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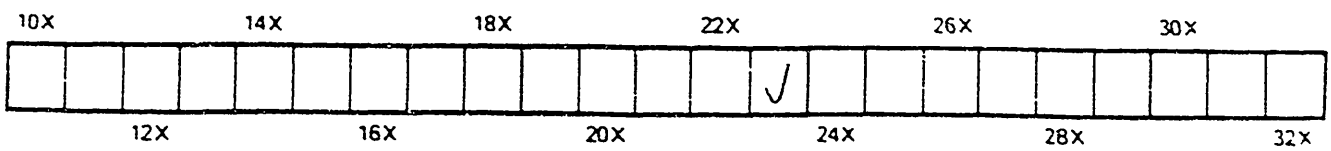

CANADIAN

PHARMACEUTICAL JOURNAL

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Transactions of Scientific Societies.

ONTARIO COLLEGE OF PHARMACY.

COUNCIL MEETING.

The first meeting of the Second Council of the Ontario College of Pharmacy was held at the rooms of the Board of Trade, Toronto, on Friday, 8th Dec., 1871, in accordance with a requisition of five members.

Present:—Messrs. W. Elliot, B. Lyman, H. Miller, George Hodgetts, W. H. Dunspaugh, E. B. Shuttleworth and H. J. Rose. Toronto: J. W. Bickle, Hamilton; W. Saunders, of London; F. Brendon, Brantford; E. H. Parker, Kingston, and J. C. Holden, Belleville.

The retiring President handed in the requisition he had received to call the meeting, and also the returns of the election held in October, stating that the examination, of which a report would be presented, was the only other event which had transpired of interest to the College since the last meeting of the Council. The Registrar having been called to the chair, the election of officers was entered upon, with the following result:—

President.—Mr. B. LYMAN.
Vice-President.—Mr. BICKLE.
Registrar and Secretary.—H. J. ROSE.
Treasurer.—Mr. HODGETTS.
Auditors.—Mr. DUNSPAUGH and Mr. MILLER.

The elections were held by ballot, with the exception of the Vice-Pres., who was elected unanimously.

The President took the chair, and after thanking the members for the honor conferred upon him, promised to do all in his power to advance the interests of the organization.

The minutes of last meeting were accepted as published in the JOURNAL, and reports of Committees being called for, Mr. Saunders read the report of the examinations held in August, and also published, and asked the Council to endorse their action in granting certificates to the successful candidates.

Mr. Bickle moved,

Mr. Holden seconded,

That the action of the Examination Committee, in granting certificates to J. J. Hall, Woodstock; G. Matthews, Paris; and T. A. Howard, B. A., Cobourg, be endorsed and approved by this Council.—Carried.

In moving the next resolution, Mr. Saunders said that he thought some change should be made in the mode of conducting the examinations, as, by the resolution adopted by the last Council, there were no marks authorized for recording the merit of candidates in the subject of the reading of prescriptions, which he thought a very important one. Another change which he thought advisable being the selection of questions in each department by each examiner, instead of dividing the different branches between the examiners. He suggested, for example, that each examiner should prepare beforehand five questions in each subject, making fifteen questions; that these questions should be submitted to the examiners in consultation, and the ten best questions selected, the advantage being that an apprentice or pupil of one examiner could have no chance of knowing the style of question which would be submitted, and there could be no suspicion as to questions being of too technical a character.

Mr. Shuttleworth said that the course advocated by Mr. Saunders was, to his knowledge, without precedent in any examining board; every examiner having one or more branches in his exclusive control was the rule in the University and Medical Schools, and he thought this College too young to start a precedent of the kind, which he did not see to possess any advantages.

Mr. Saunders said that the Philadelphia College of Pharmacy adopted the system he had mentioned.

After other remarks by members,

Mr. Saunders moved,

Mr. Elliot seconded,

That in conducting future examinations the following be the order of proceeding. In each of the four branches specified, each examiner shall take a fair proportion of the questions, and that dispensing be placed on an equal footing with the other branches in regard to marks.—Carried.

Mr. Shuttleworth said that as this was to be the method of ex-

amination he wished to withdraw his name from the board of examiners, believing the principle to be erroneous. Mr. Miller also withdrew his name. After further remarks, Mr. Brendon, Brantford, and Mr. R. W. Elliot were placed on the board of examiners with Mr. Saunders.

Mr. Bickle asked if any means would be taken to report the proceedings of this meeting. The Secretary said he would give a condensed report to the daily press; or, if thought advisable, he had no doubt the papers would send a reporter to the meeting. The ordinary report of the Secretary was thought sufficient.

Mr. Saunders said that the question of furnishing educational facilities to students was one which should engage the attention of the Council. He had been in consultation with Dr. McHattie, who, it was expected, would be at the head of the Technological School, about to be established, and from what he could learn, this institution would be in operation early in February, with ample resources in the way of lectures, apparatus, &c., for thorough instruction in chemistry. He thought that the Government would be very willing to make liberal terms with this College for the instruction of their students, and that a lecture room for the other branches might be obtained in the same building.

Mr. Elliot said that he would strongly urge the necessity of placing non-resident associates on the same footing as those living in Toronto, by devoting a portion of the funds to the payment of the whole or part of the expenses of students who might come from a distance, and for this purpose he had advocated the reduction of other expenditure in connection with the College.

Mr. Shuttleworth said that this question of education was, after all, the vital one in connection with the business of the Council. He had received a letter from a former member of the board urging its importance, by saying that an assistant of his was about leaving the Province to obtain such education, there being no facilities of the kind in Ontario. He said he had interviewed the Dean of Victoria College, who was willing to make liberal terms with this association to allow students to attend their lectures on Chemistry, Materia Medica, Pharmacy and Botany, and as these lectures would commence in January, while the Technological School was still an undeveloped scheme, he thought it presented a more feasible plan for consideration.

After other remarks by members on the subject,

Mr. Elliot moved,

Mr. Saunders seconded,

That a committee consisting of the President, Vice-President, and Messrs. Saunders, Shuttleworth and Hodgetts, be appointed to make the necessary inquiries of the Technological College authorities, and from other sources, on the subject of educating the associates of this College, and report to this Council at its next meeting.

Also that the sum of $500 be placed at their disposal for the purpose of carrying out the spirit of this resolution.—Carried.

Mr. Elliot said that from a careful perusal of the Act, he found that the resolution passed at the last Council meeting, requiring a service of three and-a-half years from candidates, was not in accordance with the Act, Section 13 and 14 providing that any person may present himself for examination.

The Secretary said that he had received no official notification of the approval of the By-laws, &c., adopted, but had reason to believe that besides the resolution just mentioned, the one also passed at the last meeting, authorizing the registration of financial partners without examination, would without doubt be negatived, as over-riding the Act by giving privileges to persons who were not entitled under the Act.

Mr. Elliot said that however desirable these points might be, the only way to establish them would be by amending the Act, and the opinion of members was that it was too soon to go to the legislature for amendments yet.

Mr. Elliot, in a few remarks, gave notice that at the next meeting he would move the following alterations in the By-laws.

That By-law No. 11 be amended by the insertion of the following after the words "fifteen days previous to the election," viz.:—"The Registrar's duty shall then be to notify the parties nominated, requesting them to reply as to whether or not it is their intention to stand for election. Should no answer be received from them, the Registrar shall assume they intend to be candidates."

And, "That the same By-law be further amended by leaving out the words 'of those nominated,' and inserting 'the candidates.'"

That the following be added to the By-laws:—

19. That no person shall be eligible to membership in the Council unless he either reside or carry on business as a Druggist, in the Province of Ontario. And further, that no person shall be allowed to hold a seat in the Council who is in the receipt of any emolument in the gift of the Council, whether as salary, or from a contract, or any other source, excepting the payment of expenses to Councillors and examiners, as provided for by By-laws 13 and 14.

Mr. Holden said, that endorsing as he did the views expressed in the notice of motion just given, and as since the election he had closed his connection with the druggists of Ontario, he would place his resignation in the hands of the Council. From a canvas of the druggists of Belleville, he thought the election of Mr. Edmund Chandler would be agreable to the druggists of the section from which he came, and nominated that gentleman.

Mr. Chandler was elected on the second ballot.

The Registrar then resigned his seat in the Council, and

thought that the Council, in electing another member, should not overlook members of the provisional Council who had proved energetic in the interests of the College, but who were not sufficiently well known to be elected.

Mr. Elliot proposed Mr. Stork, of Brampton, who was elected.

On Mr. Holden leaving the Council, the President thanked him for the interest he had taken in the College by coming up to the meeting, and hoped he might be of service to Mr. Holden on some future occasion.

Mr. Elliot said that from the Act it would be seen that the Council had the issuing of the certificates to the candidates who passed the examinations, and in order to carry out the principle, the examinations should be held on the day previous to the Council meeting.

Mr. Saunders thought if there were many candidates the decision of merit of their papers would occupy more time than one day. It was thought that this would be sufficient, and

Mr. Elliot moved,

The Vice-President seconded,

That the examiners be required to hold their examinations of candidates on the day previous to that on which the Council meets in February and August of each year. Carried.

A discussion as to the management of the JOURNAL was opened by Mr. Elliot, who criticized the editorial published with reference to the Poison Books, as being uncalled for and calculated to injure the interests of the College, remarking that the course pursued seemed like that of a house divided against itself.

Mr. Shuttleworth defended the course pursued, and said that, on taking the management of the JOURNAL, he declined being hampered with any restrictions, and he had so far conducted that paper to the best of his ability. There had been a Printing Committee appointed, but, with one or two exceptions, the members had entirely ignored their duty, and the resolutions adopted by the Committee he paid no attention to, as he received his appointment from the Council, and felt that to them alone he was responsible. He also said that he should advocate the financial management of the JOURNAL being transferred to the Registrar, the duties of whose office would be much lighter than hitherto.

The Registrar said that he could not undertake the additional responsibility, not knowing the exact division of the labour which it would involve, though, as the work connected with his office would probably be lighter in the future, he had no objection to do what he could in the way of assisting to that end.

After other remarks by the members,

Mr. Bickle moved,

Mr. Dunspaugh seconded,

That Messrs. Elliot, Hodgetts and Miller be a Committee on Printing and on the publication of the JOURNAL.—Carried.

Mr. Saunders moved,

Mr. ——— seconded,

That Mr. Rose be appointed financial editor of the JOURNAL, his duties to be defined by the Printing Committee.—Carried.

Mr. Shuttleworth said that he had received several communications in reference to infringements of the Act. He thought that those who registered and sustained the Act should certainly be protected in their rights and privileges.

Mr. Bickle thought this one of the most important duties devolving upon the Council. He thought it would be well to find out the extent of the infringement, and the parties thereto, before taking action.

After other remarks,

Mr. Elliot proposed,

Vice-President seconded,

That a committee, consisting of the President, Vice-President and Registrar, be appointed to enquire into the question as to infringements of the Act, and to report them, with the best means of correcting the same, at the next meeting of the Council.—Carried.

The Vice-President requested Mr. Saunders to give some account of his visit to the meeting of the Am. Pharmaceutical Association, which for want of time he could not do.

The Registrar asked whether it was contemplated to make any change in the certificates to be issued next year. It was thought that the idea adopted at the last meeting, of issuing a renewal, to be attached to the ones sent out, would be carried out, and that the next meeting would be time enough to decide the point. He also wished to know whether these associates who had registered during the present year would be obliged to continue as full members, or could continue as associates—the opinion of the members being that the latter course would be sufficient.

