being offered, and sold at £8 5s. per cwt. In addition, *Madagascar* sold at £6, 10s. to £7, *Mozambique* at £7 7s. 6d., *South American* at £7 7s. 6d., and *Australian* at £7 5s.

MANCHESTER CHEMICALS AND DRY-SALTERIES, May 26.—To-day the market practically closes for the week, and the remaining days of it are given over to holiday making. Since our last report there has been a hardening tendency in some articles, but little change in others. High strength caustic of best makes, 77 per cent. is quoted 5s. per ton, and recovered sulphur is about 2s. 6d. higher and scarce. The unfortunate state of things in the Transvaal causes yellow prussiate to rule low, and a large quantity of foreign has been thrown on this market. Local makers hold firmly, however, and English is a point higher, ranging from 7¼d. to 7½d. Best redistilled glycerin still at 65s. on rails here. White powdered arsenic unchanged and still scarce. Acids on the whole are lower, and best white powdered cream of tartar varies from 98s. to 101s. per cwt.

Benzols are easier, but carbolic acid is improving. Other quotations are:—58 per cent. ammonia alkali, £3 7s. 6d. per ton in bags, on rails; £3 17s. 6d., Dublin, and £3 12s. 6d., Belfast. Soda crystals; 35s. to 37s. 6d. per ton in bags on rails; 45s. to 47s. 6d., Dublin; 40s. to 42s. 6d., Belfast, barrels 5s. extra. Bi-carbonate of soda; £6 10s. to £5 15s., *f. o. b.*, Liverpool, according to package. Industrial bicarbonate (for mineral waters); £4 5s. per ton, bags; £5 10s., 1-cwt. kegs; on rails at works, Northwich, 2s. 6d. extra, *f. o. b.*, Liverpool, and 5s. and 10s. extra Belfast and Dublin. Bleaching powder: £6 15s. to £7, softwood casks on rails. Chlorate of soda: 6d. per lb., U.K. delivery. Chlorate of potash: 4¼d. to 4¾d. Alum: £5 2s. 6d. per ton, lump in tierces; £5 12s. 6d., ground, in bags, on rails here. Glanber salts: 30s. per ton, bags. Epsom salts: 48s. to 55s., according to delivery. Pitch: 30s. per ton, *f. a. s.*, Salford docks; 32s. 6d. East or West coast delivery.

NEWCASTLE CHEMICAL REPORT, May 26.—Not much change to report. Shipping orders are a shade more stirring, mostly for the Baltic. Home business likewise a trifle more active. Prices practically unaltered, and remain as follows:—Bleaching powder, £7 5s. and upwards, according to markets, etc. Soda crystals in casks and bags, 37s. 6d. to 45s. Caustic soda: 70 per cent., £7 10s. to £7 15s.; higher strength, £9 to £9 5s. Sulphur: £3 17s. 6d. to £4. Soda ash: 48 per cent., £4; 50 per cent., £4 5s. to £4 10s. Alkali: 48 to 50 per cent., £4 10s. to £5. Pitch, 35s. South Durham salt 9s. per ton *f. o. b.* Tees.

LIVERPOOL MARKET REPORT, May 27.—Linseed is offering freely on the spot. 1650 bags of River Plate were sold ex quay at 30s. 9d. per 416 lbs. Canary seed is unchanged in value and very slow of sale at 28s. 6d. to 29s. per 464 lbs. Kola nuts are plentiful, 30 bags of dried sold at 3¼d. per lb. Ginger: African (*Sierra Leone*) has been selling well at 18s. 3d. to 19s. per cwt. Olive oil continues steady at recent rates, but business is slow. Castor oil is in moderate demand, good seconds *Ca'cutta* 2¾d. to 2½d. per lb., *Madras* and first pressure French 2¼d. to 2½d. per lb. Linseed oil remains steady at 19s. 6d. to 20s. 6d. per cwt. for Liverpool makes. Cottonseed oil: Inactive Liverpool refined, 16s. 6d. to 17s. 3d. per cwt.; American, 17s. Spirits of turpentine is in fair demand for the small amount offering at 22s. to 22s. 3d. per cwt. Petroleum: Russian, 5¾d.; American, 6¼d. to 7½d. per gallon. Sal ammoniac: 39s. per cwt., first; 37s., second quality. Sulphate of ammonia, £8 2s. 6d. per ton. Bleaching powder: Hard, £7 to £7 5s. per ton. Copperas: Lancashire, 38s. per ton; Welsh, 36s. Sulphate of copper, for immediate delivery, £19 per ton. Cream of tartar is steady, but slow of sale at 100s. per cwt. for finest white. Potashes—Very quiet at 21s. 3d. per cwt. Pearlash: 35s. per cwt. Bichromate of potash: 4¾d. per lb. Prussiate of potash: 7¼d. per lb. Chlorate of potash: 4¾d. per lb. Nitrate of soda unaltered at 8s. to 8s. 3d. per cwt. Bicarbonate of soda: £7 per ton. Soda crystals: £2 10s. per ton. Borax: Lump, 20s.; powder, 21s. per cwt. Canstic soda: 70 per cent., £7 12s. 6d. to £7 15s. per cwt.; 60 per cent., £6 12s. 6d. to £6 15s. per cwt.

MISCELLANEOUS NEWS.

WOMEN IN MEDICINE.—The Pathological Society continues to refuse the privileges of membership when applied for by duly qualified women medical practitioners, several rejections being recorded at the last meeting of the Society. The *Echo*, in reporting the incident, wrongly credits the Pharmaceutical Society with this retrograde step, ignorant apparently of the fact that the Society already numbers several women members in its ranks, and is quite ready to welcome more.

NEWARK TRADESMEN AND THE HALF-HOLIDAY.—An endeavour by Mr. J. H. Smith, Pharmaceutical Chemist, Newark, as Secretary of the Local Thursday Half-Holiday Association, to induce the members of the Newark Tradesmen's Association to close their shops two hours earlier on the occasion of the annual picnic of the first-named Association, has failed owing to lack of support. He regards this as equivalent to spoiling the picnic.

SUSPECTED POISONING OF CATTLE.—The viscera of cattle which died suddenly in County Kerry (as reported last week) having been examined by Sir Charles Cameron, analytical chemist, Dublin, have been found by him to contain arsenic.

GOLF MATCH.—Teams of six aside of assistants from the East and West-end establishments of Duncan, Flockhart and Co. had a friendly game over the Braids on the 16th, resulting in a win for the East-end by 17 holes.

THE APOTHECARIES' HALL OF IRELAND.—The Conductorship (as it is called) of this body has just become vacant, owing to the death of Mr. Harry Clark, M.P.S.I., from pneumonia, after a few days' illness. Mr. Clark, who was only thirty-six years of age, had been, previous to his appointment about two years back, Manager of the Compounding Department of the Junior Army and Navy Stores, Dublin. The office of "Conductor" has to do entirely with the commercial side of the business of "The Hall."

BIRCH AND CO., LIMITED.—This company was registered on May 14 by Waterlow and Sons, Limited, London Wall, E.C., with a capital of £3000 in £1 shares. Objects: To acquire and carry on the business of chemists, druggists, drysalters, etc., carried on as "John Birch and Co.," 37 and 39, Frederick Street, Rotherham, Yorks. Registered without articles of association.

DOCTOR'S FATAL MISTAKE.—An inquest was held at Northampton, on May 22, on the body of Mr. William Kennedy, a surgeon, who died suddenly. The evidence showed that deceased drank about 8 ozs. of colchicum wine in mistake for beer. Verdict: Death from misadventure.

OILMEN AND THE SALE OF POISONS.—On May 16, at the King's Arms Inn, Dr. Vere Benson, deputy coroner, held an inquest on the body of Alfred Samuel Stokes, aged seven years, whose parents live at 4, Ham-

terrace, New Brentford, and who died from the effects of drinking a quantity of vitriol in a bottle on the kitchen table. Thomas Lewington, the lad who went to fetch the vitriol, having given evidence, Mr. Knight, oilman, of 189, High-street, Brentford, who supplied him with the acid, stated that he cautioned him. He gave about half a gill for a penny, and told him to be careful. He put a label on it stating it was poison, but he was not under any compulsion, such as chemists were (*sic*), to put a red label on the bottle. He put the label on as a precautionary measure. Dr. F. N. Williams said that death was due to shock caused by the corrosive action of the acid. It was not necessary for a person obtaining poison at an oilshop to sign his name, or for the oilman to put any label on the bottle.—The jury returned a verdict of "Accidental death," and added a rider that in their opinion the law should be amended to prevent the sale of vitriol or other poisonous substances to all persons, in all kinds of bottles, without precautions.

DRUG TENDERS.—The Lismore Board of Guardians, in accepting a tender for drugs from Messrs. Leslie and Co., Dublin, at £74 13s. 7d., against a similar tender from another contractor at £123 15s., agreed that samples of the accepted medicines be sent to each of the dispensary doctors, who should be instructed to pay particular attention to any drugs marked at unduly low figures, and in the event of their not being satisfied with the quality to have them sent to Sir Charles Cameron for analysis.

OBTAINING MEDICINES BY FALSE PRETENCES.—Thomas Smith, *alias* Aherne, has been sent for trial at Cork on a charge of obtaining goods and money by false pretences from the Cork Chemical and Drug Company, Limited. Mr. Fielding, manager of the company, deposed that the prisoner presented an order for medicine which purported to be signed by Dr. Lawton, of Midleton. On the strength of the "order," witness gave him drugs to the value of 3s. and also 5s. in cash. Dr. Lawton stated that the signature on the order was a clever forgery, and that he did not authorise the prisoner to get the medicine.

NOVEL WINDOW DISPLAYS IN AMERICA.—An American pharmacist describes, with apparent pride, in the *Druggists' Circular*, his latest efforts in the window advertisement line. One of these consisted of a "nursery display, in which a mother with a 'live baby'" was exhibited. The mother busied herself in preparing different kinds of foods, and the baby amused itself playing with rattles, etc. The rest of the window was filled with every conceivable kind of nursery requisite, feeding bottles, etc., etc. "It made a delightful *séance*," the writer adds complacently. The other display was soap. Monster cakes of soap and a large building formed of soap were exhibited, while a coloured boy in the window was occupied in making soap bubbles, which attracted such crowds that boys had to use stilts to look into the window.

EDINBURGH PHARMACY ATHLETIC CLUB.—In connection with the annual sports, a

report of which appears on page 436 of this week's Journal, the judges were Messrs. D. B. Dott and George Coull. The donors of prizes were Messrs. Anderson and Company, Messrs. Duncan, Flockhart, and Company, Messrs. Maw, Son, and Thompson, Messrs. Raimes, Clark, and Company, Messrs. Burroughs, Wellcome, and Company, and Mr. Thomas Welsh.

ALLEGED BREACH OF AGREEMENT.—In the Court of Session, Edinburgh, on May 27, Lord Kincairney ordered issues for jury trial of an action in which Gibson and Co., retail chemists and druggists, 8, Nicolson Street, and 19, South Clerk Street, Edinburgh, sue Anderson and Co., wholesale manufacturing chemists and druggists, Junction Bridge, Leith, for £500 damages for alleged breach of agreement. The pursuers have had a series of transactions with the defenders, and at November 5, 1895, were due to them £43 14s. 6d., for which a debts-recovery summons was served. An agreement was come to under which, as the pursuers aver, the defenders agreed to stop legal proceedings on receiving payment of £25. Notwithstanding this agreement decree in absence passed against the pursuers, and their name appeared in the Black List, to the detriment of their credit. The defenders admit that an agreement was come to that the pursuers would be allowed a reasonable time to pay the balance of their account on payment of £25. Payment of this sum was received on November 8, and the defenders gave instructions that proceedings should be stopped by letter, which was posted on the afternoon of Saturday, November 9. Decree in absence was, however, taken on November 11 for £18 4s. 6d. While denying liability, the defenders express regret if the pursuers were put to any inconvenience, and offer payment of £5 5s. in name of damages, with expenses.

A SHEFFIELD DENTIST AND HIS PATIENT.—At the Sheffield County Court, on Thursday, his Honour Judge Waddy, Q.C., made the final order in a long standing case, in which Mr. Frank Harrison, surgeon dentist of Glossop Road, Sheffield, was the plaintiff. Mrs. K. Kenworthy, the defendant, had declined to pay for a set of teeth supplied, on the ground that they were an imperfect fit. The case for the plaintiff was that the workmanship left nothing to be desired, and that defendant did not wear them long enough to enable them to be adapted to her mouth and the irritation to pass away. By mutual consent the point was referred to an independent dentist. This gentleman's report was entirely in favour of the case set up by his brother professional, and his Honour gave judgment for the plaintiff with costs.

SYNTHESIS OF EUGENOL.—By the action of allyl iodide on veratrol, methyl eugenol is obtained, which is, according to Moureau (*Comptes Rendus*, cxxi., 721) identical with the natural product. This methyl eugenol, when boiled with alcoholic potash, is converted into isomethyl eugenol; with chromic acid, or with potassium permanganate, it yields methyl vanillin and methyl vanillic acid.

EXCHANGE.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

A book of 130 Well-tried Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

Miscellaneous.

Lens, Clement and Gilmour's $\frac{1}{4}$ -plate snap-shot, new, cost 50s. What cash offers?—Taylor, 29, George Street, Perth.

Steam Jacketed Pan for sale, 110 gallons, jacket and pan all copper, can be tried under steam. Price £22.—Moss, 15, Church Street, New Lenton, Nottingham.

To be sold, Drugs, stock and fittings of chemists in one lot, red lamp, carboys, and sundries.—Walter Roberts, 28, Handel Street, Brunswick Square.

Violas! Violas!! Violas!!! should be grown by all who have a garden, bloom freely all the summer; 12 beautiful varieties, suitable for exhibition, free for 2s. 6d.—Henry Pattison, Chemist, Shrewsbury.

Pansies! Pansies!! Pansies!!! 12 of the best exhibition varieties, good roots, correctly named, sent post free for 3s. 6d.—Henry Pattison, Chemist, Shrewsbury.

Two 2-gals. Carboys, pear-shaped, 5s. each; two 4-gals. Carboys, 12s. each; handsome Specie Jar, 24 inches, R. Arms Magnesia (as Maw's), £3; Pill Machine, 18×15 grains, 10s.; Pill Machine, 24×5 grains, £1.—Davies, Chemist, Boreham Road, Warminster.

Balance—Becker's Students' Balance, new, used once, with weights; for volumetric, milk, or water analysis; polished case; carriage paid, £2 10s. or offers; reason for sale going abroad.—Curry, Chemist, Reigate.

Garden Tont (circular), in splendid condition, originally cost £5, complete with all accessories, 23s. 6d., carriage forward.—Aukland, Homeopathic Chemist, 46, Camden Road, London, N.W.

Twenty-gallon Iron Cistern, with strong brass tap, 10s.; Pill Machine, 10s.; Pea Sheller, 3s.; pair of copper-bottom Scales, stamped, 5s.; 5 cwt. Chloride Barium, cheap.—Advertiser, 75, Malinda Street, Snefield.

Soda Water Appliances.

Soda-Water Machine, Barnett and Foster's, No. 2; list price £45; sell for £15; good condition.—Apply to H., 1, Southwick Street, Hyde Park.

WANTED.

'Manual of Botany' (Bentley); 'Short Manual of Analytical Chemistry' (Muter); '1885 B.P. and Additions,' in good condition. State lowest price to—T. M. Kerruish, Fore Street, Hertford.

AMERICAN NOTION ON SERUM TREATMENT.—If, says the *Pacific Record*, by tapping a horse filled with diphtheria bacilli we can obtain a cure for that disease, why should not we tap an old Kentucky colonel and get a toxine that would knock the gold cure out of sight.

AN IRISH LIMITED DRUG COMPANY.—The firm of Messrs. William Corry and Co., chemists, Belfast, has been converted into a limited liability company with a share capital of £30,000 in £10 shares. The promoters are all one family, and the directors consist of Messrs. W. F. C. S., G. S. and E. S. Corry.

RUN ON THE *Ph. J.*—A curious "run" on last week's issue of the *Pharmaceutical Journal* took place a few days ago at the National Library of Ireland, Dublin. Almost simultaneously three readers, strangers to one another, requisitioned the paper, and the coincidence of the demand caused no little amusement.

OPENING OF COUNTY MONAGHAN NEW INFIRMARY.—The town of Monaghan was *en fête* on Friday the 22nd instant, to welcome his Excellency the Lord Lieutenant of Ireland, on the occasion of the opening by him of the new county infirmary, of which institution Mr. M. R. Whitla, Pharmaceutical Councillor, is Apothecary and Registrar, and to whose labours much of the credit of the project is due.

LATE ADVERTISEMENT.

Assistant Wanted.

IMMEDIATE.—Wanted, a trustworthy indoor Minor or Junior ASSISTANT. One who has been accustomed to a good-class Retail and Dispensing business. Must be well recommended. Apply or address, with full particulars, age, height, salary, reference, and photo (to be returned), to PHENASETIN, 317, Fulham Rd., South Kensington, London.

PERSONAL.

MR. STANLEY HARRINGTON, director of the Cork Chemical and Drug Company, Limited, has been re-elected a director of the National Assurance Company of Ireland.

DR. LEYBURNE, L.P.S.I., Dublin, is reported to be now recovered from his recent serious illness.

DR. T. C. S. CORRY, proprietor of the Medical Hall, Cromac Street, Belfast, died on the 21st inst. The deceased, who was over fifty years in business, was the first to export mineral waters from Ulster. He was dispensary officer during the great epidemic of cholera which visited Belfast in 1845, and rendered valuable service at that time. Widespread regret is expressed at Dr. Corry's demise.

MR. MICHAEL HANRAHAN, pharmacist to the Cork Dispensary Committee, has tendered his resignation of that position, in consequence of failing health. The Committee have accepted the resignation with much regret, and have placed on record their appreciation of Mr Hanrahan's services for over the past seven years. Mr. Sweeny, of Messrs. Harrington and Sons, has been employed temporarily, pending the appointment of a successor to Mr. Hanrahan.

MR. T. H. HUSTWICK, pharmaceutical chemist, Wellington, N.Z., has been appointed an inspector and analytical chemist under "the Alcoholic Liquors Sale Control Amendment Act, 1895." This is the first appointment under the new Act. Mr. Hustwick is an old pupil at Bloomsbury Square; he passed the Minor examination in December, 1860, and the Major in March following. He was also an "Honours" man of his year.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

MONDAY, JUNE 1.

SOCIETY OF CHEMICAL INDUSTRY (LONDON SECTION), at 8 p.m.

"Japanese Metallurgy, Part I. Gold and Silver and their Alloys," by W. Gowland.

"The Electro Deposition of Zinc," by Sherard Cowper-Coles.

ROYAL INSTITUTION, at 5 p.m.
General Monthly Meeting.

ROYAL GEOGRAPHICAL SOCIETY, at 8.45 p.m.

"Journey in North-Eastern Sudan," by J. Theodore Bent.

TUESDAY, JUNE 2.

PHARMACEUTICAL SOCIETY.

Benevolent Fund Committee.
Finance Committee.

General Purposes Committee.

ROYAL INSTITUTION, at 3 p.m.

"The Building and Sculpture of Western Europe" (Lecture II.), by Professor T. G. Bonney.

WEDNESDAY, JUNE 3.

PHARMACEUTICAL SOCIETY.

Council Meeting at 11 a.m.

ROYAL INSTITUTION, at 3 p.m.

"The Vault of the Sixtine Chapel" (Lecture III.), by Professor W. B. Richmond.

BRITISH PHARMACEUTICAL CONFERENCE.

Meeting of Executive Committee at 3.15 p.m.

THURSDAY, JUNE 4.

CHEMICAL SOCIETY, at 8 p.m.

"The Magnetic Rotation of Organic Substances, with especial reference to Benzenoid Compounds," by Dr. W. H. Perkin.

PROPRIETARY ARTICLES TRADE ASSOCIATION.

Meeting at the Longlands Hotel, Swansea, at 3 p.m., to discuss the anti-cutting question.

ROYAL INSTITUTION, at 3 p.m.

"Lake Dwellings" (Lecture II.), by Robert Munro.

FRIDAY, JUNE 5.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES ASSOCIATION:—

Botanical Excursion to Blackford Hill. The company will meet at Blackford Hill Station at 8.30 p.m., and be led by Mr. W. B. Cowie.

ROYAL INSTITUTION, at 9 p.m.

"Electric and Magnetic Research at Low Temperatures," by Professor J. A. Fleming.

SATURDAY, JUNE 6.

ROYAL INSTITUTION, at 3 p.m.

"The Moral and Religious Literature of Ancient Egypt" (Lecture II.), by Dr. E. A. Wallis Budge.

MARKET REPORT.

[The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.]

LONDON, JUNE 4, 1896.

Business in the produce markets has been very quiet during the week, and some of the periodical sales have not yet been resumed. There are few changes to report. In the heavy chemicals citric and tartaric acids are quiet, the former being, if anything, rather easier. Cream of tartar is unchanged, but dull of sale, whilst arsenic is quiet. Sal ammoniac is lower, permanganate of potash very firm, and copper sulphate inclined to dearer rates. Carbolic acid is unchanged, quinine is quiet, caffeine steady, and opium alkaloids rather dull of sale. The importers to-day lowered the price of quicksilver 5s. per bottle, which will, no doubt, lead to a decline in mercurials. Crude and refined camphor are unchanged. In the drug market jalap is dearer, whilst saffron and insect powder are both exceedingly firm. Tolu balsam quotes for delivery at an advance. There is nothing doing in cod-liver oil, shellac is unchanged, whilst among essential oils the principal feature is the continued decline in the price of star anise oil. Full details will be found below:—

ACID, CARBOLIC.—The market is quiet and unchanged, the following being the current quotations:—*Crystals*: 34° to 35° C., 6½d.; 39° to 45° C., 7d.; 39° to 48° C. (*detached crystals*), 8d. per lb. *Crude* is rather firmer, 60 per cent. being quoted at 2s., whilst 75 per cent. is worth 2s. 5d. per gallon. *Liquefied* and *creosylic* are firm at 1s. and 1½d. respectively.

ACID CITRIC.—The market is quiet but quotations are unchanged. For *English* acid the manufacturers still quote 1s. 2d., but second-hand holders offer at 1s. 1¾d. *Concentrated juice* offers at £13 5s. *f.o.b.* Messina.

ACID, TARTARIC.—The market is very quiet. *Laves'* and *Kemball's* brands of *English* acid still offer at 1s. 3d. per lb., but *foreign* acid, both in *powder* and *crystals*, can be bought at 1s. 2d. to 1s. 2¼d. per lb. according to brand.

AMMONIA COMPOUNDS.—*Sulphate* is quiet but steady. On the spot *grey* 24 per cent. is quoted at £8 2s. 6d., whilst *Hull* offers at £8 1s. 3d., *Leith* at £8, *Beckton* at £8 10s. forward, and *Beckton* terms at £8 5s. spot. *Sal Ammoniac* is lower and *firsts* are now offered at 37s., and *seconds* at 35s., which shows a decline of 2s. *Carbonate* still quotes at 3d. per lb. in *casks*, 3½d. per lb. in *kegs*, and 3¼d. per lb. in *jars*, with *powder* ¼d. per lb. extra. *Liquor* is unchanged at 3d. to 3¼d. per lb., less 5 per cent.

CACAO BUTTER.—Lower. At the monthly sales 500 cases of *Cadbury's* make, repre-

senting 50 tons, sold at an average of 12½d. against 12½d., which was the price paid in May.

CAFFEINE.—There is no change in the manufacturer's quotations, which are still 18s. per lb. for quantities of not less than 1 cwt., with smaller quantities at proportionate rates.

CAMPHOR (CRUDE).—The market is exceedingly quiet, *China* camphor being quoted nominally at 92s. 6d. *c.i.f.*

CAMPHOR (REFINED).—The market is very quiet, and there has been no further change in price. *English* refiners offer *bells* and *flowers* in 1-ton lots at 1s. 5d., with ½-ton ditto at 1s. 5½d., whilst smaller quantities are quoted at 1s. 6d. The *German* refiners generally quote 1-ton lots of *bells* and *flowers* at 1s. 4½d.

CASCARILLA.—During the week a parcel of fair greyish bark which was bought in at the last drug sales has been sold privately at 45s. per cwt. For *siftings* 35s. is asked.

COAL DISTILLATION PRODUCTS.—*Toluol* is much easier, and is now offered at 1s. 8d. per gallon for *pure*. *Benzole* is firmer, 50 per cent. being now worth 2s. 3d., whilst 75 per cent. is quoted at 2s. 6d. per gallon. *Creosote*: 1½d. per gallon. *Crude naphtha*: 30 per cent. at 120° C. quotes at 10½d. per gallon. *Solvent naphtha*: 95 per cent. at 160° C. quotes at 1s. 6d., 90 per cent. at 160° C., at 1s. 4½d., and 90 per cent. at 190° C., at 1s. 1d. per gallon. *Anthracene*: 13A. quotes at 10½d.; B., at 9d. per lb. *Pitch*: 32s. 6d. per ton, *f.o.b.* *Tar*: *Refined*, 13s. 6d.; *Crude*, 11s. 6d. per gallon.

COCA LEAVES.—Good *Truxillo* leaves quote privately at 1s. 1d. to 1s. 2d., whilst for *Ceylon* 1s. 4d. per lb. is quoted for fair quality.

COPPER SULPHATE.—The market is very firm, and spot quotations now range from £18 to £20, the latter price being paid for the *Anchor* brand.

CREAM OF TARTAR.—The market is quiet, but spot quotations are practically unchanged. Fine white *French crystals* offer at 95s. per cwt., whilst *German* brands of *powder* are quoted at 97s.

COLOCYNTH.—The market is very firm. During the week business has been done privately in good *Turkey* apple at 2s. 6d., whilst fair *Spanish* has sold at 1s. per lb.

GALLS.—The market is extremely dull in spite of new parcels being offered. Quotations for *Bussorah* galls are as follows:—*Blues*, 52s. to 54s. *sorts*, 48s. to 50s.; *greens*, 44s. to 47s.; and *whites*, 42s. to 45s. per cwt.

INSECT FLOWERS.—It is reported that the first arrivals of the new crop of flowers in Trieste are held for very high rates, and it is generally expected that the crop this year will only be about two-thirds of an average one.

IPECACUANHA.—The market is quiet, but steady. For sound *Carthagena* root 4s. per lb. is asked privately.

JALAP.—The market is firmer, and private holders now ask 7d. per lb. for fair *Vera Cruz*, which offered recently at 6½d.

LIQUORICE ROOT.—Very firm. Best *Russian* decorticated root is now held for 30s. per cwt. *c.i.f.* terms. The stocks are said to be getting very low.

OIL (ESSENTIAL).—*Star anise* oil is considerably lower, and now offers

at 8s. to 8s. 3d. per lb. on the spot according to holders. For *Russian anise* one holder asks 8s. 9d. nett, but quotations vary considerably. *Cassia* quotes at 7s. 6d. to 8s. for 75 per cent, whilst lower grades offer at nominal prices. *Citronella* is firmer and is now offering at 1s. 5d. to 1s. 6d. per lb. *c.i.f.* terms. *Bombay Rose* oil is 3¼d. per oz. *Peppermint* oil quotes at 9s. 1½d. to 9s. 3d. for *H.G.H.* brand, whilst *Japan* oil of 40 per cent. menthol strength offers at 6s. 6d., and *dementholised* at 4s. 9d. per lb. nominally. Privately a fair business has been done in *Eucalyptus* (*M.D.S.* brand) at 2s. per lb.

OILS (FIXED) AND SPIRITS.—*Cotton* is quiet, and quoted at unchanged rates, *refined* oil being worth £16 to £16 10s. on the spot, according to brand. *Coco nut* is dull without alteration, *Ceylon* being worth £22 15s., and *Cochin* £26 15s. on the spot. *Linseed* is again rather easier in price, but the market closes firmer. Oil in barrels is now worth £18 7s. 6d. to £18 10s. per barrel on the spot. *Rape* is unchanged at £23 to £23 10s. for *refined* oil. *Turpentine.*—After seeing a much higher figure the market closes easy, still the quoting, 20s. 3d. shows an advance of 4½d. over last week's price. *Petroleum.*—Flat. *Russian* still quotes at 5½d. to 5¾d., *American* at 5½d. to 5¾d., and *water white* at 6½d. to 6¾d. per gallon on the spot.

OPIUM.—The market is very quiet, and quotations remain practically unchanged for *Turkish*. *Persian* is steady, and a fair business has been done in fine *bricks* at 13s., and ordinary *ball* at 11s. per lb.

ORRIS ROOT.—The market is dull, but firm. Good *Florentine* root offers at 65s. and best selected at 68s. per cwt., both *c.i.f.* terms.

QUICKSILVER.—To-day the importers reduced their quotations 5s. per bottle, making the price £6 10s. The change was not unexpected, as second-hand holders had been offering at prices considerably below Rothschild's price for some days. The alteration has not as yet affected *Mercurials*, but no doubt will do so in the course of a day or two.

SAFFRON.—The market is very firm, although quotations are unchanged. For *Valencia* saffron 32s. to 33s. is asked for best quality, whilst 27s. to 28s. is quoted for seconds. The continued drought is causing considerable anxiety in Spain, and much harm has been inflicted on the new crop.

SHELLAC.—The market is quiet and but little business has been done privately in spite of the suspension of the weekly sales. Prices are fairly steady, *Second orange* having sold at 81s. to 88s. for *T.N.*, whilst *A.C. Garnet* is quoted at 84s. For April to June shipment 85s. per cwt. has been refused for *T.N. orange*.

TOLU (BALSAM).—The market is firm. The current quotation for good old-fashioned balsam is now 2s. 3d. per lb., *c.i.f.* terms, whilst business has been done lately in dark glassy stuff at 1s. 11d. to 2s. per lb.

TRAGACANTH (GUM).—Steady. Privately a moderate business has been done, chiefly in thirds and fourths, prices remaining about steady. The current quotations are as follows:—*Firsts*, £14 10s.; *seconds*, £12 10s. to £13 10s.; *thirds*, £11 to £11 10s.; *fourths*, £8 to £10; and other qualities, £6 10s. down to £1 15s. per cwt.

MANCHESTER CHEMICALS AND DRY-SALTERIES, June 3.—There is little change to report, and last week's position is well maintained. This applies especially to heavy chemicals, but drysalteries and drugs are rather dull. Soda crystals, owing to the continued hot weather, are somewhat scarce, but there is no change in price. Yellow prussiate is still firmly held by local makers at 7½d. to 7½d., and it is said that Scotch producers also decline to concede any point in late rates. High strength white caustic soda (77 per cent.) is still quoted £9 7s. 6d. to £9 10s. *f.o.b.*, Liverpool, for certain makes, and 70 per cent., £7 5s. to £7 12s. 6d., with 10s. and 2s. 6d. extra Dublin and Belfast respectively. Bicarbonate of soda is quoted £6 12s. 6d. per ton for 1 cwt. kegs, *f.o.b.* industrial. Bicarbonate: £4 5s. per ton bags, and £5 10s. per ton, cwt. kegs, on rails at works, Northwich, Cheshire. Ammonia alkali: 58 per cent., £3 7s. 6d. per ton, in bags, on rails, Lancashire and Cheshire. Bleaching powder: £6 15s. to £7 per ton, on rails, soft wood casks. Sulphate of copper remains firm at £19 per ton, best brands delivered here. Sulphate of ammonia improving and firm at £8 2s. 6d. all ports. Alum dull but unchanged at £5 per ton, for loose lump, £5 2s. 6d. tierces, and £5 10s. to £5 12s. 6d. ground in bags. Naphthas are lower, and miscible is down to 3s. per gallon, with solvent wood at about the same price. Acids, notwithstanding the hot weather, are dull. Tartaric, English 1s. 3d.; foreign 1s. 2d. to 1s. 2¼d.; citric, 1s. 2d.; oxalic, 3¼d. Carbolic acid is firm. Cream of tartar is the turn dearer since last week, and is to-day quoted 98s. to 102s. per cwt. for best white powdered delivered here. Chlorate of potash easier.

NEWCASTLE CHEMICAL MARKET, June 3.—This market is, on the whole, slower. Shipping and inland orders are being put forward for execution, but animation is lacking. Foreign competition is telling the tale against British production in markets which have for some time now been "special" for this district. Prices are little altered, and are thus:—Bleaching powder: £7 to £7 5s., and up, according to markets. Caustic soda: 70 per cent., £7 5s. to £7 15s. Soda crystals: 37s. 6d. to 45s. Soda ash: 52 per cent. £4 5s. Alkali, 52 per cent., £5. Sulphur: £3 17s. 6d. to £4. Pitch: 35s. South Durham salt; 9s. per ton, *f.o.b.*, Tees.

LIVERPOOL DRUG AND CHEMICAL MARKET, June 3.—Linseed is very quiet and inactive, buyers showing no disposition for spot or forward business. Canary seed has improved in demand, 790 bags of Turkish have been sold at 28s. per 464 lbs. Ginger: A large amount of business has been done in Sierra Leone lately, 1000 bags selling at 19s. per cwt. Ko'a nuts are plentiful, and 235 bags of dried have made 3d. to 3½d. per lb. Beeswax: A small parcel of Sierra Leone sold at £6 5s. per cwt. Chillies: Sierra Leone have sold at 27s. per cwt. for medium quality. Castor oil is somewhat limited in sale, Calcutta good "seconds" is at 2½d. per lb. ex quay, and 2¾d. to 2¾d. ex store, French first pressure and Madras are 2¼d. to 2¾d. per lb. Olive oil continues very firm at recent prices, ranging from £28 to £35 per ton. Linseed oil is

quiet at 19s. 6d. to 20s. 6d. per cwt. Cottonseed oil remains at 16s. 3d. to 17s. per cwt. for Liverpool refined, and American, 16s. 9d. to 17s. Spirits of turpentine is scarce at 22s. 6d. on the spot; to arrive there are sellers at 20s. 9d. per cwt. Petroleum: Russian refined, 5¼d.; American refined, 6¼d. to 7¼d. per gallon. Sal ammoniac: Firsts, 39s.; seconds, 37s. per cwt. Carbonate of ammonia: 3½d. to 3¾d. per lb. Sulphate of ammonia: £8 7s. 6d. per ton. Bleaching powder: £7 to £7 2s. 6d. per ton. Copperas: Lancashire, 37s.; Welsh, 35s. per ton. Sulphate of copper: £19 per ton. Potashes: 21s. per cwt. Pearlashes: 35s. per cwt. Cream of tartar is firm at 100s. per cwt.; the price "to arrive" is hardening. Prussiate of potash: 7¼d. per lb. Chlorate of potash: 4¼d. per lb. Saltpetre: 23s. 6d. per cwt. Caustic soda: 70 per cent., £7 8s. 9d.; 60 per cent., £6 8s. 9d. per ton. Bicarbonate of soda: £6 15s. per ton. Soda crystals: £2 7s. 6d. to £2 10s. per ton. Borax: 20s. per cwt., crystals; powder, 21s. Nitrate of soda: Steady at 8s. to 8s. 3d. per cwt. Phosphorus: 2s. per lb. wedges; 2s. 1d. sticks amorphous, 2s. 8½d. per lb.

THE NURSING EXHIBITION AND CONFERENCE.

An exhibition was opened on Monday last, in St. Martin's Town Hall, and will remain open until the 13th inst. As the title indicates, it is mainly devoted to appliances connected with this profession. Efforts have naturally been made to popularise the proceedings by giving concerts at intervals during the afternoons and evenings, whilst a series of papers and discussions have also figured in the programme, in which several of the leading lights in hospital work have taken part. A visit paid to the exhibition during the week proved that the names of firms most familiar at functions of this nature were well represented, although there was not a great deal to be said in respect to novelty.

MESSRS. MAW, SON AND THOMPSON, 7-12, Aldersgate Street, have an extensive exhibit devoted to every variety of surgical appliance, in regard to which it can only be said that the reputation of the firm is fully sustained. Not only is there a fine display of instruments designed for all forms of disease, but antiseptic dressings, chate'laines, pocket cases, sterilising apparatus, and obstetrical appliances are also duly represented.

BURROUGHS, WELLCOME AND Co., Snow Hill Buildings, E.C., give particular prominence to the Fairchild digestive ferments, a large array of bottles of pepsin, both in powder and tabloids, pepsencia, panopepton, peptogenic milk powder, and zymine being in evidence. In addition, the Wyeth beef-juice in its perfected form, the Kepler diastatic products, hazeline, and every variety of tabloid are shown. In connection with the latter it may be said that the tea tabloids make an attractive display, and the visitors readily availed themselves of the samples which were at their disposal.

The exhibit of REYNOLDS AND BRANSON, 13, Briggate, Leeds, causes one to appreciate the varied outlets which Mr. Fred Reynolds' inventive genius has found. Here are shown all the novelties which have been noticed in the *Pharmaceutical Journal* from

time to time, including the bandage shoot pill-box shoots, enema syringe cupboard, non-runaway bandage, enema clips and racks, and others too numerous to mention. It should, however, be noticed that the enema syringe cupboard, which, when first introduced, was made in cardboard, has been much improved by being now made in tin only, and is provided with a small padlock. It now retails at 1s. 6d. instead of 1s., and the old kind is no longer made. The self-closing dust-proof drawers for storing surgical dressings are now fitted with a glass slab, which slides along the whole length of the tin at the top, serving for placing the dressing upon, and is automatically wiped when drawn out.

SOUTHALL BROTHERS AND BARCLAY, Birmingham, draw attention to their well-known series of sanitary appliances, which are fully represented. The series of sanitary towels has recently been extended and improved in several details. They also show a variety of nursing appliances, including wallets, chate'laines, insufflators, douches, and the "Kenilworth" violet powder, which is one of the firm's specialties.

LIEBIG'S EXTRACT OF MEAT COMPANY, LIMITED, 9, Fenchurch Avenue, have a very handsome case in which are attractively displayed various-sized jars of the extract of meat and peptone of beef (peptarnis). The latter is now being extensively pushed by the makers, who claims that it contains the largest amount of nourishment in the most easily digestible form of any meat preparation offered. Attractive advertising matter is distributed to visitors in the shape of their 'Practical Cookery Book,' menu-cards and book-marks.

PRICE'S PATENT CANDLE COMPANY, Belmont Works, Battersea, S.W., shows a series of night-lights, including the "New Patent," "Palmatine," "Royal Castle," and "Child's," in addition to a good display of toilet soaps, prominence being given to combinations of coal tar, thymol, eucalyptol, and salicylic acid. Needless to say, the different varieties of glycerin are also shown, as well as two special toilet preparations, "Ceratine" and "Demulcine," which are recommended as preventatives for chapped hands, and sunburn.

THE AREMA MANUFACTURING COMPANY, 20, Victoria Chambers, and 55 and 56, Chancery Lane, W.C., shows three qualities of the vaporiser which was described in the *Ph. J.* Supplement a few weeks back, and five varieties of inhalants intended for use with the apparatus.

In addition the aforementioned INGRAM AND ROYLE, 52, Farringdon Street, E.C., have a display of Carlsbad and Vichy water, salts and pastilles; the FRAME FOOD COMPANY show their extract, diet, and jelly, and STEPHEN SMITH AND Co., Bow, E., give prominence to Halls' Coco Wine and the Liebig Company's Extract of Meat and Malt Wine. The SANITAS COMPANY, LIMITED, have a tasteful display of every variety of their products, most of which are familiar to the pharmacist. BOVRIL, LIMITED, show an interesting series of the various constituents of foods, such as animal and vegetable fats, Australian and South American meat extracts, malt, mutton and kidney extracts, fibrine, albumin, etc., in addition to the various varieties of bovril.

INQUESTS.

"CHRONIC OPIUM POISONING" was the verdict of a Leicestershire jury which last week inquired into the circumstances relative to the death of Ann Reeves, a widow, fifty-five years of age, of Huncote and formerly of Leicester, who died on the 22nd ult. The evidence of a Mrs. Knight showed that deceased bought an ounce of laudanum, and the witness gave half of it to her in a little water, and the other half in the second half of the day. The deceased seemed drowsy throughout the day, but witness could not explain why she gave her laudanum twice in one day. Deceased had been in the habit of taking laudanum for years past, and knew she had been told that if she continued the practice it would eventually kill her. Another witness stated that deceased had been in the habit of taking from half an ounce to two ounces of laudanum a day.—The jury returned a verdict of death from syncope due to chronic opium poisoning, and the Coroner, at the request of the jury, censured Mrs. Knight for administering the laudanum, and also for the unsatisfactory manner in which she gave her evidence.

