





# THE BRITISH PHARMACEUTICAL CONFERENCE, 1874.

## ELEVENTH ANNUAL MEETING, LONDON.



OFFICE,

COLONIAL BUILDINGS—44A CANNON STREET, LONDON, E.C.

THE meeting of the British Pharmaceutical Conference in London for the first time in its existence is an event of sufficient importance (it seems to us) to justify the devotion of a small special number to a report of its proceedings. Hence these pages.

For reasons which it is not now necessary to discuss, the executive committee decided to depart from the hitherto established custom of following the British Association in its provincial peregrinations. The opportunity was therefore seized of bringing the members together to the metropolis, a local committee was organised, with Mr. Carteighe as secretary, and with the cordial co-operation of the Pharmaceutical Society, which gave material aid in offering the free and entire use of their premises in Bloomsbury Square, there was good reason to anticipate a session worthy of the exceptional occasion.

The programme arranged by the local committee was briefly this: Wednesday evening (August 5) a *conversazione*, given by the Pharmaceutical Society to the Conference; reading of Papers and discussions thereupon on Thursday and Friday (August 6 and 7) mornings and afternoons; a light luncheon in the intervals each day, provided on the premises; a dinner on Thursday evening at the Cannon Street Hotel; and, to wind up, an excursion on the Saturday (this day) down the valley of the Thames by train, and pleasure barges to Maidenhead, with a *déjeûner* at the end of the journey.

Obviously it is yet too early to pronounce finally on the success of the meeting. Apart from its scientific aspect, which we shall touch upon presently, but little can yet be said. The social cordiality is the same as ever, and, by unanimous consent, the machinery of the meeting, which must be almost exclusively credited to Professor Attfield and Mr. Carteighe, has worked

admirably. Up to this moment no hitch has occurred, and if the rain, which has been threatening all through the meeting, can be staved off for another 24 hours, and barring railway accidents and shipwrecks, there need be no fear as to the pleasantness of the concluding trip.

On the other hand, the numbers attending the different assemblies have been much lower than sanguine prophets had anticipated. The theatre of the Pharmaceutical Society, which would be crowded if 300 persons were in it, has never been anything approaching full, and generally the attendance has averaged not more than 50. The *conversazione* was by no means crowded, and the dinner was partaken of by not much over 100 persons. We believe the London members are somewhat disappointed at the small number of their visitors.

The actual business of the Conference commenced on Thursday morning, at 10 o'clock, Mr. T. B. Groves occupying the chair. At first the attendance appeared somewhat scanty, and hardly justified the expectations that had been formed with respect to this metropolitan gathering. But by degrees the numbers steadily increased, and a very fair audience was ready to receive the President's address. Mr. Groves did not follow the arrangement or the ideal character of the opening discourses of his predecessors in office. In fact he avoided that scientific summary of the discoveries of the past year with which we have been often favoured, and chose rather to dwell on matters of quasi-political and general interest. The commencement was devoted to an explanation of the reasons which induced the Conference to depart for once from its ordinary custom of visiting at the same time the localities chosen for the meetings of the British Association. And in truth some statement was desirable, for it needed a strong necessity to justify the alteration.

Taking this as a key-note, Mr. Groves immediately ventured upon the vexed question of examinations, and the standard of qualification to be exacted from the future pharmacist. The subject was treated with some elaboration; nor were statistics wanting in the survey. We cannot enter upon an analysis of the argument submitted, and must leave its details to the persevering reader. It is open to a doubt whether, when men have met together from all parts of the country for social intercourse, and to compare, state, or discuss the various progress they may have made in original research, it would not



be wiser not to consecrate undue attention to the laws and framework of the Pharmaceutical Society, and to keep the special aims of the British Pharmaceutical Conference distinct.

The Adulteration Act came next under consideration, and an opinion was given with respect to its unsatisfactory operation. The co-operative system was described in a brief and sensible manner; while the amazing increase in the sale of patent medicines was commented on, and condemned without hesitation. This last development of trade, with its marvellous increase, was adverted to as an evil for which the remedy has not yet been ascertained.

Leaving this section of the address, the President introduced a short sketch of the progress made in the production of the International Pharmacopœia. Already it had been decided that the text shall be in Latin, and the weights used be metrical.

When thinking of the high pharmaceutical work that must yet be accomplished before we can hope for an universal pharmacy—what obscurities have to be removed, and what definite knowledge has to be gained—we are reminded naturally of those who have passed away from our ranks, leaving us of the younger generation to endeavour to fulfil the tasks they have left unaccomplished.

Such a man was Henry Deano, the founder, if not the originator, of the Conference, and who both individually and by his scientific contributions so largely advanced the interests of the Association. "I am not one," remarked Mr. Groves, "to say *we ne'er shall look upon his like again*; but am hopeful that the contagion of his example will spread among the rising generation, and produce equally good results in future years."

Mr. George Dymond was worthy to be included amongst those whose memory we could honour, having apparently before him a long career of usefulness. His work was finished at an age when most men imagine they are about entering on their labours.

Thomas N. R. Morson, whose familiar form will be missed so universally, was alluded to most happily, special reference being made to the admirable interest he would impart to an otherwise uninteresting debate. A few words on the position of French pharmacy brought the address to a conclusion. Nothing could be more accurate or conscientious than its statements, though it obviously contained little to inspire an audience with enthusiasm. The reading of the Papers was immediately commenced, and we have sincerely to congratulate the members on the many points of special interest, and of direct practical utility that were introduced.

The subjects opened well with a Paper by Dr. J. De Vrij on the Chemistry of Cinchona Bark, with reference to its use in Pharmacy. It was a thoroughly worked-out communication, and was conclusive evidence how greatly pure abstract chemistry bears on pharmaceutical manipulation.

The discussion which ensued was of an animated character; and Mr. Broughton, who happens at present to be in England, gave valuable information. A second Paper was likewise furnished by our excellent Dutch representative on the use of Pomegranate Root Bark as an Anthelmintic. As usual, other remedies for tapeworm were recommended—the reputation of oil of male fern was defended, and some curious vermifuge intelligenge was communicated.

The first day's proceedings were materially enriched by the investigations of our foreign members. For some short time, indeed, we seemed to have anticipated the desire that has been expressed for an International Pharmacy. Professor Flückiger sent the results of two series of experiments; the one illustrating the nature of the Stearopton of Oil of Nutmeg; and the other, the Chemistry of Elemi.

The President then read his further and latest report on the Aconitine Bases. It will be recollected by all that the matter

has engaged his attention for successive years, and it is the immediate object of the Conference to foster this class of continuous original research. The aconitine question is by no means yet exhausted, and it is hoped that our London President will be encouraged by past success to continue his investigations in such a difficult domain of enquiry.

No small praise must be allotted to Mr. A. W. Gerrard for his remarks and practical demonstration of the mode of spreading official plasters. Varied opinions were elicited, Mr. Martindale, from his long experience in this branch of pharmacy, taking a prominent position in the discussion. Really good, useful hints were given, and the official plasters enumerated in the British pharmacopœia were reviewed. Mr. Gerrard finished his observations with an exhibition of the manner in which lengths of *surgeons' plaster* were spread at Univ. Coll. Hosp. The apparatus is of the simplest kind, much like two deal chairs filled with hooks, and a huge blunt scraper, but the facility of execution was undeniable, and our private opinion is that the operator had not performed the experiment for the first time.

Let us notice, though not strictly in the order of sequence, a description by Mr. Stoddart of a new lactometer. Its action cannot be explained without reference to an engraving, but it appeared excellently to fulfil its intention, and capable of admirable use to those engaged in ascertaining the purity of either milk or butter. Doubts were entertained as to the accuracy of the results obtained; next morning, therefore, the zealous analyst tested a portion of his own breakfast, and demonstrated the value of the instrument.

Professor Redwood, who received a cordial welcome from the members, joined in this and in several other discussions, in most instances explaining the reason for the particular formulæ found in our authorised standard of pharmacy. Mr. Squire also was present throughout the whole proceedings, and when the subject of hydrocyanic acid was brought forward, imparted to his comparatively young audience some of the experience of former years.

To Professor Tichborne the credit must be awarded of having produced a paper of considerable importance. The Professor is no stranger to the Conference, as was just hinted, but his excellent contribution is a proof that his too frequent absence is much to be regretted.

The subject chosen was "The Use of Oleic Acid in Pharmacy;" for details reference must be made to the original paper; but it may at once be stated that the advantages to be gained by the agency of this oil appear manifest and undeniable. Beautiful, and we are told stable, emulsive preparations are produced with great facility; and certain liniments, whose manipulation has been a source either of failure or imperfect product, can be almost extemporised by the intervention of oleic acid in the place of olive oil. Professor Tichborne, as time pressed, gave but a verbal outline of one class of the applications of this acid and we believe he has extended his investigations in other directions than that of liniments.

Rather later than the canonical hour, which had previously been arranged, the first meeting of the Conference was ended but Friday morning found the members once more within the walls of the lecture room at Bloomsbury Square. The day wore a gloomy aspect, but, fortunately, our visitors from the country were not treated to that last misery, a sight of London in the wet.

The Exhibition attracted several of the earlier attendants and precisely at 10 o'clock, Mr. H. C. Baildon read a brief notice on "Cortex Rhamni Frangulæ." Much attention has been directed to this bark since it was first recommended at Edinburgh: testimony in its behalf was strongly adduced, and its efficacy as a remedial agent was urged by Mr. R. W. Giles. Dr. De Vrij related the employment of the frangule in Holland and Mr. Baildon may rest satisfied with the abundant common



dition the revival of the medical use of the bark has thus received.

It hardly is necessary, nor would it be desirable, to enlarge upon the whole list of subjects. The Executive made but one pardonable mistake: they crowded too many communications into a limited space of time. Some had to be read in abstract, while discussion on others had to be curtailed. Therefore, we must pass by Mr. Siebold's detection of lead in liquor ammoniac acetatis, and the adulteration of scammony by Mr. Greenish, though the latter drew from Professor Redwood a very satisfactory reply. It appears that both virgin scammony and the resin are official in certain cases, and the presence of these two in an official work seemed to be redundant. The Professor stated that the absolute merits of either had not been definitely determined, and while this uncertainty remained the authorities had given to the profession the benefit of the doubt, and left them unfettered in their choice.

Rapidly also we must dismiss the few remaining contributions. One was of practical interest—a notice by Mr. S. Daniel "On Syrups containing Phosphoric Acid." The troublesome nature of the bulky precipitate during the process of its manufacture has suggested the advisability of different modes of preparation. It appears a settled point that diluted phosphoric acid must be abandoned in the making of these syrups; while Mr. Umney mentioned a fact gratefully recognised by many non-manufacturing pharmacists, that an excellent syrup of phosphate of iron may be prepared by mixing a solution of the iron phosphate in exquisite proportions to pharmacopœial simple syrup.

This will lead us to the special feature of this day's transactions.

The syllabus or programme exhibited the strange fact that there were no less than four papers on the subject of hydrocyanic acid intended for discussion and waiting to be read. The authors were—Mr. Barnard S. Proctor, of Newcastle-on-Tyne; Mr. W. A. Shenstone, and Mr. L. Siebold—Mr. J. Williams reading with a paper devoted rather to the preservation than to the preparation of the acid.

We have little hesitation in stating an opinion which will be confirmed by those present, that the two records of personal experience, as detailed by Mr. Siebold and Mr. Williams, will tend to stamp the character of this particular annual Conference.

However unstable may be hydrocyanic acid and its strength—variations are beyond doubt—its medical employment is too securely planted in the mind of the profession ever lightly to be abandoned. It is for us, then, as pharmacists to exhibit this remedy in its best form, and to see that its easily altered composition is liable to the least amount of change. One of the main points urged by Mr. Siebold is the advantage of a diluted acid, the strength of which would admit of easy calculation. On the Continent, cherry-laurel water, which is virtually prussic acid in a state of dilution, suffers little change, and our own acid might be constructed on the same principle of dilution.

A matter of extreme importance was its analytical estimation, a question which was also dwelt upon by the previous author, Mr. Shenstone. Mr. Williams gave numerous details respecting the wonderful influence exerted by glycerine in the preservation of hydrocyanic acid: the glycerine was used in different proportions, the smaller quantities producing remarkable results: these have been carefully tabulated, and we may not hope that this perplexing but important remedy may be in future more stable in its constitution. Certainly, both those practical researches have considerably advanced our knowledge of the subject.

Finally, it will be confessed that this, the eleventh, annual meeting of the British Pharmaceutical Conference has been successful. Great fears, as well as great hopes, have been entertained, for it must be recollected that this is the first period in

its existence that it has stood alone. The fears have proved groundless, and the hopes have been amply realised.

An exhibition of articles relating to pharmacy was held in the rooms of the Pharmaceutical Society from Wednesday to Saturday, under the care of Mr. Holmes. We report upon it fully elsewhere.

As an appropriate introduction to our report, we publish a portrait of the President of the British Pharmaceutical Conference, with a brief sketch of his career. What remains to be reported of this memorable meeting will be cleared up in our regular issue next week.

In concluding our summary we have the pleasant duty of tendering our thanks to Professor Attfield, and other officers of the Conference, and to many of the authors of papers, for valuable and courteous assistance in the preparation of this report. Our acknowledgments are also due to the advertisers who have shared our expense in its production, and who, we hope, will be handsomely rewarded.

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### THOMAS BENNETT GROVES, F.C.S.,

PRESIDENT OF THE BRITISH PHARMACEUTICAL CONFERENCE,  
LONDON, 1874.

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THE excellent pharmacist who holds this year the presidential chair is the son of Richard Groves, who was the youngest of a family of nineteen. They came from Minterne Magna, in the county of Dorset, and for several generations had been there settled as extensive agriculturists. They farmed the Digby Home Farm, together with some landed property of their own. His father was apprenticed at Sherborne, and commenced business in 1829 at Weymouth. He was a chemist and druggist of the good old school; a man of considerable natural ability, and strictly honourable in all the relations of life. His scrupulous integrity led to a circumstance we have often heard related by the late Jacob Bell. We give it in his own words:—"One day at the examination, up comes young Groves to pass his Miour; and I do believe that Diogenes might have dropped his lantern, for had he come across the father he would have found out an honest man. I showed his son a piece of East Indian rhubarb, and he said it certainly was not Turkey, and that was the only kind he had ever seen. There is, it seems, one honest pharmacist in England."

Thomas Bennett Groves was born in Weymouth, July 12, 1829. We have read of legal families, every member of which has been connected with the law, and cases are not unfrequent of hereditary churchmen; but the entire ramifications of the Groves' household appear to have been attached to physic. Father and son have cultivated pharmacy; an only sister married a pharmacist, himself of pharmaceutical parentage; whilst the younger brother, Henry Groves, who resides in Florence, is not unknown to fame whether as a chemist or a botanist.

When twelve years old Thomas was removed from a local school of small account to a foundation grammar school called Milton Abbas. This was one of the venerable endowments of the date of Henry VIII., where they retained the healthy prejudice that the classics form a satisfactory basis of education, and are the key which opens the gate to all future knowledge. Consequently the boys were in no danger of the superficial, and could enter with sound intelligence on whatever branches of applied knowledge the providence of God should offer. English was not excluded, but modern languages and technical instruction was reserved. In this instance the result was not unfortu-



nate, as the boy's natural facility in acquiring languages enabled him by working after shop hours to supply the defect of the school curriculum.

On arriving at the school, which had then been removed to Blandford, he at once took the first place in the second division, which he held for a year, when he was put into the first division, where he kept the second place. His further progress was stopped by a boy named Edward Adams, a few years his senior. This friendly rival was entered afterwards at Oxford, and eventually became fellow and tutor of Worcester College.

In consequence of his father's failing health, he left school in 1844, when only 15 years old.

We mention the event with deep regret, knowing that it is at this very period that a youth begins to set heartily to learning, and that the next few years have a golden influence on his after life. However personal energy may triumph over actual circumstances, this premature removal is in every case to be deplored. The head master (Rev. C. L. Green) wrote a letter on the occasion, lamenting on his own part and that of the examiners, that Thomas Groves was not destined for the University. Pharmacy has, however, gained a diligent and conscientious worker.

Classical studies did not indispose him for athletic sports, in the exercise of which he was conspicuous; and he relates how he gained the nick-name of "Philosopher" on account of his successful eagerness in disputation.

On leaving school, he performed the usual duties of an apprentice, though his former studies were not abandoned. Dr. Allenby, the then leading physician of Weymouth, gave him lessons in Greek and Latin. He improved himself in mathematics; read with care such scientific works as were included in the shop library; and cultivated the knowledge of modern languages with unusual success.

Now his father placed in his hands as a birthday present a copy of "Fownes' Chemistry." The advanced nature of the work, the beauty of the illustrations, and its general superiority over the books to which he had previously had access, powerfully impressed his mind. That admirable compendium has stimulated many another pharmacist; and, having been enriched with the latest developments of chemistry, still can hold its own.

Mr. Groves spent the session 1850-51 at the School of Pharmacy in Bloomsbury Square, where he stood second to Richard Reynolds, of Leeds. For the Botanical prizes he did not compete, for although a great admirer of flowers, he did not take kindly to the science. Moreover, his brother Henry amply supplied any family deficiencies in that direction.

The session ended, he returned to the Weymouth pharmacy, where he has ever since continued. His father retired in 1856, leaving him his successor; a very fair specimen of a small, but useful, pharmaceutical laboratory has been added to the old premises under his supervision.

On March 7, 1853, there was established, at Bloomsbury Square, an association called the Phytological Club. Its meetings were held under the presidency of Professor Bentley, and its object was the cultivation of practical botanical research. The members were invited to arrange a standard herbarium of English and foreign specimens, to be open under certain restrictions to the inspection of the Society; to observe the effect of soil and climate on the medical activity of plants; and to promote the study of botany by original communications and the interchange of duplicates. Zeal for Linnæan pursuits was fostered until the club went the way of all amateur organisations. One of the earliest efforts of Mr. Groves was made before the members of the club. It was a paper on "Portland Arrowroot," in illustration of one of Pereira's lectures on *Materia Medica*. He describes how this *fecula* was manufactured by an old woman of the name of Jane Gibbs, who supplied it when required at

the price of 11*d.* per lb. It was prepared from the *Arum maculatum*, better known as Lords and Ladies; and it was collected in the months of May and June, one peck yielding three pounds of starch. The old lady advanced her price to 1*s.* 4*d.*, and the arrowroot was much prized by the Portlanders, who were a peculiar people, rigidly adhering to island exclusiveness, and neither marrying, nor giving in marriage, out of their immediate circle. Mr. Groves propounded the theory that the term *arrow-root* probably took its origin from the sagittate leaves of the plant. Professor Bentley thought that the name was due to the circumstance that the West Indians used the pulp of the *Maranta arundinacea* as an antidote to the poison in wounds inflicted by arrows.

Pharmacy has many such curious speculations—no one has yet solved the origin of the words *Taraxacum* or *Valerian*.

We next find remarks on the purification of essence of almonds, on which subject various ideas were entertained. It appeared that, when purified, oxidation more easily supervened, and the flavour was diminished. Mr. Groves was led to the adoption of an amended process, of easy application, because oil could not be rectified in the usual manner in a glass retort without sundry mechanical precautions; and that nine chemists out of ten did not possess a metal still of sufficient size, and suitable for the purpose.

We think we may perceive the germ of his future ventures into the domain of practical research in a paper read before the Society on October 4, 1854. Mr. Deane occupied the chair. It was "An Examination of the Alkaloids contained in the English Poppy Capsules." The original idea was to provide a method for preparing syrup of poppies. The liquor was subsequently examined to ascertain the presence of morphia, codeia, narcotine, and other possible ingredients. The communication is remarkable, not only for painstaking investigation, but for the successful attempt to separate morphia, narcotine, and codeia, which were exhibited to the meeting.

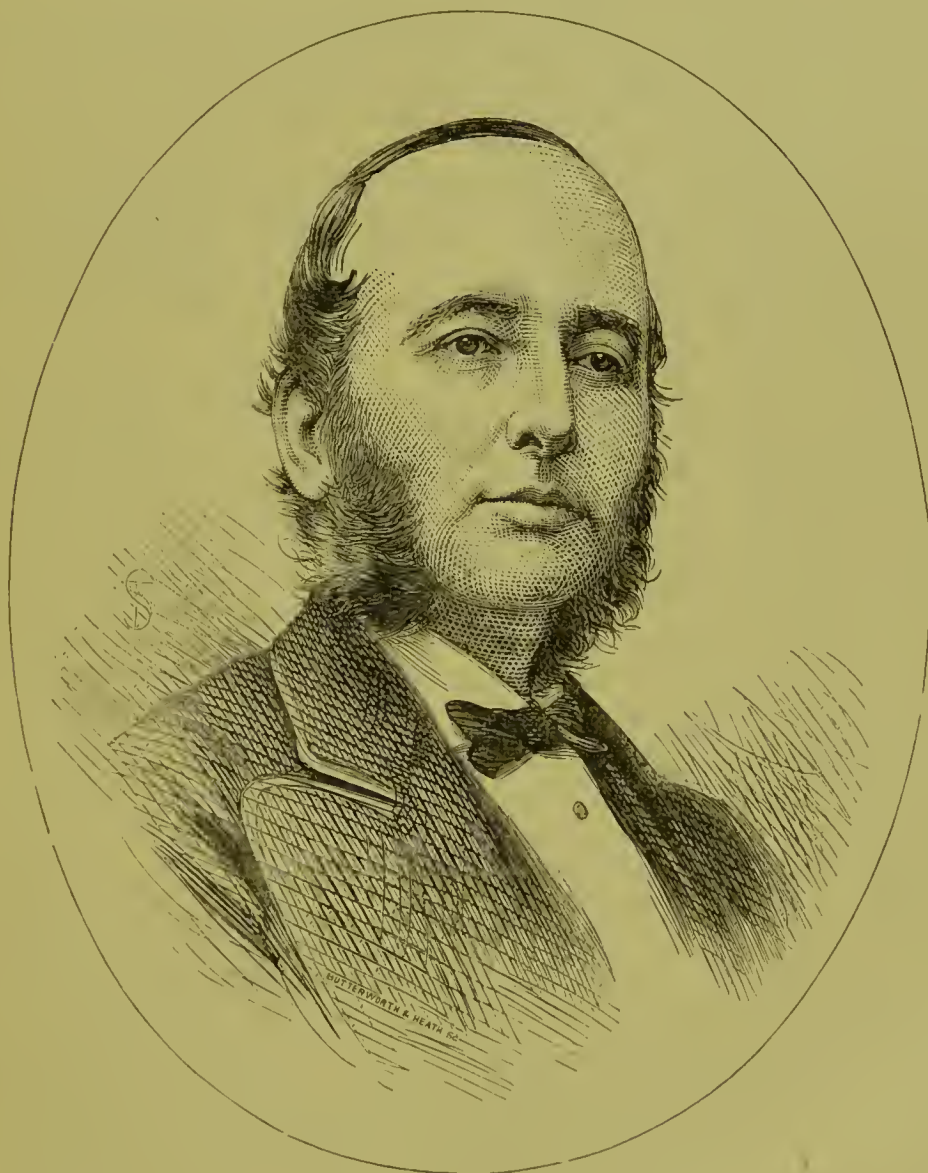
Nothing is more characteristic of Mr. Groves than the constant, and we might add the minutely laborious, manner in which he employs chemical research in aid of daily pharmaceutical occupations. He is essentially an inquirer—not ready to accept statements found in books, nor always deferential to the opinions of other people. He prefers to investigate matters for himself, to perform his own experiments, and *inter silvas quærere verum*, to seek for truth in Groves. In consequence, and from the very nature of the case, he is fertile in expedient, and his published communications are often records of ingenuity. Thus he enjoined care in pressing the contents of a filter bag; he rendered chloroform miscible with honey syrup, reducing its specific gravity by means of ether; he utilised the emulsion contained in the finely-powdered farina of oil seeds (linseed or sweet almonds) to make a paste emulsion called *Glycelæum*; he retarded the rancidity of fats by the addition of an essential oil; and a still cleverer thing was the recovery of essential oils from their watery solution. Olive oil was emulsed by solution of potash, and added to an aromatic water. Destroy the emulsion by an acid, the oil mounts to the surface, dragging upwards nearly the whole of the aroma.

Aloin has given rise to considerable disputation, and many of our ablest pharmacists have endeavoured to throw a light on its composition. A notice on the subject was published by Mr. Groves, July 21, 1856.

A statement had been made by a house in Ediinburgh that the crystalline principle of aloes might be readily procured from the Barbadoes variety, but only in inferior quantity from that known as Socotrine. Mr. Groves was inclined to doubt this assertion as being contrary to natural conclusions drawn from physical characteristics. He was, moreover, disposed to dispute the belief that the opaque varieties alone contained a considerable proportion of aloin, and that the translucent

THE CHEMIST AND DRUGGIST PORTRAIT GALLERY.

XI.



*Yours faithfully*  
*Thos. B. Groves*

THOMAS BENNETT GROVES, F.C.S.,  
PRESIDENT OF THE BRITISH PHARMACEUTICAL CONFERENCE, LONDON, 1874.





varieties having undergone the action of heat subsequent to inspissation, fusion had converted the aloin into a quasi-resinous or amorphous substance. Pereira had stated that the best Barbadoes aloes was procured by evaporation of the juice in a copper vessel over a naked fire; the Socotrine, on the contrary, was the pure spontaneously exuded juice of the cut leaves evaporated, after depositing its grosser parts, by the sole agency of the sun. Mr. Groves therefore exhausted by boiling water one ounce of Socotrine, acidulated the cold solution with hydrochloric acid, and evaporated the filtered solution over the water bath. After the lapse of some time crystals were produced, which, being three times crystallised by means of boiling water, yielded pale lemon-coloured crystals of pure aloin, which weighed when dry 48 grains, or ten per cent. of the aloes that had been employed.

He therefore was of opinion "that it is not to their possessing vitreous character, but to circumstances connected with the composition of the original juice from which they are made, that the various degrees of facility with which aloin may be obtained from them is due, and that aloin may be procured from those that have not been actually carbonised."