Meeting adjourned.

HENRY J. ROSE,
Secretary.

REGISTRARS' NOTICE.

REGISTERED AS MEMBERS.—Henry R. Gray, Montreal
Dr. Jacob G. Terryberry, Drumbo.
Andrew Rutherford, Hamilton, (Associate.)
ASSOCIATE.—A. B. Bennett, Brantford.
TAKEN OFF REGISTER.—C. J. Riddell, Toronto, deceased.

The Registrar will feel obliged if members will notify him at once in case of any change of address.

PHARMACEUTICAL ASSOCIATION OF THE PROVINCE OF QUEBEC.

The first examination in connection with this Association was held in their rooms, at the corner of Notre Dame and McGill streets, on Tuesday and Wednesday, Nov. 27th and 28th.

The written examination, comprising ten questions in chemistry and pharmacy and eight in materia medica, took place on the first day, and the oral, embracing chemistry, toxicology, posology, materia medica, pharmacy, reading of prescriptions, weights and measures, and practical dispensing, on the following day. Eleven students presented themselves for examination, of which seven passed and four were referred back to study.

The following gentlemen composed the board of examiners :— Nathan Mercer, Alfred Savage, J D. L. Ambrosse, Henry R. Gray, and Alex. Manson.

The specimens required by the examiners on materia medica, chemistry and pharmacy were kindly supplied by Nathan Mercer, Esq., as also were the drugs and sundries for the dispensing counter.

The names of the successful candidates are as follows :—

Bernard Ewan McGale,
Joseph Albert Dawson,
James Mattinson.
David Gird,
Robert Bruce Gray,
Joseph Patton,
N. H. Nesbit.

One thousand marks was the maximum, and eight hundred and forty-nine was the highest obtained. On the whole, the examinations were very successful, and certainly creditable to the young gentlemen who have succeeded in gaining the diploma of the Association.

Original and Selected Papers.

ANOMALOUS PRODUCTION OF OZONE.

BY HENRY H. CROFT.

Professor of Chemistry, University College, Toronto.

About six years ago, when evaporating some syrupy Iodic Acid, prepared according to Millon's process, over sulphuric acid, I noticed that when the acid began to crystallise, the air in the jar (covering the drying dish) had a strong smell of ozone, or active oxygen. A couple of years afterwards, on again making iodic acid, this observation recurred to my mind, and I carefully tested the air in the jar during the evaporation; no trace of ozone could be detected until the acid began to crystallise, when the smell of ozone became immediately perceptible, and all the usual tests for that body succeeded perfectly.

During the last month I have had occasion to convert two ounces of iodine into iodic acid, and exactly the same result has been observed. The acid usually solidifies to opaque verrucose masses; but, on this occasion, the crystals formed were clear and brilliant. The solution had in this, as in all the former cases, been boiled down to thin syrup, so that no trace of chlorine, or nitric acid, could possibly have remained to act on the ozone paper. The air in the jar was tested from day to day, both by the smell, and the action of iodised starch paper. Even when a few crystals began to form no change was noticed, but when the crystallization set in fully the evolution of ozone was most remarkable, the strong smell being quite characteristic, entirely different from that of chlorine or nitric acid.

I am quite unable to account for this ozonification of the air (or oxygen) over crystallising iodic acid. My friend, Mr. Sterry Hunt, has suggested that it may arise from a partial deoxidation similar to that which produced ozone when hypermanganates are decomposed, as observed by him and other chemists. As the crystallizing acid

remains perfectly white, either opaque or transparent, and as the lower oxides of iodine are of a yellow, or even brown colour, according to Millon, I cannot accept this explanation, and even if it were true, the phenomenon would be equally unintelligible—a reduction taking place during crystallisation. I can offer no explanation of the *simple fact* that air over crystallizing pure iodic acid, becomes ozonised, but I think that the observation seems to offer a wide field for further experiments, which I have unfortunately not the time to carry out.

ON THE DESTRUCTIVE DISTILLATION OF LIGHT PETROLEUM NAPHTHAS, AT COMPARATIVELY LOW TEMPERATURES.*

*From the American Journal of Science and Arts.

BY S. DANA HAYES, STATE ASSAYER OF MASSACHUSETTS.

Under the generic term *naphtha*, as applied to some of the distillates obtained in the arts from petroleum, is included a series of hydrocarbons having specific gravities above 0·642, or between 0·625 (thigolene) and 0·742 (heavy naphtha), and boiling points varying with the densities from 65 deg. F. to 300 deg. F. These naphthas have distinguishing characteristics by which they are easily recognized, and which place them in a class by themselves; and aside from their odors, densities, boiling points, volatilities and solvent powers, a noticeable peculiarity is the absence of *oily* bodies; they do not leave any permanent stain on common writing paper that has been dipped in them, as do all the heavier and oily distillates obtained from petroleum. The redistillation of these naphthas under different conditions produces other hydrocarbons, in which the proportions of hydrogen and carbon are not only changed, but some of these products are *oils* that will stain writing paper like fats, and it is possible to produce crystallizable paraffine from these volatile naphthas by properly conducted distillations.

In the summer of 1861, the writer had occasion to redistil several thousand gallons of light petroleum naphtha, which was entirely free from oily bodies, in cast-iron "stills," heated directly by coal fires and having powerful condensers attached, such as were then common in coal oil refineries; and it was observed that besides the gases, light vapors, and a greatly diminished volume of naphtha, an unexpectedly large proportion of heavy paraffine oils was obtained; and after the distillations were finished, large masses of

separated carbon were found in the stills, as in the ordinary destructive distillations of crude petroleum or its heavy products.

In 1862, Prof. Bacon of Harvard Medical College, observed, when examining a sample of "kerosolene," a light naphtha, that had a "specific gravity of 0·640 at 72 deg. F., and when heated in a flask containing scraps of platinum foil, began to boil at about 85 deg. F. As the more volatile parts distilled off, the temperature continued to rise, and at 170 deg. about three-quarters of the liquid had evaporated. It continued to boil freely, but the whole was not converted into vapor until the thermometer had risen considerably above 300 deg. It is remarkable that keroselene should be so readily and completely volatile at atmospheric temperatures. I found that keroselene and Squibb's ether, exposed in watch glasses, lost equal weights in two and a half and three and a half minutes respectively; and the former evaporated completely in about two-thirds of the time required for the other."

This peculiarity of petroleum naphtha has been so often observed in my laboratory, that I have learned to avoid the employment of heat when evaporating solutions, or extracts made in them, for the purpose of obtaining the substances dissolved; because, although these hydrocarbons are exceedingly diffusive, and evaporate entirely and very rapidly in the air at common temperatures, yet when heated above their boiling points (above 85 deg. F., in the case of keroselene) they undergo destructive decomposition, or if in a flask, destructive distillation, heavier oily bodies being produced which are difficult to remove from the residuum of such evaporations.

Within the past year an apparatus has been erected in Boston, by Mr. Z. A. Willard, for generating gases and hydrocarbon vapors for use in metallurgical operations, that has offered an opportunity to obtain considerable quantities of the oils made from naphtha, distilled at temperatures below 300 deg. F., and I have examined these products with much interest.

Willard's apparatus consists of three or more upright wrought-iron cylinders, having a capacity of several hundred gallons each, standing near a common steam boiler, and which are connected together and with the boiler by pipes that enter at the bottom of each cylinder, ending there, and starting out from the top of each again to connect with the bottom of the next; it is thus a system of large iron Woulfe's bottles, the first being connected with a steam boiler. These cylinders or gas generators, when in operation, are about half full of gasoline or petroleum-naphtha of the lightest and cheapest kind, which leaves no permanent stain on note paper, while steam at common working temperature and perssure is passing in at the bottom of the first cylinder, bubbling up through and vaporizing the naphtha, then passing into the other cylinders with the same action. The cylinders are provided with glass tube gauges, so that the changes occurring inside may be watched, and the whole apparatus

and contents are maintained under a pressure of about fifty pounds to the inch when in operation.

In this apparatus the steam and naphtha vapors are held together in the upper part of the cylinders, above the liquid, under pressure, and at a temperature of about 212 deg. F., or much above the boiling point of the naphtha, but never so high as 300 deg. F.; and the decompositions occur in the vapors rather than in the liquid, light uncondensable gases and vapors passing upward, and heavy oil falling down into the naphtha below. The apparatus was operated continuously by pumping in naphtha at intervals as it was consumed, and after the heavy oil had accumulated it was drawn off at the bottom, the largest quantity being found in the first cylinder. It was found that the longer the vapors were held together in the apparatus, heated and under pressure, the more perfect were these decompositions; and Mr. Willard obtained at different times from two to ten per cent. of the naphtha as heavy oil.

The heavy hydrocarbon oil obtained in this way has a dark yellowish-brown color, and smells of the adhering naphtha when fresh; but after standing exposed to the air for a few days, it loses this odor and becomes nearly neutral, or comparatively free from offensive odor. Its specific gravity varies from 0·850 to 0·860, and its boiling point, after it is freed from the adhering naptha, is above 400 deg. F.

It does not evaporate at common temperatures, leaves a permanent greasy stain on paper, is a good lubricator for machinery, and when redistilled at high temperatures, it breaks up into lighter and heavier liquid hydrocarbons, paraffine oil, like that of the same density obtained directly from petroleum, or its heavy products, by distillation.

When refining petroleum for illuminating purposes, it has been desirable to break up the heavier products and convert them into the light hydrocarbons generally known in commerce, in this country, as "kerosene"; and several forms of distilling apparatus have been devised for this purpose, in which the vapors of these bodies, by being heated above their boiling points, are decomposed or "cracked," first into burning oil and heavy products, and ultimately into burning oil entirely. But Mr. Willard's apparatus demonstrates that light petroleum naphthas, and probably distilled naphthas, from coal and other sources, may be "cracked" at a temperature below 300 deg. F. into lighter and heavier products, the latter being paraffine oils that belong to a class of hydrocarbons entirely different from that of the original naphtha.

Through the kindness of Prof. B. Silliman, I have received a copy of his report on the "petroleum from Venango, county Pennsylvania,"* since the first part of this article was written. It is a memoir that has never been published in any scientific journal, containing the results of an extended investigation made in the spring

of 1855, being undoubtedly the earliest record of any chemical research on the distillations of this petroleum. And I take the liberty of quoting from it, because at this early date Prof. Silliman found that the products obtained from petroleum are not simply bodies previously existing in the petroleum, but that they are new substances formed by heat and distillation.

The author says: "The uncertainty of the boiling points indicates that the products obtained at the temperatures named above were still mixtures of others, and the question forces itself upon us, whether these several oils are to be regarded as *educts*, or whether they are not produced by the heat and chemical change in the process of distillation. The continued application of an elevated temperature alone is sufficient to effect changes in the constitution of many organic products, evolving new bodies not before existing in the original substance." And further on in the report: "The paraffine with which this portion of the oil abounds, does not exist readyformed in the original crude product, but it is a result of the high temperature employed in the process of distillation, by which the elements are newly arranged." When describing the properties of the illuminating oils distilled from this petroleum, Prof. Silliman states the result of an experiment as follows: "Exposed for many days in an open vessel, at a regulated heat below 212 deg., the oil gradually rises in vapor, as may be seen by its staining the paper used to cover the vessel from dust, and also by its sensible diminution. Six or eight fluid ounces, exposed in this manner in a metallic vessel for six weeks or more, the heat never exceeding 200 deg., gradually and slowly diminished, grew yellow, and finally left a small residue of dark brown lustrous-looking resin, or pitchy substance, which in the cold was hard and brittle. The samples of oil employed were very nearly colorless. This is remarkable when we remember that the temperature of the distillation was above 500 deg. F.