THE LABELLING OF UNSCHEDULED POISONS.—Mr. H. W. Hooper, the Exeter City Coroner, held an inquest at the Devon and Exeter Hospital, on Wednesday morning (June 3) into the circumstances attending the death of Harry James Holt, aged ten weeks, who died at that Institution on the previous day from the effects of poison. From the evidence adduced it appeared that the mother, who belonged to Plymouth, was on a visit to her mother at Exeter. The child was suffering from a cold, and her mother advised castor oil for it, remarking that she had some in the house. She then went upstairs and brought down a bottle, which she thought contained castor oil. She poured out about half-a-teaspoonful, and adding a little moist sugar to it gave it to the child, but she immediately found that a mistake had been made, the bottle having contained creosote. The woman did not know she had such a poison in her house, but supposed that a daughter who resided with her must have obtained it for tooth-ache. The bottle was labelled "Creosote," and the label also bore the name of a local firm of chemists and druggists, but underneath could be seen an old label marked "Castor Oil," the oil having made the paper transparent. The grandmother did not read the label, neither did she smell the mixture.—Mr. H. Andrew, house surgeon at the Hospital, said the child was admitted on Monday, suffering from the effects of an irritant poison. The stomach was washed out, and the usual treatment adopted, but the child died on the following day. Witness thought there ought to have been a poison label put on the bottle in this case.—The Coroner, in summing up, said the case was a very painful one. The labelling of the bottle had been done in a very clumsy manner. To put a creosote label over a castor-oil bottle, as was done in this case, made it deceptive. It would have been better if the chemist had put the label on a clean bottle instead of sticking it over another label. He thought it was clumsily done, to say the least of it.—The jury returned a verdict of "Death by misadventure."

MISCELLANEOUS NEWS.

JACOB BELL AND MR. FRITH'S "DERBY DAY."—Wednesday last was Derby Day, and in connection with this it is interesting to note that the manner in which the idea of painting the famous picture of the Derby Day occurred to Mr. Frith is related in his 'Reminiscences.' He was walking along the race-course at Kempton Park with a lady friend who formed one of his party, when he felt impelled to say: "Here is a scene I should like to paint—'modern life' with a vengeance." With this idea firmly fixed in his mind he went to the Derby, and—those not being the days of Kodaks—made arrangements with a photographer, whose negatives proved to be useless. So he trusted to memory, made a pen and ink sketch, and then a study in oils. He continues as follows:—"No sooner did Mr. Jacob Bell, the collector, see the sketch than he gave me a commission for the sum of £1500, and I set to work at once, but not till after fifteen months of assiduous and incessant labour did I get the picture finished."

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.—The Committee of this Association announces that the annual excursion has been fixed for Wednesday, June 10, 1896, when the members and friends will proceed by Great Western Railway, in saloon carriages, to St. Germans, and thence, by wagonettes, to St. Germans Hnt, when during a stay of one hour the party will be photographed by Mr. Wildman, photographer, of Union Street, Plymouth, afterwards proceeding to Donderry, where fishing, boating, bathing, etc., may be indulged in. High tea will be served in the pavilion at 6 o'clock prompt. The chair to be taken by the President, Mr. C. J. Park, member of the Council of the Pharmaceutical Society of Great Britain. After tea, sports will be indulged in, when the struggle for the cup (kindly presented by Mr. J. Kinton Bond), held over from last year, will be renewed. Tugs-of-war, married *v.* single, major *v.* minor, seniors *v.* juniors, etc., etc. Entries to be made to the Secretary on the ground. The cup will be held by the winning team for the ensuing year, and kept on view at the room of the Association.

MUSICAL PHARMACISTS.—An excellent concert was given on Thursday, May 28, at the Victoria Mansions Restaurant, by Mr. J. Wellesley Douglas, A.P.S., and Mr. Leonard Howard, and was attended by a large audience, among whom were several South London chemists. Mr. Douglas is a pupil of Rosario Scalero, one of Italy's most eminent violinists, and he played several high-class solos by Wirniawski, De Beriot, Schumann, and that sweet melody "Cavatina," by Kaff. He showed great artistic ability, which the audience appreciated. He was assisted by Mrs. Douglas, who is a charming contralto from the Guildhall School of Music, and who sang Cowen's "Voice of the Father" and "Happy Days," by Shelezki, delightfully. Mr. Leonard Howard recited with great merit and dramatic power. Mr. Charles Leroux presided at the piano, and delighted the audience with solos by Godard, and espe-

cially "Marche-Hongroise," by Kowalski, which was performed in a masterly way. The evening was undoubtedly a success. It seems strange that Mr. Douglas should stick so closely to pharmacy instead of taking music as a profession.

PHARMACEUTICAL SOCIETY OF IRELAND.—The monthly meeting of the Council was held on Wednesday, the 3rd instant, at 67, Lower Mount Street, Dublin. The President, Mr. W. H. Wells, junior, presided, and the other members of Council who attended were the Vice-President, and Messrs. Bernard, Murray (Clones), Whitla (Monaghan), Conyngham, and Kelly.

A memorial which Mr. David Wilson, of Rathfriland, had sent to the Lord Lieutenant asking for the remission of two penalties of £5 each imposed on him by the magistrates of that place for selling poison and for keeping open shop, and which had been affirmed by the County Court Judge, but without costs, was enclosed from the Privy Council office, and the opinion of the Council was asked thereon.

On the motion of Mr. Bernard, seconded by Mr. Conyngham, the President was requested to reply that the Council were of opinion that the prayer of the memorial ought not to be acceded to, and to state fully their reasons for that conclusion.

Mr. A. L. Donan was re-elected examiner in Pharmaceutical and General Chemistry; and Mr. T. W. Robinson and Dr. D. J. McKinney were re-elected Examiners of the Qualification of Assistants to Pharmaceutical Chemists for Dublin and Belfast respectively.

Owing to a quorum not having been obtained until an hour after that appointed for the meeting, the rest of the business was postponed.

SOCIETY OF CHEMICAL INDUSTRY.—A meeting of the Yorkshire section of this Society took place on June 1, at the Queen's Hotel, Leeds, Mr. C. Rawson presiding. Amongst those present were Professor Smithells, Professor Hummel, Mr. R. B. Brown, Mr. George Ward, Mr. Thomas Fairley, Mr. A. G. Perkin, and Mr. H. R. Procter. A paper was read by Mr. Joseph Barnes, F.I.C., on "Oxide of Titanium as a mordant for wool," and Professor Hummel and Mr. R. B. Brown presented "Notes on the dyeing properties of catechin and catechutannic acid." The latter paper was based on experiments made in the dyeing department at the Yorkshire College. An interesting discussion followed.

THE DEATH OF AN EX-PHARMACEUTICAL COUNCILLOR, Dr. John Ryan, of Francis Street, Dublin, at a very advanced age, occurred a few days ago at his residence. Dr. Ryan was one of the twenty-one founders of the Pharmaceutical Society of Ireland, whose names are mentioned in the Pharmacy Act, 1875. Although the appearance of the old-time pharmacy—it had been carried on at the same address for very many years—and the reduced condition of the neighbourhood were not calculated to give rise to feelings of envy, Dr. Ryan must have found it a veritable mine of wealth, as he is stated to have amassed a fortune of £40,000.

EXCHANGE.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

A book of 130 Well-tryed Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Pbst free, 1s. 6d.—Tully, Chemist, Hastings.

Free.—Woodville's 'Medical Botany,' 3 large vols., 210 cold-plates, 20s., published, £8 15s.; Withering's 'British Plants,' 4 vols., 10s. 6d., published, £2 8s.; Tanner's 'Practice of Medicine,' 2 thick vols., cheap, 10s. 6d.—Davis, "Chestnuts," Gordon Hill, Enfield.

Offered.—Bentley's 'Student's Botany,' in excellent condition, 3s. 6d.; will exchange for 'Art of Dispensing' (Southall's) or Wills' 'Materia Medica.'—T. P., 40, Hatherley Street, Liverpool.

Miscellaneous.

Fallowfield's seven-guinea Focussing Facile Hand Camera, perfect condition, £4 10s., or exchange for photo sundries or set.—Eastwood, Chesterton, Staffs.

Microscope (Watson), 1-in. and ½-in. objectives, in mahogany case, good as new, cost £5 5s., price £3 10s. or offer.—Edwards, 18, St. Michael's Road, Stockwell.

Set of 11 Evvard's Extraction Forceps, in pouch, good condition, spot price, £1. A four feet run of 36 mahogany-fronted, second-hand, Shop Drawers, with two lockers, spot price, £1. Also a 400-gallon iron Oil cistern (square), with tap, spot price, £3 10s.—Randall and Son, Chemists, Wareham.

Surplus Stock.—14 lbs. pulv. extract. coloc. co., in 1-lb. bottles; 1 lb. and upwards at half wholesale drug-list price, in perfect condition.—Worsley, Chemist, Market Place, Wigan.

Soda Water Appliances.

Soda-Water Machine, Barnett and Foster's, No. 2; list price £45; sell for £15; good condition.—Apply to H., 1, Southwick Street, Hyde Park.

NEW IDEAS.

A NEW ADHESIVE PASTE.

The preparation known as Morgan's "Hungarian Adhesive Paste" is one of the best of its kind, possessing strong adhesive qualities. It is not so liable as are many such pastes to harden and decompose unless they are in constant use. It spreads easily, and seems to be very tenacious. In addition to the ordinary purposes for which pastes are used, this kind may be used for labeling bottles and tinware. It can be obtained from Messrs. Bemrose and Sons (Limited), Old Bailey, E.C., price 1s. per bottle, with polished cap and brush complete.

NOVEL SERUMS AND TABLOIDS.

Serums and animal extracts are at present receiving considerable attention from manufacturers of pharmaceutical products. Amongst others, liquid Anti-Syphilitic and Anti-Typhoid Serums are now being issued by Messrs. Burroughs, Wellcome and Co., in 10 C.c. bottles at 5s. each, for general supply to the medical profession, after careful trials of their value, extending over many months. The same serums are also made in the dried form, possessing the full potency of the liquid preparations—anti-syphilitic in vials (1s. 9d.), containing the equivalent of 3 C.c. of the liquid preparation, and anti-typhoid (5s.), the equivalent of 10 C.c. These scale serums are much more resistant to adverse climatic conditions than the corresponding liquid products, and yet are readily soluble in distilled water. The latest addition to the list of these preparations is Anti-Streptococcic Serum, which is supplied in vials containing 20 C.c. at 5s. each. The same firm is offering quite a number of tabloids prepared from medicinal animal products, including Tabloids of the Salivary Gland, Cervical Lymphatic Gland, and Pineal Gland; Nuclein, Kidney Substance, Fallopian Tube, Liver, and Spinal Cord. These tabloids are said to contain the whole of the substance and all the active principles of the carefully-selected organs from which they are prepared, thus ensuring full activity, uniformity of effect, and perfect preservation.

TRADE NOTES AND NEWS.

THE IRON AND STEEL PLANT CO. LIMITED, has just completed an order for over two hundred and fifty steel barrels for the Andrée Polar Expedition. These are to be used for the transportation of the sulphuric acid with which it is intended to manufacture the gas for Captain Andrée's balloon. Having made various experiments, the firm is satisfied that its special steel barrels are eminently suitable for the carriage of sulphuric acid.

THE LIQUOR CARNIS COMPANY, in again submitting samples of their Liquor Carnis (Caffyn), point out that great improvements have been made in covering the raw-meat flavour, and they have been able to increase the proportions of muscle-plasma or nourishing material. Special attention is directed to the fact that Liquor Carnis may be given in combination with hot beef-tea or soups without deteriorating its food-value. It is an English product, and is claimed to afford the best value among meat juices, none excepted. The full retail price for a three-ounce bottle is now 1s. 9d. To those who like a pronounced cooked-meat taste, the firm supplies a preparation of Liquor Carnis in which the roast-meat flavour or stimulating properties of meat have been imparted, under the mark of L.C.C. meat juice (Liquor Carnis Co.'s), a two-ounce bottle retailing at 1s. 9d.

MESSRS. GRIMWADE, RIDLEY AND Co. announce the sudden death of their senior partner, Mr. A. C. Ridley, which took place on Friday, May 15. The business will continue to be carried on by the remaining partners, Henry Ridley and Albert Paul Ridley, in conjunction with the other executors.

MARRIAGES.

BOARDMAN—DONALDSON.—On May 25, at Drumcondra Church, by the Rev. E. T. Crozier, A.B., John H. Boardman, L.P.S.I., Inchecore, to Annie Mena, eldest daughter of Theodore Donaldson, Windsor Avenue, Fairview, Co. Dublin.

HOWARD—KAVANAGH.—The marriage, at Arklow, has been solemnised of Mr. Richard Howard, apothecary, to Miss Sarah Lavina, daughter of the late Mr. Patrick Kavanagh.

PERSONAL.

PAST GRAND MASTER, COUNCILLOR A. SIDNEY CAMPKIN, J.P., of Cambridge, who was a candidate for the Pharmaceutical Council at the recent election, has again been elected on the Board of Directors of the Manchester Unity, at the conclusion of business at the recent A. M. C. at Bristol, on May 29 last, which position he has held since 1884, being annually re-elected by large majorities. There were twenty-four candidates for the nine members of the directorate, Mr. Campkin heading the poll with 368 votes.

DIARY OF THE WEEK.

TUESDAY, JUNE 9.
ROYAL PHOTOGRAPHIC SOCIETY, at 8 p.m.
"Cellulose and its Derivatives," by Cross and Bevan.

WEDNESDAY, JUNE 10.
PHARMACEUTICAL SOCIETY.
Library, Museum, School, and House Committee.

THURSDAY, JUNE 11.
SCHOOL OF PHARMACY STUDENTS' ASSOCIATION, at 6 p.m.
"Gold Mining in the Transvaal," by H. T. Durant.
"Report on Organic Chemistry," by H. Brown

FRIDAY, JUNE 12.
EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION:—
Botanical Meeting at 36, York Place, from 8.30 to 10 p.m.

LATE ADVERTISEMENTS.

To be Let.

CHEMISTS.—To be Let (splendid opening), capital corner SHOP, convenient dwelling-rooms, side entrance, No. 63, Crownfield Rd., Leytonstone Rd., Maryland Point Station. Densely-populated district. No Chemist near. Rent £28. Apply on premises, or Mr. BACON, 25, Liverpool St., E.C.

Assistants Wanted.

ATHOROUGHLY good fully-qualified Chemist to manage a DISPENSARY in the hills in India. Perfect climate. Must be single. Apply, with full particulars, to L. S. & Co., care of Styles, 7, St. Mary Axe, E.C.

OUT-DOOR ASSISTANT in high-class Retail and Dispensing business about 20 miles from London. Must be qualified and of good appearance and address. Send full particulars, with photo (to be returned), to SAPIENS, "Pharm. Journal Office, 5, Serle St., W.C.

MARKET REPORT.

LONDON, JUNE 11, 1896.

We have not much to report in the chemical market this week. Carbolic acid is quiet, citric and tartaric acids unchanged and cream of tartar dull of sale. No change has occurred in the price of mercurials. Crude camphor is a trifle firmer, after having been very slack, but the refined article continues to droop. The drug sales passed off to-day fairly briskly. The following are the most important changes:—Buchu leaves, annatto seeds, Turkey colocynth, senna leaves, saffron, croton seed, tolu balsam, and jalap are dearer. All varieties of aloes, honey, calumba root, ipecacuanha, gum elemi, and insect flowers are fully steady, whilst Sumatra benzoin, senega, cubebs, and Japan wax are lower. Shellac is firmer, whilst essential and heavy oil markets show little change. Full details will be found below:—

ACACIA (GUM).—The market remains very flat and no demand whatever is shown. At to-day's auctions a total of about two hundred packages were offered without finding a buyer. *Trieste* gum was bought in at £8 10s. for medium yellowish, £7 for palish grain, and £7 10s. to £8 10s. for medium greyish. In addition *Persian* gum was bought in at 16s. for bold amberly sorts, and 14s. for ordinary palish siftings. Several parcels of *Soudan* sorts were also withdrawn. High prices are still asked for *Bushire* insoluble gum, but little business has been done. Nominally fine pale picked is quoted at 24s. to 26s.; good sorts at 18s. to 20s.; reddish at 16s. and block at 10s. to 12s. per cwt.

ACID, CARBOLIC.—The market is quiet, but steady, at the following rates:—*Crystals*: 34° to 35° C., 6½d.; 39° to 40° C., 7d.; 39° to 40° C. (*detached crystals*), 8d. per lb. *Crude* is still quoted at 2s. and 2s. 5d. for 60 and 75 per cent. respectively. *Liquefied* and *creosylic* are unaltered.

ACID, TARTARIC.—The market is quiet, but steady. For *English* acid the makers still quote 1s. 3d., whilst *foreign* brands, both in *powder* and *crystal*, offer at 1s. 2d. to 1s. 2¼d. per lb., according to brand. To-day 8 bags of greyish *Cape argol* sold at 55s. per cwt.

ALOES.—A comparatively small supply was offered to-day, but the market for all varieties is firm. *Cape* aloes, of which fifteen cases were shown, sold at steady rates, 25s. to 25s. 6d. being paid for good bright hard. The greater portion of the *East Indian* aloes was bought in, but ten kegs of good soft *Socotrine* of fair aroma fetched 80s. per cwt. *Curacao* aloes in gourds sold at 37s. per cwt., subject to approval for good quality, whilst about 120 boxes sold at 25s. for good brown; 20s. for medium ditto; 17s. to 18s. for fair capey, down to 11s. 6d. per cwt. for ordinary dark. The majority of the latter kind was offered without reserve.

AMBERGRIS.—Continues dull of sale, although a considerable quantity was offered to-day. The only lot sold was a tin of dark quality of poor aroma, for which 25s. per oz. was paid.

AMMONIACUM (GUM).—Fourteen cases were shown, but found no buyers. Fine

pale free drop was bought in for 65s., part blocky palish for 50s., seedy gum, part block, with a few almonds for 35s., and pickings for 27s. 6d. per cwt.

ANNATTO SEEDS.—A rather improved demand was shown for this article, which was represented by 69 packages. Five cases of good bright *Madras* seed sold at 5d. per lb., a very good price, whilst dull damaged quality realised 1¼d. to 2¼d. per lb. Ten cases of *Annatto paste* from New York were bought in at 2s. per lb.

ASAFŒTIDA (GUM).—A considerable amount of this article was cleared off to-day without reserve, about 125 cases selling very cheaply at 26s. to 30s. for fair blocky; 23s. to 25s. for ordinary ditto, and 21s. to 22s. 6d. for common ditto. The better grades were all bought in.

BENZOIN.—The market is quiet generally. A small supply was offered in auction, and met with little inquiry, *Sumatra* selling at a decline of about 10s. per cwt. For good pale almondy centred seconds £7 15s. was accepted, whilst £7 5s. was paid for fair ditto with brown sides, and £5 10s. for ordinary rather dull seconds fair centres, very false packed sides. A case of very fine bold pale loose *Siam* almonds sold at £34, whilst 52s. 6d. was paid for a case of siftings, and 60s. per cwt. for dull part loose pickings. *Palembang* gum was all bought in although some nice lots were shown. Fine pale almondy seconds in tins being withdrawn at 47s. 6d.; fair ditto at 37s. 6d., and ordinary dark in cases at 32s. 6d.

BIRDLIME.—Sixteen cases of this article were offered and bought in to-day at 7½d. per lb.

BUCHU LEAVES.—The market is rather firmer. The majority of a moderate supply, amounting to 35 bales, found buyers, 3d. being paid for fair *round* yellowish-green leaves, and 3¼d. for those of a rather brighter colour. No *long* leaves were offered.

CALUMBA ROOT.—In fairly good demand at firm rates. Forty bags ordinary dark *Bombay* sorts, part wormy, sold at 13s. per cwt., whilst good yellow was bought in at 25s., and fair ditto at 18s. per cwt.

CAMPHOR (CRUDE).—There has been a rather better inquiry during the last few days for *Formosan* camphor near at hand, but no business appears to have been done. Probably there would be ready buyers at 85s. per cwt., *c.i.f.* *Japan* camphor is quoted at nominal rates.

CAMPHOR (REFINED).—There is no change to report in the position of this article. The *German* refiners still quote *bells* and *flowers* in lots of 5 to 10 cwt., at 1s. 4½d. with lots of 10 to 20 cwt. at 1s. 4d., and lots of 1 ton and above at 1s. 3½d. The agent for one of the *German* makers now quotes *bells* and *flowers* for August delivery at 1s. 2½d. per lb., *c.i.f.* in 1-ton lots. *English* refiners' quotations are unchanged. At the drug sales 2 cases of *German refined* camphor were bought in at 2s. 4d. per lb.

CANARY SEEDS.—At the spice sales 400 bags of new crop *River Plate* seed sold at 25s. to 25s. 6d. per quarter of 464 lbs.

CANNABIS INDICA.—Lower. To-day 17 bales of brownish tops sold at 1½d. to 1¼d. per lb., whilst greenish ditto was bought in at 4d., and very dusty ditto at 3d. per lb.

CANTHARIDES.—*Chinese flies* are still very slow of sale. To-day very dusty mixed

quality was bought in at 1s., and cleaner ditto at 1s. 2d. per lb.

CARDAMOMS.—An average supply amounting to about 100 packages met with a good demand, and steady prices were paid, as follows:—*Ceylon-Mysore*: Good pale sound, 2s. 11d.; medium to bold good palish, 2s. 6d. to 2s. 7d.; medium yellowish, 2s. 2d. to 2s. 5d.; small pale, 1s. 11d. to 2s. 1d. down to 1s. 9d. for small yellowish. *Seed* sold at full rate, 3s. 2d. being paid.

CASCARILLA BARK.—Was represented by 20 packages, which were all bought in, *siftings* at 36s., and good greyish at 50s. per cwt.

CINCHONA.—At the monthly sales the moderate supply of 2309 packages were offered against 2345 at the previous sale, the bulk consisting of *East Indian* bark. A very good demand was shown for all varieties, and the whole catalogue was disposed of at fully steady to dearer rates, the unit still remaining fully ½d. per lb. The following prices were paid:—*Ceylon*: *Succirubra* stem chips, 1d. to 1¼d.; stem chips, 1½d. to 2¼d.; root, 1½d.; renewed chips and shavings, 1½d. to 3¼d. *Ledger* shavings, 2½d. to 2¾d. *East Indian*: *Succirubra* chips and shavings, 1¼d. to 2¼d.; root, 1¼d. to 2¾d. *Officinalis*: Stem chips and shavings, 1½d. to 2½d.; root, 3¼d. to 3½d.; renewed chips and shavings, 1½d. to 2¼d. *Ledges*: Ordinary to good natural chips and shavings, 1½d. to 3½d. *Ledger* branch, 1½d. to 2½d.; root, 3¼d.; and renewed chips and shavings, 2½d. to 3¼d. *Java*: *Ledger* stem chips, 4½d. to 4¾d.; ditto branch, 2½d. to 2¾d. *African*: Fair to good quill, 2½d. to 3d.; and broken ditto 2d. to 2½d. per lb. The next Dutch auctions will be held in Amsterdam on the 11th inst., when the good supply of 5437 packages of *Java* bark will be offered. At the drug sales a parcel of *Calisaya* bark in quills sold at 2¼d. to 3d. per lb., whilst 1½d. was paid for broken greyish quill and 7d. for thin flat bark. In addition, 23 serons grey of *Guayaquil* bark sold at 7d. for fair quality, 4d. for ordinary ditto, and 1d. for bad damaged, whilst 11d. was paid for sound quality.

COLOCYNTH.—The market is firmer. A fair supply was offered to-day of both varieties, and 2s. 7d. was paid for good sound *Turkey* apple, showing an advance of 1d. per lb. on the rates paid privately. *Spanish* was bought in at 10d. to 1s. 4d. per lb.

COPAIBA (BALSAM).—The market is quiet but prices are steady. Privately, fair *Para* quotes at 1s. 5d., good *Maranham* at 1s. 11d. and dark to fair *Bahia* at 1s. to 1s. 4d. At the drug sales a cask of dark red thin *Para* balsam was bought in at 2s., and brown thick quality at the same figure.

COTO BARK.—This drug has not been shown in public sale for some little time. To-day 16 bales sold readily at 1¼d. to 1½d. per lb.

CROTON SEED.—Dearer. Eight bags imported from Colombo of fair quality seed sold in auction at 66s. per cwt.

CUBEBS.—Much lower. For twelve bags of *Singapore* berries of fair quality, 25s. 6d. per cwt. was paid in auction.

CUTTLE-FISH.—A parcel of common quality bone was cleared off in auction, 2¼d. to 2½d. being paid for small dirty, 1½d. for broken, and ¾d. per lb. for damaged quality.

ELEMI (GUM).—Firm. Out of 50 cases offered to-day 10 cases of medium greyish *Singapore* gum with fair aroma sold at 20s.

per cwt., which shows no alteration in price.

ERGOT OF RYE—Shows no appreciable change in price, but the market is firm. To-day 32 bags of *Russian* ergot of sound quality sold at 4d. to 5d. per lb., according to condition. Sound *Spanish* was bought in at 9d. per lb.

GALANGAL ROOT.—A parcel of more or less sea-damaged root amounting to 199 bags sold without reserve at 11s. to 13s. per cwt.

GAMBOGE.—This article is still neglected, although some good parcels were offered amongst the 65 shown. The only lot sold was 2 cases of damp blocky pipe of good fracture, which realised £8 10s. per cwt.

GINGER.—*Cochin* root continues dull of sale. On Wednesday only a small amount found buyers, 34s. to 34s. 6d. being paid for dull washed rough, 25s. 6d. for low tips, fair washed being bought in at 35s. to 35s. 6d. Native kinds sold at 52s. for bright medium half cut, 58s. for bold limed, and 65s. to 70s. 6d. for ordinary to bold *A* cut. In addition, limed *Japan*, slightly mouldy, sold at 19s. per cwt. *Jamaican* root for the most part was disposed of at fully steady to dearer rates as follows:—Fine to choice, 91s. to 120s.; good to fine bold, 79s. to 100s.; medium to good medium washed, 73s. 6d. to 78s.; and common to medium brownish, 63s. to 73s. per cwt.

HONEY—Was in better demand in auction, and a fair amount found buyers. Thin amber *Jamaican* sold at 25s. to 28s., and rather dirty thick ditto at 19s. to 22s. 6d., whilst a parcel of 77 kegs of pale *Chilian* all found buyers at 15s. to 17s., and four tins of yellow thick *Spanish* at 15s. per cwt.

INSECT FLOWERS.—The new crop of flowers will soon be ready for shipment to this country, but none has been despatched as yet. The current quotations are:—Open flowers, 85s.; half closed, 105s.; closed, 137s. 6d.; wild buds, 145s. per cwt., all *c.i.f.* terms. At the drug sales 30 bales of open flowers sold at 85s., and 4 of half-closed ditto at 102s. 6d. per cwt.

IPECACUANHA.—The market is quiet, and little is doing in the drug at present, although prices are unchanged. To-day a few bales of fair to good sound annulated *Rio* (Brazilian) root sold at 4s. 10d. to 5s. 2d., which shows a steady rate, whilst all the *Carthagena* was bought in at 3s. 10d. to 4s. per lb.

JALAP.—The market is very firm and there are no sellers now under 7d. per lb. for good quality. To-day ten bales of fair *Vera Cruz* sold at 6¼d. to 7d. per lb. The last shipment quotation we heard was 5½d. per lb. *c.i.f.* terms.

LAVENDER FLOWERS.—Six bales of this article sold without reserve at 12s. per cwt.

LIME JUICE.—Several parcels were bought in to-day at 1s. 1d. to 1s. 2d. per gallon.

MASTIC (GUM).—A case of fair pale drop sold to-day at 1s. 5d. per lb.

MENTHOL.—Is said to be rather firmer, but we have not heard of any business being done. Nominally 9s. 6d. to 10s. is quoted on the spot.

MYRRH (GUM).—Remains very plentiful, but with little inquiry. The only parcel sold to-day was 25 bags of fair dusty sorts, for which 33s. 6d. to 35s. was paid. Good native picked was bought in at 90s. to 92s. 6d., and fair sorts at 60s. per cwt.

OILS (ESSENTIAL).—*Star Anise* oil is still

nominally quoted at 8s. per lb., but there is no demand. *Calamus* oil sold without reserve to-day at 2s. 2d. per lb. *Peppermint* oils are cheaper. Business has been done in *H. G. Hotchkiss'* brand at 8s. 9d., whilst *Japan* offers at 5s. 6d. for the 40 per cent. menthol strength, and 3s. 9d. for *dementholised*.

OILS (FIXED) AND SPIRITS.—*Almond*: *Foreign* oil expressed from the sweet kernels is quoted at 78s. 6d. per cwt., *c.i.f.* terms. *Castor*: The market continues very firm for *Italian* oil, and importers still ask 30s. 9d. to 31s. 6d. per cwt., *c.i.f.*, terms for best quality oil. *Cotton* is quiet, and quoted at the unchanged rate of £16 to £16 10s., according to brand and package. *Coco-nut* is slow of sale at rather easier rates, *Ceylon* being now worth £22 10s. and *Cochin* £26 10s. to £26 15s. on the spot. *Linseed* is very dull, and prices have fallen, oil in barrels being now quoted at £18 5s. to £18 7s. 6d. on the spot. *Rape* is rather easier at £23 on the spot for *refined*. *Palm*: *Lagos* quotes at £20 10s. *Olive*: *Spanish* is quoted at £29 to £30, and *Levant* at £29. *Turpentine* is a trifle easier, and *American* spirit offers at 20s. 1½d. to 20s. 3d. on the spot. *Petroleum* is lower. *Russia* quotes at 6½d., *American* at 5½d., and *water white* at 6½d. per gallon on the spot. *Castor*: At the drug sales 50 cases of *Madras* oil sold at 2¼d., whilst No. 1 *Calcutta* oil was bought in at 3¼d. per lb.

PAREIRA BRAVA.—Twenty bales of this drug sold without reserve to-day at 8s. 6d. to 10s. 9d. per cwt.

PATCHOULI LEAVES.—Two cases of ordinary damaged quality sold in auction at 5d. per lb.

QUICKSILVER.—Steady, at unchanged prices. The importers' price is still £6 10s., whilst second-hand holders offer at £6 9s. 6d. No change has taken place in the price of *mercurials* as yet.

QUININE SULPHATE.—This market is quite devoid of interest, no business being reported. Nominally, the nearest value of *B. and S.* and *Brunswick* is 12½d. per oz. The landings during May were 40,288 ozs., and the deliveries 59,056 ozs., making the stock, on May 31, 1,798,464 ozs., against 2,332,160 ozs. in 1895. To-day ten 100-oz. tins of the *Imperial* brand of *English* quinine were bought in at 1s. 2d., whilst 1000 ozs. of *Honard's* in 1-oz. vials were also withdrawn at 1s. 4d. per oz.

RHUBARB.—In rather improved enquiry to-day, when 140 chests were shown of which about 30 found buyers at the following rates:—*Canton*: Good medium round, 10d. to 10½d.; bold flat good even pinkey fracture, 1s. 3d.; mixed pickings, 9½d.; very wormy flat, 6¼d. per lb. *High dried*, slightly wormy, medium flat, 10d.; round rough, 7d.; and good medium flat, 7½d. to 8d. per lb. No *Shensi* was sold.

SAFFRON.—Continues to advance in price, and seems likely to become dearer still. For fine *Valencia* saffron, 30s. to 33s. 6d. is now asked, whilst seconds are quoted at 28s. to 29s. 6d., and thirds at 27s. to 27s. 6d. per lb.

SARSAPARILLA.—Good red *Jamaica* sold to-day at 1s. 4d. to 1s. 5d. per lb., whilst for grey ditto 1s. 3d. was paid, and 1s. 0½d. for damaged. *Lima-Jamaica* sold at 1s. to 1s. 1d., *Honduras* at 1s., whilst *Mexican* was bought in at 5d. per lb.

SHELLAC.—The market is firmer in all

positions. Moderate sales have been made privately at the auction rates, 86s. to 87s. *c.i.f.* having been paid for 600 cases of *Second Orange*, May to June shipment, whilst *Calcutta* shipment is quoted at 92s. 6d. *c.i.f.* At the sales which were resumed this week, the market was firm, and *Second Orange* sold at an advance of about 3s.; 90s. per cwt. being now the spot value of *Second Orange*. *Garnet* and *Button* were quiet, and in but small supply. Since the sales, business has been done in *Second Orange*, medium to fair *TN* at 89s. to 90s., and *Button* firsts at 95s. per cwt.

SENEGA ROOT.—Sold at a decline, 1s. per lb. being accepted for 5 bales of fair quality root.

SOY.—Fair quality *China* offers at 10d. to 10½d. per gallon. To-day 17 casks more or less mixed with dirt sold at 8½d. to 9d. per gallon.

SPICES (VARIOUS).—*Cloves*: In auction medium dark *Zanzibar* sold at 2d. and ordinary dark *Amboyna* at 3d. per lb., whilst fair to good *Penang* were bought in at 7d. to 8d. per lb. *Cassia Lignea*: Broken quality sold at 20s. 6d. per cwt. *Pimento*: Still slow of sale, but steady, 2½d. being paid in auction for good clear, 2½d. for fair, 2¼d. for medium, and 2¼d. for ordinary. *Chillies* were bought in at 34s. to 42s. 6d. for *Zanzibar*, and 65s. to 75s. for fine bright *Japan*. *White Pepper*: Quiet. Fine to extra fine bold bright *Singapore* 4½d. to 5½d. per lb., whilst *Ceylon* was bought in at 4¼d. per lb.

TOLU (BALSAM).—Good quality is scarce and dear. The nominal spot price is 2s. 6d. for good old-fashioned balsam, and business has been done for arrival at 2s. 3d., *c.i.f.* To-day two cases were bought in at 3s. per lb.

TURMERIC.—The market remains quiet. About one-sixth only of the catalogue offered at the spice sales found purchasers, 8s. 3d. being paid for dull *Madras* finger. Good bright finger was bought in at 10s. 6d., and whole bulbs at 7s. 6d. per cwt., whilst, in addition, 7s. 6d. to 8s. 6d. was the buying-price of *Cochin* finger, 6s. of whole rough bulbs, and 7s. 6d. of split damaged ditto.

WAX (BEES).—There was again a good demand for *Jamaican* wax to-day, which sold at full rates, £8 10s. being paid for good yellow, and £8 5s. for fair ditto. In addition *Australian* sold at £7 to £7 7s. 6d.; *Madagascar* at £7 to £7 5s., and *Zanzibar* at £6 to £6 5s.

WAX (JAPAN).—Lower. To-day a fair business was done in pale *squares* at 33s. to 34s. per cwt., partly without reserve, which shows a slight decline on the rates which have been asked privately.

LIVERPOOL DRUGS AND CHEMICALS, June 10.—Canary seed, 27s. to 28s. per 464 lbs. Ginger: *Sierra Leone*, 19s. to 19s. 6d. per cwt. *ex quay*. Kolanuts: 37 bags of dried have sold at 3d. per lb. *ex store*. *Cochineal*: Black grain *Teneriffe* is scarce, and holders are asking 1s. 3d. to 1s. 4d. per lb. *Beeswax*: 9 bales of *Gambia* realised £7 10s. per cwt. *Gum*: Arabic sorts steadily maintain their price. *Ceará gum*, 50s. per cwt. *Sal ammoniac*: 37s. per cwt. for first; 35s. for second quality. *Bleaching powder*: £7 to £7 5s. per ton. *Copperas*: *Lancashire*, 38s. per ton; *Welsh*, 36s. *Sulphate of copper*: £19 per ton for immediate delivery. *Potashes*: 20s. 9d. to 21s. per cwt. *Pearl-*

ash: 35s. per cwt. Cream of tartar is quiet at 100s. per cwt. Prussiate of potash: $7\frac{1}{4}$ d. per lb. Bichromate of potash: $4\frac{1}{2}$ d. per lb. Chlorate of potash: $4\frac{1}{4}$ d. per lb. Caustic soda: 70 per cent., £7 12s. 6d. to £7 15s.; 60 per cent., £6 12s. 6d. to £6 15s. per ton. Borax: Powder, 21s. per cwt.; crystals, 20s. Bicarbonate of soda: £7 per ton. Soda crystals: £2 10s. per ton. Soda nitrate: 7s. $10\frac{1}{2}$ d. to 8s. $1\frac{1}{2}$ d. per cwt. Sulphur: Flour, £7 10s.; roll, £5 10s. per ton. Castor oil has developed a very firm tone; Calcutta "good seconds" has advanced to $2\frac{1}{2}$ d. per lb., though 100 cases sold early in the week at $2\frac{3}{4}$ d.; French 1st pressure and Madras remain at $2\frac{1}{4}$ d. to $2\frac{5}{8}$ d. per lb., and 50 barrels French have been sold at $2\frac{1}{4}$ d. per lb. Linseed oil is slightly easier in price; Liverpool makes are now quoted at 19s. to 20s. 6d. per cwt. Cottonseed oil is steady at 16s. 3d. to 17s. for Liverpool refined, and 16s. 9d. to 17s. per cwt. for American. Spirit of turpentine on the spot is very scarce, holders asking 23s. per cwt.; to arrive there are sellers at 20s. 6d. Petroleum: Russian, $5\frac{1}{4}$ d. per gallon; American, $6\frac{1}{4}$ d. to $7\frac{1}{2}$ d. per gallon.

MANCHESTER CHEMICALS AND DRY-SALTERIES, June 10.—Chlorate of soda, 6d. Yellow prussiate, $7\frac{1}{4}$ d. to $7\frac{1}{2}$ d., according to quality. Sal ammoniac has gone down to £37 per ton firsts, and £35 seconds. Soda crystals are lower, and may be quoted at 35s. to 37s. 6d. per ton, bags, on rails; 5s. to 6s. extra, casks; 40s., *f.o.b.*, Liverpool. Bleaching powder is in request at £6 15s. to £7 per ton on rails, softwood casks; £7 10s. at Dublin, and £7 5s., Belfast. Chlorate of potash is lower, and quiet at $4\frac{1}{2}$ d., U.K. delivery. Sulphate of copper lower, and quoted £18 per ton best brands, delivered Manchester, £17 10s., July delivery. Bicarbonate of soda, £6 per ton casks; £6 12s. 6d. one cwt. kegs. Industrial Bicarbonate (for mineral waters), £4 5s. per ton, in bags, and £5 10s. per ton, 1-cwt. kegs, on rails at works, Northwich. Acids still dull here. Citric: 1s. 2d. Tartaric: 1s. 2d. to 1s. $2\frac{1}{4}$ d., foreign; 1s. 3d., English. Oxalic: $3\frac{1}{4}$ d.; Dublin or Belfast, 4d. Cream of tartar varies from 98s. to 100s. per cwt., best white powdered.

NEWCASTLE CHEMICAL MARKET, June 10. Prices are:—Bleaching powder, £7 to £7 5s., according to markets; soda crystals, 37s. 6d. to 45s.; caustic soda, 70 per cent., £7 5s. to £7 15s.; higher strengths, £9 to £9 10s.; soda ash, 52 per cent., £4 5s.; alkali, 52 per cent., £5; sulphur, £4 per ton.

MARRIAGE.

HEALE—ADAMS.—On June 2nd at Clapham parish church, by the Rev. Noel P. Tower, Thomas Albert Oakley Heale, chemist and druggist, of Messrs. Burroughs, Wellcome and Co., to Annie, only daughter of John Adams, St. Luke's Road, Clapham.

THE PRINCE OF WALES AND GUY'S HOSPITAL.—A banquet and reception were held at the Imperial Institute, on Wednesday last, in aid of the funds of Guy's Hospital. The Prince of Wales acted as Chairman, and there was a very large and distinguished company present, whilst the subscription list was announced to have reached the immense total of nearly £160,000.

MISCELLANEOUS NEWS.

PLYMOUTH AND DISTRICT CHEMISTS' OUTING.—The Plymouth, Devonport, Stonehouse and District Chemists' Association held its annual outing last Wednesday, the Committee, consisting of Messrs. C. J. Park (President), J. G. Netting (Chairman), J. Cocks, P. A. Kelly, H. O. Westcott, E. T. Cocks, and A. D. Breeze (Secretary), having arranged an extremely picturesque trip in Cornwall, with that charming little village Donderry as the destination. It is said, and with undeniable truth, that the law of science is progression, and to appearances the Plymouth Chemists' Association has adopted a similar law. Established in 1893, the Association has made rapid strides and has in a practically short time instituted first-class annual functions. The summer outing to Lidford, last year, was attended by about thirty; on Wednesday, however, that number was more than doubled. At 1.20 p.m. the party assembled at Millbay Railway Station, Plymouth, and through the courtesy of the Great Western Railway Company, who placed two saloon carriages at the disposal of the Committee, the pleasant ride to St. Germans, a distance of about ten miles, was an enjoyable start.

On arrival at St. Germans, the train was met by nine conveyances, which took the visitors for a beautiful drive to Donderry, *via* St. German's Hut. The weather was beautifully fine, an invigorating and refreshing breeze blowing in from the sea. Fortunately for lovers of magnificent scenery, dust was conspicuous by its entire absence, making matters far more pleasant all round. At St. Germans Hut a brief halt was made in the journey with a double object—viewing the interesting little spot and photographing the party. The latter was successfully undertaken by Mr. Wildman, of Union Street, Plymouth. Having been photographed, the party proceeded to Donderry. Several of the ladies rode, whilst the majority preferred to cover the short distance on foot, walking across the headlands. The water was somewhat rough, otherwise fishing and boating might have been indulged in. In the spare time before tea, however, a pleasant hour or two was spent on the sands, several of the young fellows enjoying a "dip in the briny." High tea was served in the pavilion by Mr. Broad at six o'clock, a sumptuous meal being provided, and Mr. C. J. Park, President of the Association, and member of the Pharmaceutical Society Council, occupied the chair.