Members of the British Pharmaceutical Conference need not be reminded that the best credentials of Mr. Groves are founded on papers detailing his individual experience. From the nature of the inquiries they are rather difficult to follow, and would not be the less interesting if they included a condensed summary of the results obtained.

Two of these contributions were read at Bath.

This city is remarkable for many things. Persons under circumstances of acerbation are requested to visit the locality: it is noted for the picturesque character of its site, and for the manner in which its pharmacists unite intellectual culture with courteous hospitality. But Bath is not distinguished for the accuracy of its printing, and there it was that Mr. Groves was announced to give his views on the "Rancidity of Facts." Proboscis are occasionally in the habit of being somewhat musty, but facts are credited with being dry and hard.

The second paper was one of the most laborious and carefully worked out of his communications, "On the Assay of Alkaloids in Pharmaceutical Extracts." The subject was suggested by a friend, in consequence of the appearance in the "Proceedings of the American Pharmaceutical Association" of an article by Professor Mayer, of New York, who had attempted their titration by means of a standard solution of iodo-mercurate of potassium, and had even endeavoured to show how the method might be applied to the estimation of the numerous constituents of opium. Mr. Groves showed convincingly that the application of the method was strictly limited to a few bodies only, and, moreover, that the Professor's data were altogether erroneous. The second portion of the paper, devoted to the preliminary processes for getting the active principles into a state adapted for estimation, is characteristic of an experimenter. The merits of various eliminants are discussed—oleic acid, animal charcoal, and dialysis—and with the shining remarks we cordially agree. First, the efficacy of an extract does not depend solely on the amount of alkaloid contained; secondly, in such complex substances direct estimation is impracticable; and, thirdly, no chemical analysis would be self-sufficient without the further aid of physiological investigation.

At Norwich, in 1868, he contributed a chemo-historical paper on "Senna," which we can only note in passing—having ourselves little interest in a remedy nauseous in taste, unobtainable in effect, and odious in its consequences. Mr. Groves, in this case the misfortune to be forestalled in the discovery of the active principle of senna by an eminent foreign pharmacist, Professor Dragendorff, with whose paper he did not become acquainted till too late.

We are not, however, at liberty to omit the thoroughly good inquiries into the chemistry of the Aconites. The subject is treated without parade; the mode of investigation and the experiments are within the reach of every pharmacist, and the whole transaction is to his credit.

The first of the series was read at Nottingham in 1866, an attempt to solve the question—Does aconite owe any of its activity to any of the volatile acid body said to exist in it? The result was answered in the negative; and in the same paper doubts were entertained respecting the presence of narcotino in aconite, or of the separate existence of napellin. Crystalline salts of true aconite were first produced by Mr. Groves—a fact honourably acknowledged by M. Duquesnel in his well-known classic thesis on "Aconite and the Aconitines." A notice of Nepaul aconite followed at Liverpool in 1870. Professor Flückiger, one of the most successful, as he is certainly the most industrious, of pharmacologists, had made several experiments to determine (1) whether two aconitins had been offered to the medical profession, (2) what were respectively their distinctive characters, and (3) from what source was each alkaloid obtained? His experiments went to show that "English Aconitina" was not a descriptive title—that amongst the varieties of aconitina an entirely different basic body was found, probably derived from the Indian bikh roots. Von Schroff first noticed this, and named the alkaloid "Pseudo-aconitina;" but his results had never been confirmed. Mr. Groves set to work with the intention of further elucidation, taking for the purpose Indian aconite roots, said to be the produce of Nepaul.

A crystalline substance was produced, answering in every respect to Flückiger's description of pseudo-aconitina, and this was proved to be as distinctive of the Indian roots as lycocotinin was peculiar to the yellow-flowered variety. Much contradictory evidence was quoted on the general subject. Morson's preparation was supposed to be the result as much of care in the selection of the roots as of any special chemical manipulation, but it was reported on more minutely in a subsequent communication, and its probable composition indicated.

At Bradford, in 1873, appeared "Further Experiments on Nepaul Aconite and on the Characteristics of the Aconites." One ounce and a half of pseudo-aconitina was exhibited, and a report was subjoined on crystallised and amorphous aconite derived from *A. Napellus*, Morson's aconitina, pseudo-aconitina amorphous and in crystals, and napellin (?) derived from the Nepaul aconitine. Among the points noticed were:—1. Fusibility; 2. Solubility in ammoniacal water; 3. Action of heat on these ammoniacal solutions.

His results, the fruit evidently of considerable labour, fully established the complete distinctness of the alkaloids derived from *Aconitum ferox* and *Aconitum Napellus* respectively, and justified the original conclusions of the veteran Von Schroff.

Mr. Groves was elected a Fellow of the Chemical Society in 1859, and in April, 1870, a Corresponding Member of the Philadelphia College of Pharmacy. He is fond of amusing his leisure with archæology, and has not forgotten his early classical pursuits amongst the more urgent claims of business.

This year the British Pharmaceutical Conference holds its deliberations in the metropolis. For reasons which were deemed sufficient, it has for once not followed in the wake of the British Association; it is thus precluded from the enjoyment of the beauties of the sister isle. Our regret is softened by the reflection that the London members have the chance of repaying in over so small a degree the abundant hospitality and the unstinted kindness of their brethren in the country. We offer, then, with a peculiar feeling, our heartiest welcome to our guests. We are proud that from their ranks we should receive so good a representative; and that the first time the Conference has stood alone, a scholar and a scientific pharmacist should direct its counsels and uphold its reputation.



REPORT OF THE PROCEEDINGS  
OF THE  
BRITISH PHARMACEUTICAL CONFERENCE,  
AT THE  
Eleventh Annual Meeting, London, 1874.

PRESIDENT:  
THOMAS B. GROVES, F.C.S., WEYMOUTH.

Thursday, August 6.

THE President took the chair soon after 10 a.m., and was heartily greeted. At this time there were between 60 and 70 members present, the number considerably augmenting in the course of the morning. The first business was the reception of delegates, whose names were announced by Professor Atfield. The election of some 500 new members was then formally carried, the names not being mentioned. Professor Atfield remarked that, having some money in hand, he had taken on himself the responsibility of spending it by sending out circulars to chemists, with the result as shown in this large number of proposals for election.

THE CENTENNIAL CELEBRATION AT PHILADELPHIA IN 1876.

The PRESIDENT said that Col. Fourney, of Philadelphia, was in attendance, and he invited him to address the meeting.

Col. FOURNEY said: Mr. President and gentlemen, I feel deeply honoured by this opportunity of meeting and addressing you, as the Commissioners of the United States Government have deputed me to bring before you, in this somewhat informal manner—not as a member of your body, but as a representative of my country—a few facts which may be of interest to you. I am a journalist in the city of Philadelphia, and came here rather for the purpose of obtaining a rest after hard work than with any other object, but my people—understanding that I intended to remain in Europe perhaps for a year—have authorised me to communicate to the people of England, Ireland, and Scotland, and certain Powers on the Continent, what we regard as a most significant manifestation. On July 4, 1876, the American Government will be 100 years old, and we propose to commemorate that important event by the exhibition of such memorials of our progress as may be of use and interest to the people of our own country and of other nations. Standing as I do in the midst of this magnificent metropolis, and surrounded by the trophies of a history of 1,000 years, more or less, and when I survey the seats of learning and benevolent institutions, and the streets of magnificent houses, I feel somewhat appalled that a citizen of a young country like America should have the presumption to invite you to Philadelphia on July 4, 1876. Being conscious of the contrast between our young growth and your ripe development, I should indeed feel appalled if I did not remember that we regard ourselves as the offspring of yourselves, of your laws, your literature, and your religion, and I feel in some sort that I am now speaking to my own people in their own language. Philadelphia is a city laid out by an Englishman named William Penn, whose remains lie buried in Buckinghamshire, and whose grave I intend to visit in the hope of deriving some inspiration therefrom. Philadelphia is now a city containing nearly a million of souls, and, without presumption, it possesses institutions of learning which, perhaps, are not unknown. The Academy of Arts, the Franklin Institute, founded by Benjamin Franklin, are noteworthy; and there are numerous institutions for the promotion of education, especially in that technical branch of art named Chemistry. With regard to the Exhibition to be held in June, 1876, the city of Philadelphia alone has raised over a million of pounds for the promotion of that great object. Col. Fernie added that he did not seek their pecuniary aid; his object was simply to invite them to contribute such specimens of science, art, and literature as would be of interest and use to the American people. The Government of the United States had passed a law securing the safety of all contributions to the Exhibition. The various States of America had promised contributions, and he asked for their co-operation and sympathy. With these remarks Col. Fernie said that he desired, in the name of his country, to thank them for their very cordial and generous reception.

The PRESIDENT: On behalf of this Conference I beg to thank you for your invitation, and, although the time is somewhat distant, hope that some of us may have the pleasure of attending the Exhibition.

FINANCIAL STATEMENT.

The TREASURER then submitted his account with the British Pharmaceutical Conference for the past year, showing a balance in hand of 2*l.* 8*s.* 9*d.*, instead of a balance the other way of 4*l.* odd, as at last year.

The Treasurer in Account with the British Pharmaceutical Conference.

Dr.		£	s.	d.
To Sale of "Year Books" by Secretary .. .. .		10	2	0
" " " Publishers .. .. .		20	0	0
" Advertisements in 72 "Year Books" .. .. .		16	4	6
" " 73 " " .. .. .		102	4	6
" Subscriptions from Members .. .. .		591	14	4
		£780	18	4
Cr.		£	s.	d.
By Balance due to Treasurer, July 1, 1873 .. .. .		4	6	0
" Expenses connected with "Year Book"				
Butler & Tanner for Printing, Banding, and Binding .. .. .	£330	15	11	
Salary to Editor .. .. .	100	0	0	
Messrs. Churchill, 25 per cent. Commission on Advertisements .. .. .	29	15	6	
Advertising "Year Book" .. .. .	2	16	0	
Foreign Journals—Nutt .. .. .	7	15	0	
		471	2	3
By General Printing—				
Butler & Tanner .. .. .	£18	14	6	
Stevens & Richardson .. .. .	8	10	0	
Parkins & Gotto .. .. .	4	14	10	
Byles, Bradford .. .. .	1	17	0	
		33	6	4
" Directing Circulars and Envelopes .. .. .		3	17	0
" Assistant Secretary's Salary, and Expenses at Bradford .. .. .		30	0	0
" Postage .. .. .		91	19	10
" Sundries, including making of four large Cupboards, Telegrams, &c. .. .. .		18	2	9
" Postages of Invitation to Membership .. .. .	£49	18	4	
" Printing Circulars, &c., of do. .. .. .	24	15	0	
" Wrappers .. .. .	5	10	0	
" Addressing Envelopes .. .. .	4	8	6	
		84	14	10
" Balance in hand .. .. .		2	8	9
		£780	18	4

REPORT OF THE EXECUTIVE COMMITTEE.

Your Committee have little of importance to report since the last annual gathering. The work of the Conference has been chiefly of the ordinary routine character—a kind of work necessarily increasing in connection with so large an Association—it has devolved mainly on the Secretaries.

At a meeting of your Executive held on January 22, considerable discussion took place as to the most convenient date at which to hold the annual meeting for 1874. On previous occasions the Conference has assembled at the time and place of the meeting of the British Association, and your Committee have therefore hitherto been relieved of the responsibility of deciding in the matter. It was finally resolved that the meeting should take place in London on August 6 and 7, the house of the Pharmaceutical Society having been kindly placed at the service of the Conference. The Committee was further informed by Mr. Hills, President of the Society, that the Council over which he presided was most anxious to afford every facility for promoting the success of the Conference. It was also resolved in connection with the meeting once more to hold an exhibition of Pharmaceutical novelties and articles of interest, as it was felt that the objects of the Conference would be greatly promoted by such a course.

APPOINTMENT OF EDITOR.—At the same meeting of your Committee applications from eight candidates were read, and also letters relating to the editorship, and the merits of the candidates from various members of the Committee unable



be present. After a full discussion and careful deliberation, the election fell on Mr. Louis Siebold, Lecturer at the School of Pharmacy of the Manchester Chemists' Association.

**BELL AND HILL'S RESEARCH AND LIBRARY FUND.**—A motion was carried authorising the Treasurer to sell one bond of 50*l.*, and to expend the proceeds in aid of research or otherwise, according to the instructions of the Committee.

It was then resolved that 5*l.* be placed at the disposal of Mr. Gerrard, to defray the cost of materials to be employed in a research on the official and other plasters; 10*l.* had been forwarded to Mr. Groves to defray expenses incurred in further study of aconitines; and 10*l.* to Dr. C. R. A. Wright to assist him in his researches. Reports by two of these gentlemen will be read at the present meeting. Ten pounds worth of books, bound in calf, and stamped with the Bell & Hill's device, were forwarded to Bradford, and duly acknowledged by Mr. Rimmington on behalf of the Chemists' Association of that town.

**ASSISTANT SECRETARY.**—Mr. Robert Higgins Davies, F.C.S., has been appointed to this office.

**THE "YEAR BOOK OF PHARMACY."**—The late date of the last Annual Meeting, and the sudden departure of the editor for India, caused ten days' delay in the publication of the "Year Book." The volume, however, was issued on January 6, and at once distributed to every member who had paid his annual subscription.

**EXCHANGES FOR THE "YEAR BOOK."**—Efforts have been made by the junior secretary during the year to establish exchanges with editors of scientific journals at home and abroad. The result has been that some of the leading journals, treating of pharmaceutical matters, in England, France, Germany, and America, are now received regularly by the editor of the "Year Book," in exchange for our annual volume.

**CIRCULAR RESPECTING UNUSUAL DOSES.**—Professor Attfield communicated with the officers of the Conference and with Mr. Hampson on this subject, and the resolutions of the Conference, preceded by an introductory letter, were printed in the form of a circular, nearly five hundred copies of which were posted to the leading physicians of England, Scotland, and Ireland. Although no answer to the circular was requested, several letters commendatory of the course adopted by the Conference were received. The medical and pharmaceutical press generally also gave favourable notices of the matter. Further, written copies of the circular letter, signed by the President of the Conference, were sent to the Presidents of the General Medical Council and Colleges of Physicians of London, Edinburgh, and Ireland, accompanied in each case by a short private note from the President of the Conference. From the English college a letter was received promising that the subject should be brought before the college at the earliest convenient opportunity.

Your Committee cannot close their report without an expression of deep regret at the loss sustained by the Conference in the death of Henry Deane, its first president, and the joint author with H. B. Brady, F.R.S., of the following papers, published in our "Transactions":—(1) "Microscopic Research in relation to Pharmacy, 1864." (2) "Microscopic Analysis, applied to Pharmacy," 1865. (3) "Examination of Extract of Flesh," 1866.

Professor Attfield reported that 200 members' subscriptions had been paid since the last meeting of the Executive.

The names of 115 members whose subscriptions remained unpaid for three or four years, and to whom repeated applications had been made, were ordered to be struck off the lists.

A special circular had been recently sent to every chemist on the register not already a member of the Conference. In reply to this, 500 new members had already sent in their nomination papers, and these gentlemen were duly elected.

**THE PRESIDENT:** Would any gentleman present like to make any observations on the financial statement?

**MR. GILES** moved the adoption of the Report including the financial statement.

**MR. HAMPSON** seconded the motion, which was duly carried.

**MR. SCHACHT** said that if the Conference met next year in the City of Bristol he could promise them a very cordial reception.

**MR. STODDART** begged to support the remarks of Mr. Schacht. **THE PRESIDENT:** We feel very much indebted to you. We know something of Bristol, and are acquainted with the quality of the pharmacy as there practised.

## THE PRESIDENT'S ADDRESS.

IT will be known to most of those whom I have the honour of addressing that the original scheme of the British Pharmaceutical Conference did not embrace the contingency of a session held in a metropolis. It was intended to be a peripatetic Society, accompanying the wanderings of its elder and more powerful sister, the British Association for the Advancement of Science, of which organisation, indeed, some aspiring souls hoped to make it a section or sub-section.

Until this year we have found no difficulty in adhering to our programme, and, however distant our place of meeting, have found a sufficient number of devoted pharmacists to wend their way thither, and there uphold, to the best of their power, the credit of British pharmacy, endeavouring to convince an unbelieving public that a chemist and druggist's occupation involves something more than the mixing of drugs at the order of a medical superior, and urging, both by precept and example, upon the local chemists the necessity of union, of cultivation of that professional feeling that should animate every member of a scientific and honourable calling, and suggesting, where it was needed, the formation of local associations, the institution of libraries, in the formation of which it was enabled, by the generosity of one of its leading members, to give effective aid, in the shape of money grants, and generally endeavouring to carry out, to the best of its ability, the programme originally sketched by the founders of the Conference.

The result of ten years of such work has already been reviewed in the last annual address of the retiring President, and it is pleasant to think that, in the opinion of so competent a judge, our efforts have been crowned by a large measure of success.

It would need no gift of prophecy to foretell that so long as the same spirit animates the Conference that has inspired it hitherto, so long will it continue to flourish, so long will it powerfully second the efforts of the Pharmaceutical Society in raising the condition of British pharmacy and improving the status of the British pharmacist.

It will be necessary now to advert to the reasons that have induced the Conference to deviate from its usual course, and instead of accompanying the Association to Belfast, to decide on holding its session in London. But first let me acknowledge, without further delay, the courtesy that prompted the Council of the Pharmaceutical Society, in offering, through its president, for the use of the Conference, this lecture-hall for our meetings, and, generally, the use of its rooms, unrivalled in their special adaptation; and further, the promise to afford every facility for the success of our meeting, a success which I, holding so responsible a position, am delighted to consider as now absolutely certain.

It seems that early last year inquiries were set on foot to ascertain what the feelings of the bodies representing in Ireland the pharmacutists and chemists and druggists of this country were as to the feasibility of holding a successful meeting in Belfast, during the visit of the British Association. The answers received were unanimous in their deprecation of any such meeting being attempted during the continuance of the differences between the Irish apothecaries and the chemists and druggists of Ireland. Subsequently, on May 29, a deputation from the former body was received by the Council of the Conference, and the result arrived at, after long deliberation, was this: that, considering present circumstances, it would not be advisable to hold the 1874 meeting of the Conference in Belfast.

The reasons urged by the deputation, who were very polite in their expressions of admiration for the excellent work performed



by members of our organisation, showed that the Irish apothecaries were smarting under a sense of injury in consequence of the threatened encroachments of the chemists and druggists on their long-enjoyed privileges, and that, in fact, they declined to meet them as brethren, or countenance in any way their pretensions.

The Apothecaries' Hall of Ireland was instituted by Act of Parliament, 31 George III., cap. 34, which provides for the examination of candidates for the title of apothecary. To this body of examinees is exclusively confided the right to dispense the prescriptions of the medical profession. The original intention of the Legislature, it would seem, was to provide an adequate supply of apothecaries pure and simple, but somehow the curriculum demanded embraced the essentials of a medical education—included, in fact, medicine, surgery, midwifery, and anatomy, all of which subjects the candidate was compelled to pass in, even if he were desirous of limiting his practice to pharmacy only. The practical result was this, that as a medical qualification the diploma of the Hall was not much valued, and the course of study necessary for obtaining it entailing considerably more expense of time and money than a mere pharmacist would be justified in incurring, the labours of the examiners under the Act became lighter and lighter, until the fees for diplomas, at 10s. each, averaged 10l. only per annum. The public inconvenience caused by this limitation of the supply of dispensers, coupled with the feeling of injustice under which the chemists and druggists, many of whom were men of good position and education, laboured, gave rise to an agitation for an alteration of the law in the direction of the Pharmacy Acts, the operation of which had been of such advantage in the case of Great Britain.

The monopoly was not merely injurious—whole districts being deprived by its influence of competent dispensers—but absurd. It was competent for one apothecary to open any number of dispensaries, which he might or might not superintend personally, and regarding compounders, he was under no restriction as to their selection. It was and is possible for the assistant at the druggist's of to-day to step across the road to-morrow to the apothecary's, and there accept an engagement in the higher branch of the business.

It is, therefore, I think, much to the credit of the apothecaries that in their Bill they have voluntarily proposed to trammel themselves with provisions that limit the employes of the pharmaceutical chemist and apothecary to persons who have proved their capability before an Examining Board. A fair amount of time would of course have to be given those now engaged in the business to prepare for meeting the examiners: then there would be an exodus of the idle and incompetent, and matters would speedily arrange themselves in settled and permanent fashion. There need, I think, be no fear of opening and reopening of doors by which the idle are encouraged to postpone the evil day when they would have to withdraw somewhat from frivolous pursuits and take to hated study. A time having been fixed, it would, it is to be hoped, be strictly adhered to.

Many pharmacists on this side of St. George's Channel would rejoice if similar provisions could be ingrafted on our Pharmacy Act at some not distant day; but for the arrival of that day we must not be too impatient.

The Irish pharmacy question, being still *sub judice*, I would venture to insist on the great importance of compelling every student, apprentice, and assistant, to pass an appropriate examination, and to suggest that, in the event of two grades of pharmacists being instituted, each grade should have its own distinctive title, and not be permitted to use any other, so that the public might be able, without difficulty, to recognise the distinction.

I am of opinion that great, and I fear, permanent injury has been done to pharmaceutical education in England by the

omission of some such precaution. The public has been perfectly bewildered by the variety of titles assumed by holders of the lesser qualification, and remains to this day, and probably will remain till the end of the century, entirely ignorant of the distinction between things that differ so much as the Minor and Major qualifications. And it is not necessary to adopt Carlyle's estimation of "the public"—"some thirty millions, mostly fools," to account for such a state of things. What is the result? Young men, not unaware of this, concluding that the "title" is of no pecuniary value, and urged by no higher considerations, decline to undergo the expense and trouble of obtaining it. One cannot expect otherwise. It is as true now as ever it was that the belly is the real

Magister artis, ingenique largitor.

Deducting, perhaps, one per mille, the rest of mankind are ruled in the main by considerations of profit. Martyrs were never an abundant commodity; they are, I fear, becoming rarer every year.

I am led to these remarks by comparison of the Registers of 1873 and 1874, where I find that in 1873 the examined pharmacists were 8.93 per cent. of the total number, 12,750, whilst in 1874 they were but 8.92 per cent. of 13,216; the actual numbers in 1873 being 1,138; in 1874, 1,179; the increase—41 examined pharmacists—corresponds to a total increase of registered chemists and druggists of all kinds of 466. On the other hand, the chemists and druggists who have passed the Minor only have increased their percentage in the same interval from 7.87 per cent. to 10.59 per cent. I am aware that nothing is more deceptive than figures, unless it be facts, and therefore will abstain from forcing a construction of these figures upon this meeting. I fear, however, it must be confessed that the candidates for the Major examination bear no tolerable proportion to those for the Minor.

The evil might be partially met by the adoption by general consent of *one appellation only*, by all Major associates. Let me suggest Pharmacist (Major). It will, I hope, be understood that my object is not the glorification of the individual, but the conferring upon the title so much of distinctiveness that it might in reasonable time become sufficiently appreciated by the public to be considered worth some effort and expense on the part of the rising generation.

I fear, however, the rising generation will find some difficulty in acquiring the instruction necessary for obtaining the distinction. Although the School of Pharmacy of the Pharmaceutical Society of Great Britain is but 32 years old, one already feels inclined to look back upon its earlier years as upon a golden age that has, alas! passed away. One looks with regret at the statement in the Calendar that in 1843 its lecturing professors numbered four, each one the most distinguished in his department of that day—George Fownes, F.R.S., Chemistry; Theophilus Redwood, Ph.D., Practical Pharmacy; Anthony Todd Thompson, M.D., F.L.S., Botany; Jonathan Pereira, M.D., F.R.S., Materia Medica. It is true the quality of our lecturers has not deteriorated, but their number has been halved, and, worse again, the length of each course has also been halved, in order, it would seem, to meet the demand for "rapid preparation," not to use a shorter and far uglier expression. But where is this to end? Is the School of Pharmacy of the Pharmaceutical Society of Great Britain to descend into the arena and compete with proprietary schools of pharmacy? The old objection of the impropriety of an examining body being also an educating body has of late years been frequently raised, and as often refuted, but I am not sure that now it could be done so easily. It seems to me that the difficulty will soon have to be faced, and the connection now existing between the two bodies severed. Disappointed candidates, it is well known, have ascribed their want of success to the partiality of the examiners



for the students of their own schools, and now very recently a professional "crammer" has gone far beyond that, and not scrupled to print and distribute in a circular, addressed generally to students, that he will deliver a course of thirty lectures, &c. "The lectures will review each subject thoroughly, and point out the various tricks and artifices employed to pluck candidates."

The examiners were, of course, aware of the existence of this circular, and feeling themselves strong enough in the good opinion of the world to disregard it, have so done. In that, perhaps, they have done wisely. George Herbert has written:—

Think not thy fame at every twitch will break,  
By great deeds show that thou canst little do;  
And do them not: that shall thy wisdom be.

But that feeling can be carried too far, and I am not sure that it has not now reached its limit. Should the Society be contemplating any such severance as I have indicated, it would seem only fair to the present staff of professors that it should not be long delayed, lest the ground be already covered, and they left out in the cold.

What seems to be really wanted is a chartered and endowed college of pharmacy, that should confine its labours to the providing a high-class scientific education for intending pharmacists. I believe that no such scheme would pay as a private speculation, and that one such, placed in the metropolis, would suffice for the whole of Great Britain. For the endowment of professorial chairs, one might look hopefully, perhaps, towards the Pharmaceutical Society and the wealthier members of our profession.

The School of Pharmacy of Paris, with its staff of twelve professors, and a three years' course, has, at the present time, 500 students attending it. In addition to these must be reckoned those attending the provincial Superior Schools of Pharmacy.

The recent change in the mode of conducting the Preliminary Examination will, I think, meet with general approval as a step in the right direction. I think, however, that public opinion will eventually declare in favour of our delegating that office to one or more purely scholastic boards. That is already my opinion.

The reports of the examiners have of late revealed a most lamentable proportion of failures, especially in the Minor. The result is mainly due probably to the prospective increase in the stringency of that examination in October next. Young men, conscious of weakness, are rushing in, hoping by some fluke to pass the ordeal. One is compelled to wonder how or why such men enter the trade, and to speculate on their career as assistants.