It is remarkable that in this early laboratory investigation Prof. Silliman should have noted the production of entirely new bodies by the destructive distillation of petroleum, such as are now only produced in large quantities in manufacturing operations. The "cracking" of petroleum, as a necessary result of its distillations in the large way, was not generally recognized or admitted for several years after this report was written, and even now there are many chemists who consider these as simply *fractional* distillations; but it is only necessary to mix the distillates together again and try to reproduce petroleum, to satisfactorily prove how different the products are from the original substance.

The petroleum upon which Prof. Silliman reported as above, did

*Report on the Rock Oil or Petroleum from Venango Co., Pennsylvania, with special reference to its use for illuminating and other purposes. By Prof. B. Silliman, Jr. New Haven, 1855.

not yield any of the light naphtha to which I have referred, his lightest distillate having a specific gravity of 733, and a boiling point above 400 deg. Fah., probably because it had been floating on water exposed to the sun, or because it was thick "surface oil." Most of the petroleum, as now obtained from wells in Pennsylvania, yields by the first distillation, either by steam-heat or otherwise, about fifteen per cent. of light naphtha, such as is commonly called gasolene, benzine, etc., which is entirely free from any greasy or oily constituent; and this light naphtha by distillation at comparatively low temperatures as described above, yields about ten per cent. of its volume of heavy paraffine *oil*, a new substance produced by heating the vapors above the boiling points of the naphtha, and not simply an educt.

NOTE ON PURE CARBOLIC ACID.*

By Professor Church, M.A.

Since 1856 I have occupied myself a good deal with experiments as to the practical hygienic applications of carbolic acid, particularly as to its use in dentistry and in throat affections, and also as regards its employment as a disinfectant. The rank of carbolic acid as a most valuable contribution from chemistry to medicine is so well assured that it is unnecessary to insist upon this point here. Yet there is an objection urged against this substance, which has some apparent force, simply because the best preparations of commerce are so seldom free from a gas-like or naphthalic odor, which, though entirely foreign to carbolic acid itself, has condemned its use in some quarters. About 11 years ago, in preparing pure carbolic acid for the use of a surgeon-dentist to whom I introduced it, I adopted a plan which I shortly afterwards described before the Odontological Society, and to which I have been lately asked to give greater publicity. My plan, which is very simple, is as follows:—

One pound of the best carbolic acid of commerce (I use Calvert's white crystallized acid) is poured into 20 pounds of cold distilled water, taking care not to permit the *whole* of the acid to enter into solution. With a good sample, if after shaking repeatedly at intervals, between two and three ounces of the acid remains at the bottom of the vessel used, this will be a sufficient residue to hold and contain all the impurities. With bad samples, less water must be used or more acid. The aqueous solution should be syphoned off, and filtered, if necessary, through Swedish paper till perfectly clear; it is then placed in a tall cylinder, and pure powdered common salt

* From the Chemical News, October 13, 1871.

added with constant agitation till it no longer dissolves. On standing, the greater part of the carbolic acid will be found floating as a yellow oily layer on the top of the saline liquor, and merely requires to be removed by a syphon or pipette to be ready for use. As it contains 5 per cent. or more of water, it does not generally crystallize, but it may be made to do so by removing it to a retort, and distilling it from a little lime. The portion collected up to 185°C. or thereabouts has at ordinary temperatures scarcely any odor, save a faint one resembling that of geranium leaves; and I have taken advantage of this curious resemblance still further to mask the slight smell proper to absolutely pure carbolic acid by the addition to it of *four drops per fluid ounce of the French oil of geranium*. This addition has the further advantage of liquefying the pure crystallized product.

The acid purified as above has been so highly appreciated by those professional and private persons to whom I have distributed samples, and who were dissatisfied with the purest commercial samples, that I have thought it best to publish my simple plan, for which, however, I claim no originality. It involves, I know, considerable loss of material, but the saline liquor remaining may be distilled and thus made to yield up a second portion of pure carbolic acid, and it will be found a very pleasant and effective domestic disinfectant and deodoriser.

When dissolved in 230 parts of water and used as a gargle, or in 25 parts for painting the throat, or in 50 parts for a carbolic spray, the pure acid is rarely, if ever, objected to even by the most fastidious person. Of course it may be readily mingled with olive or other oil (1:25) or with glycerine, for dressing cuts and sores, and when introduced into the little air-purifier invented by me and noticed in your columns some months back, diffuses wholesome and inoffensive vapor in any place where there are disagreeable effluvia of vegetable or animal origin.

ON THE INFLUENCE OF THE SO-CALLED POISONOUS SHADOWS.

From Vierteljahrschrift fur. prak. Pharm. in New Remedies.

By H. Karstens.

In a paper with the above title, H. Karstens states that during a long residence in Tropical America he became well acquainted with the euphorbiaceous tree *Hippomane manzanilla L.*, and with the fact that the natives considered it so poisonous as to avoid going near it, asserting that merely resting under its thick shade will pro-

duce serious sickness, and in very susceptible persons even death. This poisonous power having been denied by various naturalists, especially Jacquin, our author gathered some of the juice, on the sea-coast of Venezuela, near La Guayra. In a very short time he was seized with a burning feeling all over the body, followed by swelling, especially of the face and eyes. The next morning he was unable to open the latter, and their irritation was so great as to force him to pass several days of great pain in a dark room. On the third day the swelling began to go down and the epidermis to desquamate. The hippomane has then a juice which in a dry atmosphere evaporates from the moist bark and acts as an irritant poison to the skin and mucous membrane. The reason Jacquin remained a number of hours in close proximity to a tree without injury, was a prevailing thunder-gust, the torrents of water washing out, as it were, the volatile principle from the air. Herr Karstens thinks the organic base in trimethylamin is an analogue of the poisonous principle, and that the latter is probably nitrogenous, a substitution product of ammonia.

A NEW TEST FOR STRYCHNIA.*

By F. L. Sonnenschein.

If strychnia be dissolved in a concentrated solution of sulphate of cerium oxyduloxyd, there is formed a beautiful blue color, closely resembling that produced by the bichromate of potash under similar circumstances. The color is, however, much more intense, and lasts a much longer time. It generally passes over into a cherry-red, and then persists unchanged for many days. In this way one-millionth part of a gramme of strychnia can be recognized. The following table shows the color produced by various other alkaloids, when treated in the same way :—

Brucin.....	Orange, and finally yellow.
Morphia....	Brown, olive-green, and finally brown.
Narcotin...	Brown, cherry-red, and finally cherry-red.
Codeia.....	Olive-green, and finally brown.
Quinia.....	Pale yellow.
Cinchonia..	No color developed.
Thein.....	No color developed.
Veratria....	Reddish brown.
Atropia.....	Yellowish brown.
Solanin.,...	Yellow, and finally brown.
Emetia	Brown.
Colchicum.	Green, and finally dirty brown.
Conia.....	Clear yellow.
Piperin	Colors the sulphuric acid blood-red, and is changed by the ceriumoxide into dark brown, almost black.

CHEMICAL THEORIES.*

BY B. HOWARD RAND, M. D.,

Professor of Chemistry in the Jefferson Medical College.

In the June number of the *Journal* is a communication from Prof. Albert R. Leeds, in which he says, in regard to the so-called dualistic and unitary theories in chemistry, "The few who cling to their ancient beliefs have ceased to defend them, and only plead the inaptitude of old age, or the bias of early education, in defence of their loyalty. But now that the unitary theory has prevailed, it is intolerable," etc.

Inasmuch as some chemists not without note, including Bunsen, Berthelot, Fremy, Bloxam, Taylor and Fresenius, still "cling to their ancient beliefs," and as a very good defence of the same may be found in Brande and Taylor's Chemistry, or in Bloxam's latest edition, it seems that the subject is fairly open to discussion.

The *facts* of chemistry are ascertained by experiment: no theory can alter them in the least. Theory is merely a convenient method of arranging the facts and aiding the memory. We have two theories in electricity—the one-fluid and the two-fluid theory. Either is convenient in explaining the phenomena; yet I think that no one believes at the present day that electricity is a fluid. The language is retained, for convenience, to be abandoned when we learn more of the true nature of the agent.

Chemistry gives us, by analysis and synthesis, the percentage composition of a body,—that is, the elements entering in it, and the proportions in which they are combined; more than this it cannot do. Knowing the percentage composition of a body, or its *empirical* formula, we conjecture as to the arrangement of the constituents, and make what may be called the *rational* formula. It does not alter the nature or properties of sulphuric acid that we write its formula HO SO_3, or H SO_4, or HO_2, SO_2, or HO_2SO, or O_4HS, etc.; nor do we know, nor shall we ever know, the true arrangement of the elements in other than the simplest binary compounds. Hence we have a right to take any view which will most easily classify our facts.

Let us consider a single example. Potassium and oxygen unite to form a compound which, when combined with the elements of water, has been called caustic potassa. Sulphur and oxygen unite to form, among other compounds, sulphuric acid, which, when combined with the elements of water, forms the well-known oil of vitriol. These are plain facts, the result of experiment. If we mix these bodies in proper proportion, a compound is formed, the sul-

*From the Journal of the Franklin Institute, August, 1870.

phate of potassa or "potassic sulphate." The "old" theory simply supposes that the acid united with the base, the water of each being eliminated. This may be true, or it may not, but no one can tell. It is a simple view, and has the advantage of being easily comprehended and of aiding the memory.

If we take the formula for alum. we shall see still more clearly the advantage of the old system in aiding the memory. We suppose that the sulphate of potassa above mentioned, KO SO_3, unites with another sulphate, say of alumina, Al_2O_3 $3SO_3$, and that the two combine, and, in crystallizing, take up twenty-four equivalents of water. The student readily comprehends this, and can easily remember the method of manufacture and the constitution of the compound. Its apparently long formula, KO SO_3+Al_2O_3 $3SO_3$, +24 HO, thus becomes easy. He can then be shown how it is possible to replace the potassa with soda, ammonia, etc., and the alumina by other sesquioxides, still retaining the type and crystalline form of the original.

Thus KO, SO_3,+ Al_2O_3, 3 SO_3 + 24 HO.

NaO	Mn_2O_3
NH_4O	Cr_2O_3
CsO	Fe_2O_3
RbO	
TlO	
AgO	

If we take the unitary formula, these advantages are in great part lost. Thus, in Fownes' Chemistry, the formula for alum is given as $(SO_4)_2$ Al″ K. 12 OH_2, while that of the "aluminium sulphate," or sulphate of alumina, which is absolutely put into the salt in its manufacture, is $(SO_4)_3$ Al‴$_2$ 18 OH_2. How is the student to remember such formulæ, and how is he to account for the change which "aluminium sulphate" undergoes when simply crystallized in company with "potassic sulphate"? Certainly the older formulæ are quite as reasonable as these.