Immediately after tea Mr. J. G. Netting (Vice-President) spoke at length of the successful career of the Association, and the rapid progress it had made within the three years of its existence. He congratulated the President (Mr. C. J. Park) on being recently elected on the Council of the Pharmaceutical Society, and thought it highly satisfactory that the West of England was now represented on that influential body—for the first time. He congratulated Mr. Cocks on being appointed on the Committee of the Anti-Cutting Association, and also Mr. A. D. Breeze, on being elected Honorary Secretary to the Plymouth Mercantile Association. Special thanks, he said, were due to the latter for the untiring manner in which he had worked as Hon. Sec. and

Treasurer to the Outing Committee. Mr. C. J. Park, in reply, was glad to see the ladies present, and trusted they would accompany them on all similar occasions in the future. Messrs. J. Cocks and A. D. Breeze also briefly replied, and mention was made of a subscription of £10 10s., which is being raised by the Association to be given in conjunction with the Bell Scholarship if won by any of the Junior Section of the Association within three years. The hope was expressed that the further prize would act as a stimulant to local junior chemists. After tea various games were indulged in, and much interest was centred in the tug-of-war. The "single" gentlemen beat the married, and were presented with a hundred years' old china mug given by Mr. J. K. Bond. Mr. P. A. Kelly captained the winning team. Soon after eight a move was made for home, the drive to St. Germans through Hossenford village being very picturesque. The party arrived at Plymouth shortly after ten o'clock.

PROPRIETARY ARTICLES TRADE ASSOCIATION.—The following gentlemen have been elected to the Retail Section of the Council of the above Association:—Barnes, W. R., Upton Manor, London, E.; Cocks, James, 8, Edgscumbe Street, Stonehouse, Devon; Cooper, A., 80, Gloucester Road, South Kensington, London, S.W.; Garrett, T. P., 33, Commercial Street, Newport; Johnston, W., 69, Loughborough Road, Brixton, London, S.W.; Jones, W., 2, High Street, Birmingham; Lister, S., Great Horton, Bradford; Pickard, S. N., 74, Manningham Lane, Bradford; Seely, H. W., 14, Southgate, Halifax; Williams, J., 47, Wilmslow Road, Didsbury. The votes were counted at the office of the Association, 2 and 3, Stonecutter Street, London, E.C., by Mr. G. R. Barclay (of Messrs. Barclay and Sons) and Mr. Newton Spyer, chemist, 13, Gledhow Terrace, South Kensington, London, S.W.

"PURCHASING A CHEMIST'S BUSINESS."—On Thursday, the 10th inst., Mr. Justice Grantham had before him the case of *Berry v. The Trust Agency, Etc., Co., Limited*. The plaintiff, Mr. Berry, who formerly carried on the business of a chemist and druggist, at Gloucester, brought his action on a contract which he had entered into with the defendants to sell his business to them. The defendants agreed to purchase the plaintiff's business for £1850 within one month from the date of the contract, depositing a sum of £30. As the defendants failed to complete the purchase within the stipulated time, the plaintiff had sold the business for £1450, and he now brought his action to recover the difference between the price he realised and the sum agreed to be paid by the defendants, plus a small sum for solicitor's costs and personal expenses. Mr. Berry was called, and said that the reason the contract between him and the defendants fell through was because the latter wanted him to take part of the purchase price in shares of the defendant's company. This he was not prepared to do. There was no defence to the action, and his Lordship gave judgment for the plaintiff for the amount claimed.

EXCHANGE.

OFFERED.

Books, etc.

A book of 130 Well-tryed Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

Free.—Woodville's 'Medical Botany,' 3 large vols., 210 cold-plates, 20s., published, £8 15s.; Withering's 'British Plants,' 4 vols., 10s., published, £2 8s.; 'Hempel's Materia Medica, with Repertory,' by Watts, 2 thick vols., cheap, 10s.—Davis, "Chest-nuts," Gordon Hill, Enfield.

What offers? Holmes' 'Botanical Note-Book,' Tilden's 'Chemical Philosophy,' Fownes' 'Chemistry' (1848), Carnegie's 'Law and Theory,' Wills' 'Pharmacy' (soiled), Austen's 'Metallurgy' (new), Proctor's 'Pharmacy,' Roscoe's 'John Dalton and Rise of Modern Chemistry,' Thornton's 'Physiology' (soiled).—S. Holliday, 19, West Street, Warwick.

Miscellaneous.

Surplus Stock.—14 lbs. pulv. extract. coloc. co., in 1-lb. bottles; 1 lb. and upwards at half wholesale drug-list price, in perfect condition.—Worsley, Chemist, Market Place, Wigan.

Taken in payment for adverts., cannot be repeated, all new:—Camera half-plate, London make, reversing, swing back, four double slides, with R R 7 × 5 lens, iris, tested by expert, £5. Lens, R R 5 × 4 iris, leather case, 22s. 6d. Developing Trays (three gross), xylonite, $\frac{1}{4}$, 3s. 9d.; $\frac{1}{2}$, 6s.; $\frac{1}{1}$, 8s. 6d.; enamelled iron, $\frac{1}{4}$, 4s. 3d.; $\frac{1}{2}$, 6s. 6d.; 12 × 10, 18s. dozen. Printing Frames, rounded corners, brass springs, $\frac{1}{4}$, 4s.; $\frac{1}{2}$, 8s.; $\frac{1}{1}$, 15s. dozen. Dark Slides, double, fit Lancaster's Instantograph, two dozen each, $\frac{1}{4}$, 4s.; $\frac{1}{2}$, 5s. 6d. Glass Measures, graduated, six dozen each, 2-dr., 5s.; 2-oz., 4s.; 4-oz., 6s. 3d.; 10-oz., 10s. dozen. Focussing Covers, black twill, lined ruby, two dozen, 30 × 34, 1s. 3d.; 30 × 51, 1s. 9d.; 60 × 48, 2s. 6d. Packages free, cash with order, returned if sold.—Warnes, 6, Rochester Square, N.W. Offers entertained.

Elam's Brass Breast Pump, 6s.; 4 ovifum Ivory, 5 ebony Pessaries, 9s.; 2s. 9d. Dusart's Syrup, 1s. 9d.; 3 ls. 1½d. Smith's Pectorine, 1s. 6d.; 10 2s. 6d. Farady's Hair Dye, 17s.—Cooke, Chymist, Surbiton.

Fallowfield's seven-guinea Focussing Facile Hand Camera, perfect condition, £4 10s., or exchange for photo sundries or set.—Eastwood, Chesterterton, Staffs.

Soda Water Appliances.

Soda-Water Machine, Barnett and Foster's, No. 2; list price £45; sell for £15; good condition.—Apply to H., 1, Southwick Street, Hyde Park.

WANTED.

Wanted.—'Attfield's Chemistry,' late edition, cheap.—W. A. L., 21, Heath Street, Hampstead.

Wanted.—Pair Carboys, about 6 gals., cut stoppers, cheap.—Perkin, 105, Church Street, Croydon.

SALE OF A BUSINESS.—The case of *Piggott v. Palmer*, which was tried before Mr. Justice Grantham and a common jury on Wednesday last, was brought to recover commission upon the sale of a chemist's business in George Street, Richmond. The plaintiff, who carries on business as an auctioneer and estate agent at Richmond, hearing that Parke's Drug Stores desired to secure premises in Richmond, called upon the defendant, Mr. Jas. Taylor Palmer, a chemist and druggist, and asked him whether he would sell his business. Defendant offered to part with his business for £2500, which sum the company declined to give. Plaintiff alleged that the defendant afterwards went behind his back and sold the business to Parke's Drug Stores for £2400, and commission upon this amount was now sought to be recovered. The defendant denied that he had employed the plaintiff to procure a purchaser, and called in support of his case Mr. John Murison, the managing director of Parke's Drug Stores, Limited, who, however, admitted that he called upon Mr. Palmer in consequence of having heard through Mr. Piggott that the business was for sale. The jury found for the plaintiff for £120, and his Lordship entered judgment accordingly.

LADIES' NIGHT AT THE ROYAL SOCIETY.—The second soirée of the season was held on June 10 at the Royal Society's rooms in Burlington House, Piccadilly, W., and the *Standard* reports that the exhibition was more than usually interesting. In the reception room the exhibits of the Applied Mathematics Department of the University College, illustrative of the applications of the theory of frequency, and diagrams illustrating the barometric frequency over the British Isles, attracted some attention. In the adjoining Council room were a series of very fine sea-scape photographs by Mr. F. H. Worsley-Benison. Professor Sylvanus Thompson, who is always a popular experimenter, had a large and excellent collection of Röntgen ray apparatus, of which he made very interesting displays. Amongst his experiments was the production of electric dust-shadows. In the principal Library Mr. M'Lean had some very fine photographic stellar spectra. Messrs. Siemens had a large and important number of illustrations of electric discharges *in vacuo*. The apparatus was headed by a facsimile of the first vacuum tube ever produced, namely, that

employed by Dr. Watson in 1751 for his experiments at that period. There was also a facsimile of Lord Cavendish's double barometer, and of Dr. Morgan's shortened barometer of 1785, in which, by long-continued boiling of the mercury, he effected a vacuum of such excellence that no discharge would pass, showing it thus to be equal, therefore, to a Crookes or Hittorf tube of the present day. It is probable that it would have sufficed for the production of the Röntgen rays. Messrs. Siemens had also a most interesting apparatus for showing the electrical discharges at different degrees of exhaustion. The stereoscopic photo-chroscope was again in high favour, and Sir John Evans contributed a sort of toy experiment in the singular behaviour of certain of the ancient flint implements of pre-historic man. In the archives room Mr. Herbert Jackson made a demonstration of the use of phosphorescent materials for rendering Röntgen rays visible, and in the meeting room electric lantern exhibitions drew, from time to time, large audiences.

LATE ADVERTISEMENTS.

Assistant Wanted.

CHINA.—Wanted an ASSISTANT, not over 30 years of age, accustomed to first-class retail and dispensing business. References must bear strict investigation. 4 years' agreement. Passage paid both ways. Address, with full particulars, CHINA, c/o A. S. Watson & Co. (Limited), 8, Fenchurch Bldgs., E.C.

Businesses for Disposal.

LONDON, North.—A good thriving Light RETAIL. Established 4 years. Under management. Rapidly increasing. Present gross receipts nearly £800. Net profit, £235 to £250. 20 years' lease, at £30 only. A rare opportunity for any one who can command not less than £500 cash. Full details and reasons for disposal, H. H., "Pharm. Journal" Office, 5, Serle St., W.C.

LONDON, extreme E.C. District, principal thoroughfare. Receipts, under management, £300. Well-stocked and fitted. Plate-glass front. Will accept £175. Good lease. Opportunity for large increase, as important additions and improvements about completing in neighbourhood. A bargain. Apply for full particulars, F. E. B., "Pharm. Journal" Office, 5, Serle St., W.C.

DIARY OF THE WEEK.

WEDNESDAY, JUNE 17.

EDINBURGH DISTRICT CHEMISTS' TRADE ASSOCIATION. Excursion to Loch Long and Loch Lomond, starting from Waverley Station at 8.50 a.m.

THURSDAY, JUNE 18.

CHEMICAL SOCIETY, at 8 p.m.

"The Action of Bromine on Pinene in Reference to the Question of Its Constitution," by Prof. Tilden.

"Note on Santalal and Some of Its Derivatives," by A. C. Chapman and H. E. Burgess.

"The Explanation of Some Anomalies in Thermochemistry, Chloral and Bromal Hydrates," by W. J. Pope.

"Further Observations on the Production of Chlorine by Heating a Mixture of Manganese Dioxide and Potassium Chlorate," by Prof. McLeod.

"The Rotation of Aspartic Acid," by B. M. C. Marshall.

"On the Occurrence of Quercetin in the Outer Skins of the Bulb of the Onion (*Allium cepa*)," by A. G. Perkin and J. J. Hummel.

"The Colouring Principle Contained in the Bark of *Myrica nagi* (Part I.)," by A. G. Perkin and J. J. Hummel.

"Note on Some New Derivatives from Camphorose," by Dr. M. O. Forster.

"Acetylene, Its Detection and Ignition in the Air," by Prof. Clowes.

Ballot for Election of Fellows.

SCHOOL OF PHARMACY STUDENTS' ASSOCIATION, at 6 p.m.

Annual Business Meeting. Prof. J. Reynolds-Green, F.R.S. (President), in the Chair.

FRIDAY, JUNE 19.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION:—

Botanical Excursion, Colinton Dell. Meet at Caledonian Station at 8.30 p.m. Conductor, W. Duncan.

PHARMACEUTICAL SOCIETY (NORTH BRITISH BRANCH). Meeting of Members and Associates in Business at 36, York Place, Edinburgh, at 11 a.m.

PERSONAL.

MR. JAMES ACHESON, L.P.S.I., Ballymena, has been appointed compounder to the Board of Guardians of that town.

MR. ERNEST SAVILLE PECK, pharmaceutical chemist, of Cambridge, has taken the Cambridge B.A. degree, his name occurring in Class I. The greatest credit is due to him because he has gained the degree whilst also attending to his daily business.

MR. WILLIAM LAMONT has purchased the business of the late Mr. Alexander Mair, at 162, Ferry Road, Leith.

MARKET REPORT.

LONDON, JUNE 18, 1896.

There are few changes in the chemical market to quote this week. Carbolic acid is quiet, tartaric and citric acids are dull, whilst cream of tartar is in rather improved demand. Crude camphor has a firmer tendency, being quoted at higher prices from Japan, and the position has had a decided effect upon the refined article, which closes very steady. The most important feature has been the announcement of a reduction in the price of salol. The position of this article is still in an uncertain position, and the present quotation can hardly be regarded as one likely to hold good for some time. The alkaloid market generally, droops very much. Amongst crude drugs jalap is very firm, a good business having been done since the sales at full rates. Colocynth has sold at an advance for good Turkey, and the supplies of this variety appear to be very limited. Brazilian ipecacuanha has sold privately at full rates, whilst senega and tolu balsam are held for late rates. Amongst other articles glycerin is very strong at an advance; menthol must also be quoted dearer, whilst shellac has attracted considerable attention. Spices are generally unchanged, and the same applies to heavy oils. In regard to essential oils the most noteworthy feature is the continued decline in the value of star anise oil. Full particulars will be found below:—

ACID, CARBOLIC.—The market is flat, and quotations run as follow:—*Crystals*: 34° to 35° C., 6½d.; 39° to 40° C., 7d.; 39° to 40° C. (*detached crystals*), 8d. per lb. *Crude* is quoted at 2s. for 60 per cent., with 75 per cent. at 2s. 5d. per gallon. *Liquefied* and *creylic* are worth 1s. and 11d. per gallon respectively.

ACID, CITRIC.—There is no change to report in the position of this article, the market being quiet. Makers of *English* acid still quote 1s. 2d. per lb., whilst second-hand holders offer at 1s. 1¼d. *Concentrated lemon juice* offers at £13 5s. *f.o.b.*, Messina.

ACID TARTARIC.—No change is to be noted. The maker's price of *English* acid is still 1s. 3d., whilst *foreign* ditto, both in *crystal* and *powder*, offers at 1s. 2d. to 1s. 2¼d. per lb., according to brand.

AMMONIA COMPOUNDS.—*Sulphate* is steady with rather better enquiry, but £8 2s. 6d. is still quoted for grey 24 per cent. on the spot. *Hull* offers at £8, *Leith* at £7 17s. 6d. to £7 18s. 9d., *Beckton* at £8 10s. forward, and *Beckton* terms at £8 spot. *Sal ammoniac* is quoted at the decline noted a fortnight ago, *firsts* being offered at 37s., and *seconds* at 35s. *Carbonate* quotes at 3d. in *casks*, 3½d. in *kegs*, and 3¼d. in *jars*, with *powder* ¼d. per lb. extra. *Liquor* is unchanged at 3d. to 3¼d. per lb., less 5 per cent.

CAFFEINE.—Is very dull, but manufacturers' quotations are unchanged, 18s. being the lowest price for 1-cwt. lots, prompt delivery.

CAMPHOR (CRUDE).—The market is quiet, but prices are very steady in sympathy with cabled advices, which report *China* camphor at 87s. 6d. to 90s., and *Japan*, at 110s., both *c.i.f.* terms. No business is reported during the last few days.

CAMPHOR (REFINED).—There is no appreciable change in the prices quoted, but the market is certainly firmer. The *German* agent who was last week offering *bells* at 1s. 2½d. per lb., *c.i.f.*, prompt delivery, is not prepared to execute further orders at this rate. In fact, it is somewhat doubtful if 1s. 3d. per lb. would be accepted in some instances. Otherwise it may be said that *English* and *German* refiners' quotations are unaltered.

CASCARA SAGRADA.—Is very quiet. The nominal spot quotation for old bark is 15s. to 16s. per cwt.

CREAM OF TARTAR.—Is dull of sale at unchanged rates, fine white *French crystals* being worth 95s., whilst *German* brands of *powder* are quoted on the spot at 97s. For shipment from *Bordeaux* the last quotation was 89s. per cwt., *f.o.b.* At the close the market is rather firmer.

COAL DISTILLATION PRODUCTS.—*Toluol* quotes at 1s. 8d. per gallon for *pure*. *Benzole* is firmer, 50 per cent. being now worth 2s. 4½d., whilst 90 per cent. is quoted at 2s. 9d. per gallon. *Creosote*: 1¾d. per gallon. *Crude naphtha*: 30 per cent. at 120° C. quotes at 10½d. per gallon. *Solvent naphtha*: 95 per cent. at 160° C. is worth 1s. 6d. per gallon. *Pitch*: 32s. 6d. per ton, *f.o.b.* *Tar*: 11s. 9d. per barrel for *crude*.

COLOCYNTH.—Dearer. Good *Turkey* colocynth has sold this week at 2s. 8d. per lb., and sound apple is scarce and firmly held. It is believed that the supplies to come forward are very limited. Fair *Spanish* is quoted at 1s. to 1s. 2d. per lb.

COPAIBA (BALSAM).—Is very firm, and good qualities are rather scarce. *Maranhão* is quotable at 1s. 11d. to 2s., fair *Para* at 1s. 5d. to 1s. 6d., and *Bahia* at 1s. to 1s. 4d. per lb.

ERGOT OF RYE.—The market remains very dull, and there is only a limited amount of good quality available. For sound *Spanish* 9d. would be paid, whilst 7d. is asked for *Russian*.

GALLS.—The market in *Persian* galls is quiet but steady. Business has been for the most part confined to *greens*, *blues* being neglected. No good *whites* are offering. Quotations run as follows:—*Blues*, 52s. to 54s.; *greens*, 42s. 6d. to 47s.; *whites*, 37s. 6d. to 42s. 6d., and *sorts*, 48s. to 50s. per cwt.

GENTIAN ROOT.—Steady. Good quality *French* root has sold privately this week at 22s. per cwt.

GINGER.—Is firm. *Cochin* in auction sold slowly, but prices were fairly maintained, fair medium and small rough being quoted at 33s. to 35s. Native kinds sold at 63s. to 73s. 6d. for bold rough cut A to fine bright ditto, whilst medium and small dull sold at 45s. *Bengal* kinds were bought in at 15s. *Japan* sold at 19s. for fair, and 21s. for good bright limed. *Jamaican* root sold at fully steady to dearer rates, 83s. being paid for good bright, and 72s. 6d. to 79s. for medium washed.

GLYCERINE.—A very firm market. *Crude* has been selling during the week at advanced prices, and a big business has been done in *German* brands of double-distilled glycerine at prices ranging from 70s. to 73s. per cwt. For the *B and S* brand 73s. is now asked, whilst second-hand holders of *German* glycerine quote 70s. to 72s.

IPECACUANHA.—During the week a fair amount of business has been done privately in *Brazilian* root at fully steady rates, and the market is very firm. *Columbian* root offers privately at 4s. A new arrival of the latter variety will be offered in the next drug rates.

JALAP.—A brisk business has been done since our last report in fair quality *Vera Cruz* at 7d. per lb., which shows a fully steady rate. The market closes very firm.

LIQUORICE ROOT.—*Russian* root is very firmly held, and there is very little now to be had. For best *decorticated* 30s. *c.i.f.* per cwt. is quoted nominally. Rough *Persian* root offers at 7s. to 7s. 6d. per cwt. nominally.

MENTHOL.—Is decidedly firmer, and business has been done at advancing prices since our last report, 11s. being now quoted for good white *crystals* on the spot. Offers from *Japan* vary in price, 9s. 9d. to 10s. 6d. per lb., *c.i.f.*, being variously quoted.

OIL (COD LIVER).—A trade report published by an American firm gives the following particulars in regard to the yield in the *Lofoten* and *Finmarken* districts during the past six seasons:—

The fishing in *Lofoden* terminated on May 7, and, although the catch in *Finmarken* will not be completed until about June 10, reliable cable reports from there state that the weather for the past two weeks has been so unfavourable that if 100 hectoliters be added to the known output we can arrive at a fair estimate of what the crop will be in that district. The following statistics have been obtained from trustworthy sources, and the final result will differ but little from the figures here given:—

	Barrels unrefined oil.
Total result of the fishing in Norway, south of Lofoten	3,210
Total result of the fishing in Lofoten	7,790
Total result of the fishing in Finmarken (estimated).....	5,000
Total for all Norway, season 1896	16,000
Total for all Norway, season 1895	14,123
Total for all Norway, season 1894	16,026
Total for all Norway, season 1893	20,869
Total for six years, 1895 to 1890	18,500

To arrive at the quantity of medicinal refined non-freezing oil, ready for export, we must deduct 25 per cent. from above figures, and it will therefore be seen that the available crop is about 12,000 barrels all told.

OILS (ESSENTIAL).—*Star Anise* oil is again lower, and now offers at 7s. 9d. to 8s. per lb. on the spot. The market is very flat. There are no reliable quotations for *Cassia*, no business appearing to have been done during the week in any variety. *American peppermint* oil is quiet, *H. G. Hotchkiss'* brand being still quoted at 8s. 9d. to 9s. per lb. on the spot, whilst *Wayne County* quotes at 6s. 6d. to 7s. per lb. No *Japanese* oils are offering, and 40 per cent. quotes nominally at 6s., and *dementholised* at 3s. 9d. to 4s. *Citronella* is very firm at 1s. 6d. per lb. in tins, and 1s. 5d. in drums on the spot, but

no business is reported. *Patchouli* is scarce, and held for 1s. 4d. per ounce on the spot. *Italian* oils are generally unchanged, with the exception of *orange*, one brand of which now offers at 6s. 1d. per lb., *f.o.b.* Messina.

OILS (FIXED) AND SPIRITS—*Castor*: *Italian* oil is firm at the unchanged rate of 30s. 9d. to 31s. 6d. per cwt. *c.i.f.* for best quality. A recent Bengal commercial report comments upon the fact that a sufficient quantity of first quality oil from Indian grown seed is now expressed in this country, consequently the demand for this grade for the United Kingdom is likely to be very small in future. *Cotton* is quiet at a decline. *Refined* oil being now quoted at £15 15s. to £16 5s. on the spot. *Coco-nut* is in fair demand at unchanged rates, *Ceylon* at £22 10s., and *Cochin* at £26 15s. *Linseed* is again lower by about 5s., oil in barrels on the spot being now quoted at £18, and this price has been paid. *Rape* is a trifle easier at £22 15s. to £23 on the spot for refined quality. *Palm*: *Lagos* quotes at £20 10s. *Olive*: *Spanish* is quoted at £29 to £30, and *Levant*, at £29. *Turpentine* is again lower, but closes steady at 20s. on the spot for *American* spirit. *Petroleum* is quiet. *Russian* still quotes at 5d., and *water white*, at 6½d., whilst *American* is a trifle firmer at 5½d. per gallon.

OPIUM.—The London market is very quiet, and there is a decided disposition amongst holders to accept lower rates. The current quotations are as follows: *Turkish*: *Soft shipping*, 12s. to 12s. 9d.; *Smyrna*, 9s. to 10s.; *Constantinople*, 9s. to 10s.; *drug-gists' seconds*, 8s. to 9s. per lb. *Persian* is very quiet, and owing to larger recent arrivals prices are inclined downwards. Nominally fine "bricks" quote at 13s., and ordinary "ball" at 11s. to 11s. 6d. per lb.

ORRIS ROOT—Quiet but steady. Business has been done privately in pale picked *Florentine* root at 75s. per cwt. on the spot, whilst for fair *Veronese* 65s. is quoted.

PERU (BALSAM)—Is very quiet, although the supply is small. Quotations in first hand range from 8s. 3d. to 8s. 6d. per lb. for good balsam.

QUICKSILVER.—The market is steady, and prices are unaltered. The importers' price is still £6 10s., whilst second-hand holders offer at £6 9s. 6d.

QUININE SULPHATE—Remains in absolutely a lifeless state, with no business whatever doing. The best *German* makes quote nominally at 1s. 0½d. per oz.

SALOL.—On Monday the price of this article was lowered to 4s. 6d. per lb. It is probable that this step was taken so as to meet the outside competition which the Syndicate of manufacturers have had to contend with. At the same time the parity of the price now quoted in France for the article is considerably lower than the reduced figure given above, so it is not improbable that a further decline will take place.

SENEGA ROOT—Is still quoted at the low price which was paid in auction, viz., 1s. per lb., which is the lowest price this drug has ever touched. The holder will not make any reduction on this figure, and 11½d. has been refused.

SHELLAC.—The market is very firm. Privately a moderate business has been done on the spot in *Second Orange* and

Button on the basis of last week's prices, with *Garnet* dull of sale at 83s. 6d. for *AC*. For arrival no business has been done, although there would be buyers of *Second Orange*, May to June shipment, at 89s. to 90s., *c.i.f.* terms. At the weekly sales the supplies offered were small, but *TN* qualities of *Second Orange* met with a brisk demand at a further advance of 3s., closing at 93s. Good grades remain neglected. *Garnet*: A few cases of *PB, G* sold at an advance of 2s. to 3s., *Button* sold well at 88s. to 91s. for blocky fair to good firsts, and 84s. for seconds. Since the sales there has been a good demand for *Button* at full rates, whilst *TN Orange* has sold at 93s. to 93s. 6d., short prompt.

SPICES (VARIOUS).—*Cloves*. In auction no Zanzibar were offered, but 20 cases of ordinary quality *Amboyna* sold at 3d. per lb. *Mace* remains flat, *Penang* being all bought in, pickings at 1s. 2d. to 1s. 3d., ordinary brown and red at 1s. 4d. to 1s. 5d. per lb. *Cinnamon quillings*: *Ceylon* sold at 7¼d. to 7½d., broken quill, at 9d., and chips at 4¼d. per lb. in auction. *Cassia vera*: Coarse *Padang* quill was bought in at 24s. per cwt. in auction. *Pimentine*. Bought in at 2½d. per lb. *Pimento* sold at a decline of ½d. to ¼d. per lb., 2½d. being accepted for good fair, 2¼d. for fair, and 2d. to 2½d. for medium grey and mixed. *Capsicums*: Long thin red *Japan* sold at 13s., whilst *East Indian* kinds were all bought in. *Chillies*: Ordinary *Zanzibar* were bought in at 40s., whilst fine bright red *Japan* sold at 51s. 6d. *White Pepper*: Fairly steady. *Penang* sold at 2½d.; *Siam* were bought in at 3½d., whilst *Singapore* part sold at 4d. for good quality; *Arrowroot* remains flat, but prices are steady, 1½d. being paid for ordinary *St. Vincent*, whilst sea-damaged sold at 2¼d.

STICKLAC—Very quiet. *Rangoon* was all bought in at the sales, small thin sticks at 97s. 6d., and small dusty at the same figure. A few bags of *Seedlac* sold at 65s. to 66s. per cwt.

TOLU (BALSAM)—Is firm. For good, "old-fashioned" balsam 2s. 6d. is still asked on the spot, the shipment quotation from New York being 2s. 3d. per lb., *c.i.f.* terms.

TRAGACANTH (GUM)—There has again been a good inquiry for this article, but little business has resulted. The market remains firm at the following prices:—Firsts, £14; seconds, £12 10s. to £13; thirds, £10 10s. to £11 10s.; fourths, £8 10s. to £10s.; yellow and pinky, £6 to £7 10s., with other qualities at 35s. to £6 per cwt.

TURMERIC.—The market is very quiet: fair *Bengal* has been selling quietly at 7s. 6d. per cwt.

MANCHESTER CHEMICALS AND DRY-SALTERIES, June 17.—It is difficult to focus the market with any degree of accuracy. It is certain, however, that in some respects, notwithstanding the diminished exports of heavy chemicals, there is a better home demand. This is borne out by reports a 1 round Bleaching powder has been reduced for the United States market. Recovered sulphur is firmer at £3 17s. 6d. per ton. Soda crystals range from 35s. to 37s. 6d. per ton in bags on rails at works; £2 7s. 6d., Dublin; £2 2s. 6d., Belfast; barrels, 7s. extra. Bicarbonate of soda

firmer. £6 12s. 6d. to £6 15s. *f.o.b.*, Liverpool. Industrial bicarbonate for mineral waters unchanged on last week. Acids very easy, and cream of tartar, 98s. to 100s. for best white powdered here. Benzols, firm. Carbolic acid unaltered, but firm. Naphthas inclined to lower figures.

NEWCASTLE CHEMICAL MARKET, June 17.—The market continues to move steadily. Oversea shipments are a shade better, principally to the Baltic ports. Home inquiries are a shade fuller. Prices, however, are a little changed, and quotations keep as follow:—Bleaching powder: £7 5s. to £7 10s., according to markets. Soda crystals: 37s. 6d. to 45s. Caustic soda: 70 per cent., £7 5s. to £7 15s.; higher strengths, £9 to £9 10s. Alkali: 52 per cent., £5. Soda ash: 52 per cent., £4 5s. Sulphur: £3 17s. 6d. to £4 per ton, *f.o.b.*

LIVERPOOL MARKET REPORT, June 17.—Hempseed: 50 bags of Chilean have sold at 27s. 6d. per 384 lbs. Canary seed is very flat, though prices are very favourable to buyers; Turkish, 27s. to 28s. per 464 lbs. Foenugrec seed: 60 bags of Egyptian *ex quay* brought 7s. 6d. per cwt. Ginger: African varieties are plentiful; 250 bags Sierra Leone sold at 19s. per cwt., and Monrovia, 17s. Beeswax: Gambia has been selling in fair amount between £7 8s. 9d. and £7 10s. per cwt., and 25 sacks of Chilean brought £7 13s. 9d. Kola nuts: Fresh nuts recently have been difficult to dispose of, and the price of some 20 baskets fell to 2¼d. per lb. to clear. Gum: Arabic varieties are slow of sale, but prices are steady. Sales of hog tragacanth have been made at 45s. per cwt. Castor oil is firm in tone and in good demand; good 2nds Calcutta are at 2½d. per lb., 1st pressure French at 2¾d., and Madras 2½d. per lb. Olive oil is in somewhat limited demand at prices between £28 and £35 per tun. Spanish oils fetch very steady prices. Linseed oil is quiet at 19s. to 20s. 6d. per cwt. for Liverpool makes. Cottonseed oil: Liverpool refined unchanged at 16s. 3d. to 17s.; American refined, 16s. 9d. to 17s. per cwt. Spirits of Turpentine: Recent arrivals have lowered the price to 20s. 9d. per cwt., spot value. Petroleum: Russian refined, 5¾d.; American, 6¼d. to 7½d. per gallon. Sal ammoniac: First quality, 37s. per cwt.; second, 35s. Carbonate of ammonia: 3½d. to 3¾d. per lb. Sulphate of ammonia: £8 7s. 6d. per ton. Bleaching powder: Hard: £7 per ton. Copperas: Lancashire, 37s. per ton; Welsh, 35s. Sulphate of copper: £18 10s. per ton. Potashes: 20s. 9d. per cwt. Pearlash: 35s. per cwt. Chlorate of potash: 4¾d. per lb. Bichromate of potash: 4¾d. per lb. Prussiate of potash: 7d. per lb. Cream of tartar is steady at 100s. per cwt. for spot parcels. Bicarbonate of soda: £6 15s. per ton. Soda crystals: £2 7s. 6d. to £2 10s. per ton. Caustic soda: 70 per cent., £7 8s. 9d. per ton; 60 per cent., £6 8s. 9d. Nitrate of soda steady at 7s. 10½d. to 8s. 1½d. per cwt. Borax: 20s. per cwt. lump; 21s., powder. Hyposulphite of soda: £5 10s. to £6 per ton.

THE RÖNTGEN RAYS AT CORK have proved successful in demonstrating the exact position of a bullet in a lad's thigh after several futile attempts to find it by the ordinary method.

NEW IDEAS.

ALAPURIN.

Messrs. Thomas Christy and Co. submit a sample of "Alapurin" or Adeps Lanæ Puriss, N.W.K. This substance differs from all other preparations of wool-fat, inasmuch as it is almost white in the anhydrous state; not only in colour does it surpass other preparations of pure wool-fat, but also in odour, the objectionable smell of crude wool-fat, which to a certain extent was always present in the best preparations hitherto on the market, being entirely removed, and the slight odour which this substance now possesses is quite an agreeable one. Alapurin is equally as soft and supple as adeps lanæ, N.W.K., and has a definite melting point of 41° C. The preparation is one that it would be difficult to improve upon as an absorbent ointment basis.

STYPTICIN—A NEW UTERINE HÆMOSTATIC.

Stypticin is a coined name for hydrochloride of cotarnin, one of the oxidation products of the alkaloid narcotine. In chemical structure and therapeutic action it is closely allied to hydrastinin, and considerable attention has been directed to its use in the treatment of uterine hæmorrhage. Gottschalk found that stypticin promptly checks hæmorrhage due to muscular atony, and leading clinicians, who have undertaken the investigation of its therapeutic effects along the lines laid down by Gottschalk, have fully confirmed his results. In response to suggestions to prepare the drug in concentrated form, so that physicians desirous of conducting trials may have within their reach a convenient preparation of undoubted purity and accuracy of dose, Messrs. Burroughs, Wellcome and Co. have prepared "tabloids" for administration both hypodermically and by the mouth. They supply the former in tubes containing twelve $\frac{1}{4}$ -grain "tabloids" at 8d. each, and the latter in bottles containing twenty-five $\frac{3}{4}$ -grain "tabloids" at 4s. each.

COMPRESSED LITHIA AND VICHY LENTIFORMS.

The large compressed tablets known as "lentiforms" are especially suitable for the extempore preparation of effervescent mineral waters, and Warner's Effervescent Lithia and Vichy Lentiforms, specimens of which have been sent by Messrs. F. Newbery and Sons, seem well adapted for presenting the remedies in a portable, economical, and pleasant form, besides ensuring a definite strength at all times. The lithia lentiforms contain 3 grains of lithium citrate each, and the Vichy lentiforms are intended to replace the bottled spring waters. Since their first introduction the lentiforms have been materially improved, and they are now capable of preservation for a much longer period than formerly, without impairment of their medicinal qualities.

IMPROVED SELTZOGENE CHARGES.

Hargreaves' patent seltzogene charges are distinctly novel, and possess several advantages over others. The complete charge is contained in one packet, in which fused sodium bisulphate is surrounded by powdered sodium bicarbonate, so that the operation of charging the seltzogene is simplified,

and it is impossible to make any mistake. As a result of the special method of preparation it is also impossible for a charge to produce more than the correct quantity of gas, the safety of the seltzogene being thus assured. The acid is in the form of solid blocks, instead of small crystals, so that the gas is evolved more gradually, and is more steadily absorbed by the water. Finally, owing to the superior form of wrapping employed, each package being enveloped in both waxed paper and heavy tinfoil, the charges are not subject to deterioration by changes of climate. The aerated water produced by these charges is excellent in flavour and full of gas. They are supplied by Mr. James Hargreaves, Farnworth, Widnes.

MISCELLANEOUS NEWS.

DRUG STORES AND THE PUBLIC.—According to the *Medical Press and Circular*, a case was down for hearing in the Court of Queen's Bench last week, which exemplified in a striking manner the "danger of dealing with cheap drug stores." Some months ago a lady called at an establishment of this kind and asked for a dose of sal-volatile for a headache. Strong solution of ammonia was given, with the effect of causing the greater part of the mucous membrane of the œsophagus to come away in sloughs, and after being in a critical state for some time and a tedious convalescence, the patient recovered to find that her sense of taste was gone. Damages were laid at £1000, but at the last moment the case was settled out of court, on terms which were understood to be favourable to the plaintiff, the defendants undertaking to pay all costs. As the *Medical Press and Circular* remarks, the occurrence of this mishap would have been impossible with the exercise of ordinary skill and care.

THE CHEMISTS' CLUB.—The Committee of this Club has arranged for a series of Sunday outings, the first of which will take place on Sunday next, June 21, to Windsor, starting from Waterloo 10.25 a.m. Dinner is arranged at the Star and Garter Hotel at 1 p.m. The Honorary Secretary, Mr. L. Lionel Cannar, 2, Farringdon Avenue, E.C., will be happy to give any further information to chemists and members on application.

BOVRIL TRADE MARK.—On Friday, June 12, Lords Justices Lindley, Lopes, and Rigby heard an appeal by John Rose-tree from the refusal of Mr. Justice Kekewich to rectify the Register of Trade Marks by removal therefrom of the "Bovril" trade mark, No. 58,405. The mark, which was originally registered by Mr. John Lawson Johnston, on November 2, 1886, and transferred to the Bovril Co. on April 6, 1889, in Class 42, was for substances used as food, and the question for the Court was whether "Bovril" was a fancy word not in common use within the meaning of Sec. 64, Subsec. 1, Clause C of the Act of 1883. On behalf of the appellant, who claimed to be a person "aggrieved," it was urged that the word was descriptive, meaning ox, and therefore ought never to have been registered, but the Court took a different view, and dismissed the appeal with costs, holding that the word

had never been known until it was coined by Mr. Johnston. Mr. Bower and Mr. Drew appeared for the appellant; Mr. Moulton, Q.C., Mr. Warmington, Q.C., and Mr. John Cutler for the respondents.

INTER-HOSPITAL BOAT RACE.—On Thursday, June 11, the Annual Inter-Hospital Boat Race took place from Hammersmith to Putney, in brilliant weather, and was witnessed by a large assemblage. Three hospitals were represented, viz.—Middlesex Hospital, Middlesex station; St. George's Hospital, centre station; London Hospital, Surrey station. At the first attempt a foul took place between St. George's and Middlesex, and the crews were ordered back to the stake boats. After a short delay, necessitated by the rupture of a thowl string in the St. George's boat, a fresh start was made. Another slight foul between St. George's and London enabled Middlesex to get away with a slight lead. A grand race now ensued for the first mile between Middlesex and St. George's, the former, however, gradually increasing their lead. At the point opposite to the Ranelagh Club, the St. George's crew were evidently beaten, and the Middlesex holding the race well in hand passed under Putney Bridge with a clear lead of 2½ lengths. London, who rowed a plucky, stern chase, finished five lengths behind. The winners carried the course in the excellent time of 9 minutes 3 seconds. The members of the winning crew were as follows:—

	st.	lbs.
Bow, C. H. Reissmann	10	4
2, H. C. Whiteside	11	7
3, G. P. Bletchley.....	11	11
Str., C. Chamoock Smith....	10	0
C., W. G. Higgins.....	9	2

PHARMACEUTICAL CRICKET.—The following match was played at Nunhead on Saturday the 6th inst., between Metropolitan College of Pharmacy and Westminster College of Pharmacy, which ended in a victory for the former by twenty-nine runs. The following were the results:—Metropolitan College of Pharmacy, 90 runs; Westminster College of Pharmacy, 61 runs.

PHARMACEUTICAL SOCIETY OF IRELAND.—The last days for entrance for the July examinations will be as follow: For the Preliminary examination, Monday, the 22nd inst.; for the Pharmaceutical Licence examination, Wednesday, the 24th inst.; for the Pharmaceutical Assistants' examination, Monday, the 29th inst.; for the Registered Druggist examination, Tuesday, the 30th inst.

THE VALUE OF A DISPENSER.—According to the Local Government Board, £40 per annum is enough for a compounder of drugs. The Castlereagh Board of Guardians thinks differently, and insist on their apothecary getting £100 a year.

CLASSES AT EXETER.—In connection with the technical department of the Exeter Technical and University Extension College, summer classes in practical chemistry, physics, and systematic botany, etc., have been arranged.

EXCHANGE.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

A book of 130 Well-tryed Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

The 'Analyst,' vol. 17 for 6s, vol. 18 for 11s.; Liddell and Scott's Greek-English Lexicon (7s. 6d.), 4s.; Smith's Latin-English Dictionary (7s. 6d.), 3s.; Remsen's 'Organic Chemistry,' 3s. 3d.; Kelly's 'Directory of Chemists and Druggists' (20s.), 6s. 6d.—Beta, 1, Eagle Villas, Pennfields, Wolverhampton.

Miscellaneous.

Two Mahogany Chairs, 25s; three Nests Mahogany Drawers, bevelled edge, gilt, glass labels, £5; Mahogany T.p. Counters; Round Ruby Glass Lamp, £2. Stamp for particulars.—Burge, 2, Fernhead Road, Paddington.