The future of British pharmacy, with the present state of which the great mass of pharmacists is so profoundly dissatisfied, will depend in great measure on the class and condition of the young men introduced into the trade as apprentices and students. It has unfortunately been for many years the custom to regard an apprentice as a cheap labourer, and boys if capable of plenty of work, no matter how ignorant or how rough in manner, were considered eligible for the post. Having no fear of examination before their eyes, they acquired what is called a practical knowledge of the business, and in due time commenced on their own account to keep open shop, as their employers had done before them. In that way, the country has been filled with chemists with little scientific knowledge and less professional feeling, who, if they succeed in making a decent living, are therewith content, regarding the excelsior aspirations of their brethren as great rubbish. The great, but I hope not increasing, difficulty of finding competent assistants obliges one to deal tenderly with young men of this class. Proprietors of mixed businesses are, I believe, the chief sufferers from this scarcity, and I fear that their troubles are likely to become more severe than other-

wise. Every one sees and knows what the end will be. Young men of education, and presumably of refinement, will decline to do porter's work, and a separation of duties, and possibly of establishments, will be the result.

Every lover of advanced pharmacy will, I am sure, declare this to be a consummation devoutly to be wished.

The necessity, now I suppose generally understood, for a youth to pass certain examinations before entering business, has influenced, and will continue to influence for the better, the *personnel* of the trade. For an employer to take a premium from the parents of a youth who he has reason to believe will never be able to enter the trade as a master would be worse than robbery: not only is the money wasted, but what is of far greater value, the youth's time; and it is satisfactory to think that such cases are now of very rare occurrence. Still, many years will, I fear, elapse before we shall be able to tap the right spring, and introduce into our ranks any great number of youths of gentle origin. Parents and guardians who have well-conditioned boys to place out in life are accustomed to well consider the matter before deciding.

The youth has, perhaps, soon at a popular lecture some brilliant experiments in chemistry, and forthwith decides that he will be a chemist. But his less impressible guardian, before consenting, counts well the cost of such a step, and finding that the mere fact of his being a chemist would, in the eyes of his friends, lower him in the social scale, and be a bar to his entry into the society of his quondam associates and equals, declines to give his permission, and the youth goes, as a matter of course, to swell the already overcrowded ranks of one of the recognised professions.

Popular ignorance on scientific subjects is still so astounding that the general public is quite unable to realise the fact that scientific medicine is impossible without scientific pharmacy, and I think it must also be acknowledged that the ordinary run of practitioners in medicine are not half alive on the subject. High-class pharmacy might here and there be received with favour, especially in large centres, and by the eminent of the profession; but, as a rule, a well-educated pharmacist would find himself unappreciated, and his carefully acquired knowledge daily growing rusty for want of use. Magistrates and public bodies in general would first apply for a chemical opinion, not to a professed chemist, but to a medical man, who, having been examined at the medical school on no end of "ologies," must necessarily in their opinion be the best authority on any scientific point.

In days gone by, there were encyclopædists; there were also, at a remoter date, megatheriums, but both have disappeared forever. Such is the vastness of the field of scientific investigation at the present day, and such the minuteness with which it is worked, that it is simply impossible for one intellect to grasp the whole or any considerable fraction of it.

In order to obtain a useful and a fruitful knowledge of any subject, attention must be concentrated upon it. We might even go further, and state that the whole of either of the more expanded sciences is too much for any one intellect to know and use effectively. Witness chemistry, whose successful cultivators in the present day have earned distinction by concentrating their attention on one or two departments of the science. It perhaps would not be too much to say that a life's work is to be found in opium, in Peruvian bark, in digitalis.

If the pharmacist claims, as his department of scientific work, the chemistry of drugs and of disease, he will have claimed enough and have done something to relieve the overtaxed capabilities of his medical coadjutor, and enable him, perhaps, to do what his distractions now so often prevent him from doing—tread the difficult path of original investigation.

So much has been said and written on the operation of the Adulteration Act, that I shall I fear, in referring to it at all,



be telling a thrice-told tale. The conception of the Act was doubtless laudable in the extreme, and by no class of persons was it more sincerely welcomed than by the honest tradesman, who saw in it a defence from the dishonest competition from which he so frequently suffers. The operation of the Act has, however, been far from satisfactory, and the good it has undoubtedly done in checking adulteration has been more than counterbalanced by the injury inflicted on innocent traders. And this has been caused mainly by a straining of the Act on the part of the lawyers, by sensational evidence, and by the lack of commercial knowledge and even of common sense on the part of the analysts.

The greatest sufferers have, I suppose, been the grocers, who have been repeatedly fined for selling as tea what had really been received as such at Her Majesty's Custom House, and upon which duty had been paid; for selling as coffee the usual mixture of chicory and coffee, which every one expects to have when he buys the cheap article, and which many prefer to the pure, the packet all the time being labelled plainly, "This is sold as a mixture of chicory and coffee." But the magistrate ruled that that was not sufficient; it ought also to have been declared by word of mouth. In the sale of butter, also, they have been much harassed, the Liverpool case being a notable one, costing a large sum of money in the defence, and after the usual conflict of scientific evidence, ending in the acquittal, and possibly the ruin, of the butterman.

The milkmen have probably furnished as many cases as any, and in most instances have suffered deserved penalties, for I suppose no article of food has been so systematically tampered with as milk. Yet the dealer who had it proved against him that he had removed the cream, selling skim milk when ordinary milk was asked for, and therefore committing a fraud, was allowed to escape scot-free, because he had *added* nothing to it, whereas his neighbour, who, according to the analyst, had sold as pure, milk containing an adulteration to the extent of five per cent. of water, was punished.

Finally, the chemist has had his turn. The great citrate of magnesia case depended on the use of a popular, and, if you will, an incorrect designation of a well-known article, and was exempt from even a suspicion of fraud or carelessness. Yet the seller was fined and his business so injured that he had to leave the neighbourhood.

The *bonâ fide* nature of the sale of sweet nitre cannot be doubted, nor can the case that arose from it be described otherwise than as a straining of the law to catch a man who ought never to have been put in jeopardy.

If one commercial fact is more firmly fixed in a chemist's mind than another it is this—that Howard's preparations are always to be relied upon for purity. Yet we find a most respectable man indicted for selling as citrate of iron and quinine an article adulterated with cinchonine, that article having been supplied by Messrs. Howard & Kent, who explained the slight difference observed by the fact of the article having been overheated during preparation.

The scammony prosecutions again point to a most unsatisfactory state of things, and must have caused many an honest pharmacist to wonder whether it would be his turn next to defend his reputation on some trumpety charge.

The report of the Select Committee on the operation of the Adulteration Act has been generally received as satisfactory; it is, therefore, much to be regretted that the state of public business will not permit of action being taken upon it this session.

The amendments suggested by the Committee are both numerous and important. It was found that some magistrates, regarding the charge as a criminal one, would not allow the defendant to give evidence. That manifest injustice is in a fair way of being remedied; both the defendant and his wife are

recommended to be allowed to enter the witness-box, and explain what very often they only would be able to explain. Then, again, it is recommended that when an article purchased of a wholesale dealer under guarantee is found to be adulterated, the wholesale dealer should be summoned as well as the retailer. This will be a great boon to pharmacists, who will, I have no doubt, very generally avail themselves of the guarantee system, and be content to pay accordingly. The pharmacist will, however, I should imagine, be held liable for manifest carelessness in not detecting what ought to have been self-evident. He, of all tradesmen, should be the last to shelter himself by a plea of ignorance; but as for his being expected to subject every one of the thousand articles in which he deals to chemical examination, it is simply absurd.

The report treats the analysts very fairly, but admits that some have shown more zeal than discretion; that others have shown a want of chemical knowledge; and recommends that the latter class should be weeded out by subjecting them to a practical examination. It has been affirmed, on good authority, that some of these gentlemen have set up as analysts after a three months' course only of chemistry, and that, in one case at least, undertaken after the receipt of the appointment. We need not wonder, then, at the occasional display of incompetence.

A main cause of the breakdown of the Act has been the difficulty of obtaining competent analysts possessing a requisite amount of commercial knowledge. It is suggested that in a few years' time there will be an abundant supply of *reliable scientific analysts*, and that until that time consolidation should be recommended. But a few years will not give a man the experience that would justify one in placing the reputation, and therefore the living, of a tradesman in his hands. In not taking precaution to prevent the introduction into court of cases of a doubtful character, the Select Committee have scarcely shown sufficient appreciation of the extreme delicacy of a tradesman's reputation. It seems that no discretionary power is to be conferred on anyone. Should the analyst's certificate report adulteration to the extent of, say, one per cent., the inspector must cause a complaint to be made before a justice of the peace, and thereupon such justice shall issue a summons, &c., whereas it would seem that the justice of the case would often be met by a caution sent privately by the bench, on the recommendation of the analyst.

Cases have already occurred where, technically, the dealer was wrong, but practically right; so that, after suffering all the annoyance and injury attending a charge which was really unsubstantiated, he still had to pay costs and a nominal fine. This reminds one of the recommendation to mercy of a west country jury, who, when asked their reason for the recommendation, answered, through their foreman, "Because, sir, we don't think he ever done it."

The plan that I should approve of would be this. Abolish all local appointments of analysts, and establish at convenient points some five or six analytical laboratories, each superintended by a gentleman of eminence and experience as a chemist, and with some acquaintance with commerce and manufacture. Under him should be placed two or three juniors, who should receive from their superior numbered samples for examination. Each sample received should be twice examined, the analysts being unaware of the source of the samples before them. No sort of collusion could then be practised. On the results being returned to the superintendent, it should be his duty to compare them; if they were alike he would probably conclude that they were exact; if they did not tally, he would inquire the reason why, and direct, or undertake for himself, a further examination. His report to the justices, recommending prosecution or otherwise, might then be acted upon without much danger of inflicting injustice.



The analysts should, of course, be paid by salary, and not by fees, and the right of appeal should be conceded.

An omission, evidently a slip on the part of the authors of the Act, will be supplied, and the fraudulent abstraction of important properties of any commodity will be regarded as a punishable offence.

There is, I am happy to say, some hope of the present Act being practically suspended in its operation until it has undergone amendment.

The question of co-operation remains *in statu quo*: but occasionally evidence is afforded us that such associations are subject to the same misfortunes as other trading concerns. The announcement of the demise of the Universal Drug Supply Association, Limited, did not probably evoke any sincere regrets on the part of London pharmacists.

It is not likely that any action will or can be taken on the general question in the way of repression, but it is still open to question whether the servants of the Crown ought to be allowed to devote their spare time and official training to trading with the general public, to the injury of the shopkeepers who contribute so largely to the taxes out of which their salaries are paid.

The system, if fully carried out, would simply obliterate the middle classes. Should that consummation ever be arrived at, I fear the saving of 5 per cent. on the incomes of the rich will fail to repay the inconvenience the plutocracy will suffer on being brought face to face with the proletariat.

We are likely, if not wide awake to the fact, to be peculiarly injured by this style of trading. Co-operators cannot get advice from the store; they will therefore go to the local chemist for it on pretence of some trifling purchase. We must therefore be on our guard against this gratuitous brain-sucking.

I should like to say a word or two about the trade in patent medicines, a subject to which the attention of the Legislature ought, I think, to be directed. I find that during the financial year ending March 31, 1873, stamp duty was paid on no less than 12,731,753 packages of patent medicines—considerably over a million more than during the previous year. The revenue thence derived amounted to 95,812*l.* for stamp duties on the medicines, and 7,283*l.* for excise duty on patent medicine vendors. The aggregate of these sums is, of course, a mere bagatelle in the revenue of this great country, so that financial considerations need not be regarded in considering the question whether or not it is advisable that the present system should be continued. I regard the whole system as rotten, and believe it to be productive of great evil. For to what has advertising patent medicines now sunk? It is in the main (I allow of some honourable exceptions) a systematic exploitation of the ignorance and credulity of sick people, and, therefore, calls loudly for some sort of regulation, if not extirpation. The medical profession, who are more nearly concerned with the public health than are the chemists, will best appreciate the extent of the evil, and to them rather it appertains to suggest a remedy for the abuse.

At a meeting of the Society of Pharmacy of Paris it was announced by M. Boudet that the committee appointed for the purpose had prepared its report on the International Pharmacopœia in readiness for presentation to the St. Petersburg Congress. The nature of the report did not transpire. It is to be hoped that its recommendations will not be too elaborate, a failing to which the French are inclined, and that the attention of the Congress may be fixed on assimilating the formulæ for the preparation of a small number of what may be termed heroic remedies.

The number of drugs actually necessary for the treatment of disease by a true physician is comparatively small, and one can venture to hope that if the scope of the International Pharmacopœia be limited to these something might be effected in this generation. The "Denarium Medicum" of Bernardus Petrus, published at Berne in 1608, proposes to show how all internal

diseases may be cured by the ten remedies he describes. Isaacus Wollandus requires three only; Paracelsus only one, and justifies himself as follows:—"Out of the trunk of one tree you may carve as many as 600 images, but one fire will consume the whole of them. In the same way, the various kinds of disease, which are almost innumerable, may yet with one not over violent remedy be all cured." It has already been decided that the text shall be in Latin, and the weights used the metrical. Professor C. W. Thomas suggests that proportional parts by weight would be more convenient at the present; but I do not see how, when the dose comes to be apportioned, a definite unit can be dispensed with. His other suggestion—a general Pharmacopœia for all English-speaking communities, is a very good and seemingly practical one. The Germans and the Scandinavians have already accomplished something of the kind, but their task, owing to the absence of colonies, was a comparatively light one.

When works of this magnitude have to be undertaken, we look around for men equal to the occasion, but every year, unfortunately, it is the melancholy duty of the President to have to refer to the removal of one or more of the pillars of pharmacy. This year the task is especially heavy, as we have lost in Henry Deane our first president, who, if not the originator, may truly be styled the founder of the Conference. It was to his wisdom, displayed in guiding the course of the Conference during the first years of its existence, that we owe much of its present prosperity, and to him we were indebted for some of the best papers that have been presented to it. Mr. Deane's reputation as a man of science was, however, by no means limited to this field: his fame, more especially as a microscopist, was widely and generally known. His social qualities were better known to many present than to me. We never realise the value of a thing till we have lost it, and now it often occurs to me how foolish I was not to avail myself more frequently of opportunities of cultivating his society. Mr. Deane had his gay as well as his grave moments, and then no man could be more genial or amusing. I am not one to say "we ne'er shall look upon his like again," but am hopeful that the contagion of his example will spread among the rising generation, and produce equally good results in future years. We then shall be able to say, in the words of the epigrammatist—

Mira cano, Sol occubuit, nox nulla secuta!

In Mr. George Dymond we have lost a useful and talented member, who has held office in the Conference, and to whom we often were indebted for remarks of great value in our discussions; he was also a contributor to our "Transactions." He died at the early age of 44, when to all appearance he had before him a long life of activity and usefulness.

We never again shall see amongst us the familiar form and genial countenance of Thomas N. R. Morson, who also has departed. Mr. Morson's reputation as a pharmaceutical chemist was literally world-wide. He was not only the first manufacturer in this country of many of the rarer chemicals, but was for very many years reputed the best. His connection with the Conference was, I believe, limited to membership. As a contributor to our discussions, no man spoke with greater weight or was listened to with more respect. A few observations from Mr. Morson would make an otherwise sterile paper at once fruitful with good—in that capacity we shall much miss him. His death has left a void in scientific society that will not readily be filled up.

In concluding my address, which I fear has already become tedious, I will, as shortly as I can, refer to the action taken by the French *pharmaciens* when it was proposed to subordinate to the French army pharmacy to medicine. The movement was begun by the doctors, and on their representation referred to the Academy of Medicine to report thereon. In the end the



doctors were defeated, pharmacy retaining its old independent position. The advocates on the side of pharmacy were MM. Bussy, Boudet, Poggiule, and Dumas, the latter of whom, himself a *pharmacien* by education, delivered a speech full of sentiments worthy of remembrance by the pharmacists of England.

"If it be true, he says, that the *pharmacien*, in dispensing the prescription of the medical man, is really his subordinate, how is it in the case of the selection, preparation, and titration of drugs and preparations, in all of which most important operations the *pharmacien* is the sole responsible person, and for the control of which medical men are and must be wholly incompetent? 'On ne fait pas de bonne Chimie en passant,' was a dictum of no less a person than Gay-Lussac, and the fact of a physician's time being so fully occupied by his medical duties, and rendered fragmentary by frequent and unexpected calls for his services, renders it impossible that he ever can be able to devote that continuous application to chemical details from whence alone proceeds good pharmacy and sound chemical hygiene." "From the ranks of French *pharmaciens* have issued many distinguished discoverers. To mention those only who have departed, Rouelle, Baumé, the two Pelletiers, Robiquet, Serullas, Soubeiran, Pelouze, Balard." "Let medicine, then, exalt the level of its instruction, and extend the area of its services—all the world will applaud it for so doing; but let the Academy be convinced of this, that to diminish the importance of pharmacy is not necessarily to increase that of medicine. The art of healing cannot be separated from the highest chemistry; it needs its help at every moment, and if clinical studies and physiological experiments point the way, it is the chemical analysis of the normal and morbid products of the economy which sustains its steps and prevent them going astray."

The pharmacists of England, now in a very slow state of transition, will have some difficulty in realising the feelings of their brethren across the water under the above circumstances. The time, however, will come when throughout Europe the position of pharmacists will be assimilated. It must not be forgotten that the desired change cannot be effected in a day by Act of Parliament. "They who would be free themselves must strike the blow," and the British pharmacist, in order to achieve the object of his ambition, must be prepared both to do and suffer in the cause. If trading instincts are allowed to smother professional feeling and practice, a trader he will and must remain; if otherwise, pharmacy will eventually in this country attain the status it has so long enjoyed on the Continent, and render services equally beneficial to the community.

Mr. CAYLEY proposed a vote of thanks to the President for his able and interesting address. He was sure that the meeting would in all respects equal if it did not surpass the meetings which had been held in other places, and he was convinced that the President would acquit himself with the same credit that former presidents had done. They had reason to congratulate themselves on the election of Mr. Groves as President; but he (Mr. Cayley) was not prepared at present to comment upon any portions of the address.

Mr. GOSTIANO seconded the motion, observing that the address was so comprehensive that it would ill become him to comment upon it, as the points touched upon and the suggestions made would doubtless in due time receive the attention which they deserved. The allusions to the education of the rising chemist were of such importance as to demand the attention of the Pharmaceutical Society.

Mr. T. H. HILLS desired to offer the President his best thanks, and also the thanks of the council and members of the Pharmaceutical Society, not only for the address, but for the honour the Pharmaceutical Conference had done to the Pharmaceutical Society in accepting the use of its rooms on the present occasion. In fact he considered that the Pharmaceutical Society and the Pharmaceutical Conference were as one. He begged again to thank the Pharmaceutical Conference for accepting the

offer of the Pharmaceutical Society, and also the President for his most able and exhaustive address.

Mr. GROVES: I can assure you that when I was proposed to the very important position I now hold, I accepted the offer with great trepidation, and the preparation of the address was to me a very serious affair. When I came to compose it I found the number of subjects included in it was somewhat alarming. I should have preferred giving a scientific *résumé* of the work done in the present year, but feel that that kind of thing is rather overdone. I fear I have trod on the toes of some, but hope that the opinions I have expressed will set others thinking. I thank you with all my heart for the vote of thanks.

A Paper on the

#### CHEMISTRY OF CINCHONA BARK, WITH REFERENCE TO ITS USE IN PHARMACY,

was read by Dr. J. E. De Vrij.\*

Mr. BROUGHTON said that the subject of barks in India was a large one, and in the short time at the disposal of the meeting he was not in a position to give much information on the subject.

Mr. UMNEY said they must all know that the process of the British Pharmacopœia in the extraction of the liquids from the bark was most wasteful. He had been recently examining some fluid extracts of cinchona, and might say that in the majority of cases the extracts were obtained from the barks of India, and although—as pointed out by Mr. Broughton—those barks might be equal, if not superior, to the barks of India, they had no right to substitute them. He might mention that out of five specimens which had been submitted to him he had only found one that contained a grain of quinine.

Mr. GILES said the conclusion had been arrived at that an efficient pharmaceutical substitute for cinchona bark did not exist. The majority of liquid extracts of bark were horrible, and only calculated to disorder the stomach. It was extremely difficult to obtain a good bark suitable for extracts, the liquid very often being harsh and acrid; in fact the whole condition of cinchona was unsatisfactory. He believed that cinchona bark was not only very valuable, but exceedingly more valuable than quinine, and that no greater mistake had been made than the pinning of their faith exclusively to quinine. He had listened to Dr. De Vrij's Paper with great interest, and hoped that the author would continue his researches.

Dr. DE VRIJ briefly replied, and expressed his satisfaction that his views had been endorsed by Mr. Giles.

#### ON A SUBSTANCE CALLED MYRISTICIN.

By Professor Flückiger, of Strasburg.

From the statements recorded in Gmelin's "Handbook of Chemistry," vol. xiv. p. 389, it would appear that the essential oil of nutmegs sometimes deposits a kind of camphor. The earliest notice of such a body is due to Johann Friedrich John, professor of chemistry, at Berlin, who, in the year 1821, made very extraordinary observations regarding nutmeg-camphor. Thus, according to that chemist, the substance under notice, which he termed *Myristicin*, is soluble in water, and even requires not more than 19 parts of boiling water for solution. We know of no other substance of the class of stearoptenes or camphors being to any considerable extent soluble in water. But still more astonishing is the assertion quoted by Gmelin, that the aqueous solution of myristicin is "*sometimes acid, sometimes alkaline!*" John even states that myristicin yields crystallized compounds with hydrochloric or tartaric acids! He, in fact, thought the substance to be a kind of alkalioid, a suggestion which may be excused when we remember the brilliant discovery of cinchonine and quinine which had been made shortly before by Pelletier and Caventou.

I am sorry to have been unable to see John's original Paper in order to ascertain how he obtained this curious camphor.† Nor have I perused that of Bley, whose few observations, however, as found in Gmelin, appear to refer to an impure substance.

\* We regret that a report of this Paper is unavoidably postponed.

† In the abstract of John's paper as contained in the *Journal für Chemie und Physik* of Schweigger und Meischeke, xxxiii. (1821), 250, myristicin is simply said to be deposited in the essential oil of nutmegs.



inasmuch as he says his stearoptene melted at above 100° C., leaving carbon when evaporated.\*

Again, in 1839, Mulder examined a crystallised stearoptene which is also noticed by Gmelin. This substance is likewise said to be soluble in boiling water as well as in caustic lye; Mulder assigned to it the formula, C<sub>18</sub>H<sub>32</sub>O<sub>5</sub>, and represented it as melting at 112° C. From his Paper it appears that he obtained it not, as supposed by Gmelin, from nutmegs, but from the essential oil of mace. As to the latter, there is found in Gmelin an observation of Bley's, according to whom this oil yielded an emulsion with ammonia, and a kind of soap with caustic lye.

Oil of nutmegs was again examined by Cloez in 1864; and oil of mace in 1862 by Dr. Schacht, of Berlin, and in 1865 by Koller; no one of these observers mentions any stearoptene.

The foregoing statements concerning the so-called myristicin induced me to endeavour to procure this remarkable substance; and in this object I was aided by the kind liberality of Messrs. Herrings & Co., of London. In the laboratory of these gentlemen there was submitted to distillation a large quantity of nutmegs, some of them being of the ordinary kind (*Myristica fragrans*), while others were the long nutmegs derived from *M. fatua*. On the third day of the distillation, a crystalline matter was noticed to collect with the oil on the surface of the water.

This was the substance which I received of Messrs. Herrings & Co. It was a greyish semi-solid mass, smelling strongly of nutmegs. By mixing it gradually with cold spirit of wine, sp. gr. 0.830, I found that the crystalline part of the magma might be separated and partially purified by washing with small quantities of spirit of wine. The crystals thus obtained have to be further purified by repeated crystallisation from boiling spirit of wine. At length large brilliant colourless scales were obtained, the crystalline form of which, however, could not be ascertained, the scales being never fully developed: in polarised light they proved to be doubly refractive. The re-crystallisation was repeated ten or twelve times, yet was ineffectual in removing from the substance the smell of nutmeg. It is, in fact, not possible to deprive it in this way of the odour; yet the odour is gradually lost when the crystals have been kept for some months, although even in a stoppered bottle. They are readily soluble in warm alcohol, crystallising therefrom when sufficiently pure, even in summer, but separating more readily in cold weather.

The alcoholic solution is devoid of rotary power; it reddens litmus slowly, but very decidedly and permanently. In water the crystals are insoluble. They melt at 54.5° C., and evolve vapours, like a fatty substance; if they are heated in a glass tube no crystallised particles are sublimed. On platinum foil they burn, leaving no residue, giving off at first the same vapours as when heated in a glass tube.

No difference whatever could be observed between the myristicin of *Myristica fatua* and that of the common nutmeg; the ultimate analysis of purified crystals from both sources likewise corroborates their identity. Crystals from *M. fragrans* afforded—

Carbon ..	..	..	..	..	75.77
Hydrogen ..	..	..	..	..	12.19
Oxygen ..	..	..	..	..	12.04
100.00					

while those from the oil of the long nutmeg, *M. fatua*, yielded—

		I.	II.	III.
Carbon ..	..	75.23	75.66	75.02
Hydrogen ..	..	12.30	12.36	12.35
Oxygen ..	..	12.47	11.98	12.63
100.00    100.00    100.00				

In caustic alkalis the crystals of "Myristicin" dissolve readily; if a somewhat considerable quantity is dissolved in warm caustic lye, it will form, on cooling, a consistent jelly, which, in fact, is nothing else than a soap. Myristicin warmed for a day or two with absolute alcohol and an excess of anhydrous carbonate of sodium, yields, on cooling, a gelatinizing neutral solution. If this solution is liquefied, filtered, and mixed with an acid, a crystalline layer will, on cooling, make its appearance on the surface of the liquid. This layer may be collected, washed with water until the latter no longer reddens litmus, and then re-crystallised from hot alcohol, when crystals are obtained which prove to agree in every way with the original "Myristicin." If this process of purification is repeatedly carried on with the same quantity of the substance, the odour of the latter diminishes, and at last disappears.