Since the time of Lavoisier the balance has been the test of chemical truth. By its aid the equivalents of the elements have been determined, and for years the simple and natural method of taking combining weights of bodies for comparison was followed. Since the introduction of "molecular" weights, as might be supposed, there has been "a most admir'd disorder." Each chemist may assume molecules according to his own theory, and the whole notation and nomenclature of chemistry is thus shifting constantly. The July number of the *Journal* contains some analyses of minerals, by Prof. Leeds. His formulæ for the silica, alumina, etc., are as follows: SiO_2, Al_2O_3, Fe_2O_3, MgO, CaO, Na_2O, K_2O, H_2O, evidently unitary formulæ, as shown by the Na_2O, K_2O H_2O. In the *Verhandlungen des Naturhistorisch-Medizinischen Vereins zu Heidelberg* is

given an analysis, by Prof. C. W. C. Fuchs, of a clay, the paper having been read March 4, 1870. His formulæ are SiO_2, AlO_3, FeO, H_2O, CaO, MgO, K_2O Na_2O. Which of the discordant formulæ is *the* unitary one? It would be easy to multiply instances from the books and papers in which the so-called molecular formulæ are found. It would seem that these theorists are like Burke's "architects of ruin," attempting to pull down and destroy, but effecting nothing solid in return.

Still more unfortunate is the disregard of facts by the enthusiastic unitarians. When the facts do not agree with the theory, "so much the worse for the facts." Without attempting to go over the ground of equivalent volumes, which is full of instances, I merely take their theory of the formation of salts.

The "ancient" dogma was that "a salt is formed by the union of an acid with a base, or of a halogen body with a metal." This is simple fact; whether the acid and base remain as such in the compound is not known, nor is it material. It is convenient to suppose that they do. The unitary theorists *assume*—first, that an *acid* is a compound containing hydrogen, the whole or part of which is displaceable by a metal. Second, that a *salt* is a compound derived from an acid by the displacement of the hydrogen by a metal. This includes the simple theory of Davy, that the hydrated acids should be looked upon as compounds of hydrogen with an unknown electro-positive body formed by adding the oxygen of the base to the dry acid, and the more complex water type theory of salts. Neither is in accordance with known facts. We can reasonably enough write $H\ SO_4$, $K\ SO_4$ etc., although SO_4, is unknown, because it is not new to assume the existence of a non-isolable body; for instance, that of ferrocyanogen. There are, however, facts which cannot be ignored, and there are considerations which render this view quite untenable. Thus:

1. Certain acids, as CO_2, AsO_2, CrO_2, SO_2 (at common temperatures) do not combine with water; hence they cannot truly be written $H\ CO_3$, $H\ AsO_4$, etc.; yet they are so written in unitary works.

2. We have well-marked sulphur-acids, which certainly do not contain replaceable hydrogen.

3. This view compels us to suppose in the bichromates, bicarbonates, etc., distinct and wholly different acids from those in the monosalts, which experiment does not show to be true. Thus, $Na\ CO_3$, $NaHC_2O_6$; $K\ CrO_4$, $K\ Cr_2O_7$, and even $K\ Cr_5O_{10}$. We are also compelled to admit that the phosphoric acid in the metapyro- and ortho-phosphoric acid is not the same, but that there are in these bodies substances as distant as are sulphurous and sulphuric acid. Thus, $H\ P_6O$, H_3PO_7, H_3PO_8. This is altogether contradicted by the properties of the acid, the characters of its salts, and the facility with which they assume and part with the elements of water, being thereby transformed the one into the other. The many other

objections in point of fact and reason need not be stated. The type theory, so well suited to the study of the complex, and therefore elastic, substitution compounds of organic chemistry, is ill-adapted to the simpler and less flexible bodies, generally included under the head of inorganic chemistry. Thus to represent the pyrophosphates, we must assume four molecules of water as the type; thus

(using molecular symbols, $\frac{H_4}{H_4}O_4$ Then "pyrophosphate of sodium," would be $\frac{Na_4}{(P_2O_5)''''}O_4$ and "acid phosphate of sodium" $\left.\begin{matrix}Na_2H_2\\(P_2O_5)''''\end{matrix}\right\}O_4$. (*Bloxams Chemistry* p 256)

What a contrast to the simplicity of the "ancient" formula, $2NaO, PO_5$; NaO,HO,PO_5! What is gained by the change?

It is not necessary to add more. I only wish to show that there are reasonable grounds for holding certain theoretical views which are by some believed to be accordant with facts, and certainly much more simple than those by which it is sought to replace them.

THE PREPARATION OF LIQUOR BISMUTHI *

BY C. H. WOOD, F. C. S.

For the last two years I have frequently resorted to a process for the preparation of a liquor bismuthi, which would, I think, constitute a good process for a future Pharmacopœia, because, while it is very simple and is easily performed, it yields a product quite free from nitrate of ammonia, and eliminates all the impurities of metallic bismuth.

To proceed by this method, I first obtain pure anhydrous oxide of bismuth. A weighed quantity of this oxide is then digested with a mixture of citrate of ammonia and citric acid in strong solution for fifteen or twenty minutes at near the boiling temperature, after which a slight excess of ammonia is added, and the solution diluted to the required volume. The mixture of citrate of ammonia and citric acid rapidly and completely converts the anhydrous oxide into citrate of bismuth, which the ammonia, afterwards added, instantly dissolves.

The oxide of bismuth is best prepared from the subnitrate of commerce. A pound of the subnitrate is boiled for a few minutes with four pints of liq. potassæ, then washed by decantation and

*Read before the British Pharmaceutical Conference, and published in the Pharmaceutical Journal, London.

dried in a stove or water-bath. It forms a dull lemon-yellow powder, which is anhydrous and perfectly definite in composition, being represented by the formula Bi_2O_3. 100 parts of the subnitrate yield from 81 to 82 of oxide.

Instead of boiling the basic nitrate with the potash, digestion in an earthenware jar with frequent stirring for an hour or two may be resorted to. Care should be taken to employ liq. potassæ free from carbonate. As the oxides subsides with great rapidity, it is perfectly washed with ease and quickness by decantation. I have always found commercial subnitrate of bismuth to be quite free from copper, and any traces of arsenic or antimony which it might contain would be completely removed by the potash; consequently the oxide of bismuth must necessarily be of great purity.

The following formula is adapted to the preparation of a gallon of liquor bismuthi, having the same strength as the solution of the Pharmacopœia:—

Oxide of bismuth	9 oz.
Citric acid	16 oz.
Strong solution of ammonia	12 fl. oz. or q.s.
Water	q s.

Dissolve 8 oz. of the citric acid in 4 oz. of hot water, and carefully neutralize it with some of the solution of ammonia (about 7 fl. oz.), mixed with half its volume of water. Then add the other 8 oz. of citric acid, and when it has dissolved introduce the oxide of bismuth. Heat the mixture to near its boiling-point for about fifteen minutes, with frequent stirring, then add about a pint of water and introduce sufficient ammonia to dissolve the insoluble portion, and render the liquid slightly alkaline. Augment the solution to the volume of one gallon, and filter through paper.

It will be found upon heating the mixture that the pale-yellow color of the oxide rapidly changes to a pure white, and at the same time the insoluble portion becomes more bulky. These signs indicate the conversion of the oxide into citrate of bismuth; the digestion is continued for a little time to ensure the perfect completion of this change. The ammonia, subsequently added, should effect a complete solution, leaving nothing insoluble but the dust, etc., inevitably present in the powder taken.

As the oxide of bismuth employed is quite as definite a substance as the metal itsef it follows that the resulting liquor will be as uniform in strength as if prepared according to the process of the Pharmacopœia.

OBSERVATIONS ON FLUORESCENT SOLUTIONS.*

BY HENRY MORTON, PH. D.,

President Stevens Institute of Technology.

Since the publication of my article on the above subject, in the August number of this Journal†. I have discovered a curious action which, while it in no respect affects my general conclusions, nor the main observations on which they were founded, throws out one of the corroborative experiments by which I thought that they might be established when a spectroscope was not at hand.

Obtaining some very anomalous results of late, I was led to mistrust the action of the Geissler tubes in which the solutions had been examined.

They were of the ordinary kind of jacketed spirals, selected as being nearly identical in size and other particulars.

It had been observed from the first that the internal spiral gave a faint blue fluorescence which could only be seen on close inspection; and in all cases, the tube being but partly filled, it was considered that a light appearing in the part covered by the fluid, many times more bright than that from the uncovered part of the spiral, was sufficient evidence of fluorescence in the liquid.

Late experiments have, however, proved that this was not so. Any liquid, however devoid of fluorescent properties, gives all the appearance of fluorescing in these tubes, and on a little thought the cause of this becomes clear.

The only fluorescent light that can be seen from the glass of the spiral is that which comes off tangentially from the outer surface, that emitted radially being marked by the bright electric discharge behind.

In passing from the glass to air, most of the light will suffer total reflection at the outer surface of the glass, but if water or any other liquid is substituted for the air, its greater refracting power (approaching that of glass) will diminish the above named action, so that much more of the light will reach the eye. The truth of this explanation was supported by the observation that the nearer the index of refraction in the liquid came to that of glass, the brighter was the light seen through it, while a liquid of higher refraction, like carbon bisulphide, seemed a little to weaken the effect by diffusion.

This fact renders of no account the observations before made on filtered and diluted solutions of turmeric, but a fresh observation

*From the American Journal of Science and Arts.
†See this Journal p. 115.

with the spectroscope on tubes free from fluorescence has fully confirmed my former conclusions as to the true color of fluorescence in this liquid.

No correction need be applied to the description already published in the case of the asphalt solution, but I may add to what was there stated another striking example.

If one of the little Geissler tubes containing nitrogen, called "spectrum tubes," be jacketed by means of a perforated cork and a large glass tube, and the jacket filled with pure or non-fluorescent benzine, then illuminating the tube, and with a pipette dropping in that petroleum product called "cosmoline," (a lubricating oil made by E. H. Houghton, of Philadelphia) each drop will appear of a rich blue as it dissolves in the benzine, which soon acquires a magnificent blue fluorescence. Increasing, however, the quantity of cosmoline oil until its color begins ro take effect, the tint of the fluorescence gradually changes to a rich green.

By a little care a blue solution may be superposed on a green one in the same tube.

Another semi-solid preparation of cosmoline, which has a very light color, gives a solution with benzine fluorescing of a magnificent blue.

I have this substance now under investigation, and hope soon to be able to make some further observations upon it.*

Returning to the solutions of turmeric, I have found that the fluorescent body in that substance is not its essential oil nor its brown coloring matter, but either the yellow coloring matter itself, or something so closely allied to it in solubility that I have thus far been unable to effect any separation.

In connection with this, let me say that I am much indebted to Mr. Robt. F. Fairthorn, of Philadelphia, who has aided me greatly in the preparation of various constituents of turmeric in a state of purity.

In my former paper I mentioned that uranium nitrate in solution gave a very faint fluorescence.

This appearance I now find was due entirely to the above explained action of the tube, and a number of carefully conducted observations now convince me that this substance, while it fluoresces so vividly in the solid state, loses that property entirely when in solution.

I have also found that a saturated solution of acid quinine sulphate has its fluorescence much increased by dilution.

Lastly, let me remark that I by no means assert that all solutions fluoresce blue, but simply those which I have examined. There are many which I have as yet been unable to procure or study, whose relations in this respect I hope soon to investigate.

*Mr. Houghton tells me that "cosmoline" is prepared from crude petroleum by evaporation in vacuo and filtration through animal charcoal only, without any chemical treatment.

A CHAPTER IN MICROSCOPY.*

BY HENRY POCKLINGTON.