Taken in payment for adverts., cannot be repeated, all new:—Camera half-plate, London make, reversing, swing back, four double slides, with R.R. 7 × 5 lens, iris, tested by expert, £5. Lens, R.R. 5 × 4 iris, leather case, 22s. 6d. Developing Trays (three gross), xylonite, $\frac{1}{4}$, 3s. 9d.; $\frac{1}{2}$, 6s.; $\frac{1}{8}$, 8s. 6d.; enamelled iron, $\frac{1}{4}$, 4s. 3d.; $\frac{1}{2}$, 6s. 6d.; 12 × 10, 18s. dozen. Printing Frames, rounded corners, brass springs, $\frac{1}{4}$, 4s.; $\frac{1}{2}$, 8s.; $\frac{1}{8}$, 15s. dozen. Dark Slides, double, fit Lancaster's Instantograph, two dozen each, $\frac{1}{4}$, 4s.; $\frac{1}{2}$, 5s. 6d. Glass Measures, graduated, six dozen each, 2-dr., 5s.; 2-oz., 4s.; 4-oz., 6s. 3d.; 10-oz., 10s. dozen. Focusing Covers, black twill, lined ruby, two dozen, 30 × 34, 1s. 3d.; 30 × 51, 1s. 9d.; 60 × 48, 2s. 6d. Packages free, cash with order, returned if sold.—Warnes, 6, Rochester Square, N.W. Offers entertained.

For sale. Bent Glass Counter-Case, as Fig. 5 Maw's, little used, splendid condition, length 5 ft. Full particulars and dimensions from—L. L. Stroud, Tewkesbury.

A Trolley which a boy of eight can easily convey 3 dozen syphons and cases on, price 35s.—Arthur and Co., Chemists, Cambridge.

Recipe.—Superior Lavender Water, guaranteed the best in the market, may be considerably reduced, suitable for retail price, 2s., post free.—Mr. McCave, 3, Cottage Place, Romney Street, S.W.

Recipe.—Superior Dental Essence, elegant preparation for the toilet, for cleaning the teeth and imparting an agreeable freshness to the mouth, 2s., post free.—Address as above.

Recipe.—Acid. Acetic, Aromat. Fort., superior preparation, elegant aroma, may be reduced one-half or more with s.v.r. for retail price, 2s. 6d., post free.—Address as above.

Soda Water Appliances.

Soda-Water Machine, Barnett and Foster's, No. 2; list price £45; sell for £15; good condition.—Apply to H., 1, Southwick Street, Hyde Park.

TRADE NOTES AND NEWS.

THE ANDERSTON'S APOTHECARIES' CO., Washington Street, Glasgow, a wholesale and retail business, is understood to be for disposal.

MESSRS. BURROUGHS, WELLCOME AND CO., Snow Hill Buildings, London, E.C., announce that during the months of June, July, and August their London offices, warehouses, and wharf will be closed at 1 o'clock on Saturdays.

MESSRS. S. MAW, SON AND THOMPSON, 7 to 12, Aldersgate Street, London, E.C., announce that on and after July 4 their establishment will close on Saturdays at 1 p.m., instead of 2 p.m. as heretofore.

THE LIQUOR CARNIS COMPANY write with respect to the medal or award allotted to them at the Chicago Exhibition of 1893, which they have not up to the present received. They also enclose a communication from their representative at the exhibition, who points out that the fund reserved for the "distribution of awards" is only £15, a sum ridiculously inadequate for the purpose, and says, "as far as I am able to judge you will receive your diplomas and medals about the same time as the arrival of the Greek Kalends."

MARRIAGE.

PATTISON—JONES.—On the 11th inst., at St. John's, Birkenhead, by the Rev. H. E. Nixon, Joseph Henry Pattison, photographer, Carnarvon, eldest son of Mr. Pattison, chemist, Shrewsbury, to Margaret Jane, daughter of Mr. Henry Jones, Cloughton Road, Birkenhead.

PERSONAL.

MR. A. D. BREEZE, a very active member of Plymouth and District Chemists' Association, has been elected honorary secretary of Plymouth Mercantile Association.

MR. J. COCKS, the energetic hon. sec. of Plymouth and District Chemists' Association, headed the list in the retail section of the successful candidates of the Proprietary Articles Trade Association election.

MR. DAVID HOOPER has been appointed by the Madras Government to officiate as Government botanist and director of cinchona plantations, Nilgiris, until further orders.

DR. ALEXANDER GORDON, L.P.S.I., Dublin, has quite recovered from his recent accident, and has resumed practice.

MR. WM. TAYLOR, chemist and druggist, of Red Lion Square, Heanor, is suffering from the effects of an ammonia bottle bursting, the contents having badly injured his eyes.

COMPANY BUSINESS.

C. I. HOOD AND CO., LIMITED.—This company was registered on May 21, by Isitt and Co., 6, Old Jewry, E.C., with a capital of £10,000 in £1 shares. Object: To acquire and carry on the business of drug and patent medicine manufacturers and vendors, chemists, etc., carried on in the United Kingdom by C. I. Hood and Co. The directors are C. I. Hood, C. Stickney, C. Gordon, and W. Everett.

LATE ADVERTISEMENT.

Assistant Wanted.

ALTRINCHAM HOSPITAL AND PROVIDENT DISPENSARY.—Wanted a Qualified Chemist as DISPENSER and to receive subscriptions of provident members. Applications, stating age and salary required, with recent testimonials, should be sent to the MEDICAL STAFF, Altrincham Hospital, Cheshire, not later than June 30.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

TUESDAY, JUNE 23.

ROYAL PHOTOGRAPHIC SOCIETY, at 8 p.m.
"A Practical Demonstration of Colour Screen-Making and Testing" by F. E. Ives.
PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.
Committee Meeting.

WEDNESDAY, JUNE 24.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION (JUNIOR SECTION).
Botanical Excursion to Yelverton and Burrator, conducted by O. A. Reade, leaving Millbay at 2.50 p.m.

THURSDAY, JUNE 25.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION (JUNIOR SECTION).
"Outlines of Chemical Philosophy," by J. R. Johnson.

NEW BOOKS AND NEW EDITIONS.

CLINICAL DIAGNOSIS. A practical handbook of chemical and microscopical methods. By W. G. AITCHISON ROBERTSON. 6s. (The Scientific Press, Ltd.)
CHEMISTRY IN DAILY LIFE. Popular lectures by Dr. LASSAR COHN. Translated by M. M. Pattison Muir, M.A. 6s. (H. Greval and Co.)
INVENTIONS AND THEIR COMMERCIAL DEVELOPMENT. A practical handbook for inventors and investors, showing how to invent, what to invent, how to patent, and how to make money by inventions. By JOHN SAMSON, C.E. 1s. (South American Journal, Dashwood House, E.C.)
BURDET'S HOSPITALS AND CHARITIES. 1896. 5s. (The Scientific Press, Ltd.)
THE LANCET AND THE HYDERABAD COMMISSION OF CHLOROFORM. (The Lancet Office, Strand.)
THE FLORA OF DUMFRIESSHIRE. By G. F. SCOTTELLIOTT, assisted by various writers. (Dumfries: Maxwell and Son.)
ELEMENTARY ANATOMY AND SURGERY FOR NURSES. A series of lectures delivered to the Nursing Staff of the West London Hospital. By W. MCADAM ECCLES, M.S. Lond., F.R.C.S. (Scientific Press, Ltd.)
THE FLORA OF THE ALPS. By ALFRED W. BENNETT M.A., B.Sc., F.L.S. In two vols. 30s. (John C Nimmo.)
PHOTOGRAPHY FOR ARTISTS. Brief and useful information respecting the many uses of Photography in various walks of the Pictorial and Allied Arts. By HECTOR MACLEAN, F.R.P.S., F.G.S. (Percy Lund and Co., Ltd., The County Press, Bradford, and Memorial Hall, Ludgate Circus, London.)

MARKET REPORT.

[The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.]

The markets have been generally steady since our last report, and a fair amount of business seems to have been done in most branches. In regard to chemicals, carbolic acid is quiet, tartaric and citric acids are dull, whilst cream of tartar is decidedly firmer. Crude camphor is quite neglected, but the refined article is very firm, and the makers are busily engaged executing orders. Amongst other fine chemicals it may be mentioned that the makers of pilocarpine, having come to an understanding, have raised the price for the alkaloid and its salts. Santonin is offering at easier rates, 6s. to 6s. 3d. being now quoted by the makers. Alkaloids generally quiet and unchanged. Glycerine is very firm, and likely to see much higher prices, whilst menthol is very firmly held at higher rates, 10s. 6d. to 10s. 9d. being now the spot quotation. The drug sales passed off to-day quietly. *Jamacia sarsparilla* sold at a marked advance, whilst good prices were also obtained for *cascarilla bark*. On the other hand, *ipecauanba* is lower, the same applying to *Sumatra benzoin*, *gamboge*, *Jamaican beeswax*, and *cardamom seeds*. Spices are generally unchanged, and the same applies to most heavy oils. Amongst the essential oils star anise and cassia show a further decline. Full details will be found below:—

ACACIA (GUM).—The high prices asked for *Persian gum* are prohibitive and little business has been done. The quotations range from 24s. to 26s. for fine picked, 18s. to 20s. for good sorts, down to 10s. for ordinary block. The market for other varieties remains very flat, without any business recorded. At to-day's auction an average supply amounting to 142 packages was shown, but not a single package sold. *Trieste gum* is in moderate supply and firmly held. A case of medium greyish picked was bought in at £8, and pale grain at the same figure. In addition good amber *Aden* sorts were bought in at 70s. to 80s., medium palish *Suez* at 75s., and frosted brown *Australian* at 46s. per cwt.

ACID, CARBOLIC.—The market is quiet but steady. The current quotations are:—*Crystals*: 34° to 35° C., 6½d.; 39° to 40° C., 7d.; 39° to 40° C. (*detached crystals*), 8d. per lb. *Crude* is quoted at 2s. for 60 per cent., with 75 per cent. at 2s. 4½d. *Liquefied and cresylic* are worth 1s. and 11½d. per gallon respectively.

ALOES.—A very moderate supply only was offered at the sales. The *Cape* variety, which was the only one to attract buyers, showed a slightly easier tendency, 25s. being accepted for fine bright hard, 23s. to 24s. for medium ditto, and 22s. for fair partly

drossy. A parcel of *Curacao aloes* in boxes was all bought in, good brown at 37s. 6d. to 42s., medium ditto at 30s., and ordinary dark capey at 15s. to 20s. per cwt. No *East Indian aloes* was shown.

AMMONIACUM (GUM).—Supplies of this article are small, but, on the other hand, little demand has been shown lately. To-day 2 cases of palish loose drop were bought in at 55s. per cwt.

ANNATTO SEEDS.—A moderate supply, amounting to 25 cases, was offered, but met with little inquiry. The only parcel sold was 7 bags of fair bright *Coconada* seed, which realised 3d. per lb., subject to approval, whilst *Jamaican* seed was bought in at 3½d., and *Madras* at 5d. per lb. The market is tending lower.

ANTIMONY.—Fifty cases of crude *Japan* antimony were bought in to-day at £19 10s. per ton.

BENZOIN (GUM).—The market is still quiet and the majority of the catalogue to-day was bought in at nominal rates. Out of a total of 296 packages, *Siam gum* was represented by five cases. For a case of medium to bold loose pale almonds £31 was accepted, whilst £19 10s. was paid for small ditto; £12 10s. for palish mixed loose and blocky small almonds, and 43s. for dark siftings in block. The remaining case of the parcel, which consisted of small loose, clean drop was bought in for £10 per cwt. *Sumatra gum* met with hardly any inquiry, and sales were only made at a further decline of about 7s. 6d. per cwt., £7 17s. 6d. being accepted for eight cases of good pale clean marbled seconds. The only additional lot sold was seven cases of ordinary, rather dull, seconds, with fair centres, but very false packed sides. *Palembang gum* was all bought in, fair seconds in tins at 35s., and barky thirds at 27s. 6d. per cwt.

BUCHU LEAVES.—The market is tending easier. At to-day's sales 66 bales of *round* leaves were shown, but the demand was very moderate and prices irregular, since at first 3¼d. was paid for fairly bright yellowish-green leaves, but subsequently 3d. was accepted for the same quality, and 2¼d. for a rather duller grade.

CALUMBA ROOT.—No sales were effected to-day, all the parcels shown being held for high prices. Ordinary brownish sorts were bought in at 15s. to 16s. per cwt, whilst fair yellow washed root is held for 40s. per cwt.

CAMPHOR (REFINED).—There is no change in the manufacturers' quotations, but the market is very firm, and the makers are busily engaged executing orders.

CAMPHOR (CRUDE).—The market is unchanged and no business is reported. The nearest quotation for *Formosan* camphor is 80s. per cwt. *c.i.f.* July to August shipment.

CANNABIS INDICA.—Forty bales of greenish-brown stalky *Bombay* tops were bought in at 2½d. per lb.

CARDAMOMS.—A good supply, amounting to about 180 boxes, was shown to-day, and about half of these sold at rather easier rates, especially for *seed*, which shows a drop of about 6d. per lb. The following prices were paid:—*Mangalore*: Fine bold plump pale, 2s. 10d. to 2s. 11d.; small yellowish, part split, 2s. 2d. to 2s. 3d. *Mysore*: Extra fine bold pale, 3s.; medium to bold plump pale, 2s. 6d. to

2s. 11d.; good plump palish medium, 2s. 2d. to 2s. 4d.; medium yellowish, 1s. 10d. to 2s. 11d.; small mixed browaish speckled and split, 1s. 7d. to 1s. 9d. For *seed* 2s. 6d. to 2s. 9d. was paid. A parcel of 20 cases of seeds, catalogued as *cardamom seeds*, but which were really "camphor seeds," was bought in.

CASCARILLA BARK.—Is in very good demand at advanced rates. To-day forty packages were shown. For good sound silvery quill 47s. to 49s. was paid, whilst 40s. to 45s. was accepted for fair brown part stringy bark and 33s. 6d. for siftings.

CASSIA FISTULA.—Forty bags of fair *Dominica* pods realised 16s. per cwt. in auction to-day. Another parcel of lean wormy quality was bought in.

CASTOREUM.—Four packages of this article were shown to-day. A box of pile I. was bought in at 55s., pile II. at 45s., whilst the remainder, which consisted of pile III. and trimmings, realised 27s. 6d. per lb.

COCA LEAVES.—None were sold in auction. Some good green *Truxillo* leaves were bought in at 1s. 3d., whilst *Huanoco* of fair quality were withdrawn at 1s. 2d. per lb.

COLOCYNTH.—The market is very firm. Thirteen cases were catalogued of *Turkey colocynth*, but none was sold. It was stated, however, that a portion had been sold previously at 2s. 8d., and the remainder of the parcel was bought in at 3s. per lb. Fair *Spanish* offers at 1s. to 1s. 2d. per lb.

COAL DISTILLATION PRODUCTS.—*Toluol* is much dearer, and now quoted at 2s. 6d. per gallon for *pure*. *Benzole* is a trifle easier at 2s. 4d. for 50 per cent., with 90 per cent. at 2s. 8d. per gallon. *Creosote*: 1½d. per gallon. *Crude naphtha*: 30 per cent., at 120° C, quotes at 11d. per gallon. *Pitch*: 33s. per ton *f.o.b.* *Tar*: 11s. 6d. per barrel for *refined*, and 13s. for *crude*.

CREAM OF TARTAR.—On the spot quotations are unchanged for fine white *French Crystals*, which are quotable at 95s., but *powder* is rather firmer at 97s. to 100s. for German brands. Cablegrams from Bordeaux advise a firm market, 90s. *f.o.b.* having been paid.

CUTTLEFISH.—Ten casks of good white dry bone, part broken, from Port Chalmers sold at 3¼d. per lb. in auction.

ELEMI (GUM).—The market is overstocked with this article, and it seems difficult to find buyers at the prices now asked. Twenty-one cases were shown to-day, but none found buyers. *Singapore gum*, rather dirty, but of good aroma, was bought in at 21s., and pale clean *Manilla* at 25s. per cwt.

ERGOT OF RYE.—Is still very slow of sale. The supply offered to-day was only moderate, but the business was confined to thirty bags of bold wormy old *Spanish* ergot, which changed hands at 4d. per lb. Sound quality is held for 9d. per lb.

EUPHORBIIUM.—Ten serons of ordinary small gum sold in auction at 18s. 6d. per cwt.

GALLS.—*China* are quite neglected, and quoted nominally at 56s. to 57s. per cwt. In *Persian* galls a fair business has been done in *blues* at 53s., and *greens* at 45s. There are also enquiries for *whites*, but few parcels are offering.

GAMBOGE is again lower. Twenty-eight cases were offered to day, and met with a good demand, although the prices paid show a distinct decline on those of last week. Ten

cases of good free *Siam* pipe slightly blocky realised £8 15s., whilst £7 5s. was paid for medium ditto subject to approval and £7 10s. for good pickings. In addition, seven cases of mixed blocky and free *pipe* sold at £8 per cwt.

GINGER.—*Cochin* root is steady, but quiet. In auction 33s. to 35s. was paid for ordinary to fair lean rough small, and 28s. 6d. for common ditto. Native kinds sold at 52s. for medium half cut, and 62s. 6d. for bold ditto. *Bengal* root was bought in at 15s., whilst mouldy limed *Japan* realised 15s. to 16s. per cwt. *Jamaican* root sold at full to rather dearer rates, 84s. 6d. to 88s. 6d. being paid for good bright, and 70s. to 80s. for ordinary medium to fair bright washed.

GLYCERIN—Remains a very firm market, with quotations ranging from 70s. to 73s. for double distilled *German* glycerin of 1260 gravity. It is generally expected that much higher prices will be seen very shortly.

GUAIACUM (GUM).—No good quality was offered to-day. Thirty cases of drossy quality were bought in at 9d. to 1s. per lb.

HONEY—Was in fair demand to-day, with out any alteration in price. Nineteen packages of *Jamaican* sold at prices ranging from 28s. 6d. for good pale clean, 23s. for fair yellow down to 20s. 6d. for rather foul brown. A parcel of *Californian* honey also changed hands at 25s. to 29s. per cwt., whilst pale *Honolulu* was bought in at 25s., and *New Zealand* at 45s. per cwt.

IPECACUANHA—Was in moderate supply to-day, but a fair amount of business was done. Of 24 bales of *Rio* (Brazilian) 18 sold at a decline of 1d. to 2d. per lb., 5s. to 5s. 3d. being paid for medium to good stout annulated root. 11 bags of *Carthagena* (Columbian) root all sold at 3s. 10d. to 4s. for stout root of good quality.

INSECT FLOWERS.—Twelve bales of open, part broken flowers were bought in to day at 115s. per cwt. Six kegs of *powder* sold without reserve at 7d. per lb. The *Apotheker Zeitung* reports that this year's crop of pyrethrum flowers will be very small, as the plants have suffered much from the attacks of an insect analogous to phylloxera, and large districts, in which the plants were formerly cultivated, have been devoted to the growth of tobacco. Sellers are stated to ask absurdly high prices, and to be unwilling to sell, as they anticipate a rise in price.

JALAP—Very firmly held. Twenty-one bags of sound *Vera Cruz* root were bought in to day at 8d. per lb. There are no sellers under 7d. per lb.

KOLA NUTS—Are selling at lower rates. To-day a bag of fair *West Indian* nuts sold at 6½d. per lb., whilst 5½d. was accepted for a box of slightly wormy and mouldy quality, and 4d. for bad mouldy ditto.

LIME JUICE.—Good *Jamaican* juice was bought in to-day at 1s. 3d. per gallon, whilst dark quality, offered without reserve, fetched 7d. to 9d.

MUSK—A moderate supply only was offered and met a fair demand. Six tons of pile I pods, partly thin blue skin, sold at 55s. per oz., whilst 4d. was paid for trimmings.

MATICO—Good quality leaves offer privately at 1s. 2d. per lb. To-day three serons of ordinary stalky quality were bought in at this figure.

MYRRH (GUM).—Very freely offered, but

little business is done, except when offered without reserve. In this instance medium to fair native picked gum sold to-day at 50s. to 60s., dusty siftings at 19s., and pickings at 12s. per cwt. Fine native picked was bought in at £5 10s., and chips at 75s. per cwt.

OILS (ESSENTIAL).—*Star anise* oil is again lower, and can be bought on the spot at 7s. 6d. per lb. For delivery 6s. 4d. *c.i.f.* is quoted for July delivery, and 5s. 9d. *c.i.f.* for October to December ditto. Business has been in *Cassia* oil of 70 to 75 aldehydic strength at 7s. 6d. on the spot, whilst for distant shipment 5s. 9d. per lb., *c.i.f.* terms, is quoted. *Ylang-Ylang*: 5 bottles sold to-day at 3s. 9d. to 4s. 2d. per oz. *Sassafras*: 1 case realised 2s. 3d. per lb. In addition, several lots of essential oils were bought in at the drug sales, including *Citronella*, at 1s. 6d.; *Fisher's Nutmeg*, at 6d.; fair native *Sandalwood* at 7½d. per oz.; *H. G. Hotchkiss' Spearmint* at 10s. 6d.; and *Cinnamon* at 6d. to 1s. per oz.

OILS (FIXED) AND SPIRITS.—*Castor*: *Italian* oil is still quoted at 30s. 9d. to 31s. 6d. per cwt. *c.i.f.* terms for best quality oil. *Cotton* is firm. *Refined* oil quotes at £15 15s. to £16 5s. on the spot according to make and package. *Coco-nut* is in fair demand at unchanged prices; *Ceylon* at £22 10s. for pipes, and *Cochin* at £26 10s. to £26 15s. *Linseed* is firmer, and for oil in barrels £18 2s. 6d. is now asked. *Rape* is much dearer and the closing prices show an advance of about 30s. on those of last week. For *Refined* oil on the spot £24 to £24 10s. is now asked. *Palm Lagos* is dearer, and now quotes at £25 15s. on the spot. *Olive*: *Spanish* quotes at £29 to £30, and *Lerant* at £29 on the spot. *Turpentine* is rather lower in price than when last reported, but the market closes firm at 19s. 10½d. for *American* spirit on the spot. *Petroleum* oil is flat, but practically unchanged. *Russian* being quoted at 5d., *American* at 5½d. to 5¾d., and *water white* at 6½d. per gallon. *Castor*: At the drug sales *East Indian* firsts were bought in at 3½d., and seconds at 3d. per lb., whilst *Italian* oil was withdrawn at 4d. per lb.

PURGE.—One case out of three offered in auction sold at 6s. per lb.

QUINCE SEEDS.—Out of ten bags of broken seed imported from the Cape two sold in auction at 1s. 5d. per lb.

RHURARB.—The supply offered to-day was very moderate amounting only to about 90 chests—Of these 28 changed hands at the following rates:—*Shensi*.—Smallish round trimmings, mixed fracture, 1s.; medium to bold round spongy with mixed fracture, 9½d.; round boldish pickings, 9d. per lb. *Canton*: Bold, round and flat three-fourths inky fracture, 1s. 1d.; medium flat, with pinky fracture, 11d.; good bold round pickings, 11d.; medium round, with even pinky fracture, 10d. to 10½d. *High dried*, medium and bold flat mixed fracture, 8½d. per lb.

SARSAPARILLA.—*Jamaican* root is much dearer. To-day 9 bales of genuine grey root, newly arrived, sold readily at 1s. 8d. to 1s. 9d. per lb., whilst a single bale of mixed red and yellow *Jamaican* fetched 1s., subject to approval. *Honduras* was bought in at 1s. 1d., and *Mexican* at 6d. per lb.

SEEDS (VARIOUS).—*Coriander*: At the spice sales 40 bags of *Morocco* seed realised

8s. 9d. per cwt. *Foenugreek*: Six bags sold to-day at 7s. 6d. per cwt. *Fennel*: Bought in at 17s. 6d. to 20s. per cwt. *Maltese Cummi* was bought in at 35s. to 37s., *Manila Sesame* at 25s., and genuine *China Star Anise* at 92s. 6d. per cwt.

SENNA—Was in moderate supply, and the majority of the catalogue was bought in. 15 bales of *Tinnevely* pods realised 2¼d. per lb., whilst ordinary dull yellowish to bold green leaves sold at 1¼d. to 3¼d. per lb.

SHELLAC.—There has been a steady demand during the week, and a fair business has been done, especially in *Second Orange*, at fully steady rates, *TN* basis being quoted at 93s. per cwt. The weekly sales passed off very quietly. *TN Orange* sold at about steady rates, 92s. to 93s. being paid. *Garnet* was quiet, whilst *Button* sold without reserve at easy rates. The prices paid were as follows:—*Orange*: Bright curly *SM*, 94s. Strong red curly *TN*, 92s. to 93s.; weak red flat, 91s.; fair cakey, 90s., down to 88s. for weak livery. *Garnet*: Fine *AC* sold at 84s., and cakey "snake" at 83s. *Button* sold at 84s. to 88s. for fair to good pale firsts, with *BL1* at 84s., and *BL2* at 83s. per cwt.

SPICES (VARIOUS).—*Cloves* are very dull of sale. A few bales only of fair quality *Zanzibar* sold at 2d. per lb. in auction, whilst *Am'oyna* were bought in at 3½d. per lb. *Cassia lignea*: Broken quills were bought in at 22s. per cwt., whilst privately good quality has sold for 32s. *Pimento*: The market is quiet but steady, 2½d. to 2¾d. being paid in auction for medium to good fair quality. *Capsicums*: Medium to small yellow *Coconada* sold without reserve at 8s., whilst medium bright *Telicherry* were bought in at 24s. A few kales of ordinary thin *Bombay* fetched 6s. 6d. per cwt. *Chillies*: Ordinary *Zanzibar* were bought in at 27s., with extra fine *Japan* at 60s. per cwt. *Pepper*: Quiet. In auction *Singapore* was bought in at 2¾s.; *Aleppo* sold at 2¾d., and fine bold *Mangalore* at 4¼d. to 4¾d. *White pepper*: Dull of sale, *Penang* being all bought in at 3¾d., whilst *Siam* sold at 3¾d., and mixed *Ceylon* at 3¾d. per lb.

TURMERIC—Remains dull of sale. A few bags of rough bulby *Chinese* finger sold at the spice sales at 6s. per cwt.

TRAGACANTH (GUM)—Is steady, a fair amount of business having been done privately since the last gum sales. The current quotations are as follows:—Firsts (fine pale "druggists" gum), £14; seconds, £12 to £13; thirds, £10 10s. to £11 10s.; fourths, £8 to £10; yellow and pinky, £6 to £7 10s., down to 35s. per cwt.

VALERIAN ROOT.—Good *Belgian* root offers privately at 23s. per cwt. To-day four bales were bought in at 25s. per cwt.

VERMILLION.—Twenty cases of *Chinese* vermilion ("Wingkat" brand) newly arrived were bought in to-day at 2s. 5d. per lb.

WAX (BEES).—*Jamaica* wax to which variety the majority of to-day's business was confined sold at a decline of about 2s. 6d. per cwt., £8 to £8 7s. 6d. being paid. For *Madagascar* of fair quality, £6 15 was paid, whilst £6 10 to £7 10s. was accepted for *Australian*, £7 5s. for *South American*, and 30s. for greasy *Aden* offered without reserve.

MANCHESTER CHEMICALS AND DRYSALTERIES, June 23.—The market is quiet, with no change in heavy chemicals to note specially. Bleaching powder is, perhaps, a turn easier. One feature is the hardening tendency of yellow prussiate. Although a large quantity of foreign has been thrown on the market, local makers hold firmly for 7½d., and the probability is that before the end of the week another farthing will be added. Sulphate of copper is rather lower, £18 being the figure for best brands here. Brown acetate remains very dull at £4 5s. per ton at station here. Green copperas is firm at 33s. alongside ship Salford docks, and 38s., *f.o.b.*, Liverpool for best Lancashire. Alum continues well sold, and sulphate of alumina is firm at £4 17s. 6d. for small lots, ex warehouse. Lump alum in tierces, £5 2s. 6d., on rails. A fair business passing in drysalteries, but anilines are quiet. Benzols and carbolics dull.

NEWCASTLE CHEMICAL MARKET, June 23.—This line of business on Tyneside jogs along steadily, Baltic shipments continuing fair. New orders, however, drop in slowly. Prices practically unchanged thus:—Bleaching powder, according to markets, £6 10s. to £7 10s. Soda crystals, 37s. 6d. to 45s. Caustic soda, 70 per cent., £7 5s. to £7 15s. Soda ash, 52 per cent., £4 5s. Alkali, 52 per cent., £5. Sulphur, £3 17s. 6d. to £4.

LIVERPOOL MARKET REPORT, June 24.—Linseed is dull and inactive in all positions; 200 bags of good Turkish sold at 35s. per 416 lbs., and 100 superior Turkish at 36s. to 36s. 3d. Canary seed is in little demand, and the few sales made have been Turkish at 27s. to 28s. per 464. Quillaya bark: 4 tons of Chilian have been disposed of at £12 5s. per ton, and smaller quantities better quality at £12 10s. Beeswax: 14 bales of Gambia sold at £7 12s. 6d. per cwt., and 5 sacks of Chilian at £7 7s. 6d. per cwt. Carnauba wax, yellow varieties, is in good demand. Kola nuts: 8 bags dried secured buyers at 3½d. per lb. Chillies: Good Sierra Leone fruit bring 33s. per cwt. Ginger: About 600 bags of African have changed hands during the week, Sierra Leone at 19s. per cwt., Moravian at 16s. 6d. to 17s. Castor oil shows a steady upward inclination; Calcutta, good seconds, is now at 2¾d. per lb.; French, first pressure, at 2½d.; Madras at 2¾d. to 2½d.; and Belgian, to arrive, at 2¾d. per lb. Olive oil is slightly easier in price. Malaga is at £29 10s. per tun, and prices generally range from £28 to £35. Linseed oil: Liverpool makes, 18s. 9d. to 20s. per cwt. Cottonseed oil steady at 16s. 3d. to 17s. per cwt. for Liverpool refined; American cheaper, 16s. 9d. per cwt. Spirits of turpentine is again cheaper, 20s. 3d. to 20s. 6d. per cwt. Petroleum: Russian, 5¾d. per gallon; American, 6¾d. to 7½d. per gallon. Sal ammoniac: £37 per ton, £35 for seconds. Bleaching powder: £7 to £7 5s. per ton. Copperas: Lancashire, 38s. per ton; Welsh, 36s. Sulphate of copper: £18 per ton. Potashes: 20s. 9d. per cwt. Pearlash: 35s. per cwt. Cream of tartar: Spot price for finest white 100s. per cwt., prices for forward delivery are firmer. Chlorate of potash: 7½l. per lb. Prussiate of potash: 7¾d. per lb. Bichromate of potash: 4½l. per lb. Caustic soda: 70 per cent., £7 12s. 6d. to £7 15s.; 60 per cent., £6 12s. 6d. to £6 15s.

MISCELLANEOUS NEWS.

FOOD AND DRUGS ACT CASES.—At the Wolverhampton Stipendiary's Court on June 10, John Caswell, chemist, and Charles Frank Lloyd, were fined, the first-named 20s. and costs, for selling quinine wine minus 20 per cent. of the prescribed proportion of quinine, and Lloyd 40s. and costs for selling ipecacuanha wine adulterated with salicylic acid contrary to the Pharmacopœia. The defence in each case was that the wines were sold as received. Caswell admitted that a much larger quantity of his wine would have to be drunk for purchasers to derive the benefit to which they were entitled.

THE PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION held a committee meeting last Monday morning at headquarters, those present being Messrs. C. J. Park, J. G. Netting, J. Cocks, F. Maitland, A. D. Breeze, J. H. Bailey, and J. W. Hunt. The result of the chemistry examination held on June 3, at Plymouth Science, Art, and Technical Schools, was brought forward by the Secretary (Mr. J. Cocks). The examination was promoted by the Local Chemists' Association, and the examiners, Mr. J. Burns Brown and Dr. Thackrah, allowed 100 marks for the written paper, and 100 marks for the practical work. Prizes have been awarded the first three of the following:—

	Practical.	Theoretical.	Total percent.
1. Herbert J. Reynolds	95	70	82½
2. Alfred Downing	75	75	75
3. Maurice Treener	70	78	74
4. Samuel H. Estlick	80	55	67½
5. Thomas Darke	35	55	45
6. John Waldon	30	35	32½

A vote of thanks was accorded Mr. J. B. Brown and Dr. Thackrah for lending their services in examining the papers.

A "FARCICAL" ANALYSIS!—The North Dublin Guardians cannot understand why Sir Charles Cameron, in analytical reports on samples of milk, refers to one containing 12 per cent. of cream as "very poor," while another with only 9 per cent. is said to be "rich." Some of the Guardians said the analyses were a "farce." Sir Charles Cameron attributes the apparent discrepancy to the unreliability of the milk testers, and says that the dozens of people who have on his certificates been heavily fined can hardly regard chemical analysis as a "farce."

OXALIC ACID IN MISTAKE FOR SALTS.—An inquest was held last week at Cheltenham on the body of Joseph Horsham, labourer, who died at the hospital on the 5th inst., from the effects of oxalic acid taken in mistake for Epsom salts. The Jury returned a verdict of "Death by misadventure."

THE SALE OF CHLOROFORM.—Dr. J. E. Kenny, City Coroner, held an inquest on Tuesday in the Meath Hospital with respect to the death of Mrs. Anne Kerrigan, 16 Rathlin Terrace, Kimmage, County of Dublin. The Jury found that death was due to poisoning by chloroform accidentally taken to relieve neuralgia. They added the following: "We consider that the sale of

chloroform under circumstances such as were detailed in this case without an order from a doctor is dangerous and ought to be discouraged."

ROBBERY AT A LONDON POST OFFICE.—Mr. W. H. Jones, chemist and druggist, 406, Caledonian Road, King's Cross, is also a sub-postmaster. Early in the present week, according to his statement, a fashionably attired young lady entered his shop, and after purchasing a few stamps, she turned to leave the shop, upon which Mr. Jones retired to his parlour, thinking the lady had left. However, on being called to serve another customer, he discovered that the till had been robbed of about £130 in cash, and stamps to the value of £25.

INCANDESCENT MANTLES.—At the meeting of the Association of Gas and Water Engineers in Berlin, Dr. Kossmann reported that he had discovered in monacite a hitherto unknown earth, which he has named Kossmium oxide. It is said to possess important advantages in connection with the preparation of incandescent mantles. He stated that it is more abundant than thoria, and can be produced at a cheaper rate.

CHEMIST'S CLUB OUTING.—The first outing of the Chemist's Club took place on Sunday last, when a very pleasant day was spent at Windsor, and every district in London was represented. Driving and boating parties were organised during the afternoon, and the party returned after a most enjoyable day. These outings will be held on the third Sunday in each month till the end of September, and the July outing will be a drive to Weybridge. Particulars can be obtained by sending a post card to Mr. Cannar, Hon.-Sec., Gen. Committee, Chemist's Club, 2, Farringdon Avenue, Ludgate Circus, E.C.

THE 'TOURIST GUIDE TO THE CONTINENT,' published for the Great Eastern Railway Company at 30, Fleet Street, E.C., at the price of sixpence, is an excellent illustrated handbook, and should be obtained by everyone proposing to spend a holiday abroad. Among the fresh features of this edition are a series of Continental maps, a chapter upon cycling routes in Holland, Belgium, and Germany, and a chapter entitled "Dull Useful Information," giving particulars as to the cost of continental travel.

AN AUSTRALIAN "CANCER SPECIALIST," Joseph Alfred Davis, was convicted recently at the criminal sittings at Melbourne, Australia, before Mr. Justice Hood, for causing the death of two persons who had gone to him for treatment. In passing sentence, the judge said that Davis, without having the slightest knowledge of anatomy, had burned a hole through the abdominal wall in order to apply an ointment containing corrosive sublimate—an old remedy to external cancer, but quite inapplicable for internal cancer. The man was either inconceivably ignorant or rash to the verge of insanity. Davis was sentenced to six months' imprisonment on each charge, the sentences to be concurrent.

EXCHANGE.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

A book of 130 Well-tryed Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

Free. Dr. Woodville's 'Medical Plants,' 3 quarto volumes, 210 finely-coloured plates, pubd. £8 11s. 6d., only 15s.; 'Pharm. Journ.,' first 15 vols., bound, 15s.; Barnes' 'Practical Midwifery,' two illustrated

vols., pubd. 36s., 12s. 6d.—Davis, "Chestnuts," Gordon Hill, Enfield.

Miscellaneous.

For Sale, Pindar's Fig. B. Rotary Pill Machine, 5 gr. pills, extra rollers and plates for 3 and 4 grs., and Fig. 3, No. 1, 5 gr. piping press, altogether costing £19 5s., thoroughly good condition, first best offer taken.—Du Var, 13, Orford Hill, Norwich.

Lot of good Shop Fittings, cheap. Mahogany drawers, with bevel-edge glass labels; mahogany-top counters, shelving, cornice, round ruby lamp. Offers invited. Stamp for particulars.—Burge, 2, Fernhead Road, Paddington, W.

Photographic.

"A" Ordinary Kodax, fully charged with spool for 24 exposures. Has been very little used. Cost 26s. Sent, carriage paid, half-price.—"Photo," 'Pharmaceutical Journal' Office, 5, Serle Street, Strand, W.C.

WANTED.

Year-Books of Pharmacy, published before 1892. State lowest price to—"Year-Book," c.o. 'Pharm. Journal,' 5, Serle Street, W.C.

FIRE AT ROTHBURY.—Early on Wednesday morning, June 3, smoke was observed issuing from the premises of Mr. Athey, pharmaceutical chemist, Rothbury, but willing helpers being promptly on the scene, the fire was extinguished before much damage had been done.

EXPENSES PAID!—The Dublin Corporation resolved recently, in a temporary fit of economy, to allow their chemist, Sir Charles Cameron, to attend the forthcoming Sanitary Congress at Glasgow at his own expense; they have now decided to send him as a delegate at the expense of the city.

FROM DISPENSARY TO WORKHOUSE.—At a recent meeting the South Dublin Guardians objected to laxity on the part of some of the dispensary doctors in not defining in many cases the complaints, except as "pains," in tickets for admission to the workhouse.

DRUG CONTRACTS IN IRELAND—In consequence of the alleged irregular appointment by the Mullingar Board of Guardians of a local drug and medicine contractor, without first making a comparison between the several tenders submitted, and of the serious loss thereby entailed on the rate-payers of the Union, the Local Government Board has directed an inquiry on oath into the matter on the 15th inst. and following days. It is stated that the most commonly used drugs could have been supplied at a much cheaper rate by the rejected than by the successful contractor, and that the guardians had improperly permitted the existing contractor to make special charges for drugs not on the authorised list. The guardians meanwhile plead justification for their action, and have instructed their solicitor to represent them at the inquiry.

THE ABERDEEN CHEMISTS' ANNUAL EXCURSION has been postponed from July 1 to Wednesday, July 8, when the members and friends will proceed by the first train to Aboyne. Permission has been granted by Sir W. C. Brooks to drive through the Forest of Glen Tana to the foot of Mount Keen. Ample time will be allowed for those who may wish to ascend the mountain. Mr. John Cruickshank, Hon. Sec., 42, George Street, Aberdeen, will be glad to hear from those who propose to attend before Wednesday, July 1.

PERSONAL.

SIR ROBERT JACKSON, Governor of the Apothecaries' Hall of Ireland, has been elected Chairman of the Pembroke Town Commissioners, Dublin.

MR. E. SAVILLE PECK, pharmaceutical chemist, and Hon. Sec. of the Cambridge Pharmaceutical Association, has had the B.A. degree of the Cambridge University conferred upon him, being the only one in the First Class of the Chemistry Special, Part II. Mr. Peck some years ago obtained the Pharmaceutical Society's Herbarium medal, and it is his intention to continue in the practice of pharmacy.

MR. J. ARTHUR HUGHES, analytical and pharmaceutical chemist, son of Mr. J. P. Hughes, of Crickhowell and Abercorn, has been elected a Fellow of the Chemical Society.

MARRIAGE.

BOTHAM—PULLEN.—On June 18, at St. John's, Brixton, London, by the Rev. A. E. Tonkin, William Bland Botham, pharmaceutical chemist, Bournemouth, to Florence, daughter of the late William Pullen, Brixton.

LATE ADVERTISEMENTS.

Agency.

A FIRM with very commodious offices, show and stock rooms, in one of the wealthiest and most important positions, are open to undertake sole London AGENCY for a good manufacturing house, provincial or foreign. Could push business through travellers. Address, AGENCY, care of T. B. Browne's Advertising Offices, 163, Queen Victoria St., E.C.

Assistant Wanted.

SHANGHAI.—Junior ASSISTANT wanted for a firm of Chemists and Druggists. One who has had about 4 years' experience of the business. Age 18 or 19. Scotchman preferred. Must be sharp, and good writer. 4 years' agreement to be signed. Passage paid out. Apply, stating full particulars of experience, to T. L., "Pharm. Journal" Office, 5, Serle St., London, W.C.

Engagement Wanted.

DISPENSER. Apoth. Hall Qualification. Æt. 31. 10 years last berth. Well up in Photography. Foreign appointment preferred. **RAND**, 14, Bloom Park Rd., Fulham, S.W.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

TUESDAY, JUNE 30.

PHARMACEUTICAL SOCIETY.
Benevolent Fund Committee.
Finance Committee.
General Purposes Committee.

WEDNESDAY, JULY 1.

PHARMACEUTICAL SOCIETY.
Council Meeting at 11 a.m.
PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION (JUNIOR SECTION).
Botanical Ramble to Batten, Doversand, and Wembury, leaving Headquarters at 2.30 p.m.