The crystals thus purified proved, upon analysis, to be composed of—

		I.	II.
Carbon ..	..	73.27	73.41
Hydrogen ..	..	12.25	12.25
Oxygen ..	..	14.48	14.34
100.00    100.00			

It became now evident that I had before me *Myristic Acid*, which, in form of *Trimyristate of Glycerin*, is the chief constituent of the fatty part of nutmegs. The formula of the acid, C<sub>14</sub>H<sub>28</sub>O<sub>2</sub>, requires:—

14 C ..	..	..	..	168	73.68
28 H ..	..	..	..	28	12.28
2 O ..	..	..	..	32	14.04
228    100.00					

The melting point of myristic acid is stated by Heintz to be 53.8°; my crystals melted not before 54° or 54.5°. Whether this is due to the perfect, I may say unrivalled, purity of my acid, or to a different way of observation, may remain undecided.

The "Myristicin" under notice is consequently nothing else than myristic acid, accompanied at the outset by essential oil. Whether the same mixture had been examined by John, by Bley, or by Mulder cannot be ascertained. It is obvious that some of their observations would agree with myristic acid, whereas others rather apply to a camphor, the existence of which has not been corroborated.

It is not astonishing to meet with myristic acid in the product of a prolonged distillation of nutmegs, for fatty acids generally are capable of being volatilised, especially by means of superheated steam, when the vegetable fats are resolved into glycerin and fatty acids. I am not aware, however, that special observations had ever been made as regards myristic acid. It is possible that free myristic acid is present in the nutmeg itself, and this would still more easily be carried over by the watery vapour. I have warmed a little powdered nutmeg with alcohol and anhydrous carbonate of sodium, and thus got a small amount of indubitable soap, from which I isolated myristic acid. This experiment shows that nutmegs contain a little myristic acid in addition to that combined with glycerin. As to the volatility of myristic acid, I may lastly remark that *Lauric Acid*, C<sub>12</sub>H<sub>24</sub>O<sub>2</sub>, which is the next in the same series as myristic acid, has been found by Görgey and by Oudemans to be easily volatilised with steam. Myristic acid may doubtless be a little less volatile.

*Myristicate of sodium* had not yet been obtained, so far as I know, in distinct crystals; there is, however, no difficulty in preparing it in thin prisms, which are deposited if an alcoholic solution of the salt is allowed to evaporate very slowly. By mixing an alcoholic solution of this salt with an alcoholic solution of acetate of barium, I obtained an amorphous precipitate of *myristicate of barium*, 0.419 gramme of which yielded by incineration 0.142 gramme carbonate of barium, representing 0.0988 of barium, that is 23.55 per cent. of that metal. The formula 2 (C<sub>14</sub>H<sub>27</sub>O<sub>2</sub>) Ba would require 23.15 per cent. The liquid which I separated from this myristicate of barium yielded after a short time crystalline scales of another salt, namely, 2 (C<sub>14</sub>H<sub>27</sub>O<sub>2</sub>) Ba + 2 H O, which has not been obtained by other observers. This salt should yield upon incineration 31.39 per cent. of carbonate of barium; 0.2055 gramme of the crystals actually afforded me 0.0645 of carbonate, that is to say, 31.38 per cent.

By mixing an alcoholic solution of nitrate of silver with an alcoholic solution of myristicate of sodium, I obtained amorphous *myristicate of silver*, C<sub>14</sub>H<sub>27</sub>AgO<sub>2</sub>, which, by theory, should give 32.24 per cent. of silver:—0.7785 gramme of this salt were found to contain 0.2506 of silver, that is to say, 32.19 per cent.; in a second experiment 0.6450 of the same myristicate of silver left 0.2077 = 32.20 per cent. of metal. All these results are in full accordance with my previous statements, namely, that the crystalline matter separated from oil of nutmegs in the laboratory of Messrs. Herrings and Co., is *Myristic Acid*.\*

The PRESIDENT imagined that this crystallised body was often met with by pharmacists in making oil of nutmeg. He presumed it was their wish to convey their thanks to the author of the Paper.

\* Such is the statement in the English translation of Gmelin

\* Some of the above analytical results have been ascertained in my laboratory by Dr. Burl.



Mr. SIEBOLD observed that wherever he had any preparation of calcium it was impossible to obtain pure carbonate as a residue. It was not possible to obtain a pure carbonate of bedollium as a residue.

Mr. GROVES said he had a recommendation to make, namely, that Mr. Saunders, of Ontario, should be elected an honorary member. Mr. Saunders was well known as a contributor to their "Transactions." Mr. Saunders was elected by acclamation; and at the suggestion of the President a committee was appointed to take the direction of the exhibition of objects of interest relating to pharmacy which was open during the Conference.

Mr. CARTEIGNE (local secretary) gave the necessary particulars respecting the excursion of the Conference on Saturday, and said that ladies who were accompanying visitors from the provinces would be welcome on the occasion.

On the resumption of the sittings in the afternoon

The CHAIRMAN called upon Professor Atfield to read the Paper on "The Chemistry of Elemi," which had been prepared by Professor Flückiger, of Strnsburg, Hon. Mem. of the Pharmaceutical Society of Great Britain.

#### ON THE CHEMISTRY OF ELEMI.

TOWARDS the year 1820, George Samuel Perrottet, a Swiss botanist, then a collector for the Jardin des Plantes, at Paris, brought to Lausanne, from Manilla, a specimen of the resin of a tree known in the Philippines as *Arbol-a-Brea*, i.e. Pitch Tree. The tree is thus called on account of its abundant resin, which is much used in the Philippines for the caulking of boats, for torches, and also in medicine, but the resin does not appear to have been at that time collected for exportation.

At Lausanne this resin was examined by the distinguished chemist, Samuel Baup, who found it to have "non peu de ressemblance avec la résine élémi." It is, in fact, nothing else than that kind of elemi which is now largely exported from Manilla, and has long superseded the other sorts of this drug, which had successively made their appearance in the European market. I am not aware of the exact period at which Manilla elemi first reached Europe in large quantities, yet Baup, in his Paper, "Sur les résines de l'Arbol-a-Brea et de l'Elemi," contained in the *Journal de Pharmacie et de Chimie*, vol. xx. (1851), pp. 321-332, was not of the opinion that Perrottet's specimen agreed with elemi as then found in commerce. We may, however, presume that Baup was no longer thoroughly familiar with the drug market, since he had in 1823 already retired from practical pharmacy. But there is another fact, which seems to me in favour of Baup's opinion, that the elemi of his time was not that from Manilla. The essential oil of elemi was found, in 1841, by H. Sainte-Claire Deville,\* to be strongly levogyne and to easily yield a crystallised compound,  $C_{10}H_{16} \cdot 2HCl$ , whereas elemi of Manilla, which I have repeatedly examined, affords a dextrogyne oil, incapable of yielding this solid hydrochlorate. This, I think, is sufficient to show that in 1841 Manilla elemi was not yet the prevalent sort, or, at least, that Deville's drug was not such. I had the opportunity, on the other hand, of examining a small fragment of the very substance which came into Baup's possession, and think it agrees with the Manilla element of the present market, only differing from the latter in being black. This is due to the smoke of the torches, which were applied to the tree in order to promote the outflowing of the oleo-resin. As to the *Arbol-a-Brea*, and its botanical characters, nothing precise and satisfactory has yet been made out.

Among the substances isolated from Manilla elemi by Baup, I shall notice now only those soluble in water, which he termed bryoidin and breidine. He obtained them in the following way:—As elemi consists chiefly of essential oil, a crystallisable resin, sparingly soluble in cold alcohol, and an amorphous resin, easily removable by the latter liquid, Baup first boiled the drug with alcohol of 90-95 per cent. On cooling, the colourless crystallisable resin ("la sous-résine") is deposited, and may be washed with cold alcohol of 85 per cent.; these crystals were called amyria, because at that time a Brazilian tree, *Amyris elemifera* (Linn.), was thought to furnish the elemi of commerce, and Baup regarded the amyria obtained from the latter as identical with the crystallisable part of the oleo-resin from the

Philippines. The alcoholic solution, separated from the amyria, was then submitted to distillation, in order to drive over the essential oil and the alcohol. The residue in the still consisted of the soft amorphous brownish resin, and a turbid, aqueous liquid. The latter was decanted, the resin repeatedly washed with alcohol of only 50 per cent. (about 916 sp. gr.); the mixed liquids were then evaporated, to deprive them of essential oil and alcohol. Finally, a brown oily aromatic\* mass separated and sunk, while, upon cooling, delicate, white needle-shaped or moss-like crystals made their appearance, and were termed by Baup bryoidin. The liquid, on further evaporation, separated into two layers, of which the heavier proved to contain chloride of potassium and other inorganic salts; the upper thickish layer (resembling the before-mentioned "aromatic" mass) afforded, when hoiled with a little water, some more bryoidin. These latter crops of crystals, after repeated purification by water, finally gave a substance which, according to Baup, did not agree with bryoidin, and he therefore distinguished it as breidine.

The characters of the two substances are thus described by Baup:—Bryoidin is a little bitterish and somewhat acid; its silky crystals may be sublimed between two watch glasses, when they form moss-like tufts. The crystals melt at 135° C.; they require, at 10°, 350 parts of water for solution. This solution is neutral; acetate of lead, either neutral or basic, produces in it a precipitate. Bryoidin is much more abundantly soluble in alcohol, ether, essential or fatty oils, or acetic acid. With concentrated sulphuric acid it assumes a red colour.

Breidine, according to Baup, is in prisms, exhibiting angles of 102° and 78°, and terminating in four-sided pyramids; 260 parts of water, at 10° are sufficient to dissolve one part of breidine; and the solution is precipitated by basic acetate of lead. Breidine is freely soluble in alcohol, not so much so in ether. The crystals melt at a little over 100° C, and are volatile, like those of bryoidin. These characters are, it will be observed, no very well marked differences between the two substances, and I believe that they are not really different at all.

I am not aware that any chemist attempted to repeat Baup's observations until last winter, when my friend, Mr. Hanbury, caused to be distilled a quantity of Manilla elemi, and took the opportunity of examining the watery liquor remaining in the still for bryoidin. He succeeded perfectly in obtaining this substance in colourless crystals by a method which we have described in the work on drugs, which is about to appear under our joint authorship. Since those observations were printed, I have carried on the experiments a little further, and, after various trials, have adopted the following as the best process for extracting bryoidin, as it appeared evident that weak alcohol is a good solvent of bryoidin. I placed four kilogrammes of elemi in a copper still, and had it gently warmed in the water-bath for a day or two, with twenty kilogrammes of alcohol of 972 sp. gr., that is to say, a weak spirit containing but 22 per cent. of alcohol. The essential oil which came over was separated, and the spirit of wine, from which it was removed, was returned to the still. After this operation had been sufficiently carried on, the still contained a solid resin, and a weak alcoholic solution. A. The resin was now boiled for a day with much water, and afforded another portion of essential oil, which I found to be dextrogyne, like that obtained by means of dilute alcohol.† The water in the still (B) was separated, and the resin warmed with about twelve kilogrammes of alcohol, sp. gr. 830, and two kilogrammes of water. After cooling, the liquid (C) contained the amorphous resin, the other resin being deposited in white crystals, agreeing with Baup's amyria.

In order to get bryoidin, I submitted the liquid A to distillation in a still, and subsequently evaporated the merely aqueous liquid from which the alcohol had been abstracted. During the evaporation a very small amount of crystallised amyria, contaminated with a trace of the amorphous resin, first separated. The weakness of the alcohol which had been used prevented any larger amount of resin being dissolved. It is important not to evaporate at once all the liquid A, and especially not to allow it to boil. After having tried the preparation of bryoidin in different ways, I came to the conclusion that the best plan is to evaporate on the water-bath small successive portions of the liquid until they begin to yield crystals of bryoidin floating on

\* I am indebted for it to Mr. Roux, late pharmacien of Nyon, Lake of Geneva, the author of *Notice biographique sur Samuel Baup, chimiste*, in the *Schweizerische Zeitschrift für Pharmacie*, December, 1862, Appendix. Its peculiar smell is not at all that of the original essential oil of elemi.

† See *Pharmacog.*, p. 132, where we already stated another sample of oil of elemi to deviate also to the right hand.



the surface. The liquid should then be allowed to repose for 24 hours, when the bryoidin can be removed from it, the mother liquid being reserved for further evaporation. By heating the solutions to full ebullition, bryoidin itself would evaporate to some extent. By gradual evaporation, as just described, it is obtained at once in a state of approximate purity. But if the concentration of the liquid is carried on without separating the crystals as soon as they appear, the final purification of the latter becomes difficult by reason of another principle occurring in elemi. This is a brown bitter substance which is more abundantly soluble in water than bryoidin. In the treatment of elemi just recommended, this bitter substance is contained in the aqueous liquid A, together with bryoidin. If this liquid is concentrated, brown drops of the bitter substance separate at a certain moment, and form a thickish resinoid deposit. Now, if the crystals of bryoidin have not been taken out of the liquid, they will be enveloped and thrown down by this resinoid matter, and can only be recovered therefrom with difficulty.

As to the liquid B, I have evaporated it with the same care, and got from it a little bryoidin, yet scarcely enough to repay the trouble. The same must be said with reference to the solution C; if this is deprived of alcohol the amorphous resin separates, but the aqueous liquid proves poor in bryoidin. As a rule, I cannot, therefore, recommend to include the liquids B and C in the process. The whole amount of bryoidin which I have been able to remove from elemi does not exceed 3 per cent., that is to say, of nearly pure bryoidin; its appearance in the mother liquors is much more promising, owing to its extreme lightness and flocculent aspect.

To purify bryoidin, it must be repeatedly re-crystallised from boiling alcohol of 25 per cent. At first the solutions are slightly brownish, a little turbid, bitterish in taste, and yield precipitates with tannic acid or with neutral acetate of lead. All this is but due to traces of the bitter principle, for after several re-crystallisations, using also a little charcoal, the solutions become colourless, perfectly clear, devoid of taste, and miscible with either neutral or basic acetate of lead, without being precipitated. The final yield of pure bryoidin is unfortunately much reduced by purification. Instead of the voluminous moss-like tufts obtained in the earlier stages of the operation, bryoidin may be at last got in brilliant prisms by allowing the solution to evaporate spontaneously. This is, I think, the substance that Baup called breidin. I have been unable to find any real difference between it and my bryoidin; under the microscope the prisms display a remarkable tendency to split longitudinally, which is well in accordance with the usual moss-like growth of the substance. The latter shows under the microscope very long, soft, thread-like crystals. In polarised light the crystals are seen to be refractive; they consequently do *not* belong to the cubic system.

There can be no doubt that Baup's observations are correct; yet it is evident that some of the properties he assigned to bryoidin apply to the imperfectly purified substance; his investigation must nevertheless be commended as a remarkably successful one,\* when it is considered that he had but very little of the "resin of the Arbol-a-Brea" at his command.

At 135°-136° C., bryoidin melts, and at a more elevated temperature can easily be sublimed; it volatilises in fact below 100°, so that very nice tufts are produced by exposing it for some days to the heat of the water-bath only. The crystals are anhydrous, giving off no water, either over sulphuric acid or at 100° C. They are readily soluble in alcohol, bisulphide of carbon, chloroform, ether, acetic acid, also in essential oil of elemi or glycerin; the solubility is not increased by the presence of alkalis or acids. Cold concentrated sulphuric acid slowly dissolves bryoidin, and assumes, when warmed with it, a reddish hue. By cold nitric acid, bryoidin is liquefied and forms brownish drops not soluble in the acid.

Bryoidin purified by repeated re-crystallisation and sublimation assumes a fine red colour if it is exposed to dry hydrochloric gas; it is subsequently liquefied, and turns violet, then a most brilliant *blue*, and lastly an intense *green*. The colours are permanent for several days; the liquids are soluble in chloroform, yet I have not succeeded in getting a solid compound by the hydrochloric treatment. These reactions are not

at all displayed by amyryn, the before-mentioned crystallisable resin of elemi. As to the amorphous part of the resin, it turns only a little reddish by hydrochloric gas, probably on account of a trace of bryoidin which it obstinately retains. The essential oil of elemi, if saturated with anhydrous hydrochloric gas, assumes a dark violet tint.

I have failed in ascertaining satisfactorily the solubility of bryoidin in water. I found one part of it to be contained in 384 parts of a solution saturated at 28-30° C.; but another solution prepared at 25° C. afforded one part of bryoidin in 492 parts. A solution prepared by boiling water with bryoidin in excess, and then allowed to remain for a week that the crystals should deposit, yielded one part in 523 parts of the solution. In every case the solutions were carefully concentrated at a temperature not exceeding about 70° C., and then fully evaporated over sulphuric acid. The loss of bryoidin to any appreciable amount was thus avoided. I think the discrepancies are due to the formation of supersaturated solutions.

In boiling water, bryoidin is not much more soluble than in cold, for 200 parts of it are able to dissolve but one of bryoidin, of alcohol 22 per cent. (0.972 sp. gr. at 15° C.) 147 parts dissolve one of bryoidin at 28° C., yet much more when warmed.

The analysis of bryoidin afforded, on an average, carbon, 74.21 per cent., and hydrogen, 11.52; these numbers may refer to the formula, C<sub>20</sub>H<sub>35</sub>O<sub>3</sub>, namely:—

20 C .. .. .	240	equal to	73.62	Analysis
38 H .. .. .	38	"	11.65	
3 O .. .. .	48	"	14.73	
	326		100.00	

Thus bryoidin may be regarded as a hydrate of the essential oil contained in elemi, that is to say, as answering to the composition—2(C<sub>10</sub>H<sub>16</sub>) + 3H<sub>2</sub>O; yet it must be borne in mind that it contains no water of crystallisation. By submitting it to sublimation it undergoes no alteration, as already proved by its melting-point remaining the same as before, namely, 135°-136° C. This view is supported by the composition of the amyryn.\* The above, I believe, to answer to the formula, C<sub>20</sub>H<sub>34</sub>O. This substance might be regarded as C<sub>20</sub>H<sub>32</sub> + H<sub>2</sub>O, and bryoidin, C<sub>20</sub>H<sub>32</sub> + 3H<sub>2</sub>O; there can be but little doubt that elemi will also afford the intermediate compound, C<sub>20</sub>H<sub>32</sub> + 2H<sub>2</sub>O.

In its general behaviour, bryoidin resembles terpin, C<sub>10</sub>H<sub>16</sub> + 3H<sub>2</sub>O, the crystallised hydrate of essential oil of turpentine, or rather of the substance C<sub>10</sub>H<sub>20</sub>O<sub>2</sub>, which is obtained when terpin, by melting, parts with H<sub>2</sub>O, that is, losing 9.47 per cent. This anhydrous terpin melts at 150°, and is soluble in 200 parts of cold, or 22 parts of boiling water, and freely soluble in all alcoholic or ethereal liquids. There are, however, great differences between bryoidin and terpin. By boiling the latter with very little dilute sulphuric acid, terpinol, C<sub>20</sub>H<sub>34</sub>O, a fragrant liquid, is formed. No such thing is produced with bryoidin. Nor is terpin coloured by hydrochloric gas. Again, if bryoidin is brought into contact with acetyl chloride, a very energetic action and effervescence takes place, whereas terpin quietly dissolves, so does likewise amyryn.

Bryoidin and terpin agree inasmuch as they are volatile, and, in solution, devoid of rotatory power, although both these compounds are derived from essential oils, C<sub>10</sub>H<sub>16</sub>, which possess that optical characteristic.

It would appear possible that the constituents of elemi may be allied thus:—

Essential oil .. .. .	C <sub>10</sub> H <sub>16</sub>
Crystallised resin (elemi or amyryn) .. .. .	2(C <sub>10</sub> H <sub>16</sub> ) + H <sub>2</sub> O
Amorphous resin (?) .. .. .	2(C <sub>10</sub> H <sub>16</sub> ) + 2H <sub>2</sub> O
Bryoidin .. .. .	2(C <sub>10</sub> H <sub>16</sub> ) + 3H <sub>2</sub> O

But further researches are needed to prove the correctness of this suggestion.

The bitter substance already mentioned is by no means abundant in elemi, though it appears to be present to a somewhat larger amount than bryoidin. I have in vain endeavoured to isolate from it a well-defined compound. The resinoid brown mass which at last separates from the concentrated aqueous solutions, A or C, has a very intensely bitter, and at the same time aromatic, non-acrid taste. The latter reminds one of orange-peel, and is certainly due to the substance itself, not to essential oil of elemi. An entirely different and strong odour is evolved by the bitter mass, if it is boiled with dilute sulphuric, nitric, or hydrochloric acid. In this case, the odour is

\* Like many others due to that zealous man; we may quote, for instance, his valuable contributions to a knowledge of quinine, cinchonine, kinic acid, citric acid, acetic acid, and equivalent numbers. Baup was born May 16, 1791, at Vevey, on the Lake of Geneva, and died February 9, 1862, at Lavaux, not far from the former place. In 1816 he paid a visit to London, and saw Brodie and Brande.

\* To this circumstance may be due the remarkable separation of *Sticks*, described in our *Pharmacographia*, p. 134.



somewhat suggestive of melon, caraway, or especially of a fresh terebinthinous varnish. By this treatment with acids, the bitter taste disappears. I have not been able to ascertain whether sugar is, at the same time, produced, because the brown bitter mass would appear already to contain some sugar, seeing that it is capable, to a small extent, of reducing alkaline tartrate of copper. If the bitter mass is warmed with a moderately concentrated mineral acid, it assumes an intense violet or blue colour, and is also coloured in the same way by dry hydrochloric gas. From a solution in dilute alcohol, the bitter semi-fluid mass is partly thrown down by absolute alcohol; yet this precipitate proves to be by no means a pure substance. Its aqueous solution is partly precipitated by tannic acid or by neutral acetate of lead, another portion remaining unaltered in solution. I have failed in removing from the bitter substance the inorganic matters which, as shown by incineration, it largely contains. Baup was well aware of the large amount of mineral substances occurring in the extracts of olomi; in fact, they appear to constitute the chief amount of the brown bitter deposit.

The CHAIRMAN, in proposing the customary vote of thanks to the learned Professor who had prepared the Paper, said that it was only another instance of the laudable zeal displayed in the pursuit of knowledge in the vast field of pharmaceutical chemistry.

Mr. HANBURY said it was rather difficult to follow the details given in this Paper. Therefore he might perhaps be excused for making a remark or two with the object of simplifying the explanations the writer gave with reference to the mode of obtaining it. When he (Mr. Hanbury) prepared the specimen that was on the table, he was not at all aware of the facts that were subsequently elicited by Dr. Flückiger's researches, and he got it by a simple evaporation of the watery liquid in a still after obtaining the essential oil. In that way he secured a colourless crystalline, and by a little manipulation obtained it in a state of comparative purity. Having minutely described the process, Mr. Hanbury went on to say that Professor Flückiger, in one part of his Paper, spoke of the separation of *Jocks*, and he (the speaker) would just explain what that was. When one was purifying the bryoidin from the aqueous solution, or rather recrystallising it (because it was perfectly colourless), one got the matter liquor. Pouring that off, and filtering it, the result was a perfectly clear solution. Then it immediately became turbid, and deposited what looked like pieces of white paper or wool. If they examined the substance it showed filminite crystals, and they did not re-dissolve by either heating or cooling. With regard to amyris, that was easily prepared. If they took the South American or Mexican elemi they got a white matter separating itself, which proved to be extremely crystalline, and might very easily be obtained in distinct crystals. Such was amyris; and, as far as they knew, that appeared to be the same in the elemi from these different sources. It was a beautiful sample of a crystallisable resin, the nature of which students could very easily investigate for themselves—it was so easily got in a state of purity.

The CHAIRMAN: These bodies are resin.

Professor ATTFIELD: No; bryoidin. Amyris is a crystallisable resin.

Dr. J. E. DE VRIJ then rose and made an extempore statement on the

#### EXTRACT OF POMEGRANATE ROOT BARK AS AN ANTIHELMINTIC.

He began by saying that many years ago the pomegranate wood bark was very much used in Holland as a powerful febrifuge against typhoid. It was, however, stated that the bark ought in no case to be used unless grown in the tropics. He did not believe in this view, and remembered more than forty years ago a physician telling him to prepare a decoction of pomegranate wood bark of India, whom he slightly deceived for the sake of proving the soundness of his views. The physician was very precise in insisting upon this particular wood bark. He (the speaker), however, got wood bark which had been grown in the south of Europe, and applied it to the patient, who recovered. Since that time he had not thought any more about the matter. When he was in Java he did not forget to secure two trees, which he did very cheaply, viz., at 6*d.* each, and secured the roots. One of the reasons why the root of the wood bark had come into discredit had been that it came very rarely pure in the trade, so that good pharmacopœists had told him that it was the bark of the tree and not the bark of

the root. A few months ago he was in a meeting of physicians at which one of them explained a perfect cure against tapeworm. He stated that he once received an extract of wood bark prepared in Java, and he cured any patient who suffered from tapeworm. He demonstrated it clearly. Every quarter of an hour he gave seven pellets, each pellet of one grain, so that after eight quarters (two hours) the cure was complete. In consequence of this he made an extract by cold water only from his own roots. He put it in a percolator, and so he got 40 per cent. of extract. That was a large but beautiful extract of yellow bark. One of his relations who suffered from a tapeworm had been treated unsuccessfully by physicians, but consented to try his remedy. The patient (a lady) was treated with perfect success, and a tapeworm of 9 metres in length was expelled. (The tapeworm was here exhibited.) His conclusion was that if they had a good wood bark, and made a good extract, they would have a perfect remedy. Near Paris a tree was cultivated, and they supplied a fresh bark there, costing fifteen francs, which was sufficient for one cure.

Mr. W. W. STODDART said it was a singular thing that they used the pomegranate bark rather extensively, especially with foreigners, but they used it for dysentery—exactly the reverse. He would like to ask Dr. Vrij if the head of the tapeworm were there.