The author of a certain book on the microscope tells a tale of a person who purchased a first-class microscope from one of the then principal manufacturers in London, but a few days after desired to return it, with a remark that he had tried it and found it perfectly useless, because it would not even show the crystals in sugar. In reply to an interrogation as to how much he had looked at, he said, "Oh, a good big lump from the sugar basin!" However much an experienced microscopist may be disposed to laugh at such gross ignorance of the proper way of using the microscope, the purchaser was to be pitied if he had become the possessor of a costly instrument without having the least notion as to how the thing was to be used, or for what purpose its several parts were designed. And there is no doubt, that amongst the many possessors of an instrument which now bids fair to be as fashionable a piece of furniture in a well-to-do household as a piano-forte, there are many whose ideas of how to use it are in a state not so unlike that of our lump-sugar friend, and who may not be indisposed to be thankful for a few hints as to what to do and what not to do.

The initial difficulties in the use of the microscope are not very great; a few minutes, or, at any rate, hours, will suffice to overcome them. In the higher walks of microscopy the case, as we shall see later on, is somewhat different. But as the tyro must walk before he can climb, he need not trouble himself by looking so far ahead.

We will assume that the microscope has been purchased:* not a big showy stand unfit for rough every-day work, but such a student's as any maker will sell nowaday's for £5, £10 or £20, according to the apparatus required therewith: and has been brought home unpacked, and the happy purchaser only too anxious to delight the eyes of his wife with his wonderful "revelations of the microscope." He will probably have learned the names of its several parts, and how "to put them together." At all events, he ought to get this much information from the maker of the instrument, and to be prepared to listen to us with his microscope *en regle*.

The first question to consider is that of the light to be used. Books are agreed as to this. Daylight being, according to them, by far preferable to any artificial light; yet, by far, the majority of microscopists use artificial light for their researches,—partly from compulsion, because their day-time is occupied by other pursuits, called by a microscopical friend butter-bread business, but also because a movable lamp is under more perfect control than daylight

* From the Pharmaceutical Journal and Transactions.

* Big Microscopes are not to be depised by those who can afford them, and who range the higher fields of research. Our remarks apply only to beginners.

can well be, and is also in this England of smoke and cloud more to be relied upon for constancy. Whichever be used, the light should fall upon the instrument from the left-hand side, if the observer use his right eye chiefly (as most do); and from that side in any case, if there be many adjustments to be made of the illuminative apparatus, which, being made with the right hand, would cause a disagreeable shadow were the light allowed to come from that side. By daylight care should be taken that the direct rays of the sun are not allowed to fall upon the object. Light from a white cloud opposite to the sun, or nearly so, is best; that from a *blue* sky is wholly unfitted for micro-polariscope work, as it is chiefly composed of light already polarised in one plane, and, therefore, only transmissible through one direction of the polarizer.

Lamps.—Their name is legion. We cannot advertise them all. Personally, we prefer an ordinary paraffin lamp, which need not cost more than a couple of shillings, or, including Mr. Swift's Blankley's new chimney, about five shillings. Such a lamp embodies nearly all the advantages of the most elaborate, and is not an addition to the paraphernalia which so often disturbs the mind of one's better half when his microscopical laboratory happens also to be his or her sitting-room. The addition to the lamp of a piece of glass stained to a decided neutral blue tint is very pleasing, and gives great relief to the eye, as most of the yellow rays that are so disagreeable and wearying are stopped back. But if such be used, it is needful to use a larger flame that would be otherwise needful. Gas is, in our notion, simply hateful for microscopic purposes, on account of its great unsteadiness, heat and its products of combustion.

Seated then at the table, not too high as to necessitate the craning of the neck, nor so low as to cause an ugly stoop (upon all these *little* things success in microscopy is dependent to a greater extent than is commonly recognized by even experienced microscopists), with the light of his lamp well adjusted, to avoid either smoke or glare, and the lamp a little to his left, the tyro may begin to work.

He cannot do better than familiarize himself with the varied effects produced upon some homely object, such as a section of wood, by direct and oblique light falling at different angles. In other words, he should begin by learning the use of the mirror, used with those objects which are sufficiently transparent to allow light to pass through them, and the bull's-eye condensing lens, used to throw light upon those objects that are too thick or otherwise too opaque to be viewed as "transparents." One of the earliest lessons we hope he will learn will be that too much light renders it difficult or impossible to see the details of an object, especially if low powers be used. From this he will learn to alter the focal adjustment of the mirror or condenser, by moving it nearer to or further from the object under view, and also that the intelligent use of the several

apertures in the diaphragm plate will greatly aid him in his efforts to obtain just so much light, and no more, than is necessary. Collins' iris diaphragm, if he be so happy as to possess it, will place literally, as well as figuratively, at his finger-ends, through a few turns of a milled head, the means of doing this to the greatest possible nicety. Having become thus far conversant with the "go" of the microscope our friend may safely begin to think of entering upon that particular department of microscopic work into which choice, or the fates, may happen to call him. That is to say, having become master, to some extent, of the instrument, he may proceed to learn how to prepare objects and fit them for observation. Here, however, we cannot at this moment attempt to help him, as we want to say a few words to him and to more advanced microscopists respecting *their* part of microscopic work.

There is, perhaps, no branch of science in which what astronomers call "personal errors" more abound, or where the poet's aphorism, "things are not what they seem," is more applicable. A few of these "errors of interpretation" may be briefly noticed.

1. *Foreign Matter.*—The presence of foreign matter in the preparations of young, and especially careless microscopists, is the source of great perplexity, and the fruitful cause of wrong conclusions. Perhaps the most frequent of these are air bubbles. All beginners in microscopy are perplexed with these; the more so as they are often the most prominent features in even good slides by very experienced men. Usually a very little experience will enable the observer to decide as to the nature of the queer-looking black rings with bright centres that he sees in the field; but there are cases where,—the bubbles being exceedingly minute and confined within a delicate tissue, which alters their shape, and consequently their refractive power,—it becomes somewhat difficult to decide upon their nature. It is, under these circumstances, a matter of great care and skill to decide whether the appearance is due to the presence of air, of oil, or, in some cases, of water. The question, if solved at all, will be solved by careful observation of the effect produced by *alteration of focus.* The milled head of the slow movement must be turned very slowly until the objective is *raised* out of focus, and then reversed until it has been *depressed* out of focus. Oil globules become *lighter*, as the objective is *raised*, and darker as it is depressed, whilst water globules and air-bubbles, surrounded by oil or balsam, do exactly the reverse. The explanation is, of course, to be found in the very different refractive powers of the three substances. In the case of the oil globule in water, the globule acts as a *convex* lense of short focus, the other globules acting as concave lenses. In the examination of vegetable and pathological preparations, it is often of essential importance that the observer should be able to detect the difference between a vacuole, an air-bubble, fat or resin globule; and no pains spent in becoming familiar with their several

appearances will be regretted. Particles of "dust" are also the source of frequent error, and we would strongly urge the student to acquaint himself with the microscopical appearance of such substances as compose the ordinary "dust and flue" of his rooms. The nature of this pest to housewives varies so much in different localities that we cannot particularize *all* its ingredients. The following are the most perplexing :—butterfly scales, starch granules, portions of wood fibres, hairs, cotton and wool fibres, leaves, fungi spores, and, by no means least, excessively minute particles of soot and other mineral matter. Nothing but experience will serve the student here, and fortunately it is easily and inexpensively gained.

(*To be continued.*)

Editorial.

INFRINGEMENTS OF THE PHARMACY ACT.

At the desire of the Council, as expressed at the late meeting, we would call the attention of members of the College to the resolution in regard to infringements of the Act, which appears in the report published in the present number. From this it will be seen that a committee has been appointed for the purpose of enquiring into cases of alleged infringements, and it is requested that members who are aware of any parties who are keeping open shop, without being in possession of the specified certificate, will at once communicate the facts of the case to the Registrar, so that at the meeting of the Council, in February, some decisive action can be taken in the matter.

There are very few, if any, of the respectable druggists of this province who have not registered. The great majority have only been too glad to comply with the requirements of a law of which they were the originators. We have reason to believe, however, that there are still a few persons who have every claim to registration, but, either from negligence or some other cause, have not yet made application for a certificate, although they continue in business. It is not against this class that the resolution of the Council is levelled—though we admit that a gentle reminder will do them no

harm—it is more particularly for those who failed to obtain the necessary evidence of their standing as chemists and druggists at the time of the passing of the Act, or for those who have since commenced business without passing the ordeal of examination.

From the letter of "Chemicus," published in another column, and many similar communications which have reached us, but which were not intended for publication, we learn that there is still another class of persons about whom some dissatisfaction is felt—we allude to those who, by fraudulent means, obtained certificates of competency. If such exist, it is to the interest of the society, as well as the credit of the college, that they be brought to light. It must be remembered, however, by those who complain of these cases, that, in the organization of the society, it was not desirable to rule with too strict a hand, and that cases of doubt were to be judged from the easiest stand-point. This was necessitated by the express wish of the legislature, that the vested rights of individuals might have every respect. But if it is found that misrepresentations have been made for the purpose of obtaining a certificate, and that the party in the possession of such certificate is in no way qualified to conduct the business of a druggist, and that the safety of the public is endangered by his assuming that position, it is certainly the province of the Council to investigate the matter, and make such corrections of the Register as the sixteenth and twenty-ninth sections of the Act specify.

It is a very natural thing for those who are proficient to look with a critical eye upon the interlopers to whom we have referred—jealous alike for their individual interests, as well as those of the profession. But they must recollect that it is with themselves that the working of the Act is left. If members of the College see the law transgressed before their very eyes they have themselves to blame if the transgression is unpunished or repeated. It may be said with justice that to assume the office of public prosecutor, perhaps against a rival druggist, would be a most disagreeable task. This is true enough, and to remove the responsibility from the shoulders of private individuals is the intention of the Council in the appointment of the committee to whom we have referred. If, then, those parties who are aware of infringements of the Act will communicate the facts to the Registrar, we have no doubt that the ends of justice will be accomplished.

A SUGGESTION ON EDUCATION.

The selection of a system of education which will prove acceptable to the majority of the members of the College, offering equal advantages to residents of all parts of the province, and, at the same time, to be carried on with a limited amount of means, is a somewhat difficult task. The establishment of a school of pharmacy in this city; or affiliation with some of the medical schools at present existing, would not fulfil these requirements without aid was extended to enable students residing at a distance to reach the city, and also to meet the expenses of living while attending a course of lectures. This plan was proposed at the late meeting by a member of the Council, but we fear would not be practicable, as it would require a much larger amount of money than is at present at command. Even were the College to bear half the expense of non-resident students representing the various sections of counties of this province, the expense would be far over our resources.

The Council was unable to come to any decided conclusion as to the best plan to be pursued, but left the matter in the hands of a committee, with a request that they communicate with the authorities of the College of Technology, about to be established here; or with some of the medical schools. The sum of five hundred dollars was placed at the disposal of the committee, to enable them to carry out such arrangements as might appear most desirable. Our educational scheme is, therefore, still in an embryo condition, but we have a nucleus of vitality in the grant of five hundred dollars, which, ere long, we hope to see developed into active life.

In order to simplify the subject, the more easily to decide as to the best course to be pursued, it is well to view the question under the two aspects under which it naturally presents itself. Whether it is better to concentrate our energies and resources on one centre of learning, and thus offer every facility to a limited number to become *thoroughly proficient* in their profession, or, by encouraging the organization of courses of lectures in the larger towns and cities, afford an opportunity for a greater number of students to acquire a somewhat less thorough knowledge of the various branches of study. Each of these systems has its advantages and disadvantages, and, other circumstances being equal, there would be no difficulty in choosing between them; but, considering our present situation and

resources, we think the latter project much better suited to the requirements of the case.