TRADE NOTES AND NEWS.

MESSRS. BARCLAY AND SONS, LTD., of Farringdon Street, E.C., send a handy price-list of goods in constant demand, including disinfectants, medicines, hair washes, toilet articles, photographic goods, and miscellaneous articles. Many of these are put up specially with the retailer's name and address printed upon the label, and chemists and druggists who deal in specialties will find the list well worthy of reference.

MIDLAND APOTHECARIES' CO., LTD.—The annual meeting of this Company was held at 37, Waterloo Street, Birmingham, on Friday, 19th inst., Mr. F. H. Prosser in the chair, when a dividend of 7½ per cent. was declared. It was also resolved to purchase the business of Messrs. Lake, Millar and Co., of Birmingham, chemists' sundries manufacturers, and to appoint Mr. E. J. Lake one of the managing directors.

MESSRS. WRIGHT, LAYMAN AND UMNEY, of Southwark Street, announce that their warehouse will be closed for stock-taking on Monday, June 29, and Tuesday, June 30. They desire their friends to anticipate their requirements as far as possible.

MESSRS. BLONDEAU ET CIE. announce that during the months of June, July, and August of this year the closing time on Saturdays for their factories, warehouse, and offices will be one o'clock.

PHARMACEUTICAL JOURNAL

BENEVOLENT FUND SUPPLEMENT.

FEBRUARY 29, 1896.

LOCAL LIST OF SUBSCRIPTIONS AND DONATIONS

RECEIVED DURING 1895.

Aberavon.		Airdrie.		Arlesley.		Baldock.	
£	s. d.	£	s. d.	£	s. d.	£	s. d.
Lovelack, G. D.	0 2 6	Hart, T.	0 2 6	Kent, T. W.	0 5 0	Peck, G. S.	0 2 6
Aberchirder.		Harvie, J.	0 5 0	Arundel.		Banbury.	
Smith, W. M.	0 2 6	Mitchell, D.	0 2 6	Neale, M. H.	0 5 0	Bartlett, H.	0 5 0
Aberdare.		Stewart, A. R.	0 2 6	Ashbourne.		Gilkes, Fredk. G.	0 5 0
Jones, D. W.	0 5 0	Stewart, J.	0 2 6	Bradley, Edwin Sylvester	0 10 6	Starkey, G. T.	0 2 6
Jones, W. H.	0 5 0	Alcester.		Greaves, Frederick W.	0 5 0	Banchory.	
Lewis, H. C.	0 10 6	Adcock, H. D.	0 5 0	Osborne, James	0 5 0	Lunan, Alexander	0 5 0
Mortimer, J. H.	0 2 6	Overbury, Henry	0 5 0	Reckless, A. H.	0 5 0	Banff.	
Smith, Morgan	0 5 0	Aldborough (Yorks.).		Ashby-de-la-Zouch.		Alexander, W.	0 5 0
Aberdeen.		Andrews, H. A.	0 2 6	Bullen, George W.	1 1 0	Bangor.	
Andrew, W.	0 2 6	Aldeburgh.		Ashford (Kent).		Jones, Owen	0 5 0
Bruce, A. L.	0 5 0	Cooper, F. T.	0 2 6	Brothers, John	1 1 0	Webster, Thomas	0 5 0
Clark, J.	0 5 0	Aldershot.		Forth, W. P.	0 5 0	Barking.	
Coutts, C.	0 5 0	Williams, James	0 10 6	Ingall, Joseph	1 1 0	Ridley, C. H.	0 5 0
Craig, A.	0 5 0	Alexandria (N.B.).		Stedman, F. W.	0 5 0	Barnet.	
Cruikshank, Geo. P.	0 5 0	McFarlane, Peter	0 5 0	White, Charles Thomas	0 5 0	Grosvenor, T. C.	0 2 6
Cruikshank, J.	0 5 0	Alfreton.		Ashton-under-Lyne.		Huggins, S.	0 2 6
Davidson, Charles	1 1 0	Evison, Alfred	0 2 6	Belfield, William	0 5 0	Barnsley.	
Davidson, W.	0 5 0	Robinson, Joseph S.	0 5 0	Bostock, J. W.	0 5 0	Billington, H. P.	0 5 0
Dugan, A. F.	0 5 0	Alnwick.		Bostock, William	0 10 6	Medley, F.	0 2 6
Dunn, J.	0 5 0	Newbigin, James L.	0 10 6	Eastwood, W.	0 2 6	Barnstaple.	
Fearnside, J.	0 5 0	Newbigin, Leslie	0 5 0	Hall, J.	0 2 6	Curtis, W.	0 10 6
Giles, William	0 5 0	Alresford.		Hill, D. C.	0 5 0	Goss, Samuel	0 10 0
Johnston, John	1 1 0	Chaston, G. H.	0 5 0	Phillips, J. J.	0 5 0	Partridge, James	0 5 0
Kay, H. G.	0 10 6	Richardson, J. H.	0 5 0	Sharp, S.	0 5 0	Pratt, Edward	0 5 0
Kay, James P.	0 10 6	Willis, William	0 5 0	Waterhouse, J. and Co.	0 10 6	Tremeer, J. J.	1 1 0
Kemp, James	0 2 6	Alsager.		Ashwell.		Barton-on-Humber.	
Mortimer, D. A.	0 5 0	Blackshaw, T.	0 10 6	Harrison, G. W.	0 5 0	Smith, Richard F.	0 5 0
Paterson, J.	0 5 0	Altrincham.		Atherstone.		Basingstoke.	
Paterson, W. and Sons	0 10 6	Reed, J. W.	0 5 0	Orme, Mrs. M.	0 5 0	Mares, J.	0 10 6
Reid, W.	0 5 0	Unsworth, J. W.	0 5 0	Parkinson, F. W.	0 5 0	Bath.	
Ritchie, D.	0 5 0	Ambleside.		Atherton.		Alcock, Henry	0 5 0
Shepherd, A. M.	0 5 0	Herd, Henry W.	0 2 6	Fletcher, Ellis	0 5 0	Appleby, E. J.	0 10 6
Simpson, C.	0 5 0	Amersham.		Heywood, J. H.	0 5 0	Bright, W.	0 5 0
Sinclair and Co	0 10 6	King, E. T.	0 2 6	Stothert, J.	0 5 0	Clarke, B. G. K.	0 2 6
Spence, J.	0 5 0	King, T. H.	0 2 6	Attleborough.		Dunn, Richard	0 10 6
Strachan, Alexander	0 5 0	Ammanford.		Robinson, C. M.	0 2 6	Gare, G. H.	0 5 0
Urquhart, R.	0 5 0	Evans, E.	0 5 0	Achterarder.		Griffin, Alfred W.	0 5 0
Wallace, W.	0 5 0	Ampthill.		Dougall, W. R. B.	0 5 0	Harding, R. O.	0 5 0
Weir, A. S.	0 5 0	Brown, J.	0 5 0	Auchtermuchty.		Marsh, John H.	0 10 0
Aberfeldy.		Andover.		Conley, T.	0 5 0	Masters, Henry James	0 5 0
Macnaughton, H. B.	1 1 0	Bienvenu, John	0 10 0	Aylesbury.		Neave, A. R.	0 5 0
Abergavenny.		Gradidge, W. T.	0 5 0	Palmer, Edwin T.	0 5 0	Partington, J. J.	0 5 0
Pryer, Henry	0 10 6	Annan.		Ratherham, W.	0 5 0	Snow, A. L. (Widcombe)	0 2 6
Shackleton, G. W.	0 5 0	Crail, J.	0 5 0	Surfleet, W.	0 5 0	Stent, F. R.	0 5 0
Aberlour.		Arbroath.		Wood, J.	0 5 0	Thomas, Henry J.	0 10 6
Smith, John	0 2 6	Burn, David H.	0 5 0	Ayr.		Whiston, E.	1 1 0
Aberystwith.		Naysmith, Andrew	0 5 0	McGregor, A.	0 5 0	Williams, Mrs. Sophia	0 10 6
Ellis, Robert	0 2 6	Robertson, John	0 5 0	McMillan, J. McM.	0 5 0	Wilson, Joseph	0 10 6
Wynne, Edward P.	0 10 6	Shield, Mill and Jack	0 5 0	Bagshot.		Batley.	
Abingdon.		Tytler, W. W.	0 5 0	Copestake, H. H.	0 5 0	Broadhead, R.	0 5 0
Smith, William F.	0 5 0	Whyte, J. S.	0 5 0	Bakewell.		Bawtry.	
Aboyne.		Arbroath.		Carrington, Edward G.	0 5 0	Nettleship, T. W.	0 5 0
Petrie, James J.	0 5 0	Burn, David H.	0 5 0	Bagshot.		Bawtry.	
Aberystwith.		Naysmith, Andrew	0 5 0	Copestake, H. H.	0 5 0	Bawtry.	
Ellis, Robert	0 2 6	Robertson, John	0 5 0	Bakewell.		Bawtry.	
Wynne, Edward P.	0 10 6	Shield, Mill and Jack	0 5 0	Carrington, Edward G.	0 5 0	Bawtry.	
Abingdon.		Tytler, W. W.	0 5 0	Bagshot.		Bawtry.	
Smith, William F.	0 5 0	Whyte, J. S.	0 5 0	Copestake, H. H.	0 5 0	Bawtry.	
Aboyne.		Arbroath.		Bakewell.		Bawtry.	
Petrie, James J.	0 5 0	Burn, David H.	0 5 0	Carrington, Edward G.	0 5 0	Bawtry.	

Beaminster.		£ s. d.
Watts, J. W.	.. .. .	0 5 0
Beaumaris.		
Roberts, W. E.	.. .. .	0 2 6
Slater, John.	.. .. .	1 0 0
Bebington (Cheshire).		
Fawcett, J.	.. .. .	0 10 6
Beccles.		
Flower, William	.. .. .	0 5 0
Plumbly, Walter.	.. .. .	0 5 0
Bedale.		
Swinbank, J.	.. .. .	0 5 0
Bedford.		
Anthony and Biss	.. .. .	0 10 0
Cameron, William Alexander	.. .. .	0 5 0
Carruthers, E. M.	.. .. .	0 5 0
Corrie, A. A.	.. .. .	0 2 6
Corrie, Isabella A.	.. .. .	0 5 0
Ekings, John	.. .. .	0 10 6
Hester, Charles	.. .. .	0 5 0
Lloyd, J. H.	.. .. .	0 5 0
Norman, Joseph S.	.. .. .	0 5 0
Taylor, J. B.	.. .. .	0 5 0
Thompson, H.	.. .. .	0 5 0
Bedlington.		
Foggan, George	.. .. .	0 10 6
Belfast.		
Green, Thomas	.. .. .	0 5 0
Leslie, J.	.. .. .	1 1 0
McNaught, A.	.. .. .	0 10 6
Yoxall, Henry	.. .. .	0 5 0
Bellshill (N.B.)		
Lawson, W.	.. .. .	0 5 0
Belper.		
Burkinshaw, W. T.	.. .. .	0 2 6
Calvert, James	.. .. .	0 5 0
Berkeley.		
Noak, W.F.	.. .. .	0 5 0
Berkhampstead.		
Cooper, W., and Nephews	.. .. .	1 1 0
Cripps, E. C.	.. .. .	0 5 0
Berwick.		
Lyle, W.	.. .. .	0 5 0
Macintyre, J.	.. .. .	0 5 0
Beverley.		
Hobson, C.	.. .. .	0 5 0
Bexhill.		
Smith, F. A. U.	.. .. .	0 2 6
Bexley Heath.		
Mason, Alfred J.	.. .. .	0 5 0
Bicester.		
Bates, John	.. .. .	0 10 0
Sandiland, R. B.	.. .. .	0 10 6
Bideford.		
Griffits, J. A.	.. .. .	0 5 0
Hogg, Mrs. Mary	.. .. .	0 5 0
Biggar.		
Eunson, J.	.. .. .	0 2 6
Birkenhead.		
Breeze, J. A. E.	.. .. .	0 3 2
Dutton, H. O.	.. .. .	1 1 0
Dutton, John	.. .. .	0 10 6
Ellithorne, A. H.	.. .. .	0 10 6
Fowler, Geo.	.. .. .	0 5 0
Birmingham.		
Arblaster and Churchill	.. .. .	1 1 0
Asten, W.	.. .. .	0 2 6
Atkins, W. S.	.. .. .	0 10 6
Ayris, H. C.	.. .. .	0 2 6
Barker, Thomas	.. .. .	0 10 6
Bayley, R.	.. .. .	0 10 0
Beech, J.	.. .. .	0 2 6
Bellamy and Wakefield	.. .. .	1 1 0
Bird, Alfred	.. .. .	1 1 0
Blackbourne, A.	.. .. .	0 5 0
Blackwell, J.	.. .. .	0 5 0
Boucher, H.	.. .. .	0 5 0
Brady, B. F.	.. .. .	0 10 6
Branford, J. G.	.. .. .	0 2 6
Brunt, G. H.	.. .. .	0 5 0
Cattell, J. T.	.. .. .	0 2 6
Cattell, F. B.	.. .. .	0 2 6
Chapman, T. W.	.. .. .	0 5 0

Birmingham—contd.		£ s. d.
Chase, Thomas	.. .. .	1 1 0
Chesterton, W. P.	.. .. .	0 10 6
Clayton, Francis Corder	.. .. .	1 1 0
Corfield and Corfield	.. .. .	1 1 0
Evans, J. C.	.. .. .	0 2 6
Evans, W. B.	.. .. .	0 5 0
Foster, Alfred H. (Executors of)	.. .. .	0 5 0
Foster, James Alfred	.. .. .	0 5 0
Gibson, F. T.	.. .. .	0 10 0
Greatrex, H.	.. .. .	0 5 0
Griffin, J. F.	.. .. .	0 2 6
Ground, T.	.. .. .	0 5 0
Harris, P. and Co.	.. .. .	1 1 0
Hedges, W. R.	.. .. .	2 2 0
Heslton, C. J.	.. .. .	0 5 0
Horton, J. J.	.. .. .	0 5 0
Jarvis, C. F.	.. .. .	0 5 0
Johnson, T.	.. .. .	0 2 6
Kennard, J.	.. .. .	0 2 6
Lowther, T. W.	.. .. .	0 5 0
Luckman, C.	.. .. .	0 5 0
Mackenzie, J. C.	.. .. .	0 5 0
Magor, M.	.. .. .	0 10 6
Mason, A. N.	.. .. .	0 5 0
Midland Apothecaries Co.	.. .. .	1 1 0
Morris Banks and Co.	.. .. .	1 1 0
Naish, C. E.	.. .. .	0 10 6
Page, C.	.. .. .	0 5 0
Pennistone, W.	.. .. .	0 2 6
Perry, George E.	.. .. .	0 10 6
Place, E. B.	.. .. .	0 2 6
Poole, J.	.. .. .	0 5 0
Price, W.	.. .. .	0 5 0
Prosser, Frank H.	.. .. .	0 10 6
Radford, J. A.	.. .. .	0 10 6
Reedman, W. H.	.. .. .	0 5 0
Reeve, T. L.	.. .. .	0 5 0
Richards, F. J.	.. .. .	0 10 6
Roberts and Son	.. .. .	0 5 0
Selby, J.	.. .. .	0 2 6
Simmons, A.	.. .. .	0 5 0
Smith, C.	.. .. .	0 2 6
Southall, A. W.	.. .. .	0 5 0
Southall Bros. and Barclay	.. .. .	3 3 0
Thompson, Blanche E.	.. .. .	0 2 6
Thompson, Charles	.. .. .	0 10 6
Thompson, William	.. .. .	0 5 0
Tomlinson, G.	.. .. .	0 5 0
Wakefield, T.	.. .. .	0 5 0
Weaver, T.	.. .. .	0 5 0
Wilkes, G. W.	.. .. .	0 5 0
Williams, R. M.	.. .. .	0 2 6
Bishop Auckland.		
Dobinson, Thomas	.. .. .	0 5 0
Harburn, Alfred	.. .. .	0 5 0
Townend, Thomas F.	.. .. .	0 5 0
Bishop's Stortford.		
Milbank, S. T.	.. .. .	0 5 0
Speechly, George	.. .. .	0 10 6
Bishop Sutton.		
Dudden, R. M.	.. .. .	0 5 0
Blackburn.		
Ainsworth, B.	.. .. .	0 2 6
Aspinall, J. W.	.. .. .	0 2 6
Bean, Percy	.. .. .	0 5 0
Butterfield, William	.. .. .	0 5 0
Clayton, Jowett and Ward	.. .. .	0 10 6
Critchley, T.	.. .. .	0 5 0
Eatough, Bros.	.. .. .	0 10 0
Farnworth, Walter	.. .. .	1 1 0
Garland, A. P.	.. .. .	0 5 0
Harrison, J.	.. .. .	0 2 6
Hindle, H.	.. .. .	0 5 0
Hindle, James	.. .. .	0 2 6
Hindle, Joseph	.. .. .	0 5 0
Holden, J.	.. .. .	0 2 6
Paffard, Frank	.. .. .	0 5 0
Pickup, W.	.. .. .	0 5 0
Wells, W.	.. .. .	0 2 6
Whitehead, F. N.	.. .. .	0 5 0
Yates, D.	.. .. .	0 5 0
Blackpool.		
Carter, Thomas	.. .. .	0 10 6
Henderson, A.	.. .. .	0 5 0
Jackson, Joseph	.. .. .	0 5 0
Laurie, John	.. .. .	0 5 0
Porter, T.	.. .. .	0 5 0
Richardson, W. C.	.. .. .	0 5 0
Sankey, J.	.. .. .	0 5 0
Sedgwick, J.	.. .. .	0 5 0
Taylor, W. C.	.. .. .	0 2 6
Turver, C. H.	.. .. .	0 5 0
Withers, H. P.	.. .. .	0 5 0
Elaenau-Festiniog.		
Gratton, G. E.	.. .. .	0 2 6

Blaenavon.		£ s. d.
Thornton, W.	.. .. .	0 2 6
Blandford.		
Groves, Richard H.	.. .. .	1 1 0
Blundellsands.		
Stockdale, R.	.. .. .	0 5 0
Blyth (Northumberland).		
Keith, J.	.. .. .	0 2 6
Bognor.		
Betty, S. C.	.. .. .	0 5 0
Long, Alfred T.	.. .. .	0 10 6
Bolton.		
Blain, William	.. .. .	0 10 6
Blain, W. R.	.. .. .	0 5 0
Dearden, W.	.. .. .	0 10 6
Hart, F.	.. .. .	0 10 6
Knott, H.	.. .. .	0 5 0
Knott, P.	.. .. .	0 5 0
Mather, James	.. .. .	0 10 6
Shallcross, J. R.	.. .. .	0 2 6
Taylor, J.	.. .. .	0 2 6
Teebay, J.	.. .. .	0 5 0
Watkinson, H. A. (Lt. Hulton)	.. .. .	0 2 6
Bombay (India).		
Davies, R.	.. .. .	0 5 0
Eakin, James	.. .. .	0 4 6
Prebble, John G.	.. .. .	0 10 6
Stephenson, T.	.. .. .	0 10 6
Bo'ness.		
Tweedie, A.	.. .. .	0 2 6
Bonnyrigg.		
Hutcheon, W.	.. .. .	0 5 0
Boston (Lincs.).		
Bullivant, W.	.. .. .	0 2 6
Grimble, Albert	.. .. .	0 10 6
Haller, F. W.	.. .. .	0 5 0
Horry, W. T.	.. .. .	0 2 6
Kent, B. J.	.. .. .	0 10 6
Boulogne-sur-Mer.		
Parsons, J. Vincett	.. .. .	0 5 0
Bourne (Lincs.).		
Judge, E. H.	.. .. .	0 5 0
Mills, Robert M.	.. .. .	0 10 6
Bournemouth.		
Beale, J. H. T.	.. .. .	0 5 0
Bilson, F. E.	.. .. .	1 1 0
Bridge, G. E.	.. .. .	1 1 0
Cox, H. B.	.. .. .	0 10 6
Endle, F.	.. .. .	0 10 6
Hardwick, Stewart	.. .. .	0 10 6
Hazard, J. D.	.. .. .	0 5 0
Hobbs, A. E.	.. .. .	0 10 6
Jones, William	.. .. .	1 1 0
Lawrence, A. F.	.. .. .	0 5 0
Matterson, J. K.	.. .. .	1 1 0
Rye, F.	.. .. .	0 5 0
Spinney, Frank	.. .. .	0 10 6
Tame, T.	.. .. .	0 5 0
Taylor, George	.. .. .	0 5 0
Toone, J. A.	.. .. .	0 10 6
Williams, J. H.	.. .. .	0 5 0
Yates, S. P.	.. .. .	0 5 0
Bourton-on-Water.		
Hardy, J.	.. .. .	0 10 0
Bowdon.		
Paine, Standen	.. .. .	1 1 0
Bracknell.		
Sandwith, W. H.	.. .. .	0 5 0
Bradford (Yorks.).		
Blackburn, Bailey	.. .. .	2 2 0
Cocker, Justus J.	.. .. .	0 5 0
Collins, H. S.	.. .. .	0 5 0
Forshaw, T. G.	.. .. .	0 2 6
Harrison, Parkinson and Co.	.. .. .	2 2 0
Lister, Simeon (Great Horton)	.. .. .	0 10 6
Mitchell, J. A.	.. .. .	0 5 0
Rimington and Son	.. .. .	1 1 0
Shattock, J. B.	.. .. .	0 2 6
Snow, C. M.	.. .. .	0 2 6
Stead, W. W.	.. .. .	0 2 6
Stephenson, Robert	.. .. .	0 5 0
Watts, John	.. .. .	0 10 6
Brading (I.W.).		
Bonn, J. E. J.	.. .. .	0 5 0
Braintree.		
Row, George C.	.. .. .	0 5 0

Branscombe.		£ s. d.
Cooper, George	.. .. .	0 10 6
Brechin.		
Hodgeton, D.	.. .. .	0 5 0
Brecknock.		
Walters, J. (Llanfaes)	.. .. .	0 10 6
Brecon.		
Meredith, John	.. .. .	0 10 0
Morris, J. C. B.	.. .. .	0 10 0
Tudor, W. T.	.. .. .	1 1 0
Brentford.		
Hawthorne, A.	.. .. .	0 5 0
Wood, A.	.. .. .	0 5 0
Bridgend.		
Jenkins, D.	.. .. .	0 5 0
Bridgnorth.		
Cooper, H. S.	.. .. .	0 2 6
Bridgwater.		
Basker, J. A.	.. .. .	0 5 0
Hook, R. G.	.. .. .	0 5 0
Bridlington Quay.		
Jackson, Henry J.	.. .. .	0 5 0
Bridport.		
Beach and Barnicott	.. .. .	1 1 0
Beach, James	.. .. .	0 10 6
Brighton.		
Ashton, C. S.	.. .. .	0 10 6
Barton, Charles	.. .. .	0 10 6
Barton, Henry	.. .. .	0 10 6
Bathe, R. S.	.. .. .	0 10 6
Beckwith, C.	.. .. .	0 5 0
Blacklock, F. W.	.. .. .	0 2 6
Blamey, C. A.	.. .. .	0 2 6
Brighton Junior Association of Pharmacy	.. .. .	4 11 3
Brown, R. E.	.. .. .	0 10 6
Caton, E. C.	.. .. .	0 10 6
Chambers, Herbert	.. .. .	0 5 0
Churchill, H.	.. .. .	0 10 6
Collingwood, R.	.. .. .	0 2 6
Costerton, H.	.. .. .	0 10 6
Cox, Arthur H.	.. .. .	1 1 0
Edwards, J.	.. .. .	1 1 0
Else, William	.. .. .	0 10 6
Franklyn, T.	.. .. .	0 5 0
Gibson, W. H.	.. .. .	0 5 0
Greening, B. C.	.. .. .	0 5 0
Guy, Frederick	.. .. .	0 10 6
Gwatkin, James Ross	.. .. .	0 10 6
Hardcastle, S. B.	.. .. .	0 10 6
Heald, Mrs.	.. .. .	2 2 6
Hickley, G.	.. .. .	0 10 6
Hornsby, George G.	.. .. .	0 10 0
Jeeves and Son	.. .. .	1 1 0
Levett, H.	.. .. .	0 5 0
Marten, J. R.	.. .. .	0 5 0
Metherell, K.	.. .. .	1 1 0
Miller, J.	.. .. .	0 10 6
Mills, C. T.	.. .. .	0 2 6
Muston, G. G.	.. .. .	0 5 0
Neville, T. C.	.. .. .	0 5 0
Padwick, John	.. .. .	0 10 6
Parris, T. W.	.. .. .	0 5 0
Pears, H. W. K.	.. .. .	0 10 6
Pears, Kilby	.. .. .	0 10 6
Perress, J. C.	.. .. .	0 5 0
Salmon, E. F.	.. .. .	0 10 6
Savage and Son	.. .. .	1 1 0
Smith, Walter Henry	.. .. .	1 1 0
Smithson, J.	.. .. .	0 10 6
Stableforth, J. W.	.. .. .	0 5 0
Thomas, H.	.. .. .	1 1 0
Vizer, Edwin B.	.. .. .	1 1 0
Williamson, J.	.. .. .	0 5 0
Wyborn, E.	.. .. .	0 10 6
Yates, C. G.	.. .. .	0 5 0
Brill (Bucks).		
Tottenham and Holmes	.. .. .	0 10 6
Bristol.		
Allen, Benjamin	.. .. .	0 10 6
Barton, J. B. (Kingswood)	.. .. .	0 5 0
Bennett, Joseph	.. .. .	0 5 0
Berry, William	.. .. .	0 10 6
Boucher, C. E.	.. .. .	0 5 0
Boucher, J. M.	.. .. .	0 5 0
Boucher, John	.. .. .	1 1 0
Burnett, A. E.	.. .. .	0 2 6
Dibble, J. W.	.. .. .	0 10 0
Evans, J.	.. .. .	0 5 0
Fardon, A. E.	.. .. .	0 10 6
Freestone, R. H.	.. .. .	0 5 0
Good, J. T.	.. .. .	0 10 6
Griffiths, H. T.	.. .. .	0 5 0

Bristol—continued.		£	s.	d.
Harris, E. T. J.	..	0	5	0
Hemmons, John	..	0	5	0
Hodder H.	..	0	5	0
Howell, H.	..	0	5	0
Humpage, Miss A.	..	1	1	0
Isaac, G. W.	..	0	10	6
Jeffery, Henry	..	0	10	6
Jennings, T. H.	..	0	5	0
Kenderdine, A. G.	..	0	5	0
La Trobe, Henry	..	0	5	0
Llewellyn, David	..	0	2	6
Long, John T.	..	0	10	6
Maish, W.	..	0	10	6
Moore, J. E.	..	0	5	0
Newman, Robert	..	0	5	0
Pinch, J. E.	..	0	5	0
Pitchford, William	..	0	10	6
Pitman, John	..	1	1	0
Plumley, James G.	..	0	10	6
Presley, Edward	..	0	5	0
Price, C. C. (Horfield)	..	0	5	0
Schacht, G. F.	..	1	1	0
Sleight, F.	..	0	2	6
Spill, Thomas	..	0	10	6
Stroud, John	..	1	1	0
Thomas, J. D. D.	..	0	10	6
Thomas, W.	..	0	5	0
Towerzey, Alexander	..	1	1	0
Townsend, Charles	..	1	1	0
Townsend, Henry H.	..	1	1	0
Trew, H. E.	..	0	5	0
Troake, R. J.	..	0	10	6
Turner, George T.	..	0	10	6
Wade, Thomas T.	..	0	5	0
Warren, Algernon	..	1	1	0
Weeks, A.	..	0	5	0
White, James W.	..	0	10	6
Williams, Rev. Moses	..	0	5	0
Wills, A. G.	..	0	5	0
Young, E. F.	..	0	5	0
Briton Ferry.				
Olive, W. T.	..	0	5	0
Bromley (Kent).				
Baxter, W. W.	..	0	5	0
Goulden, Herbert	..	0	5	0
Shillcock, G.	..	0	5	0
Skinner, Richard	..	0	10	6
Bromyard.				
Jones, Charles	..	0	5	0
Brora.				
Donaldson, W.	..	0	5	0
Broughty Ferry.				
Park, William	..	0	5	0
Brussels.				
Delcheva'erie, F.	..	0	10	0
Bruton.				
Osborne, G. C.	..	0	10	0
Brynmawr.				
Evans, Alfred E.	..	0	5	0
Jones, Alfred M.	..	0	10	6
Buckingham.				
Kingerlee, George	..	1	1	0
Buckley.				
Hughes, H.	..	0	5	0
Tomkins, W. K.	..	0	5	0
Bulwell (Notts.).				
Stanley, J.	..	0	5	0
Burgess Hill.				
Beck, N. G.	..	0	5	0
Clarke, W.	..	0	2	6
Burnham (Bucks).				
Heald, Alfred J.	..	0	10	6
Burnham (Somerset).				
Pumphrey, A.	..	0	7	6
Burnley.				
Cowgill, Brian H.	..	0	10	6
Heaton and Son	..	0	5	0
Hitchin, Robert	..	0	5	0
Parkinson, I.	..	0	5	0
Parkinson, William	..	0	5	0
Walker, Sandford	..	0	2	6
Wright, John W.	..	0	2	6
Burntisland.				
Bisset, James	..	0	5	0
Burry Port.				
Thomas, T. Rees	..	0	5	0

Burslem.		£	s.	d.
Charles, T.	..	0	10	6
Hewitt, J. F.	..	0	5	0
Oldham, William	..	0	10	6
Parker, B.	..	0	2	6
Wardle, Thomas	..	0	2	6
Burston Hall.				
Eldridge, J. H.	..	0	10	0
Burton-on-Trent.				
Norris, A. B.	..	0	5	0
Otley, Thomas	..	0	5	0
Staley, H.	..	0	2	6
Wright, George	..	0	10	6
Bury.				
Crompton, H.	..	0	10	6
Hulme, T.	..	0	10	6
Bury St. Edmunds.				
Brain, F. S.	..	0	5	0
Clark, Owen A.	..	0	5	0
Crassweller, C. W.	..	0	5	0
Crassweller, W. E.	..	0	5	0
Hardwicke, J. E.	..	0	5	0
Kirkham, F.	..	0	2	6
Kirkham, Thomas	..	0	2	6
Portway, John	..	0	2	6
Thacker, C. B.	..	0	5	0
Youngman, Edward	..	0	5	0
Youngman, W. E.	..	0	2	6
Buxton (Derbyshire).				
Hobson, G. W.	..	0	10	6
Sutcliffe, I.	..	0	5	0
Wright, Robert	..	0	5	0
Caerphilly.				
Knight, G. T.	..	0	2	6
Caistor (Lincs.)				
Greaterex, E. J.	..	0	10	6
Calcutta.				
Dewar, D.	..	0	9	6
Mair, W.	..	0	2	6
Cambridge.				
Addison, C. S.	..	0	10	6
Beall, George	..	0	5	0
Beall, Samuel S.	..	0	5	0
Bryant, J. B.	..	0	10	6
Campkin, A. S.	..	0	5	0
Church, E. H.	..	0	2	6
Church, H. J.	..	2	2	0
Cook, H. F.	..	0	5	0
Deck, A. A.	..	0	2	6
Deck, Arthur	..	0	10	0
Field, E.	..	0	5	0
Flanders, H.	..	0	5	0
Greenwood, D.	..	0	5	0
Hutchin, L. A. J.	..	0	5	0
Ivatt, A.	..	0	5	0
Leech, J. H.	..	0	2	6
McAvoy, G.	..	0	2	6
Pain, Percy	..	0	5	0
Pain, Walter E.	..	0	5	0
Parson, H. J.	..	0	5	0
Peck, G.	..	0	10	0
Sturton, Richard	..	1	1	0
Wright, T.	..	0	2	6
Yeomans, John	..	0	5	0
Campbeltown.				
Cairnie, R.	..	0	5	0
Canterbury.				
Amos, Daniel	..	0	10	6
Biggleston, E. R.	..	0	5	0
Bing, Charles	..	0	5	0
Bing, Edwin	..	0	10	6
Dennis, E. E. G.	..	0	5	0
Harris, F. R.	..	0	10	6
Cape Town.				
Jones, Jas.	..	1	1	0
Ralling, E. L.	..	0	10	6
Tebb, Henry	..	1	1	0
Cardiff.				
Anthony and Co.	..	0	10	6
Blake, B.	..	0	5	0
Clark, C.	..	0	5	0
Coleman, Alfred	..	0	10	6
Coleman, E. J.	..	0	10	6
Coleman, J. D.	..	0	5	0
Drane, Robert	..	1	1	0
Duck and Son	..	0	5	0
Duck, W. G.	..	0	5	0
Fargher, C.	..	0	5	0
Fargher, H. S.	..	0	5	0
Farthing, H. W.	..	0	5	0

Cardiff—continued.		£	s.	d.
Furnival, William	..	0	5	0
Greaves, John	..	0	5	0
Hagon, Albert	..	0	5	0
Harries, D.	..	0	5	0
Hicks and Co.	..	0	10	6
Hopkins, W. R.	..	0	2	6
Howell, Thomas	..	0	5	0
Hughes, J.	..	0	5	0
Izdebski, S. T. E. P.	..	0	2	6
Jones, J. A.	..	0	5	0
Jones, John T.	..	0	5	0
Kernick and Son	..	0	5	0
Leo, J.	..	0	5	0
Lewis, D. J.	..	0	5	0
Lloyd, David	..	0	5	0
Milward, F.	..	0	5	0
Mumford, Richard	..	0	5	0
Munday, John	..	0	10	6
Prust, Richard	..	0	5	0
Rees, J. A.	..	0	5	0
Rees, John	..	0	5	0
Sanders, W. J.	..	0	5	0
Thomas, D.	..	0	5	0
Treharne and Son	..	0	5	0
Wakeford, T.	..	0	5	0
Walklate and Co.	..	0	5	0
Williams, R. E.	..	0	5	0
Williams, Thomas	..	0	10	0
Williams, W.	..	0	2	6
Williams, W. Jesse	..	0	5	0
Carlisle.				
Dalziel, C. M.	..	0	10	6
Fisher, Catherine Hodgson	..	0	5	0
Foster, James	..	0	5	0
Hallaway, John	..	0	5	0
Nichol, A.	..	1	1	0
Parker, Edward J.	..	0	5	0
Pattinson, M. H.	..	0	5	0
Ridley, T.	..	0	5	0
Robson, John	..	0	5	0
Simpson, P.	..	0	5	0
Thompson, Andrew	..	0	10	6
Carlisle.				
Hinksman, John	..	0	10	0
Carmarthen.				
Davies, C. E.	..	0	7	6
James, J.	..	0	5	0
Lloyd, Walter	..	0	5	0
Carnarvon.				
Francis, James	..	0	2	6
Jones, David	..	0	5	0
Jones, John	..	0	5	0
Lloyd, William	..	0	5	0
Owen, G. C. R.	..	0	5	0
Roberts, R.	..	0	2	6
Castle Cary.				
Moore, Francis S.	..	0	5	0
Castle Douglas.				
Veitch, A.	..	0	5	0
Castle Hedingham.				
Webb, W. J.	..	0	5	0
Catford.				
Bishop, W. M.	..	0	5	0
Morris, E. S.	..	0	5	0
Caton (Lancs.).				
Preston, W. L.	..	0	5	0
Caversham.				
Mountain, J. T.	..	0	2	6
Chard.				
Churchouse, C. H.	..	0	5	0
Chatham.				
Lamb, Thomas C.	..	0	5	0
Morgan, Alfred W.	..	0	5	0
Chatteris.				
Whitlamsmith, W.	..	0	5	0
Chelmsford.				
Metcalfe, Wilson	..	0	10	6
Tomlinson, James	..	0	10	6
Warren, F.	..	0	10	6
Cheltenham.				
Balcomb, John	..	1	1	0
Barron, William	..	1	3	6
Beetham and Son	..	1	1	0
Blaylock, R.	..	0	2	6
Butcher, Thomas	..	1	1	0
Codling, A. J.	..	0	10	6
Cox, W. F.	..	0	2	6

Cheltenham—continued.		£	s.	d.
Dalton, R.	..	0	2	6
Dolman, Mrs.	..	0	5	0
Finch, H.	..	0	2	6
Fitt, C. H. C.	..	0	5	0
Flemons, E. B.	..	0	2	6
Fletcher and Palmer	..	1	1	0
Forth, W.	..	1	1	0
Hands, William	..	0	5	0
Harkness, J. B.	..	0	2	6
Harrison, J.	..	0	7	6
Hill, Arthur	..	0	5	0
Hill, W. H.	..	0	5	0
Horner, R.	..	0	5	0
James, J.	..	0	2	6
Jeffrey, Thomas A.	..	0	10	6
Mowatt, J. R.	..	1	1	0
Palmer, F. T.	..	0	10	0
Pattison, Thomas	..	1	1	0
Power, J. H.	..	0	5	0
Purnell, Mrs.	..	0	5	0
Saxby, A. C.	..	0	5	0
Smith, Nathaniel and Co.	..	1	1	0
Stewart, James	..	1	1	0
Thomas, J. A. and J. P.	..	0	10	6
Wilkins, H.	..	0	5	0
Willis, C. J.	..	0	5	0
Chepstow.				
Clarke, C. H.	..	0	5	0
Chertsey.				
Boyce, George	..	0	5	0
Gerrard, A. W.	..	1	1	0
Chesham.				
Elliman, E. G.	..	0	5	0
Chester.				
Baxter, George	..	0	5	0
Carter, T.	..	0	2	6
Cheers, S.	..	0	5	0
Davidson, W.	..	0	5	0
Dickenson, D.	..	0	5	0
Donald, A.	..	0	5	0
Hodges, W.	..	0	5	0
Hopley, J. H.	..	0	5	0
Huke, James W.	..	0	5	0
Kemp, G.	..	0	10	6
Mills, John	..	0	5	0
Roberts, R. R.	..	0	5	0
Roberts, W.	..	0	5	0
Shepherd, W. F. J.	..	0	5	0
Shrubsole, A.	..	0	2	6
Spencer, J. H.	..	0	5	0
Thomas, J. H.	..	0	5	0
Young, W. J.	..	0	10	6
Chesterfield.				
Barfoot, J. R. D.	..	0	5	0
Booth, George	..	0	10	6
Elliott, Thomas (Newbold)	..	0	5	0
Furness, Thomas	..	0	10	6
Greaves, A. W.	..	0	5	0
Knighton, T. W.	..	0	5	0
Lancaster, Wm. G.	..	0	5	0
Sampson, George	..	0	5	0
Toplis, J. H.	..	0	2	6
Windle, John T.	..	0	5	0
Wright, G.	..	0	5	0
Chester-le-Street.				
Greenwell, Richard Henry	..	0	5	0
Chicago (U.S.A.).				
Grammer, F.	..	0	5	11
Chichester.				
Baker and Son	..			