Dr. VRIJ: It is.

Mr. W. W. STODDART said the second remark he would make was to thank the Doctor for corroborating the efficacy of a process which he mentioned some two or three years ago about percolation. He got the powder, mixed it up into a thin grit, then put it into a percolator, put water on the top, and thus the process was complete, although many at the time said it could not be done. He was glad to have the present opportunity of recalling to the remembrance of the Conference that such was the proper mode of percolation.

The CHAIRMAN said that Dr. Vrij had done much towards giving a character to the pomegranate root bark. They were obliged to him for his experiments. (Hear, hear.) He had said it was not necessary to use the fresh wood bark, although that had been the opinion of many in Italy up to the present time. It was wonderful that a tapeworm should exist at all, seeing the number of potent remedies they had. It was to be hoped that some day they would abolish the animal altogether. (Laughter.)

Mr. HANBURY: What we have heard to-day proves that it has not its sole habitation in man—(laughter)—so that it has a variety of homes into which it can retire and get out of the way. (Renewed laughter.)

Mr. STODDART said that in Bristol some of his professional brethren and himself made a lot of experiments some six years ago, and he had then the opportunity of watching certain things that took place in a butcher's shop. In this shop it was a frequent occurrence that the boys ate pieces of raw meat, the result being that they suffered from tapeworms. There was a very good Microscopical Society in Bristol, and Dr. Britten wanted to get up a paper on the tapeworm. He is physician of the Bristol Infirmary, and one morning he said to his class, "I want to find out whether eating raw meat is conducive to the production of tapeworm." The experiments he instituted with cooks and others resulted in the collection of two buckets (he believed) of tapeworms, every one of those from whom they came being in the habit of eating raw meat by their own admission. This corroborated Dr. Spencer Cobbold's observation that it was not so much pork as beef which produced tapeworm.

Dr. FRASER said that until he began researches on the subject, no tapeworm was known in Ireland excepting the one derived from swine. He now found that that was very rare in Ireland at present. The beef tapeworm, as compared to that from pork, was as four to one. He supposed in the course of a year in Dublin there might be ten or twelve cases of tapeworm, and he could say authoritatively that if properly used the male fern extract was undoubtedly not only a cure, but a perfect and complete cure. The worm was not expelled living, but it certainly was expelled dead. (Hear, hear.)

Mr. LOUIS SIMON remarked that the comparative merits of the various remedies for tapeworms had been discussed many times, and as many different opinions had been expressed. Küchenmeister, one of the greatest authorities on the subject, maintained to the present day the efficacy of the male fern and his experiments showed the vast amount of success which had attended that plan. He might mention that there was a woman in Hamburg who cured every one of tapeworm, and in



24 hours. Hundreds of persons were cured by her. Her secret was nothing but this, that she cultivated in her garden a male fern, and administered it fresh in each case. The worst remedy was cusso or kouso, where the worm was discharged without the head. He believed male fern would always retain its position in relation to this matter.

A VOICE: How does the Hamburg woman administer it?

Mr. STODDART: As a powder.

The PRESIDENT then proceeded to read his Paper:—

#### REPORT ON THE CHEMISTRY OF THE ACONITINES.

THE sum of ten pounds from the Hills Fund, voted for the above purpose, was spent in working up two cwts. of roots of *Aconitum Napellus*, the process of Haas being employed as being less costly than that involving the use of iodo-mercurate. The result was 13 drachms of crystals of nitrate of aconitine and a much larger quantity of alkaloids of doubtful character.

On examining the former, prior to handing them to Dr. Wright for analysis, it was found that two substances were present, one aconitine, the other a crystalline bitter substance devoid of acrimony, but presenting in other respects many of the characters of the aconitines.

The pseudaconitine prepared by the same process was also found to be a mixed body.

Attempts were made to purify them by converting them into iodo-mercurates and regenerating the alkaloids, but with only partial success.

It was therefore determined to use for the combustions samples of nitrate of aconitine and of pseudaconitine made some years ago by the iodo-mercurate process, and presumably pure.

These, together with the muriate of the bitter alkaloid, were accordingly analysed by Dr. Wright, whose experiments, so far as they have gone, reveal the remarkable fact that their centesimal composition is in all probability identical, the bodies being isomers or polymers, probably the latter. The alterations of physiological properties caused by the polymerisation of morphia and codeia are cases of the same character.

There is some reason for suspecting that the bitter crystalline alkaloid is identical with the substance extracted by Mr. Broughton from *Aconitum heterophyllum*, and named by him atisine. This plant, though a true aconite, is quite devoid of acrimony, and is in fact employed in India as a bitter tonic.

*Aconitum ferox* also seems to contain a small quantity of the same substance, but that is as yet doubtful.

Professor BENTLEY said that the pleasant duty had fallen to him to propose the cordial thanks of the meeting to their President for the further admirable report which he had just read. Those who were familiar with the Conference meetings in former years, or with the reports of the President on this subject, knew full well that this was only one of the series. (Hear, hear.) He believed that all who had had the opportunity of discussing this question gave universal evidence as to the great accuracy and originality of these papers. They had been told that day that it was the work of a lifetime to make researches into three subjects that were named, and he was sure all present wished the President a long life and a long period of work, so that he might lay before his professional brethren further reports of his investigations.

Mr. HANBURY regretted that Mr. Broughton was not present, for had he been so he would have described the alkaloid called atisine which certainly he had not yet described in print. He (Mr. Hanbury) thought the name attached to it by Mr. Groves of "atsine" was rather doubtful, and had better not be published, inasmuch as they were not quite sure that the substance was the same by any means as that which had been obtained by Mr. Broughton in India from the tree atis, and which would more truly bear the name of "aticide."

The CHAIRMAN said he could assure the last speaker that he was not at all anxious that it should turn out the atisine. It was very interesting to remember that the myris should be so very powerful and that it should give exactly the same result. He believed it would be so, and that was quite Dr. Wright's opinion.

Mr. HANBURY: What is the evidence you have that it is a negative substance?

The CHAIRMAN: I have taken it in half grains and it has no effect.

Mr. A. W. GERRARD then read his Paper on

#### THE OFFICIAL PLASTERS: IMPROVED FORMULÆ FOR THEIR PREPARATION.

Having alluded to the fact that there are 14 of these plasters, he proceeded in a long and elaborate Paper to describe them in detail, making the general observation in passing that in the Pharmacopœia too much was left to the judgment of the individual. Was it not, he asked, a waste of time to prepare one material from another, when the direct materials were at hand? He exhibited specimens of the 14 plasters, and recommended for their preparation the use of stout linen in preference to some of the fabrics which were in vogue with some practitioners. He also commended pillow calico. He said he was anxious to introduce the exhibited apparatus used for plaster spreading. One of the machines to which Mr. Gerrard directed attention was a machine invented by Mr. Martindale, the details of which he explained. He, however, said that in its use the would-be proficient must be content to spoil at least the first 50 yards of his fabric. (Laughter.) He next showed a simpler machine made of wood, with heavy scale weights to prevent its shifting. The two parts of the machine were separated to the distance of about three yards, and a piece of linen stretched between and fastened to hooks at either end. With the aid of a large steel paper-knife the plaster was applied to this linen in about a minute—the rapidity of Mr. Gerrard's operations evoking a hearty cheer when they were brought to a close. He further pointed out that this apparatus was adapted for leather plasters, and, in fact, said it was the only method with which he was acquainted for spreading leather plasters. In conclusion, he said his decided opinion was that a large amount of practice was still required to enter upon the practice of plaster making.

The PRESIDENT remarked that they were highly indebted to Mr. Gerrard for the very conscientious way in which he had worked out this subject. He was sure Mr. Hills would be greatly pleased were he present to see what the result of spending his money had been. Of course, to properly discuss this question would take a very long time; but if they attempted it they must take the plasters in detail rather than attempt to deal at once with the whole subject. At the same time he must confess that he did not believe much in any plaster except plaster of Paris. (Laughter.)

Mr. MARTINDALE, in speaking of belladonna, gave his experience in connection with University College Hospital. He found that the description of plaster used there (one part mixed with two or three of resin plaster) brought out eruptions upon the patients almost similar to those of scarlet fever, and the physiological action was such as to lead him to desist from making the plasters so strong, and, with the sanction of the dispensary committee, he reduced them to the strength of one part in nine; and even these had been, in some cases, found to produce eruptions which had alarmed the patient. It might be necessary to make it even more diluted than one part in nine. Seeing the good effects of the liniment, he could not see the advantage of having the preparation from the leaf if they could get the same from the root. He felt persuaded that that prepared from the root was the best in every respect.

Mr. UMNEY, in speaking of the emp. plumbi, said he looked upon the present preparations of this plaster as a mistake, and the directions of the Pharmacopœia as needing much revision.

Mr. MARTINDALE, after describing the practice of wholesale houses in reference to this emplastrum plumbi, remarked that it should be more of a brownish colour, and wear somewhat the appearance of ordinary yellow resin, and it was only when he got it sufficiently evaporated to that consistency that it was in a suitable state. Without this it would not "bite," and there was a difficulty in applying it to a large surface. The question then was, what is the best means of getting rid both of the water and the glycerine? In his opinion the heat should be continued after the combination had taken place between the oil and the lead, until the whole of the moisture was evaporated. The plaster then assumed a dark opaque appearance, and contained only a little glycerine, which it was quite as well to retain. A large quantity of it passed off, it was true, but a certain quantity still remained after the whole of the water was evaporated. The advantage of retaining the glycerine was that the plaster became more flexible. The plasters as sent out by the wholesale houses would not stick.

Dr. REDWOOD said he should like to make a single observation



as regarded emp. plumbi, mainly arising from what had fallen from Mr. Umney. He had referred to the alteration which was made in the pharmacopœia in preparations of lead and olive oil. That alteration was made after very considerable investigation on the subject, and mainly by those practically engaged in making plasters upon a large scale. One remark that fell from Mr. Umney tended rather to confirm the propriety of the conclusion that was come to in one respect. He thought Mr. Umney had stated that the plaster was rendered more sticky in consequence of the alteration in the preparations. Now that was the very object that was contemplated. Many years ago, but quite within his experience, there was a plaster that was constantly used in London known by the name of "Dr. Scott's Plaster." It was in fact an adhesive plaster, used by a man who was very celebrated in wound cases at that period—Dr. Scott; and his plaster was sought after by a great number of persons for a considerable length of time. There was a good deal of mystery as to the way in which it was prepared. It was a true adhesive plaster, but it was entirely devoid of the ordinary constituent of our adhesive plasters, viz., resin; and the object that was contemplated in the alterations made in the emplastrum plumbi was to give to it a certain amount of adhesiveness without imparting that through the addition of resin, and that had been accomplished by an alteration in the proportion of the ingredients. It was certainly more sticky than the plaster that would be made with the ingredients in the old proportions; but it was a change that was desired and contemplated should be made. (Cheers.) He omitted to include one element in the new emplastrum plumbi, which was long boiling and an increased care in the preparation of the oil, the result being that which was desired, viz., its possessing more adhesive properties.

Mr. SQUIRE said that, although what had just been said was interesting as to the present condition of emplastrum plumbi, it left them in the same position as regarded other plasters, as the consequence of that change had been to make all the plasters of the pharmacopœia inconveniently sticky. Wholesale houses had modified the form, and thus plumbi was not now strictly made as per instructions. He recollected a good many years ago noticing the peculiarities of the plasters supplied in France. They were very much less hard than those of this country, exceedingly sticky, and in some senses were undoubtedly very inconvenient, but they had the very great advantage of being able to be applied with facility to a sore, and they could be taken off easily. Plumbi was a very useful plaster, and one which it was very desirable for them to have in the pharmacopœia. At the same time inconvenience certainly did exist in reference to the present formula.

The other plasters were passed over without discussion.

Professor TICHBORNE (Dublin) then proceeded to make a statement

#### ON THE APPLICATION OF OLEIC ACID TO PHARMACY.

He would have read the whole of it had time permitted, but, under the circumstances, adopted the wiser plan of summarising its details.

The object of this paper was to introduce to pharmacists the use of oleic acid in liniments and other preparations where soaps, which are alkaline salts of oleic acid, are now employed. The author confined his remarks entirely to liniments on this occasion, intimating, however, that there were many other pharmaceutical uses to which oleic acid could be advantageously applied, to a consideration of which he would recur on a future occasion.

The only important suggestion as to the use of oleic acid had been made by Dr. Attfield, who had proposed to dissolve alkaloids in this acid previously to combining them with cod liver oil. These preparations, however, are now no longer used, and therefore the suggestion has fallen through. But the method of dissolving any powerful alkaloid, such as aconitine, in oleic acid, when it has to be combined with a fatty body, as in the case of ung. aconitæ, is a great improvement, inasmuch as we thus obtain a solution in the fat, and not a mere mechanical mixture.

The oleate of mercury which has been introduced, Professor Tichborne thought, would not be much used on account of its unsightly appearance.

Oleic acid, which not long ago was a chemical curiosity, is now to be obtained by tons, and very cheap. It is produced by the splitting up of palm or other oils into glycerine and the

fatty acids. Stearic and the other hard acids are used in the manufacture of candles, and the fluid oleic acid remains as a by-product. The best is known as "pale cloth oil." There is also a brown German oleic acid which is extremely cheap, but much inferior in quality. A curious fact in respect to oleic acid is that, while it is itself poisonous, the oleates are quite harmless, providing the base is so. Rats and mice, though eager after all other neutral fats or oils, carefully avoid oleic acid.

After describing briefly the characteristics of the various oleates, Professor Tichborne gave the following formulæ for the various liniments of the Pharmacopœia.

#### *Linimentum Ammoniacæ.*

In preference to the old formula, which produces an emulsion, changing gradually into a semi-solid soap, Professor Tichborne recommended the following:—

Oleic Acid, ʒj.  
Water, ʒij.  
Strong solution of Ammonia, ʒij.

Mix the water and oleic acid and add the solution of ammonia gradually but with agitation. This will yield a liniment of definite and unchangeable composition.

#### *Lin. Potass. Iod. c Saponæ.*

A very useful stimulating liniment, but most unmanageable in its present form. The following was proposed in its place:—

Oleic Acid, 6 ozs.  
Carbonate of Potassium, 2 ozs.  
Iodide of Potassium, 7½ ozs.  
Glycerine, 5 ozs.  
Oil of Lemon, 5 drs.  
Water, 2½ pts.  
Solution of Potash, 9 s.

Dissolve the carbonate with heat in 10 ozs. of water, add the oleic acid, and when the effervescence has ceased add the remaining ingredients mixed together, and then a sufficiency of solution of potash to make it of the requisite consistence.

#### *Linimentum Saponis.*

As a more perfect form for this much-abused liniment, Professor Tichborne suggested the following:—

Oleic acid, 8 ozs.  
Carbonate of Sodium, 4 ozs.  
Camphor, 5 ozs.  
Oil Rosemary, 12 drams.  
Rectified spirit, 3 pts. 12 ozs.  
Water, 8 ozs.

Dissolve the carbonate in the water by the aid of heat, add gradually the oleic acid, and when the effervescence has subsided add the rosemary and the camphor dissolved in the spirit, and filter if necessary.

Certain liniments may be regarded as emulsions, of which Lin. Terebinth. is typical. In these cases oleic acid behaves beautifully. The following is the formula:—

#### *Lin. Terebinth.*

Oleic Acid, 1 oz.  
Oil of Turpentine, 16 ozs.  
Camphor, 1 oz.  
Solution of potash, 9 s.

Dissolve the camphor and oleic acid in the turpentine, and add gradually the solution of potash, until the whole is emulsified.

Professor Tichborne added that doubtless these formulæ might be improved upon, but he was confident that the days of the old forms were numbered. No one who once uses oleic acid in making the saponaceous liniments will wish to return to the soaps.

The CHAIRMAN, in proposing the customary vote of thanks regretted there had not been more time placed at Professor Tichborne's disposal, as the subject was well worthy of further elucidation at the Conference, and particularly of further experiment.

Mr. FRASER submitted the experience of the principal oculist in Glasgow to the Conference, and said that the use of oleic acid had been of very great service to the gentleman in the treatment of the particular class of disease which was under his charge.

Dr. ATTFIELD said he could not accept all the credit that seemed to be given to him by Professor Tichborne. For several years after the paper on the method of dissolving alkaloids in oil was published, he had had the subject brought under his



notice, but how this came about he really did not remember, but some one had stated some fifteen or twenty years ago that alkaloïds could be dissolved in fatty acids.

Mr. G. F. SCHACHT said that although one might see the desirability of employing oleic acid in the place of olive oil in the manufacture of liniments, he could not help thinking that it would be very desirable in most cases that the definite compounds should be first of all prepared rather than that they should attempt to extemporise their preparation at the moment of use, for of course the chances would be that they would not get a perfectly neutral preparation, which in some cases might be most necessary. He wished to speak now upon the peculiar and, according to his experience, very useful preparation, the liniment of iodide of potassium, which he believed was understood to owe its paternity to the firm of Messrs. Smith & Co. of Cheltenham. There the good result was obtained by the use of no kind of soap containing very little of the oleate of soda but a very large proportion of the stearoptate of soda. The curd soap of the Messrs. Benbow was best. When that was used they certainly did have a capital preparation, and one which looked like a clotted cream more than like anything else. It maintained its consistency for a great number of months, as he could testify from experience. They could produce the same things invariably by simply using the same material. There was no disappointment whatever in it, and it made a delightful method of applying this remedy externally. Of course it was an open question whether very much good attended the external result, but if intended to be applied at all, this was a very elegant form in which to do it.

Mr. UMNEY remarked that the specimens of oleic acid with which the learned professor had been experimenting were far superior to the article of commerce sold under that name in England.

Dr. ATFIELD said that oleic acid was now used on an enormous scale (only it was much darker) by clothworkers. Oils and fats of many kinds which formerly were thrown away through being so impure as to be almost useless were now "recovered" as the phrase ran, and thus an immense amount of oleic acid came into trade, the better varieties commanding larger prices than the darker. Still there were large quantities of oleic acid of a light colour—far larger than were likely to be used in pharmacy.

Mr. RIMMINGTON: Don't you think it would be objectionable on account of the persistency of its smell?

Mr. HANBURY observed that this was a case in which two sides had to be looked at, viz., cheapness and goodness.

Professor REDWOOD expressed his personal thanks to Professor Tichborne for having undertaken so many experiments in reference to this matter. Some time ago, indeed on more than one occasion, he had suggested to this Society the desirability of investigating the whole subject of the liniments used in pharmacy. He considered them to be in decidedly an unsatisfactory position, and that they were very much in want of some general principle upon which to proceed in their preparation. He entertained the hope that here they had a suggestion that might prove useful, and although it had been stated that the formulæ which had been put forward were not in a state of progress, and that there was room for further investigation on the subject, yet he was sure that the investigation would result in the enunciation of improved processes for liniments. He might mention one in particular, which was the liniment of turpentine and acetic acid—a liniment consisting of materials which separated and could not be kept united. He had made several experiments himself with the view of getting a more homogeneous liniment as a substitute for it, and there were several others. In fact the whole of them required to be thoroughly revised, and he should be glad some day to see some general principle acted upon, and some menstruum adopted which should serve as a medium for the application of more active constituents. He looked rather hopefully to the use of oleic acid in this particular case.

Professor TICHBORNE then rose to reply to some of the observations which had been made. As to the purity of oleic acid one gentleman had said that it was a very common thing to introduce it as a substitute for soap. He must ask him if he had ever gone to a soap work and seen the funny things put in there? (Laughter.) If he did so he would find that soaps were much more indefinite than oleic acid. The acid on the table was a specimen of commercial oleic acid taken from an old cask of it, half an hour before he left home. In connection with liniments, all they had to do was with a peculiar condition of

their solubility. He thought on repeating his experiments that they would be found as correct as applied to all oleic acid, and it was quite immaterial whether it was one month or twelve months old. There were, he knew, some very inferior German qualities—(hear, hear)—in the market, but they were introduced for rough work. He did not believe the smell would be any objection to its use.

Mr. WILLIAMS remarked that this must be a very old specimen, as the professor remarked, for he could not get any of it. (Laughter.) Oleic acid had become very bad lately, and it was most difficult to prepare those oleoids, so as to have them what they really ought to be. He had tried many experiments, and devised many plans of purifying it, but he must say that at present he had not at all succeeded to his own satisfaction. He believed there was a great future for oleic acid, and therefore he hoped that many present would turn their attention to it. At present the article in commerce going by that name was not good enough for pharmaceutical purposes.

Mr. STODDART then gave a brief outline of his Paper

#### ON A NEW MODIFICATION OF LIEBIG'S PROCESS FOR THE VOLUMETRIC ESTIMATION OF PHOSPHORIC ACID.

He described what appears to be a great improvement on the old iron method of Liebig. The principal point was the substitution of sulphur cyanide of potassium as an indicator instead of the ferro-cyanide. A full description of the details was given, and also a series of results compared with those of other processes in general use. The new modification seemed especially applicable to the wants of the geologist, mineralogist, and agriculturist. It is an extremely easy, expeditious, and accurate mode of estimating the percentage value of the phosphates generally.

#### ON A NEW LACTOMETER.

Mr. Stoddart then brought before the notice of the Conference an ingenious form of lactometer, invented by Mr. Horsley, of Cheltenham. It has hardly any resemblance in its action to the old form and none of its defects. It easily separates into three parts the fat, the casein, and the sugar and salts. The fat, instead of being estimated by volume, is calculated by the weight per cent. The analysis can be made with great rapidity and accuracy. Examples were shown, and the mode of analysis fully explained. The apparatus is also capable of butter analysis, giving at once the percentage of pure butter fat, under which a layer of fatty adulterant would also be seen if present in the sample. An excess of curd would also be easily seen at the bottom of the tube.

There was a brief discussion, and the Conference adjourned till 10 A.M. on the following day.

### THE DINNER.

THE members of the Conference dined together at the Terminus Hotel, Cannon Street, on Thursday evening. About 120 sat down to dinner, Mr. T. B. Groves presiding, supported on the right and left by the President and Vice-President of the Pharmaceutical Society, and faced by Mr. John Williams. The band of the Coldstream Guards played a selection of music during the dinner, and afterwards some songs and glees were given by professional singers.

When the cloth was removed the CHAIRMAN rose to propose the first toast—that of "The Queen." With him, he said, this was not a formal toast, nor did he think it would be received as such by the company. He called on all to drink with enthusiasm to the long life of Her Majesty the Queen.

This was acknowledged by the singing of the National Anthem.

Mr. GROVES again rose and said that the toast of "The Royal Family," which followed in order, was one which also followed that of the Queen in regard to popularity. There were no princes in Europe who enjoyed a more deserved popularity than those of the English Royal Family. Our English princes were useful as well as ornamental, as all followed some important profession, being engaged either in the army or navy.

This toast being duly honoured, Professor TICHBORNE, of Dublin, was next called upon. He said, as one of the oldest members of the British Pharmaceutical Conference, he had been



privileged to propose a toast which was certain to be well received in that room. After the Queen, it was the most important toast which could be proposed in such an assembly. It was, "Prosperity to the Pharmaceutical Society of Great Britain." In a sense, the members of the Conference were drinking their own healths in doing honour to this toast. The British Pharmaceutical Conference was undoubtedly the offspring of the Pharmaceutical Society. The latter body had tended it and nursed it, and by that aid it had grown to its present position. The Pharmaceutical Society itself was but a young society, but he hoped that its prosperity would not have the effect of making it indolent in its educational efforts. They must remember that the next generation would be the true representatives of British pharmacy, and he looked for the time when this country should be, at least, on a par with other lands in regard to pharmaceutical education. The name of Mr. Thomas Hyde Hills, President of the Pharmaceutical Society, was coupled with the toast.

The health of Mr. Hills was drunk with musical honours.

Mr. HILLS responded, saying that he thanked the members of the British Pharmaceutical Conference from the bottom of his heart for the hearty manner in which they had received the toast, and for the reception they had given to him. If he was not a jolly good fellow, he certainly ought to be. All he claimed, however, was that he had always taken a deep interest in the prosperity of the Pharmaceutical Society, and he believed that the members liked a man who sincerely interested himself in the advancement of the Society. It was somewhat by accident that the meeting was held this year in London; but it was an ill wind that blew no one any good, and he was glad of this accident, as it had given the London members an opportunity of extending a hearty welcome to their friends from the country. He had heard the papers read that day, and he was proud to belong to a Society which was doing such good scientific work. He cared not whether the papers were read at the meetings of the Conference or at the evening meetings of the Society. He had the honour of being president of one and a vice-president of the other. With regard to the Society he believed himself to have been the first associate. If any other gentleman claimed the position he would not dispute it with him, but as far as he knew such was the case. He recalled the early meetings at the "Crown and Anchor" tavern, when pharmacy was threatened to be extinguished, the circumstances of which were scarcely known to many of the younger members. He was very glad to see there Professor Tichborne, who was connected with the Apothecaries' Company of Ireland, as he would have the opportunity of seeing for himself the work of the Pharmaceutical Society in London, and he hoped he would carry a good report back with him.

Mr. YOUNG, of Edinburgh, proposed the next toast. He said that Mr. Carteighe had insisted on placing it in his hands, although he knew he was quite unequal to it. Unfortunately for him it was the toast of the evening, and he would have liked one or two hours to prepare for it. It was "The Prosperity of the British Conference." What Professor Tichborne had said as to proposing one's own health applied much more to this toast. When the Conference was first started he had his doubts as to its desirability. He thought it would be in some way antagonistic to the Pharmaceutical Society. By this time, however, his doubts and fears were all removed, and it could not be otherwise when he considered the list of presidents, Deane, Ilanbury, Bentley, Stoddart, Brady, and Groves, all honoured members of the Pharmaceutical Society. He coupled with the toast the name of the President, Mr. Groves, whom he had not seen in the flesh before that day, but whose work he had been acquainted with for years.