Taking this as a basis, we would suggest that the sum placed at the disposal of the committee be divided between the cities of Ottawa, Kingston, Toronto, Hamilton and London, and such other places as might comply with the conditions to be hereafter mentioned. Adequate facilities for instruction already exist in some of these places, and in the others we do not think there would be any difficulty in finding persons willing to undertake the formation of classes. The distribution and allotment of the money to each lecturer could justly be made to depend on the number of students attending lectures, and a fixed rate of two, three or four dollars for each student in each course, might be decided on. At the close of the term—say in May or June next—those who might have charge of the classes could present to the Council a certificate of attendance, from which the amount of the grant could be decided.

We think this plan a practicable one, and calculated to serve a good purpose. It might be made to work well in conjunction with that of the formation of branch societies, to which we alluded in our October number. We should like to hear the opinion of country members, and are sure the committee would receive with pleasure any suggestions which might be made

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PHARMACEUTICAL ETHICS.

The members of the New York College of Pharmacy have adopted a code of ethics, from which we make the following extracts :—

"Although not a legitimate part of our business, custom and the necessity of the times warrant us in keeping on hand the patent medicines of the day ; yet we earnestly recommend the propriety of discouraging their employment when called upon for an opinion of their merits.

"We discountenance all secret formulæ between physicians and pharmacists, and consider it our duty to communicate such to each other when required.

"We distinctly repudiate the practice of allowing physicians a percentage on their prescriptions; and we agree not to have a secret understanding with physicians, to the pecuniary detriment of the public.

"We will endeavour, as far as lies in our power, to refrain from compromising the professional reputation of physicians, and we expect the same comity from them.

"Since the professional training of the pharmacist does not include these branches which enable the physician to diagnose and treat disease, we should, in all practicable cases, decline to give medical advice, and refer the applicant to a regular physician.

"The growing demands of the age require that those who follow the profession of pharmacy should be educated up to a higher standard. Therefore, we consider it our duty individually, and collectively, to encourage the advancement of knowledge in the profession generally, and particularly by stimulating our assistants to attend to the lectures of the College, and by aiding and assisting them to do so.

"Considering it expedient that some rule be adopted to enforce the provisions of our Code, we hereby agree, if any just cause of complaint be found against a member of this College of having violated the rules or the spirit of our Association, to bring the case before a special or the next general meeting of the College, when the accused, after being heard in his own defence, may be expelled by a two-thirds vote."

We would recommend to the College here a similar course to that taken by our New York friends. By defining the mutual relations of physician, druggist and patient, we should not only settle many points which are now a source of disagreement and annoyance, but place our profession on a much more respectable footing than at present exists.

The *Pharmaceutical Journal* of London, repudiates the idea which has been so extensively promulgated by the newspapers, that chloral hydrate is largely used for adulteration of beer. No satisfactory proof has yet been adduced that such is the case, and for the credit of Old England, we are glad to learn that the national beverage retains its primative simplicity of malt and 'ops. If we did not happen to be a Britisher, we might make disrespectful and offensive remarks about *cocculus indicus*, and other little things of that kind but the national dignity is at stake and we forbear.

The honor of Knighthood has been conferred upon Mr. Peter Spokes, Pharmaceutical Chemist, of Reading, England.

NOTICE TO SUBSCRIBERS AND ADVERTISERS.

We are glad to announce that the business editorship of this JOURNAL has been transferred to H. J. Rose, Esq. All monies should be forwarded to him, and all particulars regarding changes of address should, to ensure regularity in the mailing department, be at once transmitted. We believe that, as a rule, the literary and business editorships of any periodical are best dissociated, and have no doubt that our subscribers will appreciate the change.

Editorial Summary.

DUTIES OF THE ANCIENT APOTHECARY.—In an address given by Dr. D. C. Black, before the Glasgow Chemists' Association, and published in the *Pharmaceutical Journal* of London, is the following enumeration of the duties of the apothecary of the olden time. There are many points that the modern apothecary would do well to make note of, and act up to:

1. Must fyrst serve God, forsee the end, be clenly, pity the end.
2. Must not be suborned for money to hurt mankynde.
3. His place of dwelling and shop to be clenly, to please the sences withal.
4. His garden must be at hand, with plenty of herbes, seedes, and rootes.
5. To sow, set, plant, gather, preserve, and keep them in due tyme.
6. To read Dioscorides to know ye nature of plantes and herbes.
7. To invent medicines, to choose by colcar, taste, odour, figure, &c.
8. To have his mortars, stilles, poltes, filters, glasses, boxes, cleane and sweete.
9. To have charcole at hand to make decoctions, syrups, &c.
10. To keep his cleane ware close and cast away the baggage.
11. To have two places in his shop, one most cleane for the physic, and a barer place for the chirurgeric stuff.
12. That he neither increase or diminish the physician's file (*i.e.* prescription), and keep it for his own discharge.

13. That he neither buy nor sell rotton drugges.

14. That he peruse often his waares, that they corrupt not.

15. *That he put not in quid pro que* (*i. e.*, use one ingredient in place of another when dispensing a physician's prescription) *without advysement.*

16. That he may open well a vein for to help plurisy.

17. That he meddle not in his vocation.

18. That he delight to reade Nicolaus Myrepsus, Valerius Cordus, &c.

19. That he do remember his office is only to be physician's cooke.

20. That he use true weight and measure.

21. To remember his end and the judgment of God; and thus do I commend him to God, if he be not covetous and crafty, setting his lucre before other men's help, succour, comfort, &c.

CULTIVATION OF CINCHONA IN THE UNITED STATES.—Dr. C. C. Parry of the Department of Agriculture, New York, says that the peculiar climatic conditions, requisite to the successful cultivation of cinchona, are not to be met with within the limits of the United States; but thinks that the Island of San Domingo is well suited for the purpose, as affording mountain ranges presenting elevations of over 6,000 feet, where the necessary moisture and heat required by the cinchona can be found.

ACTIVE PRINCIPLE OF POLYGONUM HYDROPIPER.—C. J. Rademaker, M. D., (*Am. Jour. Pharm.*) finds the active principle of hydropiper to be a crystallizable acid, of a green color; soluble in alcohol, ether, and chloroform, and slightly so in diluted alcohol, but almost insoluble in water. Aqua ammoniæ, caustic potash and carbonate of soda, when added to the crystals, or a solution of the crystals, produced an intense yellow color, the crystals being dissolved. Nitric and hydrochloric acids also produced a yellow color; sulphuric acid giving a dark red, passing to black. Basic acetate of lead, produced a yellow precipitate, soluble in the mineral acids. The acid possesses a bitter acrid taste, and under the microscope, resembles uric acid from human urine. The name of polygonic acid is suggested.

SUBSTITUTE FOR HARD RUBBER.—By mixing a thick solution of glue with tungstate of soda, and adding hydrochloric acid, a precipitate is formed, which at a temperature of 86° to 140° F., is sufficiently elastic to admit of being drawn into thin sheets; on cooling the mass becomes hard and brittle, but can be again rendered plastic by the application of heat. It is said that the compound can be applied to all the purposes for which hard rubber is now used.

CARBOLIC ACID IN POWDER FORM.—Prof. C. O. Curtman (*American Journal of Pharmacy*) suggests the use of a dry argillaceous powder, instead of water, as a diluent for carbolic acid. The powder admits of employment in cases where a solution of the acid is inadmissible, and it is said the continuous and regular exhalation of the vapour from the finely divided surface of the powder is preferable to its more irregular diffusion resulting from the evaporation of an aqueous solution. The powder is also considered safer in the hands of inexperienced persons. Prof. Curtman tried a powder containing 20 per cent. of the crude acid as an insecticide, and found that it could be used without injury to plants for the destruction of *aphidæ*, while an aqueous solution containing 4 per cent. of the acid caused a rose bush to wither and ultimately to die, while the parasites were but partially destroyed. For the powder dry clay is recommended as not entering into any combination with the acid, but acting simply as a mechanical diluent.

NEW VEHICLE FOR ADMINISTERING NAUSEOUS MEDICINES.—The employment of gelatine for this purpose is alluded to by the *Medical Press & Circular*. The gelatine is dissolved in warm water, and the desired medicine added to the solution, which is then turned out on a glass plate to dry. The dry film, which may be about as thick as paper, is then divided into squares of such size as to contain the proper dose of the active ingredient; the addition of glycerine renders the preparation tough and flexible. Insoluble agents may be suspended in a thicker solution of gelatine than that used for those which are soluble in water. This method was originated by Prof. Almen, of Sweden, and has already attained great popularity in France.

A DEPRAVED TASTE.—A contemporary says that when two drops of oil of cinnamon, one ounce of glycerine and one ounce of castor oil are rubbed up together, an emulsion is formed which "children will take as a luxury and ask for more." We think an ounce of castor oil will generally prove sufficient.

NEW VEHICLE FOR PAINT.—The London *Artizan* notices a substitute for linseed oil in painting. It is composed of shellac, methylated spirit and castor oil. The principal advantage claimed for the paint is its rapidity of drying; it is said that four coats may be applied in one day. This no doubt, may be done, but we conceive that the effect would be similar to that of applying the same number of coats of shellac varnish in the same time. Of the durability of the paint we are not assured, but itis stated that soap and alkalies do not affect it; if this is the case the properties of shellac and castor oil must be wonderfully changed by the admixture.

AMERICAN PATENT MEDICINES.—The Philadelphia *Medical & Surgical Reporter* quotes the opinion of the *Gartenlaube* in regard to the neat appearance of American medicines. Says our German friend:—The Americans understand better than we how to give an appropriate covering to everything they use. Their medicines and drugs, for example, are met with in all quarters of the globe, not because they are superior to ours, God forbid, the contrary is often the case, but because their boxes and bottles are neatly inclosed and labelled, so that they can constitute an ornament for every drug store and are, at the same time, easily opened and yet air tight.

TESTING PETROLEUM.—The *Ironmonger* gives the following characteristics of a good burning oil:—

1. The color should be white, or light yellow, with blue reflection; clear yellow indicates imperfect purification, or adulteration with inferior oil.

2. The odor should be faint, not disagreeable. The specific gravity at 60 Fah. ought not to be below 0·795, nor above 0·84.

3. When mixed with an equal volume of sulphuric acid of the density of 1·53, the color ought not to become darker, but, on the contrary, lighter.

A petroleum that satisfies all these conditions, and possesses the proper flashing point, may be set down as a pure and safe article. To test the color, care should be taken to select a glass bottle of good quality, perfectly white and clear.

Correspondence.

To the Editor of the Pharmaceutical Journal.

DEAR SIR,—I, as well as others, thought when we became members of the Pharmaceutical Society, or Ontario College of Pharmacy, that none but qualified chemists, druggists, or their assistants, were entitled to register, at least so I take it from one of the clauses appearing in the minutes of the first meeting after the adoption of the new series, viz.:—

"That candidates should send with their application evidence of having served as an apprentice or assistant at least *three and-a-half years*, or been in actual business three years prior to the passing of the Act. Now, Mr. Editor, to my certain knowledge there are three persons who style themselves chemists and druggists, and whose names appear on the list of registered chemists, lately published in the Journal, that have never served an apprenticeship,

neither have they been in business until after the passing of the Act. Now, sir, if you can tell me how they came to be on the list of registered druggists, when they have not complied with the laws of the Society, you will oblige one who takes an interest in raising the standard of the Pharmacists of Ontario; but if any one who likes to apply to the Council can secure a certificate, and be placed on the list of registered chemists, among men who have devoted *five, seven, ten years*, and even more, to the study of *Chemistry, Pharmacy, Materia Medica*, etc., etc., I think it high time that some action should be taken in the matter.