Chulmleigh. £ s. d.		Cowes (Isle of Wight). £ s. d.		Derby. £ s. d.		Dublin. £ s. d.	
Joint, Robert James	0 6 0	Beaven, George A.	0 10 0	Ashley, William	0 5 0	Webb, J.	0 5 0
Cirencester.		Cranbrook.		Blunt, Walter B.	0 10 6	Dufftown (N.B.).	
Griffiths, Waldron	0 10 6	Hudson, A. W.	0 5 0	Booth, C. W.	0 2 6	MacPherson, W.	
Kinch, Professor E.	0 10 6	Turner, John	0 5 0	Clifton, Frederick	0 5 0		
Paternoster, J. and Son	0 10 0	Crawley.		Cope, J. A.	0 10 6	Dumbarton.	
Clacton-on-Sea.		Leach, John	0 5 0	Dawson, H. G. W.	0 5 0	Babtie, John	
Mann, William	0 5 0	Crediton.		Frost, George	0 10 6	Hudson, S.	
Clare (Suffolk).		Jackson and Soas	1 1 0	Hart, C. D.	0 5 0		
Stokoe, T.	0 5 0	Crewe.		Hefford, Charles	0 2 6	Dumfries.	
Claverley (Salop).		Booth, E.	0 10 6	Hoare, C. F.	0 2 6	Allan, William	
Wilson, R.	0 5 0	Donellan, A. W. E.	0 5 0	Hodgkinson, T.	0 5 0	Johnstone, T. F.	
Claycross.		Fox, M. H.	0 2 6	Machon, Edward	0 5 0	McDonald, J.	
Lloyd, Robert	0 10 6	Crewkerne.		Monkhouse, Henry	0 5 0	Sutherland, J. W.	
Smith, John	0 5 0	Catford, O. W.	0 5 0	Ordish, Thomas	0 2 6	Turner, A.	
Clayton-le-Moors.		Rubbra, F. E.	0 2 6	Scholes, J. S.	0 5 0		
Furness, T. E.	0 2 6	Cromer.		Sherwin, Samuel	0 2 6	Dunbar.	
Clevedon.		Davison, D.	0 5 0	Stevenson, Richard W.	0 5 0	Wilson, W. P.	
Hart, J. H.	0 5 0	Dulley, D.	0 5 0	Devizes.		Dundee.	
Clun.		Hoare, W. P.	0 5 0	Edwards, T. R.	0 2 6	Anderson, J.	
Darroll, William	1 1 0	Palmer, G. W.	0 5 0	Devonport.		Hardie, James	
Clynderwen.		Cromford (Derbyshire).		Breeze, George	0 5 0	Hardie, James M.	
Tudor, W.	0 5 0	Nicklinson, T.	0 5 0	Davey, H. D.	0 2 6	Hodge, J.	
Coalville.		Croydon.		Kelly, P. A.	0 5 0	Kerr, C.	
Brunt, F.	0 5 0	Barritt, George	0 10 6	Lamble, John A.	0 2 6	Stephens, C.	
Coatbridge (N.B.).		Batty, G. A.	0 2 6	Rendle, R. H.	0 5 0	Walker, W.	
MacDonald, A.	0 2 6	Clarke, Josiah	1 1 0	Ryall, F. J.	0 5 0		
Cockermouth.		Culverwell, John S.	0 5 0	Didsbury.		Dunfermline.	
Bowerbank, Joseph	1 1 0	Green, J. W.	0 5 0	Bates, John F.	0 5 0	Fisher, J. H.	
Brown, R. F.	0 2 6	Grimwade, E. H.	0 10 6	Diss.		Gilmour, David	
Robinson, William	0 5 0	Hart, A.	0 10 6	Cupiss, Mrs. E.	0 10 6	Ker, W. L.	
Codnor (near Derby).		Long, Henry	0 10 6	Gostling, T. P.	0 10 6	Tocher, J.	
Farnsworth, Thomas	0 5 0	Marshall, H. B. K.	0 5 0	(Donation)		McDonald, Kenneth	
Colchester.		Neal, W.	0 5 0	Whitrod, H. F.	0 5 0		
Baker, H. E.	0 5 0	Nichols, A. F.	0 5 0	Doncaster.		Dunstable.	
Barritt and Son	0 10 6	Perkin, R. J.	0 5 0	Bellamy, R. A.	0 2 6	Flemons, J.	
Bates, Thomas W.	0 5 0	Roberts, D. P.	0 10 6	Brooke, T. N.	0 5 0	Herington, J. H.	
Davies, Rees	0 5 0	Russell, C. J. L.	0 10 6	Connor, Thomas H.	0 10 6		
Everitt, W. E.	0 5 0	Sergent, W. T.	0 5 0	Eminson, J. M. O. (Balby)	0 2 6	Durban (Cape Colony).	
Prosser, Mrs. J.	0 5 0	Cuckfield (Sussex).		Hasselby, T. J.	0 5 0	Charlton, T. D.	
Shenstone, J. C.	0 5 0	White, W. E.	0 5 0	Howorth, James	0 10 6	Durham.	
Smith, W.	0 5 0	Cullen (N.B.).		Jaques, George	0 10 6	Palmer, C. N.	
Weddell, Arthur	0 5 0	Robertson, J.	0 5 0	Kay, C. W.	0 2 6	Rollin, John G.	
Coldstream.		Seivwright, George	0 10 6	Parkin, Charles	0 5 0	Sarsfield, John	
Elliot, W. M.	0 5 0	Cullompton.		Smith, W. H.	0 2 6	Sarsfield, William	
Colne.		Foster, J.	0 10 6	Stiles, M. H.	0 10 6	Wise, Joseph N.	
Hirst, E.	0 2 6	Foster, M. J.	0 2 6	Taylor, F. H.	0 2 6		
Colombo.		Cumnock.		Wyatt, S.	0 2 6	Ealing.	
Angel, E. C.	0 2 6	Kay, W.	0 5 0	Dorchester.		Aldrich, Mrs.	
Colwyn.		Kerr, H.	0 2 6	Pearce, William L.	0 5 0	Colwill, R.	
Adamson, J. W. (Colwyn Bay)	0 5 0	Dalbeattie.		Dorking.		Curtis, Fred. G.	
Hannah, C.	0 10 6	Smith, F. A.	0 10 6	Clark, W. W.	0 10 0	Hayles, J.	
Sykes, F. J.	0 5 0	Darlington.		Coldwell, D. B.	0 10 6	Holmes, C. J.	
Colyton.		Best, G.	0 5 0	Doubleday, F. W.	0 5 0	Lewis, D. L.	
Skinner, A. J. P.	0 5 0	Cranston, J.	0 5 0	Douglas (Isle of Man).		Oldfield, M.	
Coningsby.		Nicholson, Richard	0 5 0	Aspelt, G. S.	0 5 0	Peal, C. N.	
Brown, Leonard H.	0 10 6	Pullin, W. H.	0 10 6	Clugstone, W.	0 5 0	Sanguinetti, F.	
Consett.		Raw, James H.	0 5 0	Frowde, J. J.	0 5 0	Smith, Mrs. H. B.	
Milner, T.	0 3 0	Robinson, James	0 5 0	Gelling, G. A.	0 5 0	Thackery, W. G.	
Corwen.		Wilson, J.	0 2 6	Greensill and Son	1 1 0	Thomas, Richard	
Jones, William	0 10 6	Dartford.		Hemensley, A. P.	0 2 6	Watt, J. C.	
Cosham.		Cann, James	0 5 0	Maley, G. J.	0 2 6	Earlstown.	
Baker, T. B.	0 5 0	Goff, W. E.	1 1 0	Matthews, J. G.	0 5 0	Peake, Arthur	
Cottingham.		Horrell, A. E.	0 5 0	Qualtrough, T. S.	0 2 6	Eastbourne.	
Temple, F. S.	0 5 0	Idenden, R. F.	0 10 6	Radcliffe, J. C.	0 5 0	Andrews, H. T.	
Coventry.		Williams, W. L.	0 10 6	Young, John	0 5 0	Andrews, J. F.	
Axford, J. W.	0 10 6	Dartmouth.		Dover.		Browne, Henry R.	
Bampton, G. F.	0 2 6	Humphry, H.	0 5 0	Atkins, J.	0 5 0	Crook, Herbert	
Bird, Frederick	0 2 6	Rees, Colin A.	0 5 0	Barnes, William James	0 5 0	Earnshaw, B. K.	
Brawn, H. S.	0 2 6	Rees, William H.	0 10 0	Bottle, Alexander	1 1 0	Gibbs and Son	
Brown, John	0 5 0	Darwen.		Brown, Joseph Fred.	1 1 0	Harmer, G. A.	
Clarke, William	0 2 6	Lomax, W. H.	0 5 0	Dickeson, Sir Richard	1 1 0	Marchant, D.	
Glover, Henry	0 2 6	Shorrock, R.	0 5 0	Ewell, Richard M.	0 5 0	Price, W.	
Hinds, James	0 10 6	Datchet.		Forster, Robert Henry	0 10 6	Senior, J.	
Jelly, George William	0 5 0	Willcocks, A. S.	0 5 0	Hambrook, E. O.	0 5 0	Temple, C. H.	
Lengden, D. M.	0 2 6	Deal.		Hambrook, John Barber	0 5 0	Trickey, R. H. (Donation)	
Mason, D.	0 2 6	Dunn, George S.	0 5 0	Leigh, H. M.	0 2 6	Willett, Dr. E.	
Newton, Alfred H.	0 2 6	Fitt, F. E.	0 5 0	Long, F. J. T.	0 10 6	Woodliffe, H. G.	
Sellors, Thomas	0 2 6	Green, John	0 10 6	Long, S. G. H.	0 10 6	East Dereham.	
Wyleys and Co.	1 1 0	Johns, T.	0 5 0	Peake, Henry	1 1 0	Peck, Edward	
		Dedham.		Stevens, E. M.	0 2 6	Eastleigh (Hants).	
		Gooch, W. H.	0 5 0	Thompson, A. L.	0 10 6	Van, F. W. S.	
				Thompson, Edward	0 10 6	Wedge, G. D.	
				Dowlais.		East Molesey.	
				Rees, R. P.	0 5 0	Kent, W. H. P.	
				Driffield.		Longtoft, W.	
				Bordass, James	0 5 0	Eastwood (Notts).	
				Parkinson, Thomas	0 5 0	Skelton, J. H.	
				Droitwich.			
				Harris, S.	0 5 0		

	£	s.	d.
Eccles.			
Blackburn, A. E. H.	0	5	0
Bomford, A. C.	0	5	0
Bowden, W. (Patricroft)	1	1	0
Howie, W. L.	1	1	0
Oldfield, F.	0	5	0
R. T. H.	0	10	6
Scholes, W. I.	0	5	0
Taylor, J.	0	5	0
Eccleshall.			
Goodman, F. W.	0	10	6
Edenbridge.			
Arnold, J.	0	10	6
Edgware.			
Williams, H.	0	5	0
Edinburgh.			
Aitken, James	0	5	0
Alexander, H. D.	1	0	0
Baildon, H. C. and Son	1	1	0
Baker, W. C.	0	5	0
Blenkiron, J.	0	2	6
Boa, Peter	0	5	0
Brown, John	0	5	0
Bruce, A. G.	0	5	0
Buchanan, James	1	1	0
Burley, William	0	5	0
Cardno, R. C.	0	5	0
Center, J. A.	0	5	0
Clark, Andrew	0	5	0
Clark, Dr. William Inglis	0	10	6
Coldwell, P.	0	5	0
Coull, G.	0	5	0
Cowie, Geo.	0	5	0
Cowie, W. B.	0	2	6
Dawson, A. F.	0	5	0
Dewar, F. L.	0	5	0
Dick, Robert	1	1	0
Dott, David B.	0	10	0
Duncan, William	0	5	0
Edinburgh Chemists' Assistants' and Apprentices' Association, per Mr. G. Sinclair	1	1	0
Ewing, James L.	1	1	0
Forret, John A.	0	5	0
Fraser, Alexander	0	5	0
Fraser, J. I.	0	5	0
Gamley, David	0	5	0
Gibson, Adam	0	10	6
Gibson, J. A.	0	5	0
Glass, W. S.	0	5	0
Hendry, R. L.	0	5	0
Henry C. F.	0	7	6
Heron, James	1	1	0
Hill, B.	0	2	6
Hill, John R.	0	5	0
Innes, G.	0	5	0
Laird, G. H.	0	5	0
Laurie, J. M.	0	5	0
Lockerbie, James	0	5	0
Lunan, G.	1	1	0
Lyon, W.	0	5	0
McBain, J.	0	2	6
MacCallum, A. I.	0	5	0
MacDonald, D. F.	0	2	6
Macdonald, John	0	5	0
McEwan, D.	0	2	6
Macfarlan and Co.	2	2	0
McGlashan, J.	0	5	0
MacLaren, David	0	10	0
McPherson, Colin A.	0	5	0
Middleton, D.	0	5	0
Nelson, J. I.	0	2	6
Noble, Alexander	1	1	0
Prentice, J.	0	5	0
Raimes, Clark and Co.	2	2	0
Ritchie, J.	0	5	0
Robertson, G.	0	5	0
Robertson, John	0	5	0
Scobie, James	0	5	0
Scott, James	0	10	6
Sime, T.	0	2	6
Small, J. A.	0	5	0
Smiles, J.	0	10	0
Smith, William	0	5	0
Stephenson, F.	0	5	0
Stephenson, J. B.	1	1	0
Stewart, A. K.	0	5	0
Swan, W.	0	5	0
Symington, Thomas	0	10	6
Thwaites, A.	0	5	0
Thomson, Isaac W.	0	5	0
Wylie, David N.	0	5	0
Young, J. R., jun.	0	5	0
Edmonton (Middlesex).			
Ragg, W.	1	1	0
Ragg, W. W.	0	10	0

	£	s.	d.
Egham.			
Douglas, W. B.	0	5	0
Herbert, H. W.	0	5	0
Elgin.			
Robertson, William	0	5	0
Thomson, Robert	0	5	0
Elland.			
Smithies, W. E.	0	2	6
Eltham (Kent).			
Mellin, C. J.	0	5	0
Rawlinson, Mrs. M.	1	1	0
Ely.			
Gulliver, G. E.	0	5	0
Howard, A.	0	5	0
Lincolne, William	0	10	6
Emsworth.			
Mumford, A.	0	10	6
Enfield.			
Do'd, W. R.	0	10	6
Gange, George	1	1	0
Morgan, E. B.	0	2	6
Epping.			
Rowland, T. W.	0	10	6
Epsom.			
Oxley, Frederic	0	5	0
Tottle, Henry John	0	5	0
Erith (Kent).			
Blomfield, F. H.	0	5	0
Esher.			
Chapman, J.	0	5	0
Eton.			
Oldham, W.	0	10	6
Evesham.			
Pumphrey, J. H. (Bengeworth)	0	5	0
Exeter.			
Bartleet, John	0	5	0
Botting, Charles	0	5	0
Bulley, William H.	0	5	0
Flint, C.	0	2	6
Gadd, Henry	0	10	0
Gadd, H. W.	0	5	0
Harrold, C. J.	0	5	0
Hoblyn, E. R.	0	5	0
Joint, F. S.	0	5	0
Lake, John H.	0	10	6
Lemmon, Eric	0	7	6
Milton, Thomas C.	0	10	6
Pasmore, George	0	5	0
Rowell, P. F.	0	5	0
Sloman, F.	0	2	6
Stocker, George	0	10	6
Tighe, J. W.	0	5	0
Townsend, J.	1	1	0
Vinden, F. W.	0	5	0
Ware, A. H.	0	2	6
Wearing, W. H.	0	5	0
Exmouth.			
Bickford, J. T.	0	10	0
Routley, Mrs.	1	1	0
Stephens, J. R. C.	0	2	6
Thornton, C. H.	0	5	0
Toone, A. H.	0	10	6
Eynsham.			
Howe, Henry A.	0	5	0
Falkirk.			
Murdoch, David	0	10	6
Falmouth.			
Martin, J.	0	5	0
Newman, Walter F.	0	5	0
Solomon, W. H.	0	10	6
Fareham.			
Batchelor, Alfred E.	0	5	0
Franklin, Alfred	0	5	0
Faringdon.			
Cook, W. R.	0	5	0
Farnborough (Kent).			
Litchfield, E.	0	5	0
Farnham.			
Griffith, J.	0	10	6
Farnworth (Bolton).			
Bowker, J. T.	0	10	0
Watkinson, W. H.	0	2	6

	£	s.	d.
Faversham.			
Jenkins, E.	0	5	0
Laxon, M.	0	5	0
Felixstowe.			
Brown, F. E.	0	5	0
Felling.			
Maillard, R. W.	0	7	6
Fenton.			
Knight, Jesse	0	5	0
Massey, S. (Executors of)	0	5	0
Fleckney (Leicestershire).			
Deacon, Fanny E.	0	5	0
Fleetwood.			
Gibson, F.	0	5	0
Lothouse, J.	0	5	0
Flint.			
Jones, O. W.	0	5	0
Folkestone.			
Bishop, E. J.	1	1	0
Lea, F. J.	0	5	0
Lea, John	0	10	6
Stainer, John	0	10	0
Forfar.			
Fowler, G. R.	0	5	0
Forres.			
Anderson, G. W.	0	5	0
Fort William.			
MacFarlane, P.	0	5	0
Foulsham.			
Maddison, Mary	0	5	0
Fowey.			
Wellington, J.	0	2	6
Fraserburgh.			
Burnett, Robert	0	5	0
Friockheim.			
Buchan, D. D.	0	2	6
Frodsham (Cheshire).			
Dunsford, F. W.	0	5	0
Jones, J. M.	0	5	0
Frome.			
Green, E. C. F.	0	5	0
Harrold, F.	0	10	0
Hodder, G. W.	0	5	0
Gainsborough.			
Forrest, Richard Wm.	0	10	6
Surfleet, A. G.	0	5	0
Galashiels.			
Cartwright, B.	0	5	0
Noble, A.	0	2	6
Poustie, J. H.	0	2	6
Ross, W.	0	5	0
Garstang.			
Thomas, J. J.	0	5	0
Garston.			
Driver, J. G.	0	5	0
Gateshead-on-Tyne.			
Elliott, Robert	0	10	6
Greenwell, William C.	0	5	0
Martin, G. H.	0	5	0
Glasgow.			
Adam, T.	0	5	0
Alexander, J.	0	10	6
Boyd, A.	0	2	6
Brodie, Robert	0	5	0
Bray, W.	0	5	0
Carmichael, M. (Crossmyloof)	0	2	6
Conacher, D.	0	5	0
Crawford, David	0	2	6
Currie, John (Eglinton Street)	0	5	0
Currie, John (Sauchiehall St.)	0	5	0
Currie, W. L.	0	5	0
Dickie, James	0	5	0
Dobson, J.	0	2	6
Duncan, J.	0	10	6
Dunlop, J.	0	2	6
Dunlop, Thomas	0	5	0
Fenwick, John	0	5	0
Foster, John	0	10	6
Frazer, Daniel	1	1	0
Galbraith, W. S.	0	5	0
Garry, George	0	5	0
Glasgow Apothecaries' Co.	1	1	0

	£	s.	d.
Glasgow—continued.			
Greig, W.	0	10	0
Harrower, P.	0	5	0
Kinninmont, Alexander	1	1	0
Lambie, Hugh	0	5	0
Laurence, John	0	10	6
Law, T. W. T.	0	5	0
McDonald, G.	0	5	0
Macfarlane, M.	0	2	6
McKellar, A.	0	5	0
McMillan, John	1	1	0
Miller, J. W.	0	5	0
Moir, D.	0	5	0
Moir, J.	0	5	0
Neil, J.	0	5	0
Peacock, J. R.	0	5	0
Reid, D. S. C.	0	5	0
Thomson, William	0	5	0
Wallace, W.	0	10	6
Watson, D.	0	5	0
Whitelaw, James	0	5	0
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Beach, T. C. (Donation)	5	5	0
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£	s. d.	£	s. d.	£	s. d.	£	s. d.
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Jeffries, Henry	1 1 0	Bevan, W.	0 10 6	Lines, G.	0 10 6	Dyson, George	0 5 0
Long, A. J. T.	0 5 0	Worts, Augustine	0 5 0	Hetton-le-Hole.		Earle, E. H.	1 1 0
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Wheeler, Frederick	0 5 0	Blayney, Joseph J.	0 5 0	Riley, J. P.	0 2 6	Gibson, C. P. (Trustees of)	0 5 0
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Fairburn, Robert W.	0 5 0	Bolshaw, A. E.	0 5 0	Richardson, George	0 5 0	Hall, Henry R. F.	0 5 0
Guisley (Yorks).		Bolton, Thomas	0 5 0	Riddle, W. R.	0 5 0	Hammond, William H.	0 5 0
Lee, J. A. R.	0 5 0	Brooks, Frederick	0 5 0	Highworth (Wilts.).		Hebblethwaite, G. A.	0 2 6
Haddington.		Cri-ford, F. J.	0 2 6	Ballard, Edwin	0 5 0	Jackson, W. I.	0 2 6
Gardiner, D.	0 5 0	Curtis, H. E.	0 5 0	High Wycombe.		Johnson, F. E.	0 5 0
Watt, James and J.	1 1 0	Daws, W. K.	0 10 6	Butler, W. H.	0 2 6	Kellington, M. L.	0 2 6
Hadfield.		Edwards, H. C.	0 2 6	Coley, R.	0 2 6	Kenny, Thomas	0 10 6
Richardson, J.	0 5 0	Emmons, C.	0 2 6	Wilford, J.	0 5 0	Kirton, C. H.	0 5 0
Hadleigh.		Goode, C. E. A.	0 10 6	Young, H. E.	0 2 6	Knowles, C. H.	0 2 6
Slater, W. M.	0 2 6	Hasselby, E. H.	0 10 6	Hindon.		Lambert, F. E.	0 5 0
Hailsham		Hepple, T.	0 5 0	Dear, Miss	0 5 0	Lambert, O.	0 5 0
Parker, T. H.	0 5 0	Jameson, W. E.	1 1 0	Hitchin.		Lincoln, J. T.	0 2 6
Hale (Cheshire).		Keyworth, G. A.	0 10 6	Ransom and Son	1 1 0	Lofthouse and Saltmer	1 1 0
Wardle, J.	0 5 0	Maggs, A. S.	0 2 6	Holt.		Markham, A. D.	0 2 0
Halesworth.		Maggs, F. W.	0 5 0	Gooch, S. L.	0 5 0	Metcalfe, A. P.	0 5 0
Gostling, John H.	0 5 0	Maggs, Samuel B.	0 10 0	Holyhead.		Milner, J. G.	0 2 6
Halifax.		Richards, J. G. (Donation)	10 10 0	Roberts, T. J.	0 10 0	Newton, G. R.	0 2 6
Bottomley, W.	0 5 0	Ripley, E.	0 2 6	Hong Kong (China).		Oldham, James	0 5 0
Brierley, H. C.	0 2 6	Rositer, Frederick	0 10 6	Browne, F.	0 5 0	Raynor, A.	0 5 0
Cobb, G.	0 2 6	Saunders, A. W.	0 2 6	Gregson, J.	0 4 6	Richardson, A.	0 5 0
Comyns, J. R.	0 2 6	Snowdon, Robert	0 5 0	Honley.		Robinson, T. W.	0 5 0
Farr, James	0 2 6	Tharle, C. A.	0 10 6	Broadbent, John B.	0 10 6	Ryley, E.	0 5 0
Fielding, C.	0 2 6	Tree, F.	0 10 6	Horncastle.		Selle, L. S.	0 5 0
Haigh, W.	0 5 0	Vint, Thomas D.	0 5 0	Betts, William	0 5 0	Shaw, Ward	0 5 6
Hebden, W. C.	0 5 0	Haverfordwest.		Carlton, H.	0 10 6	Sheffield, A. J.	0 7 6
Hollingsworth, F. W.	0 2 6	Jenkins, Jabez (Lysyfrân)	0 5 0	Hornsea.		Soten, W. L.	0 5 0
Jessop, R. H.	0 2 6	Saunders, Charles P.	0 10 6	Morrow, C.	0 5 0	Staning, Walter	0 5 0
Patchett, J.	0 2 6	Saunders, David P.	0 10 6	Horsforth.		Stoakes, Benjamin M.	0 5 0
Seely, H. W.	0 5 0	Hawick.		Wynn, F.	0 5 0	Tebb, John	0 5 0
Swire, Jabez	0 5 0	Craig, John	0 10 6	Horton (Bucks.).		Walker, C.	0 2 6
Thompson, W. S.	0 2 6	Maben, Thomas	0 10 6	Passingham, G. W.	0 10 6	West, A. T. T.	0 2 6
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Hamilton.		Davies, J. F.	0 5 0	Phillips, S.	0 5 0	Twiss, Wm.	0 10 6
Hogg, J. T.	0 2 6	Hayward's Heath.		Houghton-le-Spring.		Huntingdon.	
Lohoar, J.	0 2 6	Cripps, R. A.	0 10 6	Rowell, R. H.	0 10 6	Alexander, W. B.	0 10 6
Hampton Wick.		Hays, R. T. O.	0 5 0	Hounslow.		Baxter, Robert	0 10 6
Miller, C. S.	0 5 0	Hazel Grove (Staffs.)		Cull, Joseph	0 10 6	Cooper, A.	0 2 6
Hanley.		Sanderson, E. J.	0 5 0	Howden (Yorks.).		Huntly (N.B.).	
Cornwell, T. C.	0 5 0	Heaton Chapel.		Loam, J. G.	0 5 0	Chalmers, G.	0 2 6
Elmitt, W.	0 5 0	Thorp, John	2 2 0	Horwath (Lancs.).		Husbands Bosworth.	
Furnival, John D.	0 5 0	Hebden Bridge.		Phillips, S.	0 5 0	Clerke, W. B.	0 5 0
Hartle, W.	0 2 6	Hey, David	0 10 6	Houghton-le-Spring.		Hyogo (Japan).	
Heap, I. H.	0 5 0	Wright, G. B.	0 5 0	Rowell, R. H.	0 10 6	Franklin, J. W.	0 5 0
Hutchinson, J.	0 5 0	Heckington.		Houlslow.		Hythe.	
Insull, E. S.	0 5 0	Sumners, Michael Cole	0 10 6	Bowering, John	0 5 0	Lemmon, R. A.	1 1 0
Jones, E.	0 5 0	Heckmondwike.		Cull, Joseph	0 10 6	Ilfracombe.	
Moore, John William	0 5 0	Stead, W.	0 5 0	Howden (Yorks.).		Crang, Walter	1 1 0
Tirrell, J.	0 5 0	Hedon.		Loam, J. G.	0 5 0	Moon, W. J.	0 5 0
Waldron, J. H.	0 5 0	Soutter, J. S.	0 10 6	Hoylelake.		Thornley, C.	1 1 0
Harleston.		Helensburgh.		Pask, T. C.	0 5 0	Wheeler, James	0 5 0
Churchyard, A. E. I.	0 2 6	Harvie, George	0 5 0	Huddersfield.		Ikeston.	
Fisher, W. H.	0 5 0	McMurray, J.	0 5 0	Buckley, H.	0 5 0	Potts, Charles	1 1 0
Woods, Charles	0 5 0	Helmsley.		Bygott, W. T.	0 2 6	Ilkley.	
Harpenden.		Allenby, W.	0 10 6	Cockcroft, J. W.	0 5 0	Duckworth, A.	0 10 6
Luxmoore, Dr. C. M.	1 1 0	Helston.		Dickinson, J. H.	0 5 0	Worfolk, G. W.	0 10 6
Harrogate.		Wakeham, Charles	0 5 0	Duffin, T.	0 10 6	Inverness.	
Atkinson, A.	0 5 0	Hemel Hempstead.		Fell, R.	0 10 0	Allan, Alexander	0 5 0
Davis, Richard H.	0 10 6	Wilkinson, C. E.	0 5 0	Firth, M.	0 5 0	Cameron, J.	0 2 6
Greenwood, Charles	0 10 6	Hemsworth (Yorks.).		King, William	1 1 0	Fraser, J.	0 5 0
Houfe, R. W.	0 5 0	Hodgson, G.	0 10 6	Needham, T.	0 5 0	Junor, J.	0 2 6
Maxwell, P. H.	0 10 6	Hendon.		Piggott, W. F.	0 5 0	MacLeod, L.	0 5 0
Reynolds, Freshfield	0 10 6	Goldfinch, G.	0 10 6	Spurr, H. E.	0 5 0	MacRitchie, D.	0 5 0
Shaw, B.	0 10 6	Hartridge, J. H.	1 1 0	Swift, C. H.	0 5 0	Mitchell, D.	0 5 0
Weston, G.	0 5 0	Henley-on-Thames.		Sykes, H.	0 5 0	Mitchell, H.	0 5 0
Wilson and Son	1 1 0	Batchelor, C. J. H.	0 5 0	Wadsworth, E.	0 5 0	Ipswich.	
Wood, A. W.	0 5 0	Cartwright, A.	0 5 0	Walshaw, R. C.	0 10 6	Anness, Samuel R.	0 10 6
Harrow.		Hereford.		Wheatley, Charles	0 10 6	Clifton, E. S.	0 5 0
Gunn, S. J.	0 10 6	Goodwin, F. A.	0 2 6	Wheatley, J.	0 5 0	Cornell, William	1 1 0
Hartley, S.	0 5 0	Guy, E.	0 5 0	Hull.		Douthwaite, H. F.	0 5 0
Hartlepool (West).		Harries, W. E.	0 5 0	Akester, J. C.	0 5 0	Eyre, H. R.	0 5 0
Ferry, R. B.	0 5 0	Haines, W. E.	0 5 0	Allison, E. and H.	1 1 0	Grimwade, Ridley and Co.	0 10 6
Hartley Wintney.		Jackson, J. J.	0 10 6	Bell, Charles B.	1 1 0	Jackson, J. T.	0 5 0
Machin, W. G.	0 5 0	Pearmund, H. S.	0 5 0	Bennett, A.	0 2 6	Marsh, W. H.	0 5 0
		Phillip, J. E.	0 10 6	Bousfield, W.	0 3 0	Matcham, Edward	0 5 0
		Walker, John	0 10 6	Brighouse, C. D.	0 5 0	Miller, T. T.	0 5 0
		Williams, W. and H. B.	0 10 6	Campbell, Charles	0 10 6	Nunn, C. G.	0 5 0
		Hersham.		Chapman, E. J.	0 5 0	Pan, A.	1 1 0
		Smith, W.	0 10 6	Chapman, Joseph	0 5 0	Palmer, F. E.	0 10 0
				Creasser, Matthew	0 5 0	Palmer, F. H.	0 5 0
				Day, W.	0 5 0	Symonds, J.	0 5 0
				Desforge, J. H.	0 5 0	Wiggin, J. C.	0 10 6
						Ironville.	
						Greaves, W. S.	0 8 0

Irvine.		Knutsford.		Leicester—continued.		Liverpool.	
£	s. d.	£	s. d.	£	s. d.	£	s. d.
Gillespie, James	0 2 6	Jackson, William	0 5 0	Esam, Richard	0 10 6	Abraham, Alfred Clay	1 1 0
Iwerne Minster.		Silvester, Henry T.	0 5 0	Goodess, F. W.	0 5 0	Abraham, Thomas Fell	1 1 0
Humby, L. W.	0 5 0	Lancaster.		Harvey, William R.	1 1 0	Adams, Thomas E.	0 10 6
Jarrow-on-Tyne.		Arkle, William	0 5 0	Hind, W. T.	0 5 0	Adams, T. E. jun.	0 5 0
Hopper, Richard	0 5 0	Briggs, W.	1 1 0	Kelly, J. G.	0 5 0	Allan, James H. (Aintree)	1 1 0
Penman, E. W.	0 2 6	Lund, W. J.	0 10 6	Lloyd, T. H.	0 10 6	Aris, G. H.	0 2 6
Rose, J. D., jun.	0 2 6	Troughton, Henry	0 5 0	Ough, L.	0 10 6	Ayrton and Saunders	0 10 6
Jedburgh.		Vince, James	0 5 0	Pickering, Henry	0 5 0	Bain, John	0 10 6
Strachan, J.	0 2 6	Wyatt, W.	0 10 6	Rowe, W.	0 5 0	Regg, A.	0 5 0
Walker, A.	0 5 0	Langholm.		Thirlby, W.	0 2 6	Billington, F.	0 5 0
Jersey.		Beattie, Thomas	0 5 0	Thompson, A. T.	0 5 0	Blabey, J. J. (Woolton)	1 1 0
Baker, J. T.	0 5 0	Largs (N.B.).		Wand, Stephen	0 10 6	Blabey, J. R. (Woolton)	0 5 0
Cole, George	1 1 0	Barr, Bryce	0 5 0	Woolley, G. J. B.	0 10 6	Brown, Edwin	0 5 0
Millais, Mrs.	1 1 0	Laugharne.		Leigh (Lancs.).		Buck, A. S.	0 10 6
Miller, Henry	0 5 0	Johns, J.	0 2 6	Bennett, J. W.	0 5 0	Furn, J. R.	0 5 0
Piquet, F. G.	0 5 0	Launceston.		Boardman, F. J.	0 2 6	Clay, Dod and Co.	1 1 0
Piquet, J.	0 5 0	Downing, Frederick	0 5 0	Leighton Buzzard.		Clubb, W. H.	0 5 0
Poingdestre, C. R.	0 10 6	Wise, William	0 5 0	Herington, H. E.	0 5 0	Cowley, R. C.	0 10 6
Keighley.		Leamington.		Richmond, R.	1 1 0	Dickins, B.	0 10 6
Dickinson J. G.	0 5 0	Barnitt, John	0 10 6	Leith.		Drawbridge, Joseph G.	0 10 6
Fowlds, W.	0 5 0	Barrett, J. R.	0 10 6	Alexander, W. G.	0 5 0	Drawbridge, T. F.	0 2 6
Kershaw, A. N.	0 5 0	Barrett, Josephus T.	1 1 0	Baxter, A. K.	0 2 6	Drew, S. K.	0 5 0
Rhodes, T. G.	0 5 0	Bloomfield, E. J.	0 2 6	Blyth, J.	0 5 0	Ellams, George	0 10 0
Keith.		Collins, E. de T.	0 5 0	Bowman, J.	0 10 6	Elliott, Robert John	0 10 6
Pirie, J.	0 2 6	Davies, C.	0 5 0	Buchan, G.	0 2 0	Evans, R. J.	0 10 6
Kelso.		Davis, C.	0 5 0	Coats, J. T.	0 7 6	Evans, Sons and Co.	5 5 0
Maxton, W. M.	0 5 0	England, A.	0 2 6	Crichton, Alexander	0 5 0	Ferguson, W. and J.	1 1 0
Kendal.		Fisher, G. R.	0 5 0	Dudgeon, J.	0 5 0	Findlay, J.	0 5 0
Bateson, Thomas	0 10 6	Griffiths, W. H.	0 5 0	Duncan, A.	0 5 0	Furniss, Thomas	0 5 0
Burton, Matthew	1 1 0	Heath, W. G.	0 2 6	Garvie, A.	0 10 6	Grace, W. A.	0 5 0
Rigg, G. F.	0 10 6	Hutton, H.	0 10 6	Garvie, W. A.	0 5 0	Haywood, Charles	0 5 0
Severs, Joseph	0 10 6	Lamplough, J. W.	0 10 6	Gower, J.	0 2 6	Hickin, W. E.	0 5 0
Vogt, G.	0 2 6	Marriott, T. E.	0 5 0	Johnston, J.	0 2 6	Hocken, Joshua	0 10 6
Keswick.		Mead, F. J.	0 5 0	McDougall, R. I.	0 10 6	Hodges, E. G.	0 5 0
Scott, H.	0 2 6	Price, J.	0 5 0	McLeish, E.	0 2 6	Hudson, T. H.	0 5 0
Townley, Thomas W.	0 10 6	Roberts, J. F.	0 2 6	Mair, Alexander	0 5 0	Jackson, H.	0 10 6
Kettering.		Sansom, Henry	0 2 6	Turnbull, E. H.	0 2 6	Jones, W.	0 5 0
Baker, J.	0 10 0	Smith, Samuel A.	1 1 0	Wood, R.	0 2 6	Johnson, J. H. and S.	2 2 0
Layng, R. C.	0 5 0	Smith, Samuel H.	1 1 0	Lenton.		Jordan, J. A.	0 5 0
Thursfield, John F.	0 10 0	Stanley, Herbert	0 10 6	Wilson, Thomas	0 5 0	Leatham, W. H.	0 10 6
Thursfield, J. H.	0 5 0	Vaughan, E. E.	0 2 6	Lenzie (N.B.).		Lee, Samuel W.	1 1 0
Kew.		Wilson, G. P.	0 5 0	Pettigrew, J. W.	0 5 0	Lett, Arthur J.	0 5 0
Edwards, J. E.	0 10 6	Wilson, J.	0 5 0	Leominster.		Liverpool Pharmaceutical Stu-	
Kibworth Beauchamp.		Ledbury.		Buckham, J.	0 5 0	dents' Society	1 7 9
Freeland, A. J.	0 2 6	Freeman, Ernest	0 10 6	Ellwood and Son	0 10 6	Marsden, P. H.	0 2 6
Kidderminster.		Leeds.		Sandiland, Robert B.	0 10 6	McGuffie and Co.	2 2 0
Morgan, F. H.	0 10 6	Anning, J. J.	0 2 6	Lerwick.		Mitchell, R. H.	0 2 6
Kidsgrove.		Barrow, E.	0 5 0	Laing, A. L.	0 2 6	Morton, H. R.	0 2 6
Griffiths, Edwin H.	0 10 6	Baxter, W. S.	0 5 0	Porteous, Arthur A.	0 2 6	Parry, R.	0 5 0
Kidwelly.		Bilbrough, A.	1 1 0	Leven.		Peirson, H. S.	0 10 6
Jones, L.	0 2 6	Branson, F. W.	0 10 6	Buchanan, J.	0 2 6	Pottage, E.	0 5 0
Kilmarnock.		Briggs, George	0 5 0	Hogg, A.	0 5 0	Redford, G. A.	0 5 0
Borland, John	1 1 0	Catterall, C. G.	0 10 6	Lewes.		Richardson, J. W.	0 10 0
Borland, John, jun.	0 10 6	Day, J.	0 5 0	Briscoe, Charles (West Firle)	0 5 0	Richardson, Richard T.	0 10 6
Macdougall, D. G.	0 2 6	Drewry, J.	0 2 6	Head, John T.	0 10 6	Ridgway, T. E.	0 5 0
Kimberley (S. Africa).		Exley, John	0 5 0	Higham, T.	0 5 0	Sawden, Alfred	0 10 6
Smith, H. J.	0 10 6	Fawthorp, James	0 5 0	Lloyd, J. C.	0 5 0	Shaw, A.	0 5 0
King's Bridge (Devon).		Fearnley, F.	0 2 6	Leyton.		Simon, R.	0 5 0
Stewart, R. McA.	0 5 0	Fox, W. A.	0 2 6	Freeman, J.	0 2 6	Smith, J. (Aigburth)	0 10 6
King's Lynn.		Gee, T. H.	0 5 0	Seed, T. H.	0 2 6	Smith, J. J. (Walton)	0 10 6
Atmore, E. A.	0 5 0	Goodall, Backhouse and Co.	2 2 0	Yewen, C. H. I.	0 2 6	Smith, R. G.	0 5 0
Kingston-on-Thames.		Greasley, M. F.	1 1 0	Leytonstone.		Spinks, L. L.	0 2 6
Bond, C. R.	0 10 6	Hardcastle, J.	0 5 0	Bennett, C.	0 5 0	Stephen, A.	0 5 0
Brewster, William	0 10 6	Harvey, W.	1 1 0	Blades, W. W.	0 2 6	Summer, R. and Co.	1 1 0
Higgs, Alfred	0 5 0	Hirst, Brooke and Hirst	2 2 0	Cleland, A. H.	0 5 0	Swinton, T. H.	0 5 0
Walmsley, Samuel	0 5 0	Hirst, David	0 5 0	Ferguson, J. J.	0 10 6	Symes, Charles	2 2 0
Whaley, Edward	0 10 6	Hobbs, H.	0 5 0	Lakeman, J. J.	0 2 6	Thomas, Robert	0 10 6
Kinross.		Holmes, Francis	0 5 0	Matthews, J. H.	0 5 0	Thompson, John	1 1 0
Dow, William	0 5 0	Holmes, J.	0 10 6	Tiltman, --	0 2 6	Thompson and Capper	1 1 0
Kirkby Lonsdale.		Horsfield, E.	0 5 0	Lincoln.		Tollitt, W.	0 2 6
Birkett, J.	0 5 0	Jefferson, P.	0 10 6	Allison, H.	0 2 6	Walker, F.	0 5 0
Kirkcaldy.		Lister, R.	0 10 6	Battle, Son and Maltby	0 10 6	Warhurst, Mrs. A. (Executors	
Allan, H. W. F.	0 5 0	Pollitt, W. D.	0 5 0	Birkbeck, J. T.	0 5 0	of late)	2 2 0
Key, G. B.	0 5 0	Reynolds, Richard	1 1 0	Cottingham, H.	0 5 0	Williams, E.	0 2 6
Peebles, John	0 10 6	Reynolds, Richard F.	0 10 6	Elmitt, G.	0 10 6	Williams, William	0 5 0
Storrar, David	1 1 0	Robinson, W.	0 5 0	Harston, C. E.	0 5 0	Wokes, T. S.	0 10 6
Knaresborough.		Saville, William	0 5 0	Hill, W. E.	0 5 0	Woodcock, J.	1 1 0
Lawrence, W. P.	0 5 0	Smith, R. H.	0 2 6	Tomlinson and Hayward	1 1 0	Woodhead, H. C.	0 10 6
		Taylor, Samuel	1 1 0	Wark, D. S.	0 5 0	Woods, J. F.	0 5 0
		Thirsk, A. T. (Pudsey)	0 5 0	Wilnot, B.	0 5 0	Wright, William	0 5 0
		Leicester.		Litcham (Norfolk).		Wyatt, H.	0 5 0
		Berridge, Alfred	0 5 0	White, W.	0 5 0	Wyatt, H. jun.	0 5 0
		Broof, R.	0 5 0	Littleborough.		Yeats, T. F.	0 10 0
		Burford, S. F.	0 10 6	Hall, Samuel	0 5 0	Liversedge.	
		Butler, J. A.	0 5 0	Littlehampton.		Midwood, E.	0 5 0
		Butler, T. E.	0 5 0	Longman, J. H.	0 2 6	Llanboidy.	
		Cadoux, S. H.	0 5 0	Smart, C. F.	1 1 0	Walters, J. L.	0 2 6
		Clark, John W.	2 2 0			Llanbyther.	
		Clark, Walter B.	0 10 6			Jones, J. E.	0 5 0
		Cleaver, Samuel	0 5 0			Llandilo.	
		Cox, S. G.	0 10 0			Hughes, T.	1 1 0
		Ellis, George	0 5 0			Williams, W. J.	0 2 6
						Llandudno.	
						Burton, Joseph	1 1 0
						Sinclair, Mrs. M. A.	0 10 6
						Winter, J.	0 5 0