Mr. GROVES, who was warmly greeted, said that the hearty applause was enough to take all the conceit out of a man. It had been said that some men were born great, others achieved greatness, and others had greatness thrust upon them. He felt himself to belong to the latter class. [An unfortunate "hear, hear," at this moment caused some mirth, and, for a moment, disconcerted the speaker.] Mr. Groves proceeded to say that he was never more astonished than when he heard that his name was proposed as President of the British Pharmaceutical Conference. He presumed that he owed the honour to the fact that the President of the Pharmaceutical Society was named Hills, and it might have been supposed by the committee that it would be appropriate to have Groves as President of the Conference. He had, however, always been a staunch supporter of the Conference. He was present at its first meeting at Newcastle, and

what had induced him more than any other consideration to accept the distinction was that it might encourage the younger members of the Conference to work. He could only claim to be a worker. Never mind whether the results were good or bad, he believed in work. The Pharmaceutical Conference had never been antagonistic to the Pharmaceutical Society. It was a sort of rolling member of the Society. So long as the meetings of the Society were only held in London, country members had naturally the impression that the Society was, to some extent, a London institution. He hoped that the second decade of the Conference, on which they were now entering, would be as prosperous as the last. He could have no doubt that the present meeting was superior to all its predecessors, both socially and scientifically. Mr. Young had certainly coloured his own portrait too highly, but he would not quarrel with that.

Professor ATTFIELD proposed the toast of "Our Visitors." He said that the alternation of the parts of hosts and guests, visitors and visited, was a pleasant feature of these meetings. The Conference had been peculiarly fortunate in all its meetings in having visitors from all quarters of the globe. They had had gentlemen from nearly all the States of America, from the South of Africa, and from nearly every country in Europe. This meeting was honoured with guests from America and France, and the next day others were expected from across the Channel. He would ask those visitors to understand that the British Pharmaceutical Conference had for its single aim the promotion of original research, and its success in this respect was attested by the fact that, in spite of the competition of the evening meetings of the Pharmaceutical Society and other media of publication, the Conference could produce annually some 30 or 40 original papers, and that its 2,300 members had the opportunity, in the "Year Book of Pharmacy," of reading the researches of the scientific pharmacutists of Germany, America, France, and Italy. He coupled with the toast the name of Dr. Fraser, of Dublin.

Dr. FRASER, in the name of the visitors, returned sincere thanks for the honour. He hoped earnestly to see an extension of this pharmaceutical work to Ireland, and for the sake of science, and for the sake of universal brotherhood, he trusted that the Irish Channel would not be the boundary of the work of the British Pharmaceutical Conference.

After some vocal favours from Mr. Umney and Mr. Stanford, Mr. GILES, of Clifton, made a short speech, eulogising the efforts of the London members of the Conference in their provisions for the entertainment of their provincial visitors, and especially naming Mr. Carteighe.

Mr. CARTEIGHE had hoped to have been spared a speech, at any rate, until nearer the end of the proceedings. The London members hoped to have a good opportunity of talking with their friends from the country during the excursion on Saturday, and he urged them all to come and bring ladies with them.

#### Friday, August 7.

At the sitting on Friday morning it was announced that, with the consent of the meeting, the following gentlemen had been elected members of the British Pharmaceutical Conference:—Mr. Charles Estcourt, 8 St. James's Square, Manchester; Mr. P. W. Squire, Oxford Street; Mr. Horace Devonport, 33 Great Russell Street; Mr. Thomas Spencer, Asbournby, Lincolnshire; Mr. C. W. Taylor, 300 Holborn; Mr. Edward Prichard, 10 Vigo Street, Regent Street; Mr. James Crispe, 4 Cheapside; Mr. A. Gowie, Kirkealdy; Mr. Alex. Stonctan, George Street, Aberdeen; Mr. Jas. Gillespie, High Street, Irvine, N.B.; Mr. Robert Kelly, Shepton Mallet; Mr. J. P. Parkes, Albion Road, Stoke Newington; Mr. W. Dutchman, Swaffham, Norfolk; Dr. J. Morel, Sanck, Belgium; Mr. Walter Moorhouse, Wakefield; Mr. Miles Doughty, 26 and 27 Blackfriars Road; Mr. W. A. Gostling, Diss; Mr. H. Crawley, 19 Phoenix Street, Somers Town; and Mr. G. N. Stoker, the Laboratory, Somerset House.

#### CORTX RHAMNI FRANGULÆ, AND ITS PREPARATIONS.

Mr. H. C. BAILDON read a brief Paper on this subject, describing the value of rhamnus frangula as a medicine, and advocating its more general introduction.

Mr. INCE said he approached the subject of Mr. Baidon's Paper from an entirely personal motive. A great part of the speaker's occupation was sedentary, and his habits induced constant constipation, which was very hurtful in its effects. There



was a difference between testimonials in favour of any preparation and a personal testimony as to its effectiveness. He could bring forward his own private testimony with regard to the use of the drug under consideration. He first became acquainted with this drug some years ago when Mr. Baildon read a paper on the subject at Edinburgh. It described the manner in which the drug was used by the Dutch. They were in the habit of taking the rhamnus in small quantities—half an ounce of the bark was put in a pint of water and afterwards evaporated to half-a-pint, and taken in ordinary doses of three table spoonsfuls. So far as his personal testimony was concerned the effect of the drug was marvellous. The bark was exhausted by cold water, and when so exhausted was concentrated into liquor. The method employed seemed to leave nothing to be got out of the bark. It made an attractive looking liquor. The *cortex rhamni* had an agreeable taste and produced no bad after effects. He thought it deserved more definite notice than had hitherto been accorded to it, and it might be added to the list of substances for the use of pharmacists.

Mr. GILES considered the especial character of *cortex rhamni* was the invigorating stimulus which it gave to the bowels; it regulated the condition of the functions of the body, and he did not think its action was confined to the bowels. It was not only the best, it was the only aperient we had. Other so-called aperients were purgatives or cathartics. Instead of its use being more constantly required when recourse was had to it, the reverse was the case; persons gradually required to take less doses to produce a certain effect than that which was originally taken to produce such effect. He had reason to believe that the action of *rhamni* in restoring the regulation of the alvine action in females led to other regulations. Mr. Baildon had been the means of introducing to medical practice a most valuable preparation, and the more it was investigated the more it would be approved, and it must ultimately find a place in the official list of pharmaceutical preparations.

Dr. DE VRIJ agreed in the remarks of the previous speakers, and said that rhamnus frangula was very much used in Holland, and contrary to the majority of such purgatives, the same dose always produced the same effect.

Mr. L. SIEBOLD said that he had known the drug used in Germany for the past twenty years, and it was found a very pleasant and wholesome purgative. Considering the intercourse carried on between different European countries, it seemed strange that a medicine of so much value should be used in one country and not in another.

Professor BENTLEY was glad to hear the observations on the merits of a substance which was comparatively unknown in this country. Having had the opportunity of examining the plant, he might say that in Germany it was recognised as a medicine of considerable value. He would like to hear whether it had been used at the Bristol Infirmary, and with what results. It was desirable that the testimony of physicians, as well as of pharmacists, should be obtained to its value. The question again arose whether it was not essential to introduce in the Pharmacopœia a secondary list of medicines of established reputation in use upon the continent.

Mr. BAILDON said that the medicine had been used with considerable success in private practice, and he believed that it would be introduced at the Edinburgh Infirmary.

The PRESIDENT observed that as soon as Mr. Baildon brought the substance forward at Edinburgh he procured some samples of it. He had tried it on himself, but did not trace any definite action beyond what was ordinarily produced by other purgatives.

#### THE PRESENCE OF LEAD IN LIQUOR AMMONIÆ ACETATIS.

By Louis Siebold.

In conducting some analyses of water the author detected lead as an impurity in a solution of acetate of ammonium, which he employed as a test solution. Suspecting that this impurity might also occur in the strong liquor ammoniæ acetatis used by pharmacists, he examined ten samples of this substance obtained from different retail establishments, and found that eight samples out of the ten were contaminated with lead. He also detected traces of that metal in a specimen of liquor ammoniæ acetatis of the Pharmacopœia strength. In the course of further experiments on this subject, Mr. Siebold found that solutions of acetate of ammonium have the power of dissolving lead from glass, and quoted instances in which samples of that solution, which had been proved to be quite pure, were found contaminated

with lead after they had been kept for four weeks in glass bottles containing that metal. He, therefore, recommends that liquor ammoniæ acetatis (British Pharmacopœia), and especially the concentrated liquor used by many chemists for making the weaker preparation, should be stored in glass bottles free from lead.

#### NOTES ON SCAMMONY.

By Thomas Greenish, F.C.S.

The result of a microscopic examination of different samples of virgin scammony may at the present time possess some interest. I was induced to undertake this subject from having observed that the presence of starch was usually detected by iodine, and that little attempt had been given to determine the particular kind of starch granules, whether of wheat, or those peculiar to the scammony root itself. The scammony which appears in English commerce is principally of four kinds, virgin scammony, Angora scammony, Syrian scammony, and Aleppo scammony. Of the virgin scammony, not more than 800 lbs. arrives in this country yearly, none of which is again exported. Of the Angora and Syrian scammonies, about half a ton each are annually imported. Of this quantity, half remains in this country. Of the Aleppo scammony, about one ton annually arrives in London, only half of which is again exported. The Angora and Syrian scammonies vary in amount of resin from 46–76 per cent., while the Aleppo contains about 36 per cent. only, the remainder being impurity. We have thus one ton of adulterated scammony remaining in this country every year, the adulterations being wheat starch, wood ashes, earth, gum arabic or trajacanth, pounded scammony roots, &c.

The starch granules peculiar to the scammony root are for the most part compound, composed of two, three, and sometimes more granules; in shape the single granules resemble those of tacea—muller-shaped—with dihedral base, and the hilum approximates to that seen in the starch of orris root. With polarised light the arms of the black cross run down in the direction of those lines marked on the grains. Occasionally a lenticular grain is met with, but the hilum or markings about the hilum serve to distinguish it from that of wheat starch, to which it otherwise bears a close resemblance.

The starch grains from the scammony root vary very much in size. About the centre of the root, where the texture is loose, some granules will be found very large, at the same time in company with these will be found a good many of very variable size.

From an examination of a variety of samples of virgin scammony, I may state, as a result, that the *lump* was in every instance free from the starch of scammony root, or any other starch; that every sample of powdered virgin scammony contained more or less of the scammony starch, and some of them a little wheat starch in addition. A few also contained particles of the tissue peculiar to the root, with the starch grains still in it, and I would observe that the examinations here referred to were made on the finest samples of virgin scammony.

In these investigations I think it very desirable, having determined the presence of starch, to distinguish the granules of the scammony starch from those of wheat. I consider that the presence of the scammony starch indicates an admixture of inferior scammony, and more especially when it is accompanied by some of the tissue of the root. There exists a theory to account for the wheat starch—that it is used to prevent the semi-solid gum resin from sticking to the hands. If this were correct I should expect to find it, especially in that powder which adheres to the outside of the lumps of scammony, constituting what may be termed the bloom on it, but I do not find that to be the case in the samples which I have examined; neither does the greyish white powder which covers the lump consist, so far as I have observed, of chalk. It seems to me merely the particles of scammony reduced to a powder by the friction of the lumps against each other, and is of the same quality in every respect as the lump from which it has been detached. I can only account for the presence of starch in powdered virgin scammony by reference to the practice of picking the virgin scammony in lump from the chest, and that after a good deal of picking there must remain a quantity of fragments too small for further picking but not for grinding, and to this must be added the fact that sometimes in a chest a good piece of virgin scammony may have a very inferior one stuck to it so as to escape observation. It is much to be desired that flour and starch, when spoken of in connection with scammony, should not be considered synonymous. I have never met with cellular tissue such as I should expect to find if flour had been



present. It is an interesting question whether the gum resin possesses any value over the more uniform and less costly resin obtained from the dry root. If it should prove that the resin is equally active and more reliable than the exuded gum resin, then the pharmacist would be independent of the Greek of the Levant or the Turk nearer home.

I have examined the mineral matter scraped from the outside of a fine specimen of the root, and find it to be, as already shown by Professor Attfield, a calcareous earth which effervesces with hydrochloric acid, indicating that it was grown on a chalky soil.

Mr. HANBURY regretted that Mr. Greenish had not sent the specimen for examination to which he had alluded in his Paper.

Mr. GILES thought there should be some conclusion arrived at as to the using of virgin and gum scammony. There seemed to be an arbitrary kind of principle.

Dr. REDWOOD said it had not been conclusively decided which was the better of the two and whether there was any difference between them. There were certainly some persons who were advocates of resin of scammony, and some who considered that virgin scammony was more active and more to be relied on. And as it was found that there were two classes of advocates which believed that their modes were equally effective, in order to give them the option it was decided to give them leave to select and proscribe that mode which they preferred. That was the motive which led to the introduction of the new form of the resin of scammony in one case, and its not being adopted in the other.

A group of papers referring to hydrocyanic acid followed. The first, by Mr. Barnard S. Proctor

#### ON THE DILUTED HYDROCYANIC ACID OF PHARMACY,

was read by Mr. F. Baden Bengel. We are compelled to postpone the publication of this paper in which the author describes experiments designed to ascertain the cause and the remedy for the great variation in strength of the hydrocyanic acid of the shops, which has been pointed out by several previous writers. He concludes that the official acid does not lose strength by evaporation so speedily as has been sometimes stated, and shows that an alcoholic solution of a similar strength degenerates at a lower rate, and that a solution of the acid in ether is still less liable to variation, both from the greater affinity of the ether for the acid, and from being more volatile the ether escapes in about the same ratio as the acid. He also points out that the old method of extemporising the medicinal acid by decomposing cyanide of silver by hydrochloric acid leaves nothing to be desired but economy, and adds a formula by which similar results can be obtained at less cost. He concludes that the cause of the observed irregularities in strength has not yet been established, and the right remedy has probably yet to be pointed out.

The following three Papers were then read by their respective authors.

#### NOTES ON SOME RECENTLY PROPOSED SUBSTITUTES FOR BRITISH PHARMACOPEIA HYDROCYANIC ACID.

By W. A. Shenstone.

The author described some experiments on the stability of a solution of hydrocyanic acid, one-tenth of the B.P. strength, and of dilute solutions of zinc and potassium cyanide.

A solution of hydrocyanic acid containing .185 p.c. of real acid was placed in a white glass bottle, covered with paper, and exposed in the dark for one month, it was then found to be quite free from hydrocyanic acid; when, however, it was kept in a stoppered bottle in the dark, and only occasionally opened, its strength at the end of two months was only reduced to .183 p.c. A solution containing 2.28 p.c. under similar conditions lost three or four times as much in proportion. When the acid was kept in stoppered white glass bottles in the dark, and frequently opened, the following results were obtained:—A, opened 28 times, was reduced from .205 to .202; B, opened 56 times, from .205 to .194; C, opened 84 times, from .205 to .194; D, opened 112 times, from .205 to .195.

These numbers seemed to show that when the strength is reduced to .195 p.c. or thereabouts, the loss from volatilisation is practically nothing unless it is very much exposed, as, for instance, by leaving out the stopper of the bottle. To ascertain the effect of light on such a dilute acid, a white glass stoppered bottle, containing a solution of .206 p.c. strength, was placed in diffuse daylight, and another exposed to the sun for

some hours daily for a month; the first then contained .195 p.c., the second .199 p.c. As the portion which had been subjected to the most active treatment was the stronger, part of the loss in the kept bottle in diffuse light may have been due to defective stoppering, and this is to some extent confirmed by the strength being reduced to the point at which volatilisation appears to cease.

The author concluded from these experiments that a much diluted solution of H.Cn. is considerably more stable than that now in use, and in conclusion showed that a further point in its favour is that, owing to its slight solubility, a rapid determination of its strength may be made from time to time. The process he adopts is to measure 20 c.c. of the diluted acid into a stoppered bottle containing some caustic soda, rinsing the pipette used for measuring it, which should be graduated in cubic centimetres (and costs 1s. 6d.), refilling it with a solution of silver nitrate containing 6.296 grains to a litre, and dropping this into the bottle which contains the H.Cn., constantly shaking until turbidity is produced; the number of c.c. used gives the percentage, thus, 9 c.c. indicates .09 p.c., and 19 c.c. .19 p.c.

Zinc and potassium cyanide. Solutions containing amounts of this salt equivalent to 2 p.c., and .2 p.c. were put into white glass stoppered bottles and kept, one of each in the dark, in diffuse daylight, and in the full light of the sun for a month, being frequently opened; in none of these cases was there any depreciation of strength, which shows that this substance is considerably more stable and reliable than the dilute hydrocyanic acid treated of at the beginning of the Paper, though the legitimacy of its use, unless when authorised, was questionable.

#### HYDROCYANIC ACID.

By Louis Siebold.

The writer referred to the changeable and unsatisfactory nature of the hydrocyanic acid of the British Pharmacopœia, and contrasted with it the stability of cherry-laurel water and bitter almond water, which are so generally prescribed in Germany in place of hydrocyanic acid that the latter is not mentioned at all in the German Pharmacopœia. He pointed out that these waters, which are about 20 times weaker than the acid of the British Pharmacopœia, are not pure solutions of hydrocyanic acid in water, but that they contain a volatile and other constituents besides; and that the British chemist could, therefore, not dispense them instead of the acid without the full concurrence of the medical profession. He had conducted a series of experiments with the object of deciding whether the greater stability of cherry-laurel water is due to the highly diluted state of its hydrocyanic acid, or whether it is due to the fact of the latter being present in it, partially at least, in organic combination. He stated that a mixture of hydrocyanic acid (British Pharmacopœia) and water which he prepared, of the same strength as the cherry-laurel water of the German Pharmacopœia, kept exceedingly well for a month, although the bottles containing it were opened three times every day, each time for about a quarter of a minute. The same mixture kept in a bottle, which was securely closed and not opened until three months after it was filled, was found to have undergone no appreciable change during that time.

On the strength of these results, Mr. Siebold strongly recommended the general use of such a weak solution of hydrocyanic acid, of which 20 drops would be equivalent to 1 drop of the acid of the Pharmacopœia. He said that by adopting this simple and inexpensive plan, chemists could guarantee the patients to get the exact dose of hydrocyanic acid intended by the prescriber, and they would thus remove one of the greatest anomalies of practical pharmacy.

The writer next referred to Liebig's method for determining the strength of hydrocyanic acid, and pointed out that inexperienced analysts might commit very grave errors in this determination, though working strictly according to the author's instructions. Liebig and other authors stated that sufficient caustic potash should be added to the acid to render the mixture distinctly alkaline; but this, Mr. Siebold contended, was incorrect, because the mixture might have a strongly alkaline reaction and yet contain a large quantity of free hydrocyanic acid. Unless sufficient, or rather more than sufficient, potash was added to convert the acid completely into cyanide of potassium, an erroneous result would be the inevitable consequence. This mistake was the more likely to be made because most authors caution against the use of too large an excess of potash, which also impairs the result. The writer also quoted the results of



his experiments, showing the extent of the errors which would result from the use of an insufficient amount of alkali.

#### ON THE PRESERVATION OF DILUTED HYDROCYANIC ACID.

By Mr. John Williams, F.C.S.

IN order to ensure a less variable preparation than that now in use, it had occurred to the author to try some experiments with glycerine as an aid to the preservation of dilute hydrocyanic acid. The power of this substance in preserving hydrosulphuric acid had been known to the author for some years. An aqueous solution of this gas exposed to light is completely decomposed in twenty-four hours, but if 25 or 30 per cent. of glycerine be added to the water the solution may be kept unchanged for months.

A preliminary experiment was to make two 2 per cent. solutions of hydrocyanic acid, one in pure water, the other in equal proportions of water and glycerine. After two weeks the first was found black and spoiled; the second had retained its original appearance, and on testing was found perfect in strength.

The cause of the rapid decomposition of the first sample was that no mineral acid had been mixed with the water. Makers always add a small proportion of hydrochloric acid, without which it is impossible to preserve the dilute hydrocyanic acid at all.

The next experiments were therefore directed to the comparative testing of a solution which contained 50 per cent. of glycerine against that made in the ordinary manner. There was no mineral acid in the glycerine solution. The strength of hydrocyanic acid was 2 per cent., as ordered in the Pharmacopœia.

In the first place samples were kept under the most favourable conditions. After three months they were tested. The aqueous acid yielded 1.80 per cent., that made with glycerine 1.96 per cent. Other samples were left for two months in bottles half filled, loosely stoppered and exposed to diffused light. The strength of the aqueous solution was 1.80 per cent., that of the glycerine solution 1.96 per cent. But in three months the former had fallen to 1.32 and the second only to 1.84 per cent.

Other experiments were made with higher percentages of hydrocyanic acid, and also with lower proportions of glycerine. It was found that very large proportions of hydrocyanic acid were not retained in full strength; one, for example, made with 16.24 per cent. falling to 14.64 per cent. in the three months. But in these further experiments the weak solutions, 2.12 per cent. and 4.12 per cent., kept perfectly. Proportions of glycerine down to 15 per cent. of the bulk were found equally as effectual in preventing decomposition as the larger quantity at first used.

Blue glass was not found to have any advantage over white glass in these experiments, though it might be desirable to use blue bottles as a means of distinguishing the acid in the dispensary. Price's glycerine was found to be the best; another make caused the acid to assume a slight yellow colour. The Pharmacopœia process of testing was in all cases employed. The author acknowledged the assistance he had received in the various testings from Mr. Everson.

The CHAIRMAN said that Mr. Proctor's Paper showed the usual amount of research and labour which he expended on everything which he undertook. With respect to Mr. Siebold's contribution, Mr. Groves did not see, except on the point of permanency, why such a strong acid should be used. A difference of opinion was expressed in Mr. Williams' Paper, in which the addition of a mineral acid was considered necessary.

A vote of thanks was then accorded to the respective authors of the Papers, after which Mr. Rimmington believed that more prominence seemed to have been given to the subject than it merited. For the concentration of acids he thought corked bottles were much better than a stopper bottle. It would keep better because the contact between the two surfaces was closer. He objected to the addition of ether.

Mr. SCHACHT was surprised to hear Mr. Rimmington speak lightly with respect to the difference of various samples of acid. He (the speaker) could give an illustration of one sample which contained 0.12 per cent., and another of 1.9 per cent., which was an important difference. He thought the most important contribution to the matter would be any suggestion which would enable them to keep the strength of Scheele's. It was necessary to be quite certain that they were not having their Scheele's acids being gradually reduced to about half their strength. Some

short time since a quantity of acid, of the strength of 4 per cent., which he had placed in a bottle, was reduced in one week to about half its strength—to about 2 per cent.

Mr. WILLIAMS considered it probable that the cherry laurel water owed its preservative properties to its having an essential oil which was not diffusible in solution.

Mr. SQUIRE said that some forty years ago Scheele's prussic acid was much in use; the great objection to it was its loss by keeping. The 2 per cent. strength was then adopted, and it had thus remained ever since, and he hoped that what had been in use so long would not be overthrown without due consideration. He believed that prussic acid would keep for a very long time, and from his own experience it would be advisable to keep to the 2 per cent. strength.

Mr. GILES said the question, as a chemical one, appeared to be already settled. As a practical question the difficulty he thought had been very much overrated, but as a scientific question he did not think it had. By the exercise of moderate care one might keep prussic acid within those bounds of variation which were considered very important to observe.

Mr. ALLEN, referring to some suggestions made by Mr. Proctor, said it seemed useless to take so much trouble to preserve hydrocyanic acid when it could be prepared so easily.

Mr. SIEBOLD considered that everything that was possible should be done to remedy the evils existing, so far as they could, by their own experience and knowledge, rather than at the instigation of public analysts or magistrates.

The PRESIDENT then announced that two distinguished visitors from France had arrived.

Mr. W. W. STODDART, F.C.S., then further explained the new lactometer, and gave some interesting details as to analyses which he had made of butter, milk, and lard.

Dr. REDWOOD was much obliged to Mr. Stoddart for what he had laid before the meeting. There might be an adulteration of butter with other fat than that of the fat of butter which could be detected by the apparatus before them, or other similar means, *i.e.*, there might be a fat which would differ entirely in composition from the ordinary fat of butter—differing in the proportion of constituent parts—and which therefore would have a different melting point; and seeing that stearine and palmitine were not acted upon by solvents in the same way and extent that oleine was, it would be quite possible to indicate such a fact. What he held, however was, that if butter, instead of having been clumsily adulterated, had been dexterously adulterated, and if the foreign fat which was introduced was a fat similar in composition to the butter fat—if the approximate constituents which presented themselves were in the same proportion as those in ordinary butter—then it still remained to be shown how their presence could be indicated. If the apparatus before them would indicate the presence of foreign fats under such circumstances as he had alluded to, certainly a great and progressive step would have been made.

Mr. ALLEN said that he had not been so successful in his experiments as had Mr. Stoddart.

Mr. EGIN had tried the apparatus several times, and he had found no difficulty in arriving at similar conclusions to those to which allusion had been made. Mr. Stoddart had been doing for months what the London analysts had been unable to do—he had condemned several samples of butter.

Mr. STODDART, speaking of what took place eight years ago, said that 300 tons of butter were sent out of England that had only 30 per cent. of butter in its composition. If butter with 20 per cent. of fat in it was obtained and tested, the butter would rise to the top, and what was foreign to it would go to the bottom. After some further explanations Mr. Stoddart considered that the apparatus under consideration had proved that there were two things in the chemical books of authority which were wrong. Those books stated that ether would remove the fat from milk, and it was also generally supposed that nothing in the way of meat fat would dissolve in cold ether. Ether would dissolve butter, but it would not dissolve lard; and the ordinary ether would distinguish between the latter and the ordinary fats which were used by persons.

Before the adjournment for luncheon, Mr. T. H. H. said that he had great pleasure in inviting the President and friends of the British Pharmaceutical Conference to dinner that evening at his residence in Queen Anne Street. He would be happy to accommodate as many as his house would hold.

Professor ARFIELD added that he should be very pleased to receive to dinner in the evening, at the Inns of Court Hotel, any



gentlemen from the country who could not find room at Mr. Hills'.

#### THE LIQUID EXTRACT OF SARSAPARILLA.

By Mr. Barton.