Yours,

CHEMICUS.

Dingle, Dec. 11th, 1871.

To the Editor of the Canadian Pharmaceutical Journal.

SIR,—It appears to me that your correspondent, "Soothing Syrup," comes far short of the question at issue by confining his remarks to that portion of the community who do not generally have an account with the apothecary, such as artizans, mechanics, &c., (but pay for their medicines as they procure them, and to-day will go to the druggist for the medicine, as directed by the doctor, and to-morrow will return to their own druggist to make purchases for castor oil, &c., as heretofore) forgetting that in all large towns and cities there are families that keep an account with the chemist as much as they do with the grocer or dry good merchant; and as this omission has part been so ably brought out and replied to by the correspondent of the *Evening Star* of the 16th inst., I simply refer him to that letter upon this most important point, where he says "That he has tried to prove that it is absolutely wrong for a druggist to allow a percentage." This is, in my opinion, a digression. To keep to the question he should have said, "*That he has not proved that it is absolutely right for a physician to demand a percentage.*" There is, in this matter, something overlooked in the term physician. A physician is one that stands higher in the profession than the family doctor, and in the old country the family doctors generally supply the medicines required by their patients, and it would be far better if nine-tenths of these so-called physicians prepared their medicines, than inflict a penalty of fifty cents or a dollar upon the artisan, mechanic or laborer, for a prescription in the first place, and then he have afterwards to pay for the medicine prescribed with the doctor's percentage added to it; and again my opinion is that when a medical man finds his practice so large and his time so valuable, that he gives up the supplying of medicines to his patients, and takes upon himself the standing of a prescribing physician, only the dignity he then assumes should deter him from enter-

ing into any collusive arrangement whereby his patients are mulcted by having to pay an extra price for their medicines in order to give him a percentage ; again, all things being equal, there is a chance for a man having a good knowledge of his business, as a Chemist and Druggist, by giving a fair attention to it of obtaining a return for his labours, and of maintaining a good position in life; but if this practice continues, where favoritism is to be purchased and black mail is to be levied at will by men who abuse the power their profession gives them I say that the druggist is no longer a free man, and all his acquired knowledge and unwearied attention to his lawful calling, will avail him nothing.

In conclusion, taking the whole question upon all its bearings, my opinion is, that in every case, the truest and most just principle to act upon, is this, "*That the medical man should not in any way interfere* with the business of the Chemist and Druggist;" but as the patient selects his medical adviser from choice or from representation, he also should be allowed to select his apothecary, and the medical man who follows the practice here complained of, should always bear in mind, that when he directs his patient to any one druggist in particular that he may be sending the customer of another druggist away from him, who is equally as competent to dispense the medicine, and from whom he takes away, that which in all common honesty rightly belongs to him,

I am, Sir,

Your obedient servant,

A DRUGGIST.

Montreal, Dec. 20, 1871.

To the Editor of the Canadian Pharmaceutical Journal,—

DEAR SIR,—The communication from "Soothing Syrup," in the December Journal, upholding the percentage system, really demands little discussion to show the fallacy of his arguments, as the inconsistencies are too palpable.

However, for the sake of discussion, it necessitates a review, not of the conclusions arrived at by "Soothing Syrup," for they answer themselves, but the arguments which he considers demand the conclusions. A partial surrender of profits for the purpose of gaining trade, is as indispensable as brains would be to a philosopher ; it bears no relation to the question,—"Is it proper to give percentages ?" It is, according to "Soothing Syrup." A physician having an account with him prefers long reckonings. To rectify this he proffers to do this physician's work, and for so doing, allows him the profit he would receive if the crude drugs had been sold, the only accommodation being the cash. The compounding of the medicine is infinitely superior, while the compounding of the money involved in the transaction is infinitely less after the bonus has been taken

away. Next comes the question, what right has the physician to receive this *douceur*, for no equivalent has been tendered in return. If he accepts this consideration from "Soothing Syrup," would he reject 10 per cent. advance from "A Toronto Pharmacist?" It comes with a better grace as it shows that I appreciate his patronage in a more substantial manner than "Soothing Syrup," and thus the polity of percentages dwindles down to a mere competition for patronage between druggists, and when sold to the percentage shaver at the highest bid, the jobbing profit would then bear about the same relation to the cost of the drugs, as the bulk of an ounce of hops compared with an ounce of salts.

That the abuse is inseparable from the custom must be patent to every one who gives the subject consideration, for you do not bid for the local business but the physician's whole practice, thereby unjustly injuring the whole trade. No excuse can be offered for the use of empirical formulæ. The pharmacopia was compiled more especially for our use that we might be all governed by the same nomenclature, while pharmaceutical latinity is the key by which English, French and Turk translate all prescriptions into his vernacular language. By introducing such formulæ we are undoing what our forefathers wisely devised for our benefit. Prescriptions are very frequently presented from different parts of Canada, which cannot be dispensed in the city at all, to the great discomfit of the patient, who is deprived of the means of relief by this absurd custom. In a former communication on the evils arising from the percentage system, was noticed the damaging effect produced by the use of empirical formulæ, which was founded on fact. Fair play is a jewel, which we should all endeavour to secure. Let us, therefore, by fair argument, cause the propagators to see its evil tendencies through their very encouragement, and cause them to feel that they are guilty of an injustice to their co-workers and patrons. Then, and not till then, when selfishness has succumbed to the higher sentiments of their nature, will the condition of the trade be ameliorated.

There is no occupation, perhaps, which offers the same opportunities for unprincipled persons to victimize the public, and which has been, and is, taken advantage of. We still hear the old saying—that the druggist makes 11d. out of a shilling—and it is certainly not without reason. Medical men that accept this *douceur* will also order medicine more frequently, and if the percentage is on the size of the mixture, the drugs will be of a cheaper character and in a more dilute form, to bear a plausible relation to the price charged.

Preference from ability is secondary, while percentage is primary. If the physician requires medicine for his own family, and when it becomes a matter of self, he has no confidence whatever in his druggist, he goes elsewhere. Such cases might be cited. Lastly, it strikes a serious blow at the qualification of the rising generation.

> "Full many a rose is born to blush unseen,
> And waste its sweetness on the desert air."

Apprentices with non-percentage men have not the opportunities of knowing the requirements of the business, because the proprietor does not keep an entire stock of the rarer medicines, or if the stock should be complete, he never has an opportunity of dispensing them.

A TORONTO PHARMACIST.

To Prepare Skeleton Leaves.—A method, other than by the employment of water alone, is given by the *Druggists' Circular*. A solution of caustic soda is made by dissolving three ounces of washing soda in two pints of boiling water, and adding one and one-half ounce of quick-lime, previously slaked; boil for ten minutes, decant the clear solution and bring it to the boil again. During ebullition add the leaves; boil briskly for some time—say an hour—occasionally adding hot water, to supply the place of that lost by evaporation. Take out a leaf, and put it into a vessel of water, and while there rub it with the fingers. If the epidermis and parenchyma separate easily, the rest of the leaves may be removed from the lye and treated in the same way; but if not, then the boiling must be continued for a time longer. To bleach the skeletons, mix about a drachm of hypochlorite of lime (bleaching powder) with a pint of water, adding sufficient acetic acid to liberate the chlorine. Steep the leaves in this till they are whitened (about ten minutes) taking care not to let them stay in too long, otherwise they are apt to become brittle. Put them into clean water and float them out on pieces of paper. Lastly, remove them from the paper before they are quite dry, and place them in a book or botanical press.

MARKET REPORT.

The course of business during last month has undergone the changes incident to the season, opening with great briskness, and in turn succeeded by the usual stagnation common to the holidays.

Changes in price are not numerous, but are, generally, towards an advance; amongst these may be mentioned Oxalic Acid, Balsam Copaiba, Fenugreek and Alcohol, which are slightly higher. Potassium Iodide has again advanced, and is given at $10.50. Bromide is also quoted higher. Castor Oil, which has lately been very low, selling for less than its intrinsic value, is now very firm at an advance of 1c. per pound. Oil of Sassafras is higher, commanding $1.25 to $1.50. Newcastle Bicarbonate of Soda is quoted at a higher rate.

Oils are quiet, with the exception of Linseed, which is at present very firm at 77½ to 80c. for raw, and 82½ to 85c. for boiled. Sperm and Whale Oils have advanced greatly, and Seal is quoted slightly higher. Spirits Turpentine continues very firm, and we see no probability of a reduction in price. Other naval stores remain about the same as last month.

Mr. Walter Ross, of Collingwood, has opened a new business in that place.

DRUGS, MEDICINES, &c.	$ c.		$ c.
Acid, Acetic, fort	0 12	@	0 14
" Benzoic, pure	0 25		0 35
" Citric	0 90		0 90
" Muriatic	0 04		0 06
" Nitric	0 11½		0 15
" Oxalic	0 30		0 35
" Sulphuric	0 03¾		0 07
" Tartaric, pulv	0 45		0 50
Ammon, carb. casks	0 20		0 22
" " jars	0 19		0 20
" Liquor, 880	0 17		0 25
" Muriate	0 12½		0 15
" Nitrate	0 45		0 60
Æther, Acetic	0 45		0 50
" Nitrous	0 27		0 30
" Sulphuric	0 45		0 50
Antim. Crude, pulv	0 13		0 17
" Tart "	0 50		0 55
Alcohol, 95 per ct.....Cash	1 65		1 72
Arrowroot, Jamaica	0 18		0 22
" Bermuda	0 45		0 65
Alum	0 02½		0 03½
Balsam, Canada	0 24		0 35
" Copaiba	0 77		0 80
" Peru	4 00		4 20
" Tolu	0 90		1 00
Bark, Bayberry, pulv	0 18		0 20
" Canella	0 17		0 20
" Peruvian, yel. pulv	0 45		0 50
" " red "	2 10		2 20
" Slippery Elm, g. b	0 15		0 20
" " flour, packets	0 28		0 32
" Sassafras	0 12		0 15
Berries, Cubebs, ground	0 20		0 25
" Juniper	0 06		0 10
Beans, Tonquin	0 62		1 10
" Vanilla	16 00		00
Bismuth, Alb			5 00
" Carb	20		5 00
Camphor, Crude	0 38		0 41
" Refined	0 50		0 55
Cantharides	2 20		2 30
" Powdered	2 30		2 40
Charcoal, Animal	0 04		0 06
" Wood, powdered	0 10		0 15
Chiretta	0 25		0 30
Chloroform	1 00		1 50
Cochineal, S. G	0 80		0 90
" Black	1 00		1 20
Colocynth, pulv	0 50		0 60
Collodion	0 67		0 70
Elaterium.....oz	4 50		5 00
Ergot	0 65		0 75
Extract Belladonna	2 20		2 50
" Colocynth, Co	1 25		1 75
" Gentian	0 50		0 60
" Hemlock, Ang	1 12		1 25
" Henbane, "	1 70		2 00
" Jalap	5 00		5 50
" Mandrake	1 75		2 00
" Nux Vomic	0 60		0 70
" Opium	Variable.		
" Rhubarb	7 50		—
" Sarsap. Hon. Co	1 00		1 20
" " Jam. Co	3 25		3 70
" Taraxicum, Ang	0 70		0 80
Flowers, Arnica	0 25		0 35
" Chamomile	0 30		0 40
Gum, Aloes, Barb. extra	0 70		0 80
" " " good	0 42		0 50
" " Cape	0 12		0 20
" " " powdered	0 20		0 30
" " Socot	0 76		0 80
" " " pulv	0 90		1 00
" Arabic, White	0 60		0 65
" " powdered	0 50		0 55
" " sorts	0 28		0 30
" " powdered	0 42		0 50
" " com. Gedda	0 13		0 16
" Assafœtida	0 31		0 35
" British or Dextrine	0 13		0 15
" Benzoin	0 48		0 55
" Catechu	0 12		0 15
" powdered	0 25		0 30
" Euphorb, pulv	0 32		0 40
" Gamboge	1 05		1 20
" Guaiacum	0 38		0 87
" Myrrh	0 42		0 60