Llanelly.		London—continued.		London—continued.		London—continued.	
£	s. d.	£	s. d.	£	s. d.	£	s. d.
Evans, Gwilym	1 1 0	Brookes, Samuel	0 10 6	Dunstan, J. F.	0 2 6	Hay, J.	0 10 0
Jones, J. W.	0 5 0	Brooks, J.	0 2 6	Durant, F.	0 5 0	Hayles, A.	1 1 0
Wade, J.	0 2 6	Broumpton, F. R.	0 2 6	Dyson, A.	0 5 0	Heale, T. A. O.	0 2 6
Llangollen.		Brown, Alfred James	0 10 6	Dyson, William B.	1 1 0	Hearn, John	0 5 0
Jones, Humphrey	0 5 0	Brown, C. H.	0 10 6	Eade, George	0 10 6	Heathcoat, T.	0 5 0
Llanidloes.		Brown, E. A.	0 5 0	Eade, James	0 10 6	Hebbeler, K.	0 10 6
Jones, Thomas Pryce	0 2 6	Brown, Edgar M.	0 2 6	Eastes, E. J.	0 5 0	Heeley, J.	0 5 0
Llanrwst.		Brown, James	0 5 0	Edgson, H., Senior	0 10 6	Heighington, T. G.	0 5 0
Jones, O.	0 2 6	Brown, John	0 5 0	Edwards, Charles	1 1 0	Henty, Henry Martin	0 5 0
Loanhead.		Brown, W. B.	0 5 0	Edwards, James	0 10 6	Herbert, William	0 5 0
Stephen, J.	0 5 0	Brunton, W. W.	0 5 0	Egg, G. F.	0 10 6	Hern, W. H.	0 5 0
Lochgelly.		Buckley, J. D.	0 2 6	Elkington, W. A.	0 5 0	Hersant, M.	0 5 0
Graham, A.	0 5 0	Bull, E. John	0 5 0	Ellerington, J. P.	0 5 0	Hewitt, J. R.	0 5 0
Lockerbie.		Bullock, J. Lloyd and Co.	2 2 0	Elliott, W.	0 5 0	Hewitt, S. S.	0 2 6
Walker, D.	0 5 0	Bunker, C. J. G.	0 5 0	Ellis, C. J.	0 2 6	Hewlett, J. C.	1 1 0
Loddon.		Burden, C. H. B.	0 5 0	Ellwood, T. A.	0 5 0	Hick, John	0 5 0
Ellis, T. W.	0 10 6	Burgoyne, Burbidges, Cyriax and Farries	2 2 6	Elvey, the Misses	1 1 0	Hickman, William	0 10 6
London.		Burleigh, W. M.	0 10 0	Emson, William N.	0 5 0	Hicks, A. D.	0 5 0
Abbott, A. A.	0 2 6	Burton, Percy H.	0 5 0	Epps, James	2 2 0	Higgins, James	0 10 6
Adams, J.	0 5 0	Butt, Edward Northway	10 10 0	England, R. A.	0 5 0	Hill, A. F.	1 1 0
Allen, Charles B.	2 2 0	Butterworth, John	0 10 6	Evans, A. P.	0 5 0	Hill, A. E.	1 1 0
Allgood, E. J.	0 5 0	Cadman, Daniel C.	1 1 0	Evans, D. W.	0 2 6	Hill, A. S. and Son	1 1 0
Amies, S. M.	0 2 6	Cain, J. H.	0 5 0	Evans, Lescher and Webb	1 1 0	Hill, Arthur S.	2 2 0
Amore, Lewis P.	0 10 6	Cammack, J. F. J.	0 5 0	Evershed, G. S.	0 5 0	Hill, William	0 5 0
Andrew, C. W.	0 2 6	Campbell, E. K.	0 5 0	Eynon, C. E. J.	0 2 6	Hillen, John	0 10 6
Andrews, Frederick	0 10 6	Carteighe, Michael	1 1 0	Farmer, C. A.	5 5 0	Hills, Walter	3 3 0
Apollinaris, Co., Ltd.	2 2 0	Castle, J. W.	0 5 0	Farrow, A. E.	0 5 0	Hodgkinson, George A.	0 10 6
Applegate, Edwin	0 10 6	Chapman, Joseph J.	0 10 6	Fawssett, T.	0 5 0	Hodgkinson (Thomas), Prestons and King	2 2 0
Atkins, E.	0 5 0	Chaston, W. R.	0 5 0	Feltwell, J. W.	1 0 0	Hodgkinson, Treacher and Clarke	2 2 0
Arkinfall, William	1 1 0	<i>Chemist and Druggist (Proprietors of)</i>	5 5 0	Fentiman and Co.	2 0 0	Hodgson, J. D.	0 2 6
Atkinson, James	0 5 0	Chemists' Assistants' Association	1 10 0	Ferguson and Osborne	1 1 0	Hodsoll, Thomas W. H.	1 1 0
Atkinson, L.	1 1 0	Churchyard, R. L.	0 5 0	Foden, T. H.	0 2 6	Hogg, E. G.	0 10 6
Aukland, W. H.	0 2 6	Clapp, Edward F.	0 10 6	Foot, F. J.	0 5 0	Hogg, Robert	0 10 6
Austin, Henry Felix	1 1 0	Clark, J. A.	0 10 6	Ford, W. C.	0 5 0	Hogwood, E.	1 1 0
Bacon, Henry J.	0 2 6	Clarke, W. L.	0 5 0	Forster, G. F.	0 5 0	Hogwood, H. P.	0 10 6
Baines, Wm. H.	0 10 6	Clayton, T.	0 10 6	Fowle, S.	1 1 0	Holding, J.	0 10 6
Baker, A. J. E.	0 5 0	Clemson, J.	0 10 6	Fowler, W. H.	0 10 6	Holl, E.	0 5 0
Baker, Alfred P.	0 10 6	Clifford, T. A.	0 2 6	Fox, W. R.	1 1 0	Holloway, J.	0 2 6
Baker, P. C.	0 5 0	Colchester, William M.	0 5 0	Francis, G. Bult	1 1 0	Holmes, C. M.	0 5 0
Baldock, E. C.	0 2 6	Cole, A. C.	0 10 6	Francis, W. H.	1 1 0	Holmes, Walter M.	1 1 0
Ball, Junior Pharmacy, per Mr. H. Arliss Robinson	12 12 0	Colles, J. W.	0 10 6	Freke, C. H.	0 5 0	Holroyd, W. H.	1 1 0
Ball, The Chemists', per Mr. A. J. Phillips	26 5 0	Collier, Henry	0 10 6	Frith, E. J.	0 5 0	Hopkin and Williams	2 2 0
Barker, A. W.	0 5 0	Collins, H. G.	0 5 0	Froom, William Henry	1 1 0	Hopkin, William King	1 1 0
Barker, G.	0 5 0	Constance, Edward	0 10 6	Frost, John H.	0 5 0	Horncastle, J.	0 5 0
Barley, A. H.	0 5 0	Constance, Herbert E.	0 10 6	Frost, W. T.	0 10 6	Horsley, T. W.	0 10 6
Barnard, A. P.	0 5 0	Constance, Sidney W.	1 1 0	Fuller, J.	0 10 0	Howell, Maurice	0 10 6
Barnard, G. B.	0 2 6	Cooper, Albert	1 1 0	Garman, C. E.	0 5 0	Howlett, Samuel	1 1 0
Barnes, James Benjamin	1 1 0	Cooper, F.	0 5 0	Garner, J.	0 5 0	Hudson-Cox, F.	0 5 0
Barnes, James Burden	0 5 0	Cooper, Henry	0 10 6	Garnett, H.	0 2 6	Hudson, T. F.	0 5 0
Barnes, W. R.	0 5 0	Cooper, H. H.	1 1 0	Garnham, A. W.	0 5 0	Hugill, E. A.	1 1 0
Bartlett, G. F. H.	0 5 0	Cooper, W.	0 5 0	Gater, J.	0 10 6	Hugill, John	1 1 0
Bartley, George A.	0 10 6	Cooper, W. W. R.	1 1 0	Gaubert, S.	0 2 6	Hugill, John H.	1 1 0
Bascombe, Frederick	0 10 6	Cooper, Wm. Henry	0 10 6	Gilbert, S. F.	0 2 6	Humble, J. B.	0 5 0
Bate, Henry	1 1 0	Cooper, Walter Temple	0 10 6	Glaisyer, E.	0 10 6	Humphrey, John T.	0 10 6
Bateman, T. H.	2 2 0	Corbyn, Stacey and Co.	2 2 0	Glaisyer, T.	0 10 6	Hunt, Charles	1 1 0
Bayles, R. H. E.	0 5 0	Cosway, Edwin C.	1 1 6	Glew, F. H.	0 5 0	Huskisson, Henry Owen	1 1 0
Beach, T. E.	0 5 0	Cottrill, John W.	0 10 6	Goddard, G. E.	0 5 0	Hutchins, E. C.	0 5 0
Beddard, John	1 1 0	Coulson, T.	0 2 6	Godfrey and Cooke	1 1 0	Hutton, T. W.	0 2 6
Bedford, C.	0 10 6	Cracknell, Herbert	1 1 0	Godolphin, G. F. A.	0 7 6	Hyslop, John Cahill	1 1 0
Bell, Matthew W.	1 1 0	Cresswell, Frederick	0 10 6	Goff, Richard	0 5 0	Icke, Henry S.	1 0 6
Bell, William H.	1 1 0	Crosby, John	0 5 0	Goldby, F.	0 5 0	Idris, T. H. W.	0 10 6
Belton, E. R.	0 2 6	Crosland, W. H.	0 10 0	Goodall, W. A.	0 10 6	Ince, Joseph	1 1 0
Bennett, Thomas	0 5 0	Crow, E. L.	0 10 6	Goodchild, Alfred C.	0 5 0	Ingham, J.	0 5 0
Benson, G. W.	0 5 0	Crowden, S. G.	0 10 6	Goodwin, John	1 1 0	Ingram and Royle	1 1 0
Bessell, J. W.	1 1 0	Cryer, Henry	0 5 0	Gorton and Sons	0 10 6	Irving, T. S.	0 2 6
Bigg, Thomas	1 1 0	Cugnoni, A. H. D.	0 5 0	Gosden, H.	1 1 0	Jacks, D. R.	0 10 6
Bindloss, G. F.	0 10 6	Cullen, Harry H.	0 5 0	Gradidge, James H.	0 10 6	Jackson, J. P.	0 5 0
Bingley, Richard	0 10 6	Curtis and Co.	1 1 0	Graham, Henry	0 5 0	Jakson, John and Co.	1 1 0
Bird, Augustus	4 4 0	Curtis, G.	0 5 0	Greaves, J. E.	0 10 6	James, E.	0 1 6
Bird, F. C. J.	1 1 0	Dales, E.	0 5 0	Green, Samuel	0 5 0	Jefferson, T.	0 10 6
Bird, G.	1 1 0	Dampney, Richard S.	0 10 6	Green, W. J.	0 10 6	Jenkins, Henry	1 1 0
Bird, Robert	0 10 6	Daniel, G.	0 5 0	Greenish, Professor	0 10 6	Jenkins, Thomas	0 10 6
Bishop, E.	0 2 6	Darby, S.	1 1 0	Greenish, Thomas	1 1 0	Jobson, T.	0 5 6
Blagg, E.	0 2 6	Dart, W.	0 2 6	Greenish, T. Edward	0 10 6	Johnson and Sons	1 1 0
Blake, Charles A.	1 1 0	Davenport, Horace	2 2 0	Greig, W.	0 2 6	Johnston, W.	0 2 6
Blayney, W. C.	0 2 6	Davenport, J. T.	2 2 0	Gristock and Co.	1 1 0	Jones, A. W.	0 2 6
Blewett, E.	0 5 0	Davidson, P.	1 1 0	Gudgen, Frederick G.	0 10 6	Jones, Jonah	0 10 6
Blissett, F. H.	0 2 6	Davis, H. S. E.	0 10 6	Gulliver, William	1 1 0	Jones, R. E.	0 2 6
Bonnett, F.	0 2 6	Davy, Yates and Routledge	2 2 0	Gulliver, W. F.	0 5 0	Jones, T. P.	0 10 6
Bourdas, Isaiah	1 1 0	Day, J. A.	0 5 0	Hairsine, H. S.	1 1 0	Jones, William	0 10 6
Bourdas, I., jun.	0 10 6	Daymond, S.	0 2 6	Hale, G.	0 10 6	Jones, William	0 5 0
Bowdler, E. H.	0 5 0	Dean, S.	0 5 0	Hall, A. W.	0 10 6	Jones, W. A.	0 2 6
Bowen, John W.	1 1 0	Dee, A. H.	0 5 0	Hall, Ralph	0 10 6	Josling, A.	0 2 6
Brack, D. G.	0 5 0	Defriez, R.	0 2 6	Hardy, Samuel C.	1 1 0	Jozeau, G.	1 1 0
Brand and Co.	1 1 0	De Peare, John Thomas	0 5 0	Harley, E. T.	1 1 0	Keer, Isabella S. Clarke	0 10 6
Branford, A. J.	0 5 0	Dewar, Mrs. Mary Ann	0 10 6	Harrington, J. F.	1 1 0	Keer, Thomas H.	0 10 6
Bridges, C. W.	0 10 6	Dinneford and Co.	2 2 0	Harris, Frank William	0 5 0	Kent, Thomas Ramsey	0 10 6
Briggs, W.	0 5 0	Dixon, Herbert	0 5 0	Harris, G.	0 10 6	Kerr, T.	0 5 0
Bright, F.	0 5 0	Dolling, A.	0 5 0	Harrison, R. C. C.	0 10 6	King, Henry	0 10 0
Broad, H. J.	0 2 6	Doughty, T.	0 10 6	Hart, A.	0 2 6	King, J. H.	0 5 0
Brodribb, J. B.	0 10 6	Douglas, J. W.	0 5 0	Hart, J. C.	0 5 0	Kingan, D.	0 10 6
		Doulton and Co.	1 1 0	Hart, Thomas	0 5 0	Kingsford, Frederick	1 1 0
		Douthwaite, H. L.	0 5 0	Hart, W. R.	0 5 0	Kirk, Snowden	1 1 0
		Drury, G. J.	0 2 6	Harvey, E.	1 1 0	Kitchin, J.	0 10 6
		Drury, Sydney	0 5 0	Harvey, John William	0 2 6	Kneen, G. F.	0 5 0
		Dunn, G. M.	0 5 0	Harvey, William	0 10 6	Knott, H. A.	0 5 0
				Hatfield, George B.	0 10 6	Landor, W. E.	0 5 0
				Hatfield, George W.	0 10 6	Langley, Frank C.	0 5 0
				Hawkins, Thomas	0 10 6	Laphorn, G.	1 1 0

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Laws, John	0	10	0	Potts, Robert A.	1	1	0	Stark, A. C.	0	5	0	Wells, W.	0	5	0
Legg, H. A.	0	10	6	Poulson, E.	1	1	0	Starkey, E. B.	0	5	0	West, Charles	0	10	6
Lester, J. F.	0	2	6	Pound, H. W.	1	1	0	Starkie, Richard S.	1	1	0	Weston, Samuel John	1	1	0
Lewinton, Alexander B.	1	1	0	Powell and Sons	1	1	0	Stephens, Henry I.	0	5	0	Westrup, Joseph B.	0	5	0
Lidwell, J. E.	0	10	6	Powell, Captain H. G.	0	5	0	Stickland, W. H.	1	1	0	Whiffen, Thomas	5	5	0
Litten, H.	0	2	6	Powell, S. R.	0	5	0	Stone, J. J.	0	10	6	Whigham, Robert L.	0	5	0
Littlejohn, A.	0	5	0	Powell, T. H.	0	10	6	Storey, E. H.	1	1	0	Whineray, E.	0	5	0
Llewelin, Ivor V.	0	2	6	Presbury, H. H.	0	5	0	Stratford, H. O.	0	10	6	White, Charles	1	1	0
Lloyd, Isaac T.	0	5	0	Pretty, Charles	0	5	0	Stratton, A. R.	0	2	6	Widgery, John	0	5	0
Lockyer, J. E.	0	2	6	Price, J. T.	0	2	6	Stratton, William	0	2	6	Wiggins, Henry	0	10	6
Long, H. H.	0	7	6	Price, Robert John	0	5	0	Streater, J. H.	0	10	0	Wigginton, Alfred	0	10	6
Longhurst, E.	0	10	6	Probyn, P. C. (Donation)	50	0	0	Strickett, J.	0	2	6	Wilkinson, Benjamin John	0	10	6
Longstaff, W. L.	0	5	0	Procter, H. R.	0	5	0	Strongitharm, W. G.	0	5	0	Wilkinson, W.	0	2	6
Lovibond, J. J.	0	5	0	Procter, R.	0	5	0	Strother, Florence E.	0	2	6	Will, William W.	1	1	0
Lucas, E. W.	0	10	6	Puckey, W.	0	10	6	Style, J. W.	0	10	6	Williams, Alfred	0	10	6
Lucas, J. M. M.	0	10	6	Purse, G. F.	0	2	6	Sugden, W. A.	0	10	6	Williams, F.	0	2	6
Lyon, James	0	10	6	Radermacher, C. J.	0	10	6	Summers, James R.	0	10	6	Williams, G. T.	0	5	0
Lyon, W. H.	0	5	0	Reed, Charles W.	0	10	6	Surfleet, A. F.	0	5	0	Williams, Henry	2	2	0
Macdonald, Alexander	0	10	6	Rees, C. J.	0	5	0	Sutcliffe, L. B.	0	2	6	Williams, J.	0	5	0
MacEwan, Peter	1	1	0	Reid, C. S.	0	2	6	Swaffin, J. P.	0	2	6	Williams, J. W.	1	1	0
MacEwan, W.	0	10	6	Reynolds, R. J.	1	1	0	Symons, William H.	1	1	0	Williams, Stephen	0	5	0
MacGeorge, William	0	10	6	Richards, B.	0	5	0	Tabor, T. S.	0	5	0	Williams, T. R.	0	5	0
Maish, J. R.	0	10	6	Richardson, John	0	5	0	Talintyre, W. J.	0	5	0	Willows, Francis and Butler	3	3	0
Maizey, E.	0	10	6	Riches, F. F.	0	5	0	Taplin, J. W.	1	1	0	Wilson, James	1	1	0
Makepeace, A. B.	0	5	0	Ri hes, T.	0	5	0	Taplin, William Gilbert	1	1	0	Wilson, J. F.	0	5	0
Malcolm, J.	0	2	6	Rigden, George	0	5	0	Tapp, C.	0	2	6	Wing, A. J.	0	5	0
Marsh, E. R.	0	10	6	Roach, H. W.	1	1	0	Taubman, Robert	0	10	6	Wink, J. A.	1	1	0
Marshall, J. D.	0	5	0	Roach, Pope	1	1	0	Taylor, E. W.	0	2	6	Wisken, Robert	0	5	0
Marston, John Thomas	0	10	6	Roberts, H. W.	0	5	0	Taylor, E.	0	2	6	Wodderspoon and Co.	1	1	0
Martin, T. C. W.	0	10	6	Roberts, R.	0	10	6	Taylor, George S.	1	1	0	Wood, Jacob	1	1	0
Martin, W. L.	0	5	0	Roberts, W.	0	5	0	Taylor, Horatio	0	10	6	Wood, W.	0	2	6
Martindale, William	1	1	0	Robertson, George	0	10	6	Taylor, John	0	10	6	Woodward, J. H.	0	5	0
Mathews, J. H.	1	1	0	Robeson, C. B.	0	5	0	Taylor, Peter	0	5	0	Wootton, Alfred C.	2	2	0
Matthews, C. W.	1	1	0	Robinson, C. E.	0	5	0	Tebbutt, Edwin	1	1	0	Worsley, A. G.	0	10	0
Matthews, H. R.	1	1	0	Robinson, R. A.	0	10	6	Tennent, A.	0	5	0	Wretts, J. R.	1	1	0
Maw, Charles	1	1	0	Robinson, William P.	0	10	6	Thacker, W.	1	1	0	Wright, Layman and Umney	3	3	0
Maw, C. Trentham	1	1	0	Rogers, R. A.	0	10	6	Thatcher, R.	0	5	0	Wyatt, Francis J.	0	5	0
(Donation)	52	10	0	Rogers, F. Ashley	0	5	0	Thomas, Harry A.	3	3	0	Wybrant, A.	0	10	6
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Meggess, and Co.	1	1	0	Ros-iter, R. T.	0	5	0	Thomas, R.	0	10	0	Yeatman, F. J.	0	2	6
Michie, Charles C.	0	10	6	Rowland, E. E.	0	10	6	Thompson, A.	0	10	6	Young, E.	0	2	6
Miles, C. J.	1	1	0	Rowland, H. L.	0	5	0	Thompson, Arthur S.	0	5	0	Young, George	0	5	0
Miller, W. P. F.	0	5	0	Rowntree, Thomas	0	10	6	Thompson, G.	0	10	6	Zusman, H.	0	10	0
Millhouse, H. H.	0	5	0	Rundle, C.	0	5	0	Thompson, Henry	0	10	6				
Minshull, Flora	0	5	0	Rutter, John	0	10	0	Thompson, Henry Ayscough	1	1	0				
Minshull, Rose C.	1	1	0	Sadler, William	1	1	0	Thompson, John	1	1	0				
Moffat, C. D.	0	5	0	Sadler, William, jun.	0	10	6	Thompson, R. W.	0	5	0				
Moore, E.	0	2	6	Sainsbury, S.	1	1	0	Thompson, T.	0	2	6				
Morgan, H.	1	1	0	Sandy, Frederick William	0	10	6	Thorn, John James	1	1	0				
Morley, C.	0	5	0	Sanger and Sons	2	2	0	Thorton, L. B.	0	5	0				
Morrell, Thomas	0	5	0	Sangster, Arthur	1	1	0	Tickle, T.	0	5	0				
Moss, John and Co.	1	1	0	Sant, E.	0	5	0	Tijou, Tom	0	2	6				
Moxon, G. R.	0	10	6	Saul, J. E.	1	1	0	Tingle, Miss Ellen	0	2	6				
Mundy, Alfred O.	0	10	6	Saunders, C.	0	10	6	Tomlinson, Thomas	1	1	0				
Mutch, John Pratt	0	5	0	Saunders, W. H.	0	10	6	Tompsett, Leighton S.	0	5	0				
Myers, William	0	10	6	Savory and Moore	3	3	0	Towers, W. L.	0	5	0				
Naylor, W. A. H.	0	10	6	Saxby, R.	0	5	0	Tree, J.	0	2	6				
Neale, J.	0	5	0	Sayers, W. J.	1	1	0	Tregellas, C. P.	0	5	0				
Nettle, W. R. P.	0	5	0	Sell, W. H.	0	10	6	Trick, William B.	0	10	6				
Newhill, J. W.	1	1	0	Sewell, T. A. W.	0	2	6	Trotman, Alfred C.	0	10	6				
Nicholls, T.	1	1	0	Seymour, W. H.	0	2	6	Truman, F. W.	0	10	6				
Nicholson, Thomas T.	0	5	0	Sharman, Wm.	0	10	6	Truman, H. V.	0	10	6				
Nind, George	0	10	6	Shaw, E. H.	0	2	6	Tucker, W. C.	0	2	6				
Ninnis, T. M.	0	10	6	Shaw, J. W.	0	10	6	Tugwell, Ernest H.	0	10	6				
Norfolk, J. W.	0	5	0	Shephard, Thomas F.	0	10	6	Tupholme, F.	1	1	0				
Ord, Septimus W.	0	5	0	Shephard, W. A.	0	5	0	Turner, Charles E.	0	10	6				
Page, R. S.	0	5	0	Shepley, Frederick Thos.	0	5	0	Turner, Edward A.	2	2	0				
Page, W. I.	0	5	0	Sheppard, W. J.	0	5	0	Turner, Thomas	0	5	0				
Palmer, J. T.	0	10	6	Shera, W. A.	0	2	6	Tustin, Chas. D.	5	5	0				
Parker, C.	0	2	6	Sherburn, Thomas	0	10	6	Upjohn, F. W.	0	5	0				
Parker, F. P.	0	10	6	Sherwood, N.	0	10	6	Vaughan, J.	0	5	0				
Parker, Robert Henry	1	1	0	Shields, R. H.	0	10	6	Vialls, J. B.	1	0	0				
Parkes, J. P.	1	1	0	Shirley, S. S.	1	1	0	Vincent, P.	1	1	0				
Parkinson and Son	1	1	0	Sibthorp, S. J. K.	0	2	6	Vooght, W. J.	0	5	0				
Parry, C. D.	0	5	0	Silver, S. W.	0	2	6	Wade, T.	0	2	6				
Pasco, G. S.	0	2	6	Silverlock, Henry	5	5	0	Walker, A.	0	5	0				
Pasmore, W. F.	0	5	0	Sisson, E.	0	5	0	Walker, Charles	0	5	0				
Patey, W. J.	0	7	6	Skoulding, W. G.	0	2	6	Walker, C. J.	0	10	6				
Peacock, George	0	5	0	Slack, Josiah W.	0	10	6	Wallis, T. J.	0	5	0				
Peat, Joseph	0	5	0	Slator, Henry	0	5	0	Wallbridge, H. A.	0	5	0				
Pellew, A.	0	10	6	Smart, W.	0	10	6	Wallis, John T. W.	0	10	6				
Penrose, A. W.	1	1	0	Smith, Albert	0	5	0	Wallis, Owen	0	10	6				
Perodeau, E. G.	0	10	6	Smith, A. J.	0	10	6	Wallis, T. E.	0	5	0				
Peters, D.	0	5	0	Smith, E. C. H.	0	2	6	Want, W. P.	0	10	6				
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Philpott, F. W.	0	5	0	Smith, Percy John	1	1	0	Watkins, H. E.	0	2	6				
Pickard, William	2	2	0	Smith, William	0	10	6	Watson, E.	0	5	0				
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Gourlay, H. H.	0 5 0	Hudson, J. E.	0 5 0	Nicholson, J. W.	0 5 0	Cooling, W. J.	0 10 6
Macclesfield.		Hughes, Evan G.	0 10 0	Mayfield.		March, William	0 5 0
Cooper, Thomas	0 5 0	Hughes, J.	0 2 6	White, Edward A.	0 5 0	Priestley, L.	0 2 6
Hodkinson, J.	0 5 0	Jackson, George	1 1 0	Melbourne (Victoria.)		New Buckenham.	
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Pass, W. H.	0 10 6	Jeans, Alfred	0 10 0	Melksham.		Newbury.	
Scanlon, F. W.	0 2 6	Jeans, T. R.	0 5 0	Bush, J. E.	0 2 6	Pratt, Thomas H.	0 10 6
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Upson, A.	0 10 6	Kidd, J. C.	0 5 0	Merthyr Tydvil.		Bolan, John	0 10 6
Walton, Ralph	0 10 6	Kirkby, W.	0 5 0	Harris, E. W.	0 5 0	Cantrill, W. W.	0 5 0
Wardle, J.	0 10 6	Lane, W.	0 10 6	Thomas, D. A., M.P.	0 10 6	Cormack, G.	0 5 0
Maidstone.		Leech, Robert	0 5 0	Thomas, H.	0 5 0	Coxon, Mrs. E.	0 2 6
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Corfe, Alfred	0 5 0	Massey, J.	0 2 6	Messina.		Dudderidge, F. R.	0 5 0
Corfe, A. F.	0 5 0	Milligan, G.	0 5 0	Barrett, A. A.	0 5 0	Forbes, R.	0 5 0
Goff, T. S.	0 5 0	Munday, H.	0 5 0	Smith, G. F.	0 5 0	Forster, J. R.	0 5 0
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Stonham, Thomas G.	0 10 6	Ogden, A.	0 2 6	Hume, William A.	0 10 6	Hallaway, R. R.	0 5 0
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Crick, George E.	0 10 6	Pickup, Robert L.	0 10 6	Taylor, H. H.	0 5 0	Ismay and Sons	0 10 6
Heaver, A. W.	0 5 0	Pidd, Arthur J.	0 10 6	Taylor, William R.	0 5 0	Lander, A.	0 5 0
Pechey, T. P.	0 5 0	Pigott, Samuel	0 2 6	Middlewich.		Long, F. C.	0 5 0
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Buckle, James	0 5 0	Pratt, G. W.	0 5 0	Midmar (N.B.)		Martin, N. H.	1 1 0
Harrison, William	0 10 6	Price, J.	0 5 0	Milne, J. (Comers)	0 2 6	Merton, G.	0 5 0
Laverack, W. H.	0 5 0	Riding, J.	0 5 0	Millom.		Owen, William	0 10 6
Malvern.		Ritchie, T.	0 2 6	Roberts, John L.	0 2 6	Park, F.	0 10 6
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Balmforth, A.	1 1 0	Stratford, A. J.	0 2 6	Marsh G. W. F.	0 10 6	Wilkinson and Simpson	1 1 0
Bates, Frederic W.	0 5 0	Sturdy, T. M.	0 5 0	Williams, W. R.	0 2 6	Newcastle (Staffs.).	
Bayliss, T. G.	0 2 6	Sutcliffe, C. H.	0 7 6	Montrose.		Heathcote, Thomas S.	0 10 6
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Bell, Joseph	0 5 0	Teasdale, C.	0 10 0	Davidson, A.	0 5 0	Williams, T. L.	0 5 0
Benger, F. Baden	1 1 0	Terry, Thomas (Withington)	0 5 0	Morecambe.		Newhaven (N.B.).	
Berry, W. (Newton Heath)	0 5 0	Thompson, H.	0 2 6	Fell, J. J.	0 5 0	Anderson, J. G.	0 5 0
Bew, John	1 1 0	Towle, A. P. and Son	1 1 0	Morpeth.		Mitchell, W. K.	0 3 0
Billington, John	0 5 0	Towles, Rev. R. E.	0 2 6	Davidson, T. R.	0 5 0	Newhaven (Sussex).	
Blain, Alfred L.	0 5 0	Travis, H. A.	0 2 6	Schofield, F. E.	0 5 0	Granger, Harold	0 5 0
Blone, G. J.	0 5 0	Turner, C.	0 10 6	Warner, D.	0 5 0	New Malden.	
Blyton, J.	0 10 6	Twemlow, Richard	0 10 6	Morrison.		Abrams, B. R.	0 5 0
Boor, Frederick	0 10 6	Walton, D.	0 2 6	Thomas, L.	0 5 0	Newmarket.	
Booth, T.	0 2 6	Walton, J. W.	0 5 0	Motherwell.		Barrow, Frank A.	1 1 0
Booth, W. G.	0 10 6	Waugh, J.	0 5 0	Baillie, D.	0 2 6	Carr, J. W.	0 10 6
Botham, J.	0 10 0	West, H. T.	0 2 6	Scott, R. A.	0 2 6	Freeman, J. H.	0 2 6
Bowker, W.	1 1 0	West, Thomas	0 5 0	Scott, T.	0 5 0	Newport (Isle of Wight).	
Bransby, C. K.	0 2 6	Whittaker, E.	0 10 6	Taylor, D.	0 2 6	Millidge, Alfred	0 5 0
Breadner, C. G.	1 1 0	Whitaker, T.	0 5 0	Mumbles.		Newport (Mon.).	
Broughton, T.	0 2 6	Wild, John	0 5 0	Lowther, H. R.	0 10 6	Aspinall, H.	0 5 0
Bullock, A. H.	0 2 6	Wilkinson, George	0 2 6	Nairn.		Atkins, A. E.	0 5 0
Bullock, H.	0 2 6	Wilkinson, William	0 5 0	McIntosh, J.	0 2 6	Evans, David	0 5 0
Bushby, Thomas	0 5 0	Williams and Co.	0 10 6	Nantwich.		Garrett, T. P.	0 10 6
But her, G. S.	0 5 0	Williams, J. B.	0 5 0	Manley, Henry (Aston)	0 2 6	Paine, Charles	0 10 6
Cargill, D. A.	0 2 6	Woolley, Sons and Co.	5 5 0	Neath.		Phillips, James W.	0 5 0
Carter, William	0 10 6	Wright and Barnaby	0 10 0	Isaac, J. G.	0 5 0	Smith, Albert	0 5 0
Clayton, G.	0 5 0	Vates, Ebenezer	0 5 0	Nelson.		Williams, A. G.	0 5 0
Cooper, F. R.	1 1 0	Young, J. C.	0 5 0	Collins, M. A.	0 10 6	Young, John	0 10 6
Cowpe, M.	0 2 6	Mansfield.		New Barnet.		Newport (Salop).	
Dawson, Robert D.	0 5 0	Adams, Benjamin	1 1 0	Hayles, B. H.	1 1 0	Chalmers, J.	0 5 0
Denton, J.	0 10 6	Vallance, A. C.	0 5 0	Williams, W.	0 10 6	Douthwaite, G. L.	0 5 0
Eden, W. J.	0 2 6	Margate.		Young, R. F.	0 10 6	Picken, T. W.	0 5 0
Edwards, G.	0 5 0	Evans, D. T.	1 1 0	Mareham.		Newport Pagnell.	
Fairweather, W. E.	0 2 6	Harvey, William S.	0 10 6	White, Edward A.	0 5 0	Taylor, F. W.	1 1 0
Fawcitt, T. C.	0 10 0	Hewlett, J.	0 10 6	Melton Mowbray.		Newton Abbot.	
Foden, E.	0 5 0	Holmes, P.	0 5 0	Attenburrow, Jas.	0 5 0	Barnes, G. A.	0 5 0
Gardner, E.	0 2 6	Pettman, R.	0 10 6	Gill, Josiah	0 5 0	Bibbings, J. H.	0 5 0
Garner, E. J. F.	0 5 0	Market Drayton.		Wing, G. N.	0 5 0	Cornelius, J.	0 5 0
Gavin, J.	0 5 0	Cooke, William	0 5 0	Market Harborough.		Stiling, John E.	0 10 6
Gavin, T.	0 10 6	Market Harborough.		Adams, H. G.	0 10 6	Wright, W.	0 5 0
Gibbons, Walter	0 10 6	Adams, H. G.	0 10 6	Bragg, W. B.	0 5 0	Newtown (Mont.).	
Gibson, Robert	1 1 0	Bragg, W. B.	0 5 0	Maynard, H. R.	0 5 0	Morgan, Richard	0 10 6
Gilbert, J. A.	0 2 6	Market Weighton.		Maryport.		New York (U.S.A.).	
Gourlay, R. G.	0 2 6	Marshall, J. J.	0 5 0	Cockton, John	0 5 0	Lamb, T.	0 10 6
Handford, T. E.	0 5 0	Maryport.		Smith, J. M.	0 5 0		
Hankinson, W.	0 2 6	Cockton, John	0 5 0	Spark, W.	0 2 6		
Harding, E.	0 10 6	Smith, J. M.	0 5 0	Watson, R. W.	0 2 6		
Havard, H. L.	0 5 0	Spark, W.	0 2 6				
Hedley, J.	0 2 6	Watson, R. W.	0 2 6				
Heald, W. O.	0 2 6						
Hilditch, Thomas	0 3 0						

	£	s.	d.
Nice (France).			
Barrass, T. E.	0	5	0
Nicholls, A.	1	1	0
Normanton.			
Rogers, A.	0	2	6
Northampton.			
Barry, James	1	1	0
Bingley, John	0	10	6
Clower, John	0	5	0
Kirby, Frederick	0	10	6
McKinnell, W.	0	5	0
Mayger, William D.	0	10	6
Sindall, J. W. (Executors of)	0	5	0
Ward, O. T.	0	5	0
North Walsham.			
Bailey, George Wm.	0	5	0
Denney, E. J.	0	5	0
Northwich.			
Clough, John C.	0	10	6
Deakin, J. W.	0	5	0
Hough, T.	0	5	0
Humphreys, Griffith	0	5	0
Lee, William	0	5	0
Lewty, A. E. R.	0	2	6
Norwich.			
Arthur, John	0	5	0
Betts, George	0	10	6
Brittan, T. B.	0	5	0
Corder, Edward	0	10	6
Corder, Octavius	1	1	0
Cossey, John	0	5	0
Cossey, J. D.	0	10	6
Cullen, F. S.	0	5	0
Dawson, W. T.	0	5	0
DeCarle, H. E.	0	5	0
Fitch, J. R.	0	5	0
Gardiner, W.	0	7	6
Hayhoe, W.	0	5	0
King, H. A.	0	5	0
Mallett, H. P.	0	5	0
Mason, Philip H.	0	10	6
Nuttall, Edwin	0	10	6
Robinson, James	0	5	0
Smith, Joseph de Carl, jun.	0	10	6
Sutton, Francis	0	10	6
Taylor, H. E.	0	5	0
Watson, J. E. H.	0	10	6
Norwood.			
Atkinson, J. G. (Upper)	1	1	0
Badman, W. R. (Upper)	0	2	6
Beale, F. W. (South)	0	10	6
Birch, H. C. (Upper)	1	1	0
Dunlop, T. W.	0	2	6
Golds, L. G. (Upper)	0	10	6
Izod and Son (Upper)	1	1	0
Palmer, F. (Upper)	0	10	6
Peake, W. A. (South)	0	5	0
Prime, T. R. (Upper)	0	10	6
Ramsey, W. (Upper)	0	10	0
Rees, H. (South)	1	1	0
Stacy, F. (Upper)	0	5	0
Wallis, G. (South)	0	5	0
White, C. E. (South)	0	10	6
Nottingham.			
Ashby, W.	0	2	6
Bailey, S.	0	5	0
Bolton, C. A.	0	5	0
Coates, F. C. (New Basford)	0	2	6
Cobb, F.	0	5	0
Cook, S.	0	5	0
Cowley, H. W.	0	5	0
Dadley, I. I.	0	5	0
Davis, I.	0	2	6
Dennis, J. E.	0	5	0
Fitzhugh, R.	0	5	0
Flowerdew, W. C.	0	2	6
Gascoyne, E.	0	5	0
Gaskin, J. H.	0	2	6
Gill, W.	0	5	0
Hare, G. E.	0	5	0
Ingle, G.	0	5	0
Lumby, Fred	0	5	0
Middleton, A.	0	5	0
Newball and Mason	1	1	0
Rayson, J. T.	0	5	0
Robinson, Joseph	0	2	6
Sergeant, F. R.	0	5	0
Smithurst, John	0	5	0
Turton, E. E. H.	0	5	0
Waterall, G. E. (Donation)	10	10	0
Wilford, J.	0	5	0

	£	s.	d.
Oakham.			
Wellington, J.	0	10	6
Odiham.			
Woodman, George	0	5	0
Oldbury.			
Homes, Joseph P.	0	5	0
Old Charlton.			
Wigg, L. N.	0	5	0
Oldham.			
Bagshaw, Henry B.	0	10	6
Bagshaw, William	0	10	6
Bates, Henry	0	10	6
Bates, Hiram	0	5	0
Braddock, George	1	0	0
Brelsford, James	0	10	6
Buckley, W.	0	2	6
Burnett, W.	0	5	0
Goodall, F.	0	10	6
Hargraves, H. L.	0	10	6
Haslop, William	0	5	0
Hurst, James	0	5	0
Lees, James	0	5	0
Lord, Robert B.	0	5	0
Platt, Mrs. M.	0	2	6
Tomlinson, A. G. (Hollinwood)	0	5	0
Wilson, Alexander G.	0	5	0
Old Brompton.			
Green, J. H. B.	0	2	6
Old Deer (N.B.).			
Hardy, A.	0	5	0
Old Meldrum.			
Bremner, J.	0	5	0
Oswestry.			
Evans, John	0	5	0
Roberts, William Carey	0	2	6
Smale, Richard B.	0	10	0
Otley (Yorks).			
Hamond, J.	0	5	0
Pratt, Richard M.	0	10	6
Oundle.			
Roper, H. E.	0	5	0
Oxford.			
Bloxham, W. E.	0	10	0
Frooks, H. J. R.	0	2	6
Burbank, T. J. A. R.	0	5	0
Clayton, C.	0	2	6
Court, G. F.	0	5	0
Dolbear, J.	0	10	6
Druce, George C.	0	10	6
Gilkes, W. H.	0	5	0
Hill, James H.	0	5	0
Jenkins, Alexander	0	5	0
Mason, J.	0	2	6
Mathews, H.	1	1	0
Prior, George T.	0	10	6
Squire, James	1	5	0
Thurland, Henry	0	10	6
Paignton.			
Sherriff, George	0	5	0
Paisley.			
Fraser, A.	0	7	6
Hannah, H.	0	2	6
MacCowan, R. T.	0	5	0
Paris.			
Barret, E. L.	1	1	0
Parkstone.			
Haynes, J. A.	0	5	0
Partick (N.B.).			
Blair, T.	0	2	6
McNicol, John	0	5	0
Rait, Robert C.	0	10	6
Robertson, G.	0	5	0
Pau (France).			
Jarvis, John	1	1	0
Smith, C. C.	0	5	0
Paulton (Somerset).			
Bush, Thomas	0	5	0
Peebles.			
Lindsay, R.	0	5	0
Sanderson, W. J.	0	2	6