At the present time sarsaparilla does not appear to sustain the high position once held by it as a remedial agent, and the question arises, Were its reputed good qualities a delusion, or are the usual preparations of it defective? Looking into the older compendiums of pharmacy, such as Dr. Jordan's "Pharmacopœia Universalis," it becomes strikingly apparent that considerable boiling was thought an essential, and it is beyond question that well-boiled decoctions were in great favour; but when it became necessary to meet the demands for concentrated preparations, or liquors, it was, and with good reason, supposed, that, however well decocting might exhaust the root, the continued application of heat dissipated into the surrounding atmosphere much of its peculiar aroma; also after a time the concentrated decoctions deposited in considerable quantity a something which would most likely contain further portions of their active properties. We now come to the truly "elegant extracts," the preparations *par excellence* for appearance and good keeping qualifications, those made by cold or moderately hot infusion and careful evaporation leaving, so far as appearance is concerned, nothing to be desired; but looked at in the light of a more than usually interesting reprint, which appeared in the "Pharmaceutical Journal" some thirty-one years ago, of a Paper read by Mr. T. J. Husband, of the Philadelphia College of Pharmacy, I much fear these "elegant extracts" are at the bottom of the present lukewarm reputation to which in this country the drug has descended. Mr. Husband advocated the use of alcohol in the process for preparation of sarsaparilla, and expressed fear that the permission to make compound syrup by a cold water method would result in the destruction of its valuable character. His experiment and the report of the committee to whom his Paper was referred appeared well worthy of re-pensal and consideration at the present time; bearing this in mind, I have for the last ten years departed somewhat from the letter of the official process, and thrown rather more spirit into the fluid extract in the following manner:—Each ten pounds of select fibrous root, after being dried and coarsely powdered at a loss of about 8 per cent., has been equally moistened with a gallon of dilute alcohol, containing 25 per cent. of 60 o. p. spirit, and set aside for ten days, then pressed, giving up 65 to 68 ounces of fluid, the pressed root well worked up with 5 gallons of water, at 160°, set aside for about 16 hours and again pressed, the watery solution decanted and evaporated to about 10 pounds, filtered, and further reduced to make with the spirituous portion 80 fluid ounces. Prepared in this way the liquid extract retains more of the taste and smell of sarsaparilla than a liquor made in strict accordance with the latter would do; still to my mind it is not a satisfactory preparation, nor in any respect equal to the following unorthodox sample. Taken 40 ounces similar root, dried and coarsely powdered, moistened with 40 ounces proof spirit, set aside for 10 days, pressed from it 20 ounces, macerated the pressed root for 16 hours with 15 lbs. of water at 160° strongly pressed, decanted the liquor into a water-bath, adding 8 ounces of sugar, and evaporated to produce with the spirit portion 40 ounces, each fluid ounce representing one ounce of the root. Thus prepared the proof spirit is very much charged with the odour and taste of sarsaparilla, and has to a high degree the frothing characteristic. Again, the addition of a little sugar to the aqueous solution exerts a marked influence during evaporation, filtering being unnecessary, the finished product depositing scarcely anything. It may be said that there is considerable loss of spirit. Loss I admit, but waste, I do not think, can be charged against this process; that remaining in the bulky pressed powder would be rapidly diffused in the hot water, and although dissipated during subsequent evaporation, would leave in the saccharated solution what it had dissolved. One further experiment—1 lb. transversely cut select root was digested as directed in the Pharmacopœia in two waters at 160°, kept hot during the 12 hours, the second portion pressed away by hydraulic force to exhaust the root, so far as this process can do so, the liquid reduced in water bath, at a temperature never exceeding 165°, to make the spirit for  $\frac{3}{4}$  viii. The root having been reduced and bruised was moistened with 16 ounces proof spirit, and set aside for four days, when it was again pressed, and from it obtained a fluid, a little of which added to water and shaken froths up, developing the odour in a

decided degree; or a few drops tasted leaves upon the palate a persistent, rather pungent taste, showing that digestion with  $17\frac{1}{2}$  times its weight of water at 160°, and pressed away by a force not always applied in practice, still leaves the root, retaining much that we should suppose ought to have been in the prepared liquor.

The President said that the meeting had to thank Mr. Barton for the short and lucid Paper detailing the interesting experiments which he had carried out. He was afraid that some of the papers on the order of business would have to be sacrificed on account of time running short. He (the President) must say that having examined the preparation with some care, he was of opinion that it was a very capital preparation, as it contained all that acrid principle upon which the efficacy of sarsaparilla so much depended. The saponine which entered into the preparation of the extract caused the frothiness and turbidity with which the sarsaparilla preparation was associated. He had been long of opinion that the virtue of a preparation of sarsaparilla was in proportion to the presence of the acrid principle. There can be no doubt that in certain maladies the use of sarsaparilla was becoming far more general than hitherto, and it was at the present time much used in the treatment of syphilis.

Mr. BARTON said that sarsaparilla was used by one of the principal medical practitioners of Brighton (Dr. Price) in the treatment of syphilis, sometimes in conjunction with mercury.

Mr. UMNEY asked whether Mr. Barton had determined the amount of extract taken up by the proof spirit.

Mr. BARTON replied that he had not.

#### NOTE ON THE ADMINISTRATION OF PHOSPHORUS.

By Mr. John Williams, F.C.S.

THE author had occasion to prepare a solution of phosphorus in alcohol and glycerine, 12 grains in 9 fluid ounces of alcohol, to which 9 fluid ounces of glycerine were to be added, giving  $\frac{1}{3}$ th of a grain of phosphorus in each fluid drachm. Cold alcohol scarcely acts on phosphorus; it is necessary to digest the phosphorus in alcohol rather under the boiling point, and in a flask or retort so arranged as to return the spirit. The flask should be immersed in a water bath and fitted with a good cork, through which passes a tube 3 or 4 feet long. The alcohol condenses in the tube and drops back into the flask.

The tediousness of this process induced the author to make other experiments, and he found that by reversing the process, that is, by dissolving first in hot glycerine and afterwards adding the alcohol, the solution could be accomplished in as many minutes as by the other plan hours were required, though a perfect solution was thus obtained. But, on cooling, a certain proportion of the phosphorus was always deposited. This proved that 18 ounces of the mixed liquids were insufficient to hold in solution 12 grains of phosphorus. Further experiments showed that the alcoholic solution was invariably acid, and, as might have been predicted, proved that during the long digestion in hot alcohol a part of the phosphorus became oxidised. The glycerine solution, on the contrary, scarcely reddened litmus paper.

A series of experiments were next undertaken with the view of discovering what proportion of phosphorus was really contained in the different solutions. The results, though not definitely conclusive, were interesting. The addition of a solution of phosphorus to a solution of bichloride of mercury produces by boiling phosphoric acid and a deposit of calomel. Theoretically, 1 grain of phosphorus should produce 37.9 of calomel. As each fluid ounce of the solution before referred to should contain  $\frac{1}{3}$ rd grain of phosphorus, it should produce, therefore, about 25 grains of calomel. When tested it was found to yield only 4 grains when the alcoholic solution was employed, but 11 grains when the glycerine solution was in question. In the former case it therefore appeared that nearly all the phosphorus was oxidised, while in the latter instance it might be estimated that only about half the phosphorus was dissolved, and consequently that  $\frac{1}{2}$ th of a grain was as much as could be held in solution in each drachm. As, however, some of the lower oxides of phosphorus will also reduce bichloride of mercury, and as some of the deposit might also have been phosphate of mercury, these experiments cannot be regarded as perfectly reliable.

The author considered that in consequence of the liability of phosphorus to oxidation, great caution ought yet to be observed in its administration, as it was extremely possible that the



maximum dose of unoxidised phosphorus had not been ascertained with sufficient certainty.

The PRESIDENT said Mr. Williams's Paper was entitled to every consideration at the hands of the Conference, and its author was entitled to their thanks. Phosphorus was now getting into great repute, owing, he supposed, to people's over-taxed brains requiring a stimulus of that kind some times. He was quite sure that Mr. Williams's experiments would tend to make the question of phosphorus more controllable than it had been.

Mr. UMNEY looked upon Mr. Williams's experiments as very valuable, but he wished to ask whether Mr. Williams subjected the alcohol to any special treatment before he made the experiments, in order to determine the amount of acetic acid, or aldehyde, in it?

Mr. WILLIAMS replied that he had used absolutely pure alcohol.

Mr. MARTINDALE said it seemed that phosphorus was very soluble in glycerine. What strength would Mr. Williams suggest?

Mr. WILLIAMS said he believed the best strength to be attained by one twenty-fourth of a grain in a mixture of equal parts of alcohol and glycerine. The dose was from one-thirtieth to one-tenth of a grain.

#### UTILISATION OF IODOFORM RESIDUES.

*By Edward Smith, Torquay.*

In this paper a slight modification in Wittsteiu's method of preparing iodoform is suggested. Instead of a retort and receiver, a flask fitted with a long tube bent at an obtuse angle is employed, so that volatile condensable bodies run back into the flask. The temperature is kept down to 63°-70° Centigrade.

The filtrate from the iodoform thus prepared contains potassic iodide, iodate, formate, and carbonate. The iodine of the iodide and iodate amounts to over 80 per cent. of the iodine employed. The author proposes to secure this by passing sulphuretted hydrogen— $H_2S$ —through the solution until the iodate is reduced to iodide, then warming to expel excess of  $H_2S$ , filtering, and cautiously neutralising with nitric acid, the solution now containing simply potassic iodide, formate, and nitrate. Lead nitrate is now added until all the iodine is precipitated as lead iodide, the other salts present remaining in solution.

By this process the whole of the iodine is readily secured in a form of not unfrequent use in pharmacy.

The results of the actual working are given, from which it appears that even "on a small scale," such as pharmacists would generally undertake, the loss of iodine barely exceeds 1 per cent.

The author draws attention to Rother's statement, that methylic alcohol yields better results than ordinary ethylic alcohol; but, from his own experiments, expresses doubts as to whether pure methylic alcohol yields any iodoform whatever, and suggests that the product obtained from ordinary methylic alcohol is derived from certain impurities, such as acetone, or other analogous body always present in ordinary wood spirit.

Further experiments to decide this point are promised.

The PRESIDENT said that not many pharmacists would like to make iodoform as Mr. Smith made it. Mr. Smith made a point of making everything that could be made with any advantage whatever. His Paper would no doubt be very useful to manufacturers. Possibly Mr. Williams might, perhaps, derive something from it, and also Mr. Umney. He was quite sure that the Conference would be unanimous in thanking Mr. Smith for his Paper.

Mr. STANFORD asked whether he understood that the precipitation of iodine by charcoal did not succeed?

Professor ATTFIELD said he never found any difficulty in obtaining iodine from such residues by simply adding a little nitric acid, as recommended by Mr. Edward Smith, and then iodide of lead. With regard to methylic alcohol, there was one very good method of obtaining it by treating the new wood spirit with chloride of calcium, evaporating to dryness, and pretty strongly heating the residue and adding water, which decomposed the crystalline formation. One or two rectifications of the product gave nearly pure methylic alcohol.

Mr. WILLIAMS said that in making iodoform there was no doubt in the world that a considerable loss occurred from the

volatilisation of the organic compounds. He did not think it would be possible to get iodine without a larger percentage of loss than Mr. Smith had stated. Ten or fifteen per cent. had always been his experience of the loss.

Mr. STANFORD said why he had asked the question was simply because the affinity of charcoal for iodine was very remarkable. This had been one of the greatest difficulties he had met with in making sea-weed charcoal instead of kelp. They could produce three times the amount of iodine, but there was extreme difficulty in washing the charcoal. They were obliged always to use caustic soda for the purpose. As an iodine manufacturer, he felt bound to discourage as much as he could any method of saving iodine. (A laugh.) He had never actually made iodoform himself. Various processes of the kind described by Mr. Smith had been constantly urged for the manufacture of iodine, but they had never been successful in the manufacturer's hands. The old process by the aid of manganese and sulphuric acid had still to be resorted to, although the apparatus had been modified to some extent. The reason why none of the new processes succeeded was that they would not produce iodine in a dry state fit for the market.

Mr. S. DANIEL read a Paper on

#### SYRUPS CONTAINING PHOSPHORIC ACID,

The publication of which, however, we are compelled to postpone. The drift of it will be gathered from the discussion.

The PRESIDENT said that Mr. Daniel's paper had been very well worked out. What they as pharmacists required was a rapid method of preparing syrups containing phosphoric acid. The great objection and obstacle to rapidity was the difficulty of using the precipitates. He preferred mixing the solutions hot—boiling them, in fact—and to use carbonate instead of acetate of soda. He continued putting in carbonate of soda as long as the effervescence lasted, and in that way he could make a syrup of phosphate of iron in about an hour. He found that acetate of soda did not prevent colouration, although it did to some extent. Some had supposed that the colouring was due to the presence of acetate of iron.

Mr. EKIN hoped that Mr. Daniel's Paper would be productive of much good. Great difficulty was often felt, especially in country places, on the occasion of any sudden demand for the syrups. He had found that the phosphoric acid solution submitted to phosphates would keep certainly for years, and the plan he always adopted was to keep a quantity by him already prepared, and to make a comparatively small quantity of syrup as was wanted. Without sugar the acid would keep perfectly well for three or four years.

The PRESIDENT asked Mr. Ekin whether he found it oxidise.

Mr. EKIN: Not in the slightest.

Mr. UMNEY said he could corroborate what Mr. Ekin had said. There could be no question that the new phosphoric acid would eventually be obtained without the precipitate being dissolved in the phosphate of iron. He had himself made a solution eight times the strength of the Pharmacopœia, which solution could be diluted so as to produce a syrup equal if not superior to that of the Pharmacopœia.

Mr. SMITH said that he made the acid solution with strong phosphoric acid, and he found that it left a deposit on the bottom of the bottle.

Mr. EKIN said he did not use the strong phosphoric acid, but the diluted phosphoric acid of the Pharmacopœia, and he proceeded exactly as the Pharmacopœia directed.

Mr. GILES said that the phosphate of iron, when first turned out, appeared to subside very tardily indeed; but after it had been once decanted it subsided very rapidly. The first subsidence was a very tedious process. He did not know why there should be so much difference.

The PRESIDENT suggested that the difference was due to the hydrate in the phosphorus breaking up more rapidly.

Professor ATTFIELD then read a paper by Mr. W. E. Heathfield, F.R.S.E., entitled

#### NOTES ON EXTRACTS OF ACONITE, BELLADONNA, HEMLOCK, HENbane, AND COLCHICUM.

The PRESIDENT was sure that the Conference would be unanimous in thanking Mr. Heathfield for his paper. In the early part of the paper he mentioned that he had been requested by Dr. Peiroira to see whether the active principle of conium might not be diminished or partly modified by coagulation, the alkaloids separating in combination with albumen. It was very



singular that quite recently some French chemist had been investigating this question, and he proved very clearly that there was a combination between the alkaloids and the albumens. If the albumens were separated we should, therefore, find them to contain quantities of alkaloids.

Mr. SCHACHT said he owed some apology to the members of the Conference, inasmuch as by some mistake of his own, his name had been put down as the contributor of a paper on this subject. He had, however, stated to the President that he might bring a matter on which he had been at work upon before the Conference. The little bit of work which he set himself to do was suggested by last year's Conference, when Mr. Ekin gave some experiments upon the drying of extracts, which would have been a little more valuable if he had been able to answer a question which was put to him at the time, viz., whether anything else but water had passed off during the inspissation. It occurred to him that if one had taken the special subject of conium, a more subtle material to work upon would have been the *succus* rather than the extract, *succus* being generally allowed to be more valuable as a medicinal material than the extract. It had occurred to him that it would be an interesting point to estimate if possible whether, in the process of the reduction of the juice of the plant to the condition of the extract, any very large proportion of the nitrogenous matter which originally existed in the *succus* was lost. He thought that Mr. Siebold, in conversation, had first suggested this investigation to him, according to the plan pursued in estimating the amount of nitrogenous matter in potable waters. As the plant did not come to maturity until comparatively late in the season, he had had but a very short time in which to pursue his investigations, and his results were imperfect at present. He tried to satisfy himself as to the exact quantity of nitrogenous matter of all kinds which existed in various specimens of *succus*, and then, by putting it through a process, to bring it to the condition of an extract, he hoped to estimate its proportion of nitrogen by a similar process. He had satisfied himself pretty well, by an average of a good many experiments, as to the percentage of nitrogen which the *succus* contained. He felt sure that it was distinctly and considerably less than that which the extract contained, but the exact proportion of one to the other he could not venture to say, as it was very variable in different specimens of the plant, although one element of difficulty in the process would be the fact—for he assumed it to be such, coming from so high an authority as Professor Wanklyn—that all nitrogenous alkaloids did not equally yield their nitrogen to this process. In his work, Professor Wanklyn gave two lists, of which he says that while the alkaloids enumerated in the one yield up all their nitrogen under this process, those included in the other do not yield up more than one half. That was a very remarkable statement, and if well-grounded should be borne in mind in the pursuit of such investigations as that under discussion.

Mr. EKIN said that when he suggested that Mr. Wanklyn's process might be applied to the estimation of alkaloids in vegetable substances, he felt, as indeed he felt on the present occasion, that the whole subject was involved in much vagueness and obscurity. There were great difficulties in the way, first and foremost being the difficulty of getting conia absolutely pure to start with. Even when this could be accomplished, almost any amount of ammonia might be obtained from it. He had tried to separate vegetable albumen, but it was very difficult to do so thoroughly, and even when it was separated it was impossible to know what other vegetable matters were in the way.

Mr. STODDART thought the subject was one well worthy of further investigation.

Mr. SCHACHT further remarked that the *Succus conium*, as usually expressed, contained a certain proportion of nitrogenous material. He should estimate the whole of the nitrogen in it by Wanklyn's process. If it were evaporated to the consistency of the extract, and the corresponding portion of the extract yielded only a lessened amount of nitrogen, he should infer that a portion of the nitrogen had existed as a volatile organic base. Then of course it would be a further question to enquire into as to the form in which that volatile organic base may have passed off, and this was a question in advance of the one which he had set himself to solve.

Mr. WILLIAMS and Mr. CATFORD having made a few remarks,

Mr. UMNKY mentioned that at a previous Conference a medical friend had experimented upon himself with the *Succus conium*, which affected his heels to such an extent that he could scarcely lift his feet from the ground.

Mr. HUNT then read an amusing Paper, full of curious information, on

#### CHINESE PHARMACY IN HONG KONG,

which was illustrated by a large model of a Chinese pharmacy and other objects of interest, including a small and delicately-balanced steelyard, which did duty for scales. He noticed as worthy of commendation the remarkable perfection with which the Chinese sliced their roots, but was unable to recommend their dentistry for "elegant and painless extraction." The *modus operandi* of the Chinese dentist was somewhat as follows: The operator, whose finger nails were very long and very sharp, removed an offending tooth by digging or cutting away with his finger-nails as much of the gum as was necessary to loosen the tooth, which was then pulled out with the fingers. Mr. Hunt said he had on one occasion witnessed this sickening operation, which lasted about twenty minutes.

The PRESIDENT said he was quite sure the meeting would thank Mr. Hunt most cordially for his interesting Paper, for papers of that kind were most useful in relieving the monotony of so much scientific matter.

Mr. HANBURY agreed with Mr. Hunt that there were some things which the Chinese did to admiration. One was the slicing of roots and woods. They apparently had some clever contrivance for doing this, and by inexhaustible patience they succeeded in producing a very beautiful article. Another thing for which the Chinese pharmacists were to be praised was the extremely thorough manner in which they powdered various substances, such as carbonate of lime, which they reduced to a remarkably soft and fine condition.

The PRESIDENT said Mr. Hunt had spoken of the "odoriferous Chinese." Did he allude to the odour of musk?

Mr. HUNT replied that he referred to the peculiar oily smell which characterised the Chinese.

Mr. FRASER said that as a visitor of the British Museum he might impart some useful information on the subject, which would be new even to Londoners. In some of the drawers of the botanical department, under the charge of Mr. Carruthers, there were the contents of a Chinese apothecaries' shop, three or four thousand years old. Many of the roots and leaves were the very things we have now in use and which were most estimated. Mr. Carruthers was desirous of information and assistance in arranging this collection, which was at present in confusion, and perhaps Mr. Hanbury and Mr. Hunt, who had knowledge of the subject from residence in China, might be willing to assist him in putting it in order.

The following Paper, by Mr. T. Haffenden, was read in the absence of the author by Mr. F. Baden Bengier.

#### ON THE CONFECTIONS OF THE BRITISH PHARMACOPEIA, 1867.

By Thomas Haffenden, Brighton.

CONFECTIONS are of very ancient origin, and have certainly advanced in some degree with the progress of chemical science, as for instance, Sir Walter Raleigh's Confection, with its forty ingredients, bears very unfavourable comparison with our Conf. Senna, our most complete confection. Still I think we are not perfect, and suggest additions and alterations. The confectious of roots are much used, but very liable to crystallise. I suggest the addition of glycerine with a view to prevent crystallisation, and making them more reliable as pill excipients; also that this class of confectionary might include preparations of lavender, orange, &c., that would be found useful and elegant as pill excipients, or in covering the taste of nauseous medicines, as, for instance, quinine ordered with Conf. Aurantii, would be very elegant and obviate the necessity of exhibiting acids very undesirable in some cases. Then I suggest a confect. simplex compound of, say, prunes, sugar, and glycerine would be very useful for such preparations as Conf. Scamm. Co. and Conf. Senna; and why not have a Conf. Jalape, Conf. Manna Co., &c., for children, and those numerous classes of persons who are unable to swallow pills. With respect to Conf. Sulphuris it is very elegant, but the sugar crystallises out: why not have a recognised form for the old favourite brimstone and treacle—we are often appealed to for the proper strength of it. The Conf. Terobinthine is one of our best confections. Here again, I would suggest that as the liquorice powder covers the flavour so well, my Conf. Lavard., instead of the honey, would cover the smell. Finally, we have no form for Conf. Cubeba: it is largely used in several hospitals, and there are consequently various empirical formulæ: why not have a standard preparation, that we may always fall back upon.



The CHAIRMAN said there were a great many points in the Paper worthy of attention, but he would ask them unless they had anything very particular to say upon it to forego their remarks, as the time was getting short. The next Paper in the list was that

#### ON THE INFLUENCE OF THE MEANS OF SUPPLY UPON WATER USED FOR DOMESTIC PURPOSES.

By M. M. Pattison Muir, F.R.S.E.

The author drew attention to the results of his examination of cistern waters, as compared with water from the main-pipe communicated to last year's Conference; he then proceeded to give the results of further experiments upon this subject. By direct experiment the author showed that sewer gases may be largely absorbed by water, and that the amounts of free and albuminoid ammonia in this water are thereby greatly increased. From the measurement of ammonias and nitrates in various cistern waters, the author concluded that those waters only are contaminated with sewer-gases which have been allowed to remain for some time undisturbed in the cistern, but that this contamination is in no case—so far as he could speak from his own experiments—so great as to cause the water to be unfit for domestic uses.

Mr. Groves then announced that his brother, who was at present in Italy, had also sent a long Paper on "Medicinal Plants in Popular Use among the Tuscans." As the Paper was much too long to read at this meeting he had himself made a short abstract of it which, with their permission, would now be read. The abstract of the Paper was then read as follows:—

#### NOTES ON SOME INDIGENOUS TUSCAN REMEDIES.

By Henry Groves, Florence.

HERBALISM in Tuscany is by no means rampant, nor has it been so for two or three centuries. This is to be attributed to the early establishment of hospitals, some of which were kept by monks who, in return for tithes of wine, oil, and corn, became the doctors of the peasantry.

The contadino seeks to heal leper ailments by wedding the curative with the culinary art, so he prepares numerous salads and fried meats, with several of the *Chicoracæ* which he finds on his own grounds.

There are, however, a few simples found in the cupboard of every housewife. For what could be done without the capitula of *Matricaria camomilla*? which are used as a calming antispasmodic, and also applied hot externally for removing pain. Then there are the flowers of mallow, violet, lime, orange, and elder, the leaves of mallow, orange, walnut, and myrtle, with the sobles of couch-grass and the roots of marsh-mallow. Then as a non-indigenous remedy tamarind takes a high place—tamarind for diarrhoea, tamarind for constipation, tamarind for every other ailment. All diseases are popularly ascribed to "riscaldamento" or heat, in the same way as the English ascribe not a few disorders to "bile," and the French to "glaires."

Yet there are persons who have a much more extensive Materia Medica, either obtained by observation, or handed down to them as the shreds of an almost extinct herb-wisdom which flourished under the worthies of the fourteenth and fifteenth centuries, when medical practitioners identified themselves with research on indigenous remedies more than is the fashion in our day.

A custom very prevalent in Tuscany is the administration of herb-juice in the spring. It is prepared daily by many herbalists, and is also ordered by the faculty, and thus comes under the notice of pharmacists. I give two receipts that have come under my notice.

- R. Beccabunga (vermica), Nasturtio acquatico, Fumaria, Cochlearia.  
R. Ortica, Bardana, Fumaria, Gallio.

Simple cherry juice is frequently used, and also that of the nettle. To all these succi it is usual to add a grain or two of Ferri Ann. Chlor., or a few grains of sulphate of soda, or sometimes a drachm or two of compound syrup of rhubarb. The treatment is usually continued for a month, and the quantity taken is from 3 to 4 ozs. of juice per diem.

Of the herb-lore of the people, alas! little else than the monsters and griffins of the plant-world remain. The story of the mandrake still opens the eyes of both little and big children, as some wise one tells of the dreadful power of the *Mandragora*

*superiore*, of its long and slow growth, and of its deadly power over those who seek to uproot it. An old herb-collector whom I employ thanks God that when he discovered a mandrake it proved to be a false one, or he would have been a dead man!

Before proceeding with the plants arranged in their natural order, let me observe that viper broth is gone out of fashion, and the pharmacist is spared keeping the reptiles and the pin-cers with which they were handled. Snail poultices are still used. The snails are applied alive; the shell being crushed or partially removed, the snails are set upside down on a piece of coarse paper, they are then sprinkled with a little vinegar and applied at once to the soles of the feet, on which they produce an irritation greater than mustard, and which is supposed to be efficacious in some cases of fever.