DRUGS, MEDICINES, &c.—*Contd.*	$ c.	$ c.
" Sang Dracon	0 60	0 70
" Scammony, powdered	6 50	6 75
" " Virg. "	14 50	—
" Shellac, Orange	0 43	0 45
Gum, Shellac, liver	0 38	0 40
" Storax	0 65	0 75
" Tragacanth, flake	1 10	1 40
" " common	0 35	0 40
Galls	0 27	0 32
Gelatine, Cox's 6d	1 10	1 20
Glycerine, common	0 25	0 30
" Vienna	0 30	0 40
" Prices	0 60	0 75
" Honey, Canada, best	0 15	0 17
" Lower Canada	0 14	0 16
Iron, Carb. Precip	0 20	0 25
" " Sacchar	0 40	0 55
" Citrate Ammon	1 10	1 20
" " & Quinine, oz	0 50	0 60
" " & Strychine "	0 17	0 25
" Sulphate, pure	0 03	0 10
Iodine, good	10 00	—
" Resublimed	10 50	—
Jalapin	1 40	1 60
Kreosote	1 60	1 70
Leaves, Buchu	0 25	0 30
" Foxglove	0 25	0 30
" Henbane	0 35	0 40
" Senna, Alex	0 30	0 60
" " E. I	0 12½	0 20
" " Tinnevilly	0 20	0 30
" Uva Ursi	0 15	0 15
Lime, Carbolate.....brl	5 50	—
" Chloride	0 05	0 06
" Sulphate	0 08	0 12½
Lead, Acetate	0 11	0 15
Leptandrin.....oz	0 60	—
Liq. Bismuth	0 50	0 75
Lye, Concentrated	1 50	2 00
Liquerice, Solazzi	0 50	0 55
" Cassano	0 23	0 40
" Other brands	0 14	0 25
Liquorice, Refined	0 35	0 45
Magnesia, Carb. 1 oz	0 20	0 25
" " 4 oz	0 17	0 20
" Calcined	0 65	0 75
" Citrate.....gran.	0 40	0 50
Mercury	1 10	1 15
" Bichlor	1 00	—
" Chloride	1 30	—
" C. Chalk	0 60	—
" Nit. Oxyd	1 30	—
Morphia Acet	3 90	4 00
" Mur	3 90	4 00
" Sulph	3 85	4 20
Musk, pure grain.....oz	21 00	—
" Canton	0 90	1 20
Oil, Amonds, sweet	0 50	0 52
" " bitter	14 00	15 00
" Aniseed	3 80	4 00
" Bergamot, super	5 00	5 25
" Carraway	4 00	4 20
" Cassia	2 00	2 20
" Castor, E. I	0 14	0 15
" Crystal	0 22	0 25
" Italian	0 26	0 28
" Citronella	1 10	1 50
" Cloves, Ang	1 00	1 00
" Cod Liver	1 90	1 50
" Croton	2 00	2 10
" Juniper Wood	0 80	1 00
" " Berries	6 00	7 00
" Lavand, Ang	16 00	17 60
" " Exotic	1 40	1 60
" Lemon, super	5 90	5 20
" " ord	2 20	3 40
" Orange	3 20	3 50
" Origanum	0 65	0 75
" Peppermint Ang	13 00	14 40
" " Amer	3 00	3 25
" Rose, Virgin	7 75	8 00
" " good	5 50	6 00
" Sassafras	1 25	1 50
" Wintergreen	6 50	7 00
" Wormwood, pure	5 80	6 50
Ointment, blue	0 76	0 80
Opium, Turkey	6 00	6 25
" " pulv	8 00	10 00

DRUGS, MEDICINES, &c.—*Cont'd*	$ c.	$ c
Orange Peel, opt.	0 30	0 36
" good	0 12½	0 20
Pill, Blue, Mass.	0 80	0 85
Potash, Bichrom	0 25	0 27
" Bi-tart	0 27	0 28
" Carbonate	0 14	0 20
" Chlorate	0 55	0 55
" Nitrate	10 50	11 00
Potassium, Bromide	1 30	1 50
" Cyanide	0 75	0 80
" Iodide	10 50	0 00
" Sulphuret	0 25	0 35
Pepsin, Boudault's oz	1 50	—
" Houghton's doz.	8 00	9 00
" Morson's oz.	0 85	1 10
Phosphorus	0 75	0 85
Podophyllin	0 50	0 60
Quinine, Pelletier's	—	2 25
" Howard's	2 35	—
" " 100 oz. case.	2 30	—
" " 25 oz. tin..	2 30	—
Root, Colombo	0 13	0 20
" Curcuma, grd	0 12½	0 17
" Dandelion	0 25	0 35
" Elecampane	0 14	0 17
" Gentian	0 10	0 12½
" " pulv	0 15	0 20
" Hellebore, pulv	0 17	0 20
" Ipecac, "	2 20	2 30
" Jalap, Vera Cruz	1 35	1 60
" " Tampico	0 90	1 00
" Liquorice, select	0 11	0 13
" " powdered	0 15	0 20
" Mandrake "	0 20	0 25
" Orris, "	0 20	0 25
" Rhubarb, Turkey	3 50	—
" " E. I.	1 10	2 00
" " " pulv	1 40	2 50
" " 2nd	1 30	1 50
" " French	0 75	—
" Sarsap., Hond	0 40	0 45
" " Jam	0 88	0 90
" Squills	0 10	0 15½
" Senega	1 70	1 80
" Spigelia	0 48	0 50
Sal, Epsom	2 25	3 00
" Rochelle	0 26	0 35
" Soda	0 01¾	0 03
Seed, Anise	0 13	0 16
" Canary	0 05	0 06
Cardamon	3 50	3 75
" Fenugreek, g'd	0 09	0 10
" Hemp	0 06½	—
" Mustard, white	0 14	0 16
Saffron, American	2 00	2 50
" Spanish	17 00	18 00
Santonine	9 50	10 00
Sago	0 07½	0 09
Silver, Nitrate Cash	14 85	16 50
Soap, Castile, mottled	0 10	0 14
Soda Ash	0 03	0 04
" Bicarb. Newcastle	5 00	5 25
" " Howard's	0 14	0 16
" Caustic	0 04	0 05
Spirits Ammon., arom	0 25	0 35
Strychnine, Crystals	2 20	2 50
Sulphur, Precip	0 10	0 12½
" Sublimed	0 03½	0 05
" Roll	0 03	0 04½
Vinegar, Wine, pure	0 55	0 60
Verdigris	0 35	0 40
Wax, White, pure	0 75	0 80
Zinc, Chloride oz	0 10	0 15
" Sulphate, pure	0 10	0 15
" " common	0 06	0 10
DYESTUFFS.		
Annatto	0 35 @	0 60
Analine, Magenta, cryst	3 25	4 00
" " liquid	2 00	—
Argols, ground	0 15	0 25
Blue Vitrol, pure	0 08	0 10
Camwood	0 06	0 09
Copperas, Green	0 01½	0 02½
Cudbear	0 16	0 25
Fustic, Cuban	0 02	0 04
Indigo, Bengal	2 40	2 50
" Madras	0 95	1 20
Extract	0 28	0 35

DYESTUFFS—*Continued.*		
Japonica	0 05½	0 06¼
Lacdye, powdered	0 33	0 38
Logwood	0 02	0 03
Logwood, Camp	0 02	0 3½
" Extract	0 10	0 14
" " 1 lb. bxs	0 14	—
" " ½ lb. "	0 15	—
Madder, best Dutch	0 16	0 17
" 2nd quality	0 15	0 16
Quercitron	0 03	0 05
Sumac	0 06	0 08
Tin, Muriate	0 10½	0 12½
Redwood	0 05	0 06
SPICES.		
Allspice	0 8½@	0 10
Cassia	0 38	0 40
Cloves	0 12½	0 15
Cayenne	0 18	0 25
Ginger, E. I.	0 12	0 14
" Jam	0 20	0 30
Mace	1 45	1 50
Mustard, com	0 20	0 25
Nutmegs	1 05	1 10
Pepper, Black	0 19	0 20
" White	0 26	0 28
PAINTS, DRY.		
Black, Lamp, com	0 07 @	0 08
" " refined	0 25	0 30
Blue, Celestial	0 08	0 12
" Prussian	0 65	0 75
Brown, Vandyke	0 10	0 12½
Chalk, White	0 01	0 01½
Green, Brunswick	0 07	0 10
" Chrome	0 16	0 25
" Paris	0 25	0 35
" Magnesia	0 20	0 25
Litharge	0 06½	0 09
Pink, Rose	0 12½	0 15
Red Lead	0 06½	0 08
" Venetian	0 02½	0 03½
Sienna, B. & G	0 10	0 15
Umber	0 07	0 10
Vermillion, English	1 15	1 25
" American	0 25	0 35
Whiting	0 85	0 90
White Lead, dry, gen	0 08	0 09
" " " No. 1	0 07	0 08
" " " No. 2	0 05	0 07
Yellow Chrome	0 12½	0 35
" Ochre	0 02½	0 03½
Zinc White, Star	0 10	0 12
COLORS, IN OIL.		
Blue Paint	0 12 @	0 15
Fire Proof Paint	0 06	0 08
Green, Paris	0 30	0 37½
Red, Venetian	0 07	0 10
Patent Dryers, 1 lb tins	0 11	0 12
Putty	0 03¾	0 04½
Yellow Ochre	0 08	0 12
White Lead, gen. 25 lb. tins	2 30	—
" " No. 1	2 10	—
" " No. 2	1 90	—
" " No. 3	1 65	—
" " com	1 30	—
White Zinc, Snow	2 75	3 25
NAVAL STORES.		
Black Pitch	5 50 @	5 60
Rosin, Strained	5 00	5 25
" Clear, pale	9 00	10 00
Spirits Turpentine	0 85	0 90
Tar Wood	5 00	5
OILS.		
Cod	0 58 @	0 60
Lard, extra	1 00	—
" No. 1	0 95	1 00
" No. 2	0 85	0 90
Linseed, Raw	0 77½	0 80
" Boiled	0 87½	0 85
Olive, Common	1 15	1 35
" Salad	1 80	2 30
" " Pints, cases	4 20	4 40
" " Quarts	3 60	3 80
Seal Oil, Pale	0 70	0 75
" " Straw	0 65	0 65
Sesame Salad	1 30	1 35
Sperm, genuine	2 30	2 40
Whale, refined	0 90	0 95

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