	£	s.	d.
Pembroke Dock.			
Bowling, J. H.	0	2	6
Laen, Mrs. S.	0	10	0
Thomas, J. M.	0	2	6
Williams, A. L.	0	10	6
Penzance.			
Buckett, A. H.	0	5	0
Harvey, J. S.	0	5	0
Symons, N. H.	0	5	0
Perth.			
Ayre, G. M.	0	5	0
Donald, David	0	10	6
Strang, P.	0	5	0
Peterborough.			
Althorp, H.	0	2	6
Bodger, J. W.	0	5	0
Booth, Samuel	0	2	6
Calcutt, T. J.	0	2	6
Carlton, Arthur	1	1	0
Heanley, A. V.	0	2	6
Heanley and Saunders	0	10	6
Holland, W.	0	2	6
Knight, W. T.	0	10	6
Noble, H. E.	0	2	6
Pearson, John H.	0	2	6
Sturton and Sons	0	10	6
Turner, R. P.	0	2	6
Whitwell, Ewen	0	5	0
Peterhead.			
Tocher, J. F.	0	10	0
Petworth.			
Whitcombe, C.	0	5	0
Plymouth.			
Allen, Joseph	0	10	6
Andrews, T. N.	0	5	0
Bailey, John H.	0	5	0
Bailey, Richard	1	1	0
Balkwill, A. P.	2	2	0
Balkwill, G.	0	2	6
Barge, John	0	5	0
Blackmore, F. J.	0	2	6
Cantle, H.	0	2	6
Cocks, E. T.	0	2	6
Cox, F. F.	0	2	6
Dance, C. K.	0	2	6
Dangerfield, E.	0	2	6
Downing, T. J. W.	0	2	6
Filmer, J. H.	0	2	6
Findlay, J.	0	5	0
Foster, F. H.	0	5	0
Goodwin, Medmer	0	10	6
Goodwin, W. F.	0	5	0
Header, H. N.	0	2	6
Header, H. P.	0	10	6
Hender, W. C.	0	5	0
Hunt, F. W.	0	10	6
Jones, E. O.	0	10	6
Luke, R. S.	0	5	0
Maitland, S.	0	2	6
Maurice, James	2	2	0
Netting, J. G.	0	5	0
Park, Charles J.	0	10	6
Roper, R. F.	0	10	6
Sloggett, Thomas C.	0	5	0
Taveney, W. S.	0	2	6
Turney, E. G.	0	2	6
Turney, F. E.	0	2	6
Turney, J. D.	0	5	0
Turney, Samuel B.	0	5	0
U'Ren, W. C.	0	5	0
Weary, C. T.	0	5	0
Westcott, H. O.	0	2	6
Williams, S. R.	0	5	0
Williams, T. J.	0	5	0
Woods, William	1	1	0
Woods, W. H.	0	5	0
Pocklington.			
Boyden, John A. C.	0	2	6
Pontefract.			
Bratley, William	0	5	0
Pontlottyn.			
Roberts, W.	0	5	0
Pontypool.			
Ford, Edward B.	0	10	6
Pontypridd.			
Arnott, D.	0	5	0
Cule, Taliesin	2	2	0
Davies, D.	0	5	0
Groves, T. B.	0	10	6
Key, W. H.	0	2	6

	£	s.	d.
Poole.			
Groves, T. B.	0	10	6
Portland.			
Childs, Joseph L.	0	5	0
Porto Alegre (Brazil).			
Hallowell, J.	1	1	6
Portmadoc.			
Morris, D.	0	5	0
Thomas, W. J.	0	2	6
Portobello.			
Nesbit, James	0	5	0
Nesbit, John	1	1	0
Portsmouth.			
Adamson, W.	0	5	0
Anstey, J. U.	0	2	6
Arnold, J.	0	5	0
Bailey, H. H.	0	2	6
Brewis, T.	1	1	0
Cooper, J.	0	5	0
Cruse and Co.	1	1	0
Deacon, F. G.	0	5	0
Eggleton, W. L.	0	2	6
Ford, H. S.	0	5	0
Gall, F.	0	2	6
Gourd, W.	5	0	0
Hoit, A. H.	0	2	6
Lowther, W.	0	5	0
Mumby, C. and Co.	1	1	0
Perfect, Geo.	0	5	0
Postlethwaite, T.	0	5	0

Reading.	£	s.	d.
Ashfield, A.	0	5	0
Biddles, W. B.	0	5	0
Bradley, Charles.	1	1	0
Brunsdon, E.	0	2	6
Butler, B. H.	0	5	0
Cardwell, E.	0	10	6
Coles, S. J.	0	5	0
Craft, James.	0	5	0
Dodge, E.	0	5	0
Dowling, R., jun.	0	5	0
Gibson, J. E.	0	5	0
Hampton, G.	0	5	0
Hayward, S.	0	2	6
Knowles, J. H.	0	10	6
Mays, F. W.	0	10	6
Milton, H.	0	5	0
Powell, J. A.	0	5	0
Rowell, John C.	0	5	0
Smith, A. B.	1	1	0
Tunbridge, Frederick	0	10	6
Wright, J. N.	0	10	6
Young, J. M. (Theale)	0	5	0
Redditch.			
Moule, William	0	5	0
Ramsay, A. R.	0	2	6
Redcar.			
Underwood, G.	0	2	6
Redhill.			
Cross, J.	0	5	0
Monk, F. A.	0	5	0
Padwick, T.	0	10	6
Sillitoe, F. S.	1	1	0
Reepham.			
Cripps, Johnson	0	10	6
Reigate.			
Neve, Annie.	0	10	6
Sargant, J.	0	10	6
Woodward, M. M.	0	5	0
Retford.			
Pater, E. R.	0	5	0
Westbrook, Dr. C.	1	1	0
Rhyl.			
Lawrence, George R.	1	1	0
Richmond (Surrey).			
Blanchford, R. A.	0	10	6
Bletsoe, John	0	10	6
Parrott, J.	0	10	6
Rickmansworth.			
Sumner, G. T.	0	5	0
Ripon.			
Parkin, J. B.	0	10	6
Rudd, H. B.	0	2	6
Thornley, F.	0	5	0
Rochdale.			
Highley, William	0	5	0
Kerr, William	0	2	6
Partington, William	0	2	6
Taylor, John	0	2	6
Thomas, F.	0	5	0
Whittaker, J. W.	0	2	6
Rochester.			
Brown, Hugh S. F.	0	2	6
Hewitt, J. S.	0	5	0
Marriner, G. F.	0	2	6
Wyatt, C. F.	0	5	0
Rome.			
Ross, C.	0	5	0
Wall, A. W.	0	5	0
Romford.			
Lasham, John W.	0	10	6
Romsey.			
Kemp, C. T.	0	5	0
Oram, F.	0	2	6
Ross.			
Matthews, T. A.	0	5	0
Rothbury.			
Farrage, Robert	0	10	0
Rotherham.			
Bradshaw, C. H.	1	1	0

Rothsay.	£	s.	d.
Duncan, William.	0	5	0
Rothwell.			
Gray, A. U.	0	2	6
Runcorn.			
Weston, J. H.	0	10	6
Rutherglen.			
Robertson, D. S.	0	2	6
Ruthin.			
Rouw, T. J.	0	5	0
Ryde (Isle of Wight).			
Barford, H. W.	0	5	0
Dixon, Henry	0	10	6
Flower, T. C.	0	2	6
Gibbs, William	0	10	6
Pollard, Henry H.	0	10	6
Smith, Tenison	0	10	6
Smith, T. N.	0	2	6
Smith, W.	0	2	6
Thomas, W. J.	0	2	6
Rye (Sussex).			
Horrell, W. H. D.	0	5	0
Waters, William A.	0	10	6
Saffron Walden.			
Faraday, G.	0	5	0
St. Albans.			
Allenby, Henry	0	2	6
Ekins, Arthur E.	0	10	6
St. Andrews.			
Bruce, A. K.	0	10	0
Govan, Alexander	0	10	0
St. Anne's-on-the-Sea.			
Taylor, J. H.	0	5	0
St. Austell.			
Bice, James.	0	5	0
St. Bees (Cumb.).			
Broomfield, R. W.	0	10	6
St. Boswells.			
Robertson, J.	0	5	0
St. Davids.			
David, Albert	0	2	6
St. Day.			
Corfield, Charles.	0	10	6
St. Helens.			
Harrison, James.	0	5	0
Sherlock, Thomas	0	5	0
Swift, C. W.	0	2	6
Wallbridge, J. G.	0	2	6
St. Johns (Newfoundland).			
McNeil, John	1	1	0
St. Just.			
Wearing, John	0	2	6
St. Leonards (See Hastings).			
St. Neots.			
Dukes, H. J.	0	2	6
Wise, James.	1	1	0
Sale.			
Smith, A.	0	5	0
Salford (see Manchester).			
Salisbury.			
Atkins, Samuel Ralph	1	1	0
Atkins, William R.	0	10	6
Hardy and Son	0	10	6
Harrison, F. J.	0	2	6
Kerly, W.	0	2	6
Liddle, C.	0	5	0
Newton, F. H.	0	5	0
Newton, J. W.	0	10	6
Orchard, E. J.	1	1	0
Rowe, J.	0	5	0
Saltburn-by-the-Sea.			
Taylor, William	0	10	6

Saltcoats.	£	s.	d.
Walker, J.	0	5	0
Saltley.			
Strutt, E. B.	0	5	0
Sandbach.			
Gee, G. H.	0	2	6
Sandgate.			
Jenner, William M.	0	5	0
Kennett, E.	0	2	6
Sandown (Isle of Wight).			
Brown, G.	0	5	0
Cocksedge, H. B.	1	1	0
Woolings, F.	0	2	6
Sandwich.			
Baker, Frank	0	10	6
Dixon, William (Ash).	0	5	0
Woodruff, A. E. (Eastry).	0	5	0
San Remo (Italy).			
Squire, Frank R.	1	1	0
Saxmundham.			
Palmer, C. J.	0	2	6
Scarborough.			
Batty, T. E.	0	5	0
Brown, J. E.	0	2	6
Chapman, Henry	0	10	6
Clare and Hunt	1	1	0
Davy, H. R.	0	2	6
Fccles, H.	0	5	0
Hill, R. M.	0	2	6
Jones, Alfred	0	5	0
King, F. H.	0	2	6
Procter, B. B.	0	5	0
Simms, R. J.	0	2	6
Smith, J. F.	0	2	6
Turner, W. H.	0	2	6
Walker, J.	0	5	0
Whitfield, G.	0	5	0
Whitfield, John	1	1	0
Seacombe.			
Hinkley, E.	0	5	0
Holt, Richard W.	0	5	0
Robinson, R. F. W.	0	2	6
Seaford.			
Cameron, L.	0	2	6
Seaham Harbour.			
Storey, W.	0	5	0
Seaton.			
Skinner, G. J.	0	5	0
Selby.			
Brown, G.	0	2	6
Selkirk.			
Dunn, Thomas	0	5	0
Stavert, W.	0	2	6
Settle.			
Shepherd, J. W.	0	10	6
Sevenoaks.			
Barrat, R.	0	5	0
Hampson, R.	1	1	0
Pain, E.	0	10	6
Shallowford.			
Smith, E. R.	0	10	6
Shanklin (Isle of Wight).			
Deeks, W. T.	0	2	6
Tovey, A.	0	5	0
Sheepshed.			
Moore, Thomas	0	5	0
Sheerness.			
Hills, William J.	0	2	6
Prosser, David	0	10	6
Sheffield.			
Archer, A.	0	2	6
Austen, J.	0	2	6
Bates, J. H.	0	5	0
Bradwall, J. H.	0	5	0
Carr, George	0	5	0
Carr, P.	0	5	0
Dale, J.	0	5	0

Sheffield—continued.	£	s.	d.
Dobb, J. T.	0	10	6
Eardley, J. F.	0	10	6
Eyre, S.	0	5	0
Fox, A. R.	0	10	6
Furness, Joseph M.	0	10	6
Gardner, J.	0	2	6
Gibson, J. C.	0	5	0
Haining, E.	0	2	6
Harrison, J. H.	0	2	6
Hewitt, C. H.	0	5	0
Hewitt, J. P.	0	5	6
Ibbitt, H. E.	0	2	6
Jepson, X.	0	2	0
Kirkby, W.	0	2	6
Lowe, S. P.	0	5	0
Marshall, J.	0	5	0
Miller, John T.	0	5	0
Miner, M. T.	0	5	0
Newsholme, G. T. Wilkinson.	1	1	0
Owen, G. B.	0	5	0
Pater, J. B.	0	5	0
Preston, Job	0	10	6
Rhoden, S. T.	0	2	6
Smith, E. W.	0	5	0
Turner, J. W. J.	0	5	0
Twelves, C. H.	0	2	6
Ward, William	0	10	6
Watson, H. G.	0	5	0
Watson, Robert W.	0	10	6
Watts, J.	0	5	0
Wiles, Edwin	0	5	0
Williams, H. G.	0	5	0
Shepton Mallet.			
Fudg6, Charles William	0	5	0
Sheringham (Norfolk).			
Burrell, W. H.	0	5	0
Shields, North.			
Buckley, W.	0	5	0
Burn, Thomas	0	2	6
Gibson, James	0	10	0
Shields, South.			
Bottomley, L. W.	0	5	0
Darling, J. M.	0	2	6
Ellis, A.	0	5	0
Forrest, Robert	0	10	6
Mays, A.	0	5	0
Noble, John.	0	5	0
Noble, J. G. B.	0	5	0
Riddle, J.	0	5	0
Walker, James	0	5	0
Walker, J. B.	0	5	0
Wanle-s, F. A.	0	5	0
Williamson, B., jun.	0	10	0
Shildon.			
Veitch, T. D.	0	10	6
Shrewsbury.			
Adams, William	1	1	0
Blunt, T. P.	1	1	0
Cross, A. R.	0	5	0
Cross, William G.	3	3	0
Gouldbourn, William	0	10	6
King, L. W.	0	5	0
Perkins, Christopher	0	5	0
Salter, Benjamin	1	1	0
Salter, Joseph B.	1	1	0
Sidmouth.			
Chessall, Rowland	0	5	0
Sittingbourne.			
Cocking, T. S.	0	5	0
Gordeier, William G.	1	1	0
Stedman, W. (Teynham).	0	5	0
Sketty.			
James, A. W.	0	3	6
Skipton.			
Green, W. H.	0	2	6
Sleaford.			
Harrison, T. E.	0	5	0
Spyvee, W.	0	5	0
Slough.			
Elliman, Sons and Co.	1	1	0
Griffith and Walden	0	10	6
Smallthorne.			
Fletcher, Thomas	0	10	6

Snaith. £ s. d.		Stanningley (Yorks). £ s. d.		Sudbury (Suffolk). £ s. d.		Tewkesbury. £ s. d.	
Bean, John	0 10 6	Powell, A. J.	0 5 0	Brown, J. H.	0 2 6	Barlow, G. R.	0 2 6
Solihull.		Stanstead.		Sunbury-on-Thames.		Thetford.	
Pegg, H.	1 1 0	Minett, E. P.	0 5 0	Price, J.	0 5 0	Hildyard, W.	0 2 6
Southall (Middlesex).		Stockbridge.		Sunderland.		Marshallsay, R. J.	
Diggens, E. D.	0 5 0	North, J.	0 10 6	Bell, R. H.	0 5 0	Thornbury (Glos.).	
Southampton.		Stockport.		Bowman, S.	0 5 0	Palmer, J. S.	
Alderslade, W.	0 5 0	Arnfield, J. C.	0 5 0	Cherret, E. R.	0 5 0	Thornaby-on-Tees.	
Andrews, W.	0 5 0	Ball, G.	0 2 6	Fairman, George P.	0 10 6	Ronchetti, T. A.	
Bates, William	0 10 6	Johnson, Thomas J.	0 5 0	Harrison, E. E.	0 2 6	Thornhill (N.B.).	
Bishop, Samuel	0 5 0	Kay Brothers	2 2 0	Harrison, John	1 1 0	Fingland, James	
Borchert, Heinrich T. G.	1 0 0	Lang, J. W.	0 5 0	Hodgson, C.	0 5 0	McNay, D.	
Carter, H. A.	0 5 0	Langbourne, W. C.	0 2 6	Hodgson, R.	0 5 0	Ticehurst.	
Chipperfield, R.	1 1 0	Orton, W. B.	0 5 0	Leadbitter, W. W.	0 2 6	Corke, Edward	
Dawson, Oliver R.	0 10 6	Plant, E. G. L. (Romiley)	0 5 0	Mitchinson, J.	0 5 0	Titchfield.	
Horsley, H. V.	0 5 0	Wilson, A. E.	0 2 6	Purse, A. D.	0 2 6	Smith, W. O.	
Hughes, J. H.	0 5 0	Stockton-on-Tees.		Ranken, Charles	0 10 6	Tiverton.	
Johns, H. B.	0 2 6	Bainbridge, Robert R.	0 2 6	Scott, W.	0 5 0	Havill, P. W.	
Johnson, W. E.	0 5 0	Gregory, J.	0 2 6	Thompson, L.	0 10 6	Rossiter, Thomas E.	
Madge, James C.	0 10 6	Stoke-on-Trent.		Todd, M. J.	0 2 6	Todmorden.	
Randall, William B.	1 1 0	Adams, Frank	0 10 6	Walton, T.	0 5 0	Lovatt, H. P.	
Rubie, J. T.	0 5 0	Adams, William H.	0 10 6	Sunninghill (Berks.).		Tonbridge.	
Spearing, James	0 10 6	Emery, R. G.	0 5 0	Ball, W. B.	0 10 0	Gower, A. J.	
Vertue, E. S.	0 2 6	Holt, R. D.	0 5 0	Surbiton.		Wardley, S. F.	
Wilson, H.	1 1 0	Smith, Arthur H.	0 10 6	Acfield, William	0 5 0	Topsham.	
Southend.		Stone (Staffs.).		Lowe, Charles	0 10 6	Ellis, Frederick	
Dawson, George R.	0 5 0	Slater, Thomas	0 10 6	Sutton.		Torpoint.	
Ebbage, H. E.	0 5 0	Slater, Thomas, jun.	0 5 0	Blyth, U.	0 10 6	Perkins, S. A.	
South Molton.		Stonehaven (N.B.).		Sanders, F. T.	0 5 0	Torquay.	
Harris, J. B.	0 2 6	Wood, A. L.	0 2 6	Swaffham.		Bathe, William	
Swingburn, Richard H.	0 10 6	Stonehouse (Devon).		Bell, Frederick R.	0 10 6	Bray, F. D.	
Southport.		Cocks, J.	0 5 0	Christopherson, Fred.	0 5 0	Bridgman, William Louis	
Adams, C. M.	0 10 6	Maitland, F.	0 5 0	Finch, Jacob	0 10 6	Cocks, John W.	
Ashton, W. (Executors of)	0 5 0	Netten, Henry J. T.	0 5 0	Swansea.		Cutmore, F.	
Ball, Henry	0 10 6	Stony Stratford.		Bevan, E.	0 5 0	Davies, J.	
Browell, J. J.	0 2 6	Cox, Julia Jane	0 10 6	Bonnett, F.	0 5 0	Guyer, James B.	
Cave, J. R.	0 5 0	Robinson, William H.	0 10 6	Davies, J. M.	0 5 0	Holloway, E. A.	
Crook, G.	0 5 0	Stourbridge.		Davies, John (31, High Street)	0 5 0	Knight, Benjamin	
Elliott, Stephen J.	0 2 6	Burgess, William	0 5 0	Davies, John (75, Oxford Street)	0 5 0	Milne, W.	
Foggitt, J. B.	0 5 0	Loverock, Henry	0 5 0	Davies, John (Walters Road)	0 10 6	Moon, G. W.	
Gill, Hugh	0 5 0	Selleck, W. R.	0 5 0	Dryden, T.	1 1 0	Newlyn, J.	
Gill, W. S.	0 2 6	Simpkins, G. S.	0 5 0	Evans, J. W. M.	0 5 0	Quant, E.	
Gilmour, A.	0 2 6	Yeates, A.	0 5 0	Evans, M. D.	0 5 0	kawling, W. J.	
Hackett, T.	0 10 0	Stowmarket.		George, W.	0 10 6	Rendall, T.	
Hamer, J. A.	0 5 0	Gostling, George J.	1 1 0	Grose, Nicholas M.	1 1 0	Shapley, Charles	
Hartley, T.	0 5 0	Simpson, Robert G.	0 5 0	Hughes, James	0 5 0	Sloman, Richard	
Jesper, C. F.	0 2 6	Wilson, Thomas	0 5 0	James —	0 2 6	Taylor, John	
Laing, J. W. A.	0 5 0	Stradbroke.		Jones, T.	0 5 0	Tomlin, J. P.	
Mainwaring, R.	0 10 6	Foulsham, Harry B.	0 5 0	Keall, A. A.	0 5 0	Waymouth, T. S.	
Marshall, G. G.	0 5 0	Stranraer.		Lloyd, John W.	0 5 0	Totnes.	
Nuttall, R. H.	2 2 0	Kerr, R.	0 5 0	Powell, S. J.	0 2 6	Cooke, E. H.	
Righton, James	0 10 6	Stratford.		Rees, Daniel	0 5 0	Foot, W. R. W.	
Round, Frederick	0 10 6	Eastman, J. E.	0 10 6	Roberts, J. K.	0 5 0	Morse, C. H. Stafford	
Smith, F. J.	0 5 0	Holford, T. C.	0 10 6	Stott, J. W.	0 5 0	Tottenham.	
Surr, Edward	0 10 6	Ricketts, J.	0 2 6	Thomas, Evan	0 10 6	Bently, W. J.	
Sykes, J.	0 5 0	Stratford-on-Avon.		Thomas, J. E.	0 5 0	Fell, S.	
Whitworth, James	0 5 0	Akerman, W. J.	0 2 6	Thomas, T.	0 5 0	MacCrimdale, T.	
Wilding, G. J. (Birkdale)	0 10 6	Ashwin, Alice M.	0 2 6	Trick, M.	0 5 0	Oakeley, T. J.	
Winter, William	0 10 6	Strathpeffer Spa.		Williams, H. E.	0 10 6	Tanner, A. E.	
Southwell.		Maxwell, T. W.	0 10 6	Williams, J. T.	0 10 6	Tranent.	
Bennett, G.	0 5 0	Stratton.		Yorath, C.	0 5 0	Ness, T.	
Downing, J. H.	0 10 6	Pickard, Henry	0 5 0	Swindon.		Tredegar.	
Southwold.		Stratton-on-Fosse.		Green, John	0 5 0	Phillips, Charles L.	
Critten, Robert P.	0 2 6	Thring, E. J. H.	0 10 6	Tarporley.		Treorchy (Pontypridd).	
Sowerby Bridge.		Streatham.		Aston, A. V.	0 5 0	Prothero, G. R.	
Briggs, T.	0 2 6	Breese, C.	0 5 0	Taunton.		Trowbridge.	
Spalding.		Dwelly, H. E.	0 5 0	Kirkpatrick, J.	0 5 0	Chettle, H. T.	
Bell, E. W.	0 5 0	Escritt, H. T.	0 10 6	Short, G. W.	0 3 0	Truro.	
Bloodworth, T.	0 5 0	Shacklock, J. H.	1 1 0	Tavistock.		Bucher, W. H.	
Hearnshaw, J. W.	0 5 0	Strood.		Doble, H. T.	0 5 0	Feaver, Samuel	
Spennymoor.		Clarke, W. E.	0 10 6	Doble, R. D.	0 5 0	James, Hamilton	
Burdon, Thomas A.	0 5 0	Stroud.		Gill, William	0 5 0	Percy, Thomas B.	
Farthing, G. T.	0 5 0	Coley, Samuel J.	0 10 6	Teddington.		Vincent, O.	
Stafford.		Smith, H. C.	0 5 0	Scott, J. H.	0 5 0	Tenbury.	
Averill, Henry Alcock	0 10 6	Strathpeffer Spa.		Stacey, P.	0 5 0	Slade, John	
Averill, John	0 10 6	Sturminster Newton.		Teignmouth.		Tenby.	
Spilsbury, J.	0 5 0	Breese, C.	0 5 0	Evans, Joseph J. O.	0 5 0	Davies, Moses P.	
Stamford.		Dwelly, H. E.	0 5 0	Maunder, William	0 5 0	James, George	
Dickinson, Frederick	0 10 6	Escritt, H. T.	0 10 6	Silk, E.	0 5 0	Tenby.	
Stanford-le-Hope.		Shacklock, J. H.	1 1 0	Tewkesbury.		James, George	
Cushion, S.	0 5 0	Sturminster Newton.		Tewkesbury.		James, George	
Stanhoe.		Clarke, W. E.	0 10 6	Tewkesbury.		James, George	
Oliver, J. R.	0 2 6	Sturminster Newton.		Tewkesbury.		James, George	

Tunbridge Wells. £. s. d.	Wallington. £. s. d.	Wellington (Somerset). £. s. d.	Winchester. £. s. d.
Batting, Thomas G. 0 10 6	Wood, Edward 0 10 6	Gregory, Walter. 0 5 0	Barratt, F. J. 0 5 0
Chapman, F. 0 10 6		Windeatt, G. J. 0 5 0	Chaston, A. E. 0 5 0
Cheverton, George 1 1 0	Walsall.		Gaiger, J. E. 0 1 0
Dunkley and Rogers. 1 1 0	Bayley, C. 0 10 6	Wells (Norfolk).	Garnett, J. 0 5 0
Howard, G. W. 0 10 6	Baynard, E. J. 0 5 0	Hyett, H. 0 10 0	Gibb, W. D. 0 2 6
Howard, Richard 0 10 6	Elliott, E. M. 0 10 6	Rump, Robert R. 0 10 6	Hamilton — 0 2 6
Llewellyn, P. H. 0 5 0	Fast, J. P. 0 5 0		Heth rington — 0 2 6
Nicholson, A. 0 10 6	Grove and Son 0 5 0	Wells (Somerset).	Knight, George E. Moses 0 5 0
Sells, Robert J. 0 10 6	Morris, J. O. 0 2 6	Slater, Jonathan. 0 5 0	
Thompson, G. A. 0 10 6	Shelley, E. S. 0 5 0		Windermere.
Ventham, A. W. 0 5 0			Barker, R. H. 0 5 0
Whitrow, Benjamin 1 1 0	Walsham-le-Willows.		
Williams, James. 0 10 6	Harrington, Arthur 0 5 0		Windsor.
York, F. 0 10 6			Everett, J. G. 0 10 6
			Grisbrook, Edward 0 5 0
Tunstall.			Miller, G. F. 0 5 0
Viggars, G. D. 0 5 0	Waltham Abbey.		Wood, Robert 0 10 6
	Griffiths, J. M. 0 5 0		
Tutbury.	Marshall, A. 1 1 0		Wingate.
Green, Isaac. 0 5 0			Cross, John T. 0 10 0
	Walthamstow.		
Twickenham.	Nichols, F. R. 0 5 0		Winslow.
Alexander, William 0 5 0	Noble, J. 0 5 0		Parrett, Edward 0 5 0
Bishop, Thomas 1 1 0	Saunders, A. 0 5 0		
Davies, O. T. 0 5 0	Wilson, J. 0 5 0		Wisbech.
Peake, Henry F. 0 5 0			Hill, Major 0 2 6
Shelley, Henry 0 10 6	Walton-on-Thames.		
Taylor, J. J. 0 5 0	Power, William 0 5 0		Wishaw.
			Macfarlane, T. B. 0 2 6
Uckfield.			
Farr, E. H. 1 1 0	Wantage.		Witham.
	Candy, J. W. G. 0 5 0		Green, R. P. 0 10 6
Uddingston.	Robins, H. 0 2 6		
Flett, A. 0 5 0			Wokingham.
	Ware.		Pearman, H. 0 2 6
Ulverston.	Medcalf, Benjamin 0 10 6		Pickles, L. 0 2 6
Porter, W. 0 2 6			Rednall, W. R. 0 5 0
Willan, Robert 0 10 6	Wareham.		
	Marshallsay, R. J. 0 5 0		Wolverhampton.
Unst (N.B.).	Randall, Thomas 0 10 6		Beardmore, A. E. 0 10 6
Sutherland, A. 0 5 0			Burnett, C. C. 0 5 0
	Warrington.		Cannell, William 0 10 6
Upton-on-Severn.	Ashton, H. M. 0 2 6		Fleeming, W. 0 5 0
Cooper, W. E. 0 2 6	Greenough, H. F. 0 5 0		Gibson, F. J. 0 10 6
Gibbs, John. 0 10 6	Hill, J. S. 0 5 0		Goodsell, P. G. 0 5 0
	Warner, M. R. 0 5 0		Hamp, John. 0 5 0
Upper Brighton.	Wells, C. H. 0 2 6		Johnson, W. 0 2 6
Walker, J. 0 5 0	Young, John Rymer. 1 1 0		Lowe, R. H. 0 10 0
			Pratt, J. 0 5 0
Uppermill (Yorks.).	Warwick.		Reade, Bros. and Co. 0 10 6
Fryer, J. 0 2 6	Holliday, J. 0 10 6		Robinson, J. 0 5 0
	Mellor, J. G. 0 5 0		Stanway, Edward Thomas 0 10 6
Urmston.			Willcock, F. A. 0 2 6
Duncalfe, Richard 0 5 0	Waterloo (Lancs.)		
Farrants, F. S. 0 5 0	Alexander, J. 0 10 6		Wolverton.
	Hamnett, T. 0 5 0		Barton, W. 0 5 0
Usk (Mon.).	Hodgson, T. S. 0 5 0		
Ault, J. 0 5 0	Kirk, W. P. 0 5 0		Woodbridge.
	Maries, C. A. 0 2 6		Betts, A. S. 0 5 0
Uttoxeter.	Morgan, H. B. 0 10 0		Clapham, F. G. 0 5 0
Woodward, H. 1 1 0	Pearson, W. 0 10 6		
Woolrich, Charles B. 0 2 6	Physey, R. 0 10 6		Wombwell.
			Allen, A. 0 5 0
Uxbridge.	Watford.		
Coles, A. 0 5 0	Bateman, J. M. 1 1 0		Woolston (Hants).
Perfect, E. G. 0 2 6	Chater, Edward M. 1 1 0		Pell, John 0 5 0
Poll, G. J. 0 5 0	Chater, Matthew Taylor 1 1 0		
	Cottle, Alfred James. 0 5 0		Worcester.
Ventnor (Isle of Wight).	Hannafor, W. 0 5 0		Acton, F. G. 0 5 0
Lees, J. 0 5 0	Parrott, W. S. 0 10 6		Blunt, C. 0 2 6
Littlefield, J. W. 1 1 0			Brown, C. C. 0 2 6
Nicholls, A. L. 0 2 6	Wath-upon-Deerne.		George, Henry 0 10 6
Smith, C. A. 1 1 0	Nerwood, J. P. 0 10 6		Hall, Frederick J. 0 5 0
Withers, J. T. 0 2 6			Hinks, John. 0 10 6
	Watlington.		Horniblow, F. H. 0 2 6
Wainfleet.	Spyer, A. J. 0 5 0		Horniblow, W. T. 0 5 0
Huggins, R. B. 1 1 0			Judson, T. B. 0 2 6
	Watton.		Lunn, T. 0 5 0
Wakefield.	Vincent, Lacey A. 0 10 6		Max-y, W. H. 0 10 6
Cardwell, James 0 5 0			Price, W. W. 0 5 0
Chaplin, J. H. 0 10 6	Weaverham.		Silk, Thomas 0 5 0
Chaplin, John Lambert 0 10 6	Manifold, John J. 0 5 0		Steward, John A. 0 10 6
Luffin, C. W. 0 5 0			Storm, E. B. 0 5 0
Green, A. 0 7 6	Wednesbury.		Turner, C. W. 0 5 0
Hick, M. B. 0 10 6	Gittoes, Samuel J. 0 10 6		Twinberrow, J. 0 10 6
Job, C. F. 0 5 0			Virgo, Charles 0 10 6
Pollard, William. 0 10 6	Wellingborough.		
Saville, George 0 10 6	Walker, G. B. 0 2 6		Wordesley (Staffs.)
Smith, G. E. 0 10 6			Smith, S. 0 5 0
Wice, J. H. 0 10 6	Wellington (Salop).		
	Bates, J. 0 10 0		
Wallingford.	Hensby, R. P. 0 5 0		
Cowling, E. 0 2 6			
Payne, Sidney 1 1 0	Wellington (Somerset).		
Upton, Eustace J. 0 10 6	Gregory, Walter. 0 5 0		
	Windeatt, G. J. 0 5 0		
	Wells (Norfolk).		
	Hyett, H. 0 10 0		
	Rump, Robert R. 0 10 6		
	Wells (Somerset).		
	Slater, Jonathan. 0 5 0		
	Welshpool.		
	Griffiths, Thomas 0 5 0		
	Welton.		
	Myers, George Henry 0 5 0		
	West Bromwich.		
	Mould, J. S. 0 2 6		
	West Burton (Yorks.)		
	Pratt, W. 0 5 0		
	Westbury.		
	Paine, Charles 0 2 6		
	West Cornforth (Co. Durham).		
	Hunter, H. 0 5 0		
	Westgate-on-Sea.		
	Bessant, Frederick R. 0 10 6		
	West Kirby.		
	Barber, George 0 10 6		
	Jennings, W. H. 0 5 0		
	West Malling.		
	Stedman, Richard B. 0 5 0		
	Weston-super-Mare.		
	Bennett, W. 0 5 0		
	Carr, J. B. 0 5 0		
	Clutterbuck, C. 0 5 0		
	Cooper, John 0 5 0		
	Hall, E. 0 5 0		
	Lupton, J. S. 0 5 0		
	Parke, Harry C. 0 10 6		
	Watson, J. W. 0 5 0		
	Wigg, L. 0 10 6		
	Weybridge.		
	Griffin, Thomas 0 10 6		
	Kennett, J. N. 0 10 6		
	Weymouth.		
	Gregory, W. 0 5 0		
	Smith, E. M. 0 10 0		
	Whitby.		
	Booth, S. V. 0 5 0		
	Corner, Thomas B. 0 10 6		
	Frank, John. 1 1 0		
	Stevenson, John 0 10 6		
	Whitehaven.		
	Wilson and Kitchin 1 1 0		
	Whitley (Northumberland).		
	Whitehead, G. 0 5 0		
	Whitstable.		
	Arrowsmith, G. W. T. 0 10 6		
	Wickham Market.		
	Gardner, A. W. 0 5 0		
	Wick (N.B.).		
	Miller, Kenneth 0 5 0		
	Wigan.		
	Dawson, F. R. 0 5 0		
	Johnson, T. 0 10 6		
	Kellett, Richard E. 0 5 0		
	Phillips, Jonathan 0 5 0		
	Wimbledon.		
	Babb, J. 0 10 6		
	Butler, E. D. Barry 0 10 6		
	Dancey, R. 0 5 0		
	McDiarmid, F. 0 10 6		
	Spencer, W. G. 0 5 0		

Workington. £ s. d.	Worthing (continued). £ s. d.	Yarmouth, Gt. (contd.). £ s. d.	Yeovil (continued.) £ s. d.
Birkett, F. J. 0 2 6	Gulliver, W. I. 0 5 0	Wells, A. J. 0 2 6	Johnson, A. K. C. 0 2 6
Mason, Joseph R. 0 5 0		Williams, C. E. 0 2 6	Percy, J. W. 0 5 0
Worksop.	Wrexham.	Woodcock, T. J. 0 2 6	Pooley, J. D. S. 0 10 6
Baxter, George 0 5 0	Caldecott, C. G. 0 5 0	Wyles, W. 1 1 0	Wright, A. 1 1 0
Jones, George W. 0 5 0	Rowland, L. B. 0 5 0		
Marris, T. 1 1 0		Yaxley.	York.
Pennington, J. R. 0 5 0		Farr, Joseph. 0 10 6	Batty, Thomas 0 10 6
Worthing.	Yarmouth, Great.		Brooke, B. 0 5 0
Aston, W. 0 5 0	Clowes, John E. 0 10 6	Yeadon (Yorks.)	Coverdale G. 0 10 6
Betry, H. J. 0 5 0	Drabble, T. L. 0 5 0	Blatchley, Thomas 0 10 6	Enderby, J. E. 0 2 6
Burt, J. 0 5 0	Lane, F. J. 0 5 0	Coatsworth, T. 0 2 6	Grierson, G. A. 0 10 6
Cortis, A. B. 0 5 0	Palmer, H. 0 5 0		Lupton, J. A. 0 2 6
Frost, William 0 10 6	Poll, W. S. 0 2 6	Yeovil.	Parker, Thomas 0 10 6
	Pratt, Edward J. 0 10 6	Aplin, J. D. 0 5 0	Saville, John 1 1 0
	Shearman, J. S. 0 5 0	Francis, J. 0 5 0	Sowray, J. 0 5 0
		Gatward, O. 0 10 6	Wisker, R. H. 0 2 6
		Helliar, E. 0 5 0	

ANONYMOUS DONATION AND SUBSCRIPTIONS.

	Donation. £ s. d.	Subs. £ s. d.
M. F. (per M. Carteighe)	10 0 0	
S. J. B.		2 2 0
S. F.		1 1 0
W. J. J.		0 10 6
A Friend		0 2 6
T. M. J.		0 2 6
Anonymous		0 10 0

SUBSCRIBERS TO THE BENEVOLENT FUND DURING 1895

(SINCE DECEASED).

£ s. d.		£ s. d.
Bland, John 0 10 6	London	Hooper, William 100 0 0
Brown, A. 0 2 6	Motherwell	Jackson, C. 0 10 6
Burnett, W. 0 2 6	Hull	Linford, J. S. 1 1 0
Caley, A. J. 1 1 0	Norwich	McMillan, J. 0 10 6
Cordley, W. B. 0 5 0	Colchester	Merrick, J. B. 0 10 6
Darling, William 1 1 0	Manchester	Miles, G. 0 2 6
Donington, Robert 0 5 0	Spalding	Parker, W. 0 2 6
Elliott, George 0 10 6	Walsall	Piaister, W. J. 1 1 0
Ferneley, Charles 0 10 6	Worcester	Spencer, W. H. 0 5 0
Ferrein, Dr. A. 1 0 0	Moscow	Stimpson, G. 0 10 6
Fisher, F. D. 0 5 0	Grantham	Taylor, E. 0 5 0
Fitch, R. O. 0 10 6	Hackney	Tearle, W. 0 5 0
Forbes, J. W. 0 10 6	Bolton	Tagwell, W. H. 0 10 6
Gill, S. 0 10 6	Pendleton	Walton, M. F. 0 2 6
Gordon, W. 0 5 0	Aberdeen	Webster, J. H. 0 2 6
Hellowell, J. 0 5 0	Leeds	Westlake, J. 0 5 0
Hind, T. W. L. 1 1 0	Kendal	

ORPHAN FUND

OF THE

Pharmaceutical Society of Great Britain

(FOUNDED BY THOMAS HYDE HILLS, 1891.)

For securing the admission of Orphans of Members and Associates of the Society who were subscribers to the Benevolent Fund for 3 years and upwards into Orphan Schools or Asylums.

Subscriptions and donations to this Fund are invited. Donations and legacies are invested, and the income derived therefrom, together with such portion of the Annual Subscriptions as may be deemed necessary, are devoted to the object contemplated by the late Mr. Hills.

Legacy and Donations which have been received.

Thomas Hyde Hills (Legacy)	...	...	...	...	...	...	...	...	...	£1000	0	0
John Robbins	...	...	...	...	...	...	...	...	...	150	0	0
Elias Bremridge	...	...	...	...	...	...	...	...	...	105	0	0
Isaiah Bourdas	...	...	...	...	...	...	...	...	...	50	0	0
George Cooper	...	...	...	...	...	...	...	...	...	10	10	0
Guarantors of Edinburgh Committee B.P.C.	...	...	...	...	...	...	...	...	...	5	5	0
William Pickard	...	...	...	...	...	...	...	...	...	2	10	0

Subscriptions received during 1895.

Adams, William	...	...	...	...	...	...	...	...	...	0	10	6
Allen, Charles Bowen	...	...	...	...	...	...	...	...	...	1	1	0
Andrews, W.	...	...	...	...	...	...	...	...	...	0	2	6
Blunt, T. Porter	...	...	...	...	...	...	...	...	...	1	1	0
Bourdas, I.	...	...	...	...	...	...	...	...	...	1	1	0
Bourdas, I., jun.	...	...	...	...	...	...	...	...	...	0	10	6
Butt, E. Northway	...	...	...	...	...	...	...	...	...	2	2	0
Carteighe, Michael	...	...	...	...	...	...	...	...	...	1	1	0
Crook, George	...	...	...	...	...	...	...	...	...	0	5	0
Cross, W. Gowen	...	...	...	...	...	...	...	...	...	1	1	0
Gradidge, J. H.	...	...	...	...	...	...	...	...	...	0	5	0
Granger, H.	...	...	...	...	...	...	...	...	...	0	5	0
Hampson, Robert	...	...	...	...	...	...	...	...	...	1	1	0
Hills, Walter	...	...	...	...	...	...	...	...	...	1	1	0
Hodsoll, T. W. H.	...	...	...	...	...	...	...	...	...	0	5	0
Martindale, Wm.	...	...	...	...	...	...	...	...	...	1	1	0
Newsholme, G. T. W.	...	...	...	...	...	...	...	...	...	0	10	6
Robinson, J.	...	...	...	...	...	...	...	...	...	0	5	0
Roper, R. F.	...	...	...	...	...	...	...	...	...	0	5	0
Salter, Benjamin	...	...	...	...	...	...	...	...	...	0	10	6
Southall Brothers & Barclay	...	...	...	...	...	...	...	...	...	1	1	0
Warren, W.	...	...	...	...	...	...	...	...	...	0	5	0
Willcocks, A. S.	...	...	...	...	...	...	...	...	...	0	2	6
Wright, Layman, and Umney	...	...	...	...	...	...	...	...	...	2	2	0
Young, J. Rymer	...	...	...	...	...	...	...	...	...	1	1	0