The author then commencing with *Ranunculacæ* gives an account of the virtues popularly ascribed to each plant. In an abstract like the present it will be possible to print out one here and there only of the numerous remedies he describes in his interesting Paper.

*Ranunculus sceleretus*, when bruised, is used as a blistering agent. The root of *Nymphæa alba* is used both in poultice and electuary for the cure of piles. The flowers of *Cheiranthus cheiri*, called yellow violets, boiled in oil, yield an oil used for enemata. *Viola tricolor* in infusion is given as a mild cathartic to children. The oil of *Hypericum perforatum*, obtained by boiling, is used externally for worms. The tears that flow from the cut shoots of the vine make a slightly astringent eye-lotion. The flowers of *Amygdalus persica* are used for preparing a syrup, which, if prepared by cold process, possesses sedative properties, and has the taste of the syrup of Virginian cherry bark. The fruit stalks of the cherry form a popular diuretic. Blackberries, called "More di Macchia," yielded chiefly by *Rubus discolor*, are employed in making a very generally used syrup. The leaves of the hramble are used in decoction for relaxed sore throats. The fresh root bark of *Punica granatum* is an efficient vermifuge. The powdered leaves of *Myrtus communis* are used for dusting babies. The distilled water of the leaves is sold at the cheap rate of 5d. per half-gallon flask, and is much used as a corroborative lotion for the toilet of ladies. The seeds of *Cucarbita maxima* and *C. Pepo*, which are extensively cultivated but not indigenous, are used for expelling tapeworm, and are effectual in doses of not less than 4 or 5 ounces of the peeled seed. In the place of uva ursi, which in Tuscany is extremely rare, several species of vaccinium are employed. The bark and young shoots of *Phillyrea vulgaris*, called "Lillatro," which grows plentifully in the fever-stricken Maremma, are used as a febrifuge, and its alkaloid phillyrine is also employed in doses double that of quinine. It is supposed to increase the quantity and quality of milk when eaten by cattle. Excellent sweet oil can be prepared from the ripe berries of Privet, but a friend of mine who experimented with them told me that they did not pay the expense of collecting. *Gentiana lutea* is not found on the Tuscan mountains. In the herb shops of the Sempliciotti one finds the so-called lesser gentian, the large roots of which are furnished by *G. asclepides* and *G. cruciata*. *Convolvulus soldanella* has been employed as a purgative. From the green leaves of henbane and belladonna, boiled in oil, an oil is made. It is much used in frictions. *Digitalis purpurca* is not indigenous. *D. lutea*, a very common plant, is sometimes employed. *Verbena officinalis*, called "Erba sante," is used boiled in vinegar as a poultice for liver complaints. It is used taken internally for the same purpose and for dropsy. The seeds of *Vitex agnus castus*, slyly called "Pepo pei monaci," are supposed to have cooling properties. The *Labiata* contain a host of aromatic plants which give a distinct odour to our barren hills, especially under the fierce sun of summer. The following are used as carminatives:—*Mentha rotundifolia*, *M. pulegium*, *Ariganum vulgare*, *Thymus serpyllum*, *Calamintha parviflora*, *C. arvensis*, *C. Chiropodium*, *Melipa officinalis*, &c. *Plantago lanceolata* is used for making a distilled water used for the eyes. This water had a reputation for staunching blood. *En passant* I may mention that there is a water distilled wholly from herbs, according to its author, Dr. Capodieci, of Naples, which possesses the property of coagulating blood in a greater degree than *Ferri perchloridum*. I have seen it employed with the best success, and it has been extensively used by Professor Schiff, who reports it as a wonderful and most useful invention. What can it be? The seeds of hemp are used in emulsion for irritation of the bladder. *Tuscus baccata* has been employed instead of *Digitalis*, in doses of from 8 to 16 grains. *Pinus pinca* yields the little almond-



like seed called *Pinocchio*, which is sometimes emulsed as the almond. *Smilax aspera*, or native sarsaparilla, grows abundantly on the stony hills. The roots of *Asparagus tenuifolius*, a beautiful little species growing plentifully in moist woods round Florence, are used as a diuretic. From the tuberous roots of *Asphodelus macrocarpus*, called "Porraccio," is made the Aphodel spirit in the Marranna. *Colebitum autumnale* is very common, and its tincture is sometimes used externally. The root of *Arisarum vulgare* is used sometimes as an emetic instead of ipecacuanha. Several species of ferns are used for the expulsion of worms. *Asmunda regalis* has been used as well for a tonic for children.

In conclusion I may say that the collection of herbs generally takes place, not at some phase of the moon, but on some saint's day. Every plant is supposed to possess its full virtue at that particular epoch, but this does not prevent herb-collectors from securing a good gathering whenever they get the chance—the saint kicks the beam when weighed against a few centimes.

The CHAIRMAN said: Gentlemen, you will hardly expect me to form a very unprejudiced estimate of my brother's Paper, but I do not think I shall be violating your confidence if I ask you to give a vote of thanks to the writer.

Professor ATTFIELD said that Mr. Muir's Paper, was a continuation of the Paper which he read at the last Conference on the subject. In a former Paper he stated that he found the water kept in the cistern of a house contained a larger quantity of nitrates than water taken from the main at the same house. He explained that result on the assumption that the water had absorbed a large quantity of sewer gas, which had become oxidised, yielding nitrates. In the Paper sent to the Conference this year by Mr. Muir, he stated that what he stated last year was the result of only two experiments, but that he has since made ten or twelve similar experiments, and with the result that he finds the quantity of nitrogen as nitrates caused by the action of sewer gas was much less than his two previous experiments had led him to suppose.

The PRESIDENT said that Dr. Wright had sent two short, but valuable, papers, which were too abstruse for discussion, but the points of which would be given by Professor Attfield. He was quite sure that the Conference would express its deep indebtedness to Dr. Wright for his valuable papers, which would greatly add to the value of the "Transactions."

Professor ATTFIELD then gave summaries of Dr. Wright's papers, which were entitled (1) "On the Essential Oils of Wormwood, Citronella, and Cajeput." (2) "New Derivatives from the Opium Alkaloids."

The PRESIDENT then read a short Paper "On the Preparation of Trimethylamine."

Mr. HANBURY proposed a vote of thanks to the President for his interesting paper.

Mr. WILLIAMS said he had listened with great interest to the President's paper, as he had had great experience in preparing trimethylamine. He generally prepared it from herring-brine. During last winter he had to prepare some considerable quantity from sprats. He had also used fresh herrings. Of course, the trimethylamine produced was more impure when the fish was distilled than when the brine only was put into the still. He wished to know whether the President found much impurity in the shape of a tarry oil of a brown colour.

The PRESIDENT replied that he found no tarry oil or discolouration whatever. There was, however, a light oil floating on the top.

Mr. WILLIAMS said he supposed that trimethylamine obtained by this process never attained more than a semi-solid condition.

The PRESIDENT said that he had evaporated it as far as he could go without diminishing its weight, but it never attained more than a semi-solid state. Allowing 10 per cent. of chloride of ammonium to remain in, it became sufficiently solid to dispense and manipulate. He understood that Mr. Williams obtained a larger proportion of ammonia to trimethylamine than he (the President) had obtained. He had only succeeded in getting about twice as much ammonia as trimethylamine, but he understood that Mr. Williams obtained eight or ten times as much ammonia as trimethylamine.

Mr. WILLIAMS said that was the case, but then he did not use carbonate of lime, but caustic soda. He did not know whether the President had come to any conclusion as to the source of trimethylamine, but he (the speaker) was of opinion

that it did not exist in the fish at all, but under the scales on the surface of the fish.

The CHAIRMAN: Gentlemen, we have now finished reading our Papers, but there are two other important matters which must engage our attention before we separate, the first being the arrangement of our place of meeting for the next year. You are aware that we have had a very pressing and kind invitation from Bristol pharmacists to go there next year, and the Committee recommend that we should accept the invitation, especially as the British Association will meet there at the same time. I therefore move that we accept the kind invitation of the pharmacists of Bristol to meet in that city next year.

This was carried by acclamation, and Mr. Schacht said he was sure they would not regret their visit to Bristol.

Professor ATTFIELD then read a report of the Committee as to the election of officers for the forthcoming year, submitting the following list of names, which was unanimously approved:—

President: Mr. Thomas B. Groves, F.C.S., Weymouth; Vice-presidents: Professor Bentley, F.L.S., M.R.C.S., London; D. Hanbury, F.R.S., London; W. W. Stoddart, F.C.S., F.G.S., Bristol; H. B. Brady, F.R.S., Newcastle-on-Tyne; T. H. Hills, F.C.S., London; R. Reynolds, F.C.S., Leeds; Charles Bourne, Bristol; and Peter Squire, London. Treasurer: G. F. Schacht, F.C.S., Clifton, Bristol. General Secretaries: Professor Attfield, Ph.D., F.C.S., London, and F. Baden Benger, Manchester. Assistant Secretary: R. H. Davies, F.C.S. Local Secretary: Mr. John Pitman, Bristol. Editor of the "Year Book": Mr. Louis Siebold. Editor of the "Transactions": Professor Attfield.

The PRESIDENT: I can assure you that I highly appreciate this renewed mark of your confidence. I had a great struggle this morning as to again acting as President, but my ideas were considered revolutionary, and it was decided, much against my wish, that I should again take office. All I can say is that I will do my best to serve you with something like efficiency, and I do not apprehend I shall have much difficulty in doing so, as the duties are not very onerous.

Mr. SCHACHT, in moving a vote of thanks to the local committee, said that its labours had been very arduous, and had extended over a long period. During the last few days they had all witnessed with what energy the committee had worked to carry out the multifarious matters connected with the meeting, and thanks were due also for the splendid hospitality which had been offered and was still offered to the members of the Conference. Mr. Carteighe and Professor Attfield had been untiring in their labours. With regard to Professor Attfield he might say that he did not know a single individual who would have devoted the time and attention which he had bestowed during the last ten Conferences in securing their success.

Mr. F. BADEN BENDER, in seconding the proposal, said that in coming to a house like that of the Pharmaceutical Society they expected to have a pleasant meeting, but he was quite sure that except for the exertions of the local committee it would not have gone off with so much *éclat*.

The motion was enthusiastically carried; Mr. Carteighe briefly acknowledging the compliment; he also paid a tribute to Dr. Attfield's untiring exertions.

The CHAIRMAN: I have great pleasure in proposing that the most cordial thanks of this Conference be given to the President and Council of the Pharmaceutical Society for the use of this building. We all know how well we have been treated by the President and Council, and to meet in the house of the Pharmaceutical Society is an event which may not occur again in the lifetime of any of us.

This motion was also carried.

Mr. T. H. HILLS (President of the Pharmaceutical Society of Great Britain) said that, in his own behalf and in that of the Council of the Pharmaceutical Society, he could only say that they were most pleased to have had the opportunity of helping the Conference by offering the use of their rooms. If at any time the Conference was unable to carry out the plan of meeting in conjunction with the British Association, the Council of the Pharmaceutical Society would only be too glad to be again honoured by the visit of the Conference.

Mr. GILES said he had a most pleasing duty to perform in asking the Conference to express its hearty appreciation of the admirable manner in which the President had presided over its deliberations. Mr. Groves brought the highest possible qualifications to the discharge of his duties as president; but he was also gifted with those minor but nevertheless important qualifi-



tations without which no chairman of a meeting could be efficient. It would be a source of great gratification to everyone to know that the services of a gentleman of such distinguished abilities as Mr. Groves had been secured to the Conference as President for another year, and he was quite sure that the pharmacists of Bristol would be as appreciative as his present audience of Mr. Groves' abilities.

Mr. MACKAY seconded the motion, and in doing so said he cordially endorsed all that had been so ably said by Mr. Giles. The Conference was indeed fortunate in having Mr. Groves as its President for two successive years.

Professor BENTLEY then put the motion, which was carried with acclamations, and the proceedings terminated.

### THE CONVERSAZIONE.

ON Wednesday evening, August 5, the proceedings of the Conference were inaugurated by a conversazione given by the Pharmaceutical Society at their house in Bloomsbury Square. Though not crowded, the rooms were fairly filled with pharmacists from all parts of the country. Probably between 300 and 400 were present. Much pains had been taken to provide an interesting scientific entertainment for the visitors. The success was unquestionable. Besides the exhibition of pharmaceutical products, which was, of course, on view, there were several scientific novelties which attracted considerable attention. Mr. Crookes, F.R.S., sent some apparatus illustrative of a very curious new law which he has recently observed. Briefly the experiments were these: a small bar of pith was suspended in a glass globe from which the air had been exhausted. On the application of the heat of a caudle to the side of the globe, the bar of pith was immediately repelled, revolving away from the heat. A contrary effect was produced by the application near the globe of a freezing mixture. The curious part of the experiment, however, was that in another globe, from which the air had not been withdrawn, exactly reverse results occurred, heat attracting, and cold repelling the bar. A third bar was contained in a globe in which the air had been withdrawn to exactly such a degree that no movement of the pith occurred. This discovery is not at present accounted for, but it seems like one which encloses within itself the germ of some important fruit. These experiments were most intelligently and patiently explained during the evening by Mr. R. H. Davies, F.C.S.

Several other scientific novelties were shown in operation. Messrs. Whitehouse & Clark had at work a remarkably ingenious electric apparatus attached to the model of an omnibus or tram-car, which quite automatically produced a complete record of each journey, showing every stoppage and the time occupied for every portion of the road, as well as the number of passengers at any moment both inside and outside. Messrs. Baker & Co., Messrs. Steward & Co., Messrs. Smith & Beck, and Messrs. Browning showed microscopes and other optical instruments. A magnificent Cape diamond and a number of mineralogical specimens were exhibited by Professor Tonnant, and in the same case a fine piece of crystallised gold was shown by Mr. Chandler Roberts, the chemist to the Mint. Messrs. Pindar & Co., too, were exhibiting in action their rotary pill machine. Mr. Geraut also showed in action his excellent and compact soda-water machine, and a syphon filter; also a number of syphons, gazogenes, and seltzogenes, of which we believe he is the only maker in England.

### THE EXHIBITION OF PHARMACEUTICAL PRODUCTS, ETC.

IN order to add to the interest of the meeting, the Local Committee had decided to hold an exhibition of pharmaceutical products and such other manufactures as more or less closely pertained to the profession. The Pharmaceutical Society placed its rooms at the disposal of the Committee, and Mr. Holmes, the curator of the museums, undertook the labour of superintending and arranging the display. It is certainly somewhat surprising that on such an occasion as this, when the pharmacy of this and other countries might be expected to be so largely represented in one gathering, the metropolitan manufacturers should not have shown greater avidity after space. In a commercial sense, the opportunity must have been valuable, and it is likely enough

that if a price had been put upon the cubic feet at disposal our esteemed manufacturing friends would have responded to the invitation much more eagerly. The fact is, they are not accustomed to have benefits bestowed upon them gratuitously, and this, we suppose, will partially account for the absence of many well-known names from the list we publish below.

These remarks, however, are by no means intended to imply that the exhibition presented anything like the "beggarly account of empty boxes" which Shakespeare has for ever associated with an apothecary's display. It was not large, but it was an extremely interesting collection, and it illustrated most effectively the high condition to which the art of pharmacy has been carried in these latter days.

The first and most striking collection which met the visitor was a large number of foreign living plants, exhibited by Professor Bentley. These occupied two sides of one room, and as many of the plants were small trees, reaching to the ceiling, the effect was most pleasing. The place of honour in the centre was assigned to "the hope of modern medicine," *Eucalyptus globulus*. Two little trees of this promising "blue gum tree" were exhibited, which had been grown from seeds in the Royal Botanic Gardens, and Professor Bentley had also gathered together an interesting collection of the products which have already been introduced with the object of utilising this interesting plant. Among these were tincture, syrup, extract, cigarettes, &c., prepared by Messrs. Savory & Moore; cigarettes and other preparations made by Mr. Besisto, of Melbourne, to whom much of the credit of the introduction of this tree into medicine is due; and also cigarettes and bon-bons prepared from the directions of Dr. Ramel by Messrs. Clin & Co., of Paris.

Among the other interesting plants in this collection may also be mentioned the *Erythroxylon Coca*, *Carludovica Palmata*, from which the material for Panama hats is obtained, camphor, tobacco, logwood, New Zealand flax, Barbadoes aloes, nuxvomica, cinnamon, canella, and many other plants of pharmaceutical and commercial interest.

The makers of scientific apparatus were well represented. Messrs. John J. Griffin & Sons, of Garrick Street, had the centre of one of the rooms, and had erected a fine trophy of the most varied apparatus, prominent among which was an enormous glass rotor and receiver. In connection with their show, and made by them, was Dr. Parkes' very complete set of apparatus designed for the analysis of food, water, air, &c., all packed in a case some three feet long by two feet deep and wide.

Messrs. Zimmerman, of Fen Court, Fenchurch Street, also had a considerable number of foreign electric apparatus; and in another room they showed Beindorff's steam apparatus for pharmaceutical laboratories, a most compact and useful piece of apparatus for a small laboratory, which we will take an early opportunity of describing more fully.

Mr. M. Jackson, of Barbican, also made a fine display of chemical and electric apparatus, with a collection of pure chemicals. There was also shown by this maker the collection of apparatus supplied to each student at the pharmaceutical laboratories.

Mr. Morson's collection of chemicals, though small, was remarkably beautiful; especially, a vase of glacial phosphoric acid in square transparent blocks excited much admiration. Pepsina porci, aconitine, narceine, meconine, podophyllin, and other rare products were among this firm's exhibit. Also, what was very interesting, a case showing most, if not all, of the varieties of opium—Turkey, Persian, Egyptian, Indian, English, Australian, &c. There was also an opium-smoking cabinet complete, with pipes and melting bath, as used by Chinese ladies.

Messrs. Hopkin & Williams were also well represented by their manufactures. Some re-distilled chloral hydrate and croton chloral attracted much attention. A series of oleates of mercury, containing 5 per cent., 10 per cent., and 20 per cent., was interesting. The first was a deep red liquid, the last almost the consistence of pomade, and of a brownish yellow colour. The other was medium in appearance. Methyl atropine and methyl strychnine were among the rare chemicals exhibited by this firm. The first is said to be of a much more deadly nature than atropine itself; the latter, strangely enough, though perhaps not exactly wholesome, is said to produce none of the tetanic effects of strychnine, but, *en revanche*, its effects, if injected through the skin, are of the most terrible character, similar to the bite of a snake.



A small display of Sarg's glycerine was noticeable for two sample bottles of "Krystallisirtes Glycerin." The crystallisation had unfortunately disappeared, but the glycerine itself was of the most dazzling whiteness. We believe this firm is the only one which has produced glycerine in any quantity in a crystalline condition. Several vases of it were exhibited by them at the Vienna Exhibition, and were probably the finest specimens of glycerine ever produced.

Messrs. Davy, Yates & Routledge had a good show of chemicals, especially of scale preparations. A bottle of potass. boro-tart. was among these, and was very handsome. It is presented in white scales of a silky appearance.

Messrs. T. & H. Smith, of Edinburgh, showed a globe of cantharidine, with some liquid cantharidine plaster, and some of their tela vesicatoria. Also a globe of meconine.

Messrs. Lynch & Co. alone represented the druggists' sundries houses. Their double-action tincture press was the most prominent object of their collection. By an ingenious mechanical arrangement a great increase of power is obtained in this press over those furnished with the vertical movement only. Some new pattern suspensory bandages, self-adjusting, and some machine-folded filters were among the novelties presented by this firm. A very pretty little corkserow with an ornamental top, especially adapted for Eau de Cologne corks, was also introduced. Messrs. Lynch had also on exhibition some exceedingly handsome cut smelling bottles.

Messrs. Southall Brothers & Barclay displayed a fine collection of pharmaceutical preparations and analysed drugs. Their system in regard to the latter is to offer a guarantee with the particular drug that it reaches a certain standard. Powdered opium, for example, was shown in bulk guaranteed to contain not less than from 6 to 8 per cent. of morphia. Many other specimens were on exhibition. Also small bottles of calcis hydras, prepared from white marble, each bottleful being sufficient for a gallon of liq. calcis, or for a quart of liq. calcis sacch. Messrs. Southall also showed one of their widely-known *Materia Medica* cabinets.

A *Materia Medica* cabinet was also exhibited by Messrs. Evans, Lescher & Evans.

A sample of benzoated lard, which had been exhibited at Nottingham in 1866, was shown by Messrs. Hearon, Squire & Francis. It was a little discoloured, but in point of sweetness and odour it was hardly the worse for eight years' wear.

Elegant pharmacy was in strong force; coated pills especially being a feature of the exhibition.

Mr. Hampson had a case containing specimens of bis sugar-coated pills.

Messrs. Richardson & Co., of Leicester, showed a large variety with a soluble pearl coating.

Messrs. Bullock & Cronshaw, of Philadelphia, sent over a prominent display of their productions in this line, sugar being the coating adopted by them. They also exhibited a number of sugar-coated granules of the more powerful medicines, accurately dosed.

Messrs. H. & T. Kirby & Co., besides pearl-coated phosphorus and other pills, showed a case of their "Glycecoles." These are very attractive-looking jujubes of a flat shape, and variously medicated. The basis is glycerine and isinglass, which forms an excipient for the medicine. For the application of gargles, tannin, carbolic acid, &c., this form is very useful, and some of the most nauseous remedies, aloe for example, may be swallowed in this form with scarcely the perception of any flavour except that of glycerine. Messrs. Kirby are now offering to chemists the material and the apparatus, with a license for producing these glycecoles. They also showed a selection of their very elegant miniature dispensaries.

Under elegant pharmacy should be classed the "Cachets Medicamenteux" of M. Limousin, of Paris. These are small double discs of wafer paper enclosing a dose of some powder, rhubarb, sulphur, reduced iron, &c., and stamped with the name. M. Limousin also showed some "precision" drop glasses.

Messrs. Roberts & Co., of Bond Street and of Paris, showed some beautifully made "perles," containing ether, tar, phosphated oil, and many other remedies. They also exhibited several handsome "irrigateurs," and a "goudronière," or apparatus for the diffusion of tar odour through an apartment.

Messrs. Rigolot & Co., of Paris, made a display of several large sheets of their beautifully made mustard paper, which showed how little possible it was for pharmacists to compete in the way of elegance of manufacture with this firm by following

the formula lately introduced into the *Pharmacopœia*. This is not the place to enter into the discussion of the morality of the proceeding of taking a maker's idea, and giving official sanction to what is openly professed to be a counterfeit. Whether sold openly or *sub rosa*, the original manufacturer equally loses the rightful benefit of the conception.

The display made by Messrs. Clin & Co., of Paris, included several interesting pharmaceutical products. Prominent was a very fine sample of bromide of camphor. This remedy has of late come much into French medical practice, and several series of experiments have been reported upon it. It seems to have an invariable action in reducing the action of the heart. It is administered hypodermically. Messrs. Clin & Co are the chief manufacturers of this delicate chemical in Paris. This firm also showed numerous samples of their gluten capsules, which seem to have many advantages over gelatine as a covering for nauseous medicines. These capsules are beautifully made, and are smaller than those usually sold in England. The other portion of their display consisted of Ramel's products of the *Eucalyptus*.

Mr. Cornelis, of Diest, Belgium, sent some "patent bottles, with desiccating stoppers." The stopper is hollow, and contains small pieces of lime. At the bottom it is tied over with white kid leather. By this means Mr. Cornelis has kept unchanged in colour, though exposed to light, for years leaves such as rose and violet petals, and deliquescent substances like chloride of zinc.

Messrs. De Ricqlès, of Lyons and Paris, showed "on draught" some of their "Alcool de Menthes," a very fine essence of peppermint distilled from French grown herb. A few drops of this leaves in the mouth a cool and refreshing flavour, which is an indication of the high purity of the oil contained in the essence.

Among the French exhibits, too, were some samples of Fucoglycine, a preparation invented by Dr. Gressy, of Carnac, Morbihan, France, and intended to serve as a substitute for cod liver oil. It is a compound whose basis is a thick syrupy liquid, produced from certain sea-weeds, and with which is combined in proper proportions the chemical elements of cod liver oil—iodine, bromine, and phosphorus. The preparation is pleasant to take, and if, as is asserted, its medical effects are not inferior to cod liver oil, its introduction would be an unmingled blessing. Agents, Roberts & Co., Bond Street.

Messrs. Barnett & Foster showed a number of Codd's patent soda-water bottles, which to visitors who had not before seen them, caused much interest. We have explained this invention on former occasions. A glass marble is held tightly against the mouth of the bottle by the pressure of the gas within. A simple little boxwood presser easily forces this marble into a place provided for it to fall into in the neck of the bottle. Both in filling and opening the bottles this system is a great convenience.

Some "Gazateurs," manufactured by M. Maldiné, of Paris, were worthy of attention. In these there is no glass tube, and there seems but little possibility of derangement. By a simple arrangement sufficient water is allowed to pass from the upper to the lower compartment of the gazogène, to generate gas, which then passes into the water and aerates it.

Among the miscellaneous exhibits the dripping and sprinkling stoppers of Messrs. R. J. Ellis & Co., were attractive. These were shown attached to bottles of perfume, sauces, sal volatile, &c. They were universally regarded as extremely useful. For sauces especially, these stoppers, which need never be removed, but which admit the graduated flow of the liquid, and at the same time form an ornamental stopper, seem to be particularly well adapted. Messrs. Corbyn, Stacey & Co. showed one of their new inhalers. The excellent poultice-bags of Mr. Broad were shown, and also a series of the glycerides of the phosphates introduced by Mr. Broad, junior. Mr. Silverlock had an interesting collection of printed matter suited to chemists; and Mr. R. Hoag showed his various medicated mineral waters. Some well-made spread plasters (*belladonna*) with adhesive margins, and others, were shown by Messrs. Goosey & Rogers. And we also noticed a pleasantly flavoured and attractive looking eister oil jelly, made by Mr. R. Niven, of Edinburgh.

This about completes the enumeration of the exhibits, which were on view from Wednesday to Saturday, and evidently gave much interest to those visitors who were engaged in trade. Very much credit is due to Mr. Holmes for the untiring attention he gave to this department, and its success was due mainly to his efforts.







