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Original and Selected Papers.

CITRATE OF LITHIUM.*

BY C. UMNEY.

Citrate of Lithium of trade is either in a crystalline or pulverulent form.

Its composition when crystalline is exceedingly uniform, but when in powder, as commonly met with in pharmacy, it varies considerably, and is dissimilar to the citrate of lithium of the British Pharmacopœia.

In order to test the suitability of the official proportions of citric acid and lithium carbonate for the production of neutral anhydrous lithium citrate, and to determine whether the *characters and tests* given in the Pharmacopœia were strictly accurate, and in addition to ascertain by the examination of trade specimens how far the requirements of the Pharmacopœia were complied with, the experiments upon which this communication is based were made.

The official process directs that to 100 parts of carbonate of lithium, 180 parts of citric acid should be used, but Squire ('Companion to the Pharmacopœia,' p. 180) takes exception to this, and gives for 100 of carbonate, 200 parts of citric acid, which latter proportions have been accepted, for in the United States' Pharmacopœia, 1874, this ratio has been adopted.

Now neither by calculation nor in actual practice are either of these proportions correct.

*Read before the British Pharmaceutical Conference and published in the *Pharm. Journal and Transactions.*

Accepting the formula :—

3 $(L_2CO_3) \div 2\ (H_3C_6H_5O_7H_2O) = 2\ (L_3C_6H_5O_7)$,

then 100 parts of carbonate of lithium will be required to neutralize 189·2 parts of citric acid, the product of anhydrous lithium citrate being identical with the amount of citric acid originally employed.

If commercial carbonate of lithium of fine quality contain 98·5 per cent. of real carbonate, then the proportions would be 100 parts of carbonate and 186·5 parts of citric acid.

Lithium citrate when prepared from these proportions and dried until anhydrous was neutral to test paper, while a specimen made in accordance with the British Pharmacopœia was distinctly alkaline, and one by the United States' formula strongly acid, and much discoloured.

A solution of specific gravity 1·230 when set aside, produced* crystalline citrate of lithium, more generally used in pharmacy some fifteen or twenty years ago than at the present time.

The definition of "deliquescent," applied by the British and United States' Pharmacopœias to citrate of lithium, is (as remarked by Squire) inaccurate, and this can doubtless be confirmed by those accustomed to handle the salt.

Incineration, as a means of quantitative estimation, is given in both the Pharmacopœias referred to, the acid salt of the one, and the alkaline salt of the other, being both stated to yield the theoretical quantity of 53 per cent. of carbonate by ignition.

It is apparent that if different proportions of carbonate be used for the production of two citrates, as these Pharmacopœias direct, then the weight of these residues upon incineration cannot be identical as stated, but must be in proportion to the weight of the original carbonate employed.

The theorectical quantity of carbonate cannot easily be obtained by incineration of lithium citrate, inasmuch as carbonate of lithium loses a portion of its carbonic acid at high temperatures and becomes caustic.

In order to obtain approximate results it is advisable to subject the citrate to the minimum amount of heat, and to conduct the incineration rapidly.

The examination of trade specimens of lithium citrate indicates that not only do manufacturers regard the anhydrous salt as required by the Pharmacopœia as an unnecessary refinement, but they simply decline to attempt its production, for in no instance have I been able to procure specimens that contained more than 84 per cent. while those most generally met with do not exceed 74 per cent of anhydrous citrate.

*Mr. Sandford has kindly favoured me with crystals made twenty years since, from proportions almost identical with those I have given. These crystals contain about 73 per cent. of anhydrous citrate of lithium, and correspond in all probability to the formula $L^3C_6H_5O_7 + 4H^2O$.

Lithium Citrate of Pharmacy.

Specimen.	Quantity taken.	Dried at 100°.	Dried at 115° (240° Fahr. B. P.) to produce the officinal citrate.
1	1 grm.	·852grm.	·838 grm.
2	"	·862	·821
3	"	·808	·745
4	"	·765	·747
5	"	·773	·741
6	"	·850	·828
7	"	·757	·739
8	"	·822	·803
9	"	·770	·733
10	"	·765	·729

It would seem from the above that the difference between citrate dried at 100° and 115° is about 5 per cent. corresponding to about one molecule of water, or in other words, if the formula for crystalline citrate of lithium be $L_3C_6H_5O_7\ 4H_2O$, then the salt dried at 100° will lose three of these four molecules of water.

It is possible that the compilers of the 1864 British Pharmacopœia, in which citrate of lithium was first official, adopted the anhydrous citrate to lessen the objections to the salt on account of its supposed deliquescent character, and that in the 1867 edition the same was accepted as correct.

I cannot see why the cystals, which are thoroughly definite and reliable, should not be used in preference to anhydrous citrate, and if it be thought desirable to retain a salt containing less water than the crystals, then one dried at the temperature of a water bath would in my opinion be sufficient for all practical purposes.

The chief advantage likely to result from the adoption of the crystalline as the official form of citrate of lithium would be that its appearance would guarantee its uniformity, while the chief argument in favour of drying the citrate at the temperature of a water bath *only*, is that such a salt is more easy of manipulation, and can be prepared and retained under all circumstances of greater uniformity than one absolutely anhydrous.

The President said this was one of a series of valuable papers on articles in the Pharmacopœia which Mr. Umney had contributed. Citrate of lithium was greatly used, and it appeared to be unsatisfactory in its composition, varying sometimes to the extent of 10 or 20 per cent. He agreed with Mr. Umney that, provided his assertion were correct that the crystalline salt was not deliquescent, it would be better to use the salt in that form rather than in an amorphous condition. He should like to ask whether benzoate of lithium had been tried; he had seen it strongly recommended in a continental journal.

Mr. Williams said benzoate of lithium was being extensively employed. He thought it was in America where it was principally used. It seemed to be an elegant and beautiful salt, and it was largely prepared for the foreign market. Having been a maker of citrate of lithium for many years, he should like to say that he considered the reasons why crystals were given up was that it was found very difficult to produce them with uniformity and elegance. Manufacturers know better now, but ten or fifteen years ago it was a difficult task, for the manufacture of good crystals had died out. He did not think the anhydrous salt of the Pharmacopœia was practically so useful as a salt containing one atom of water would be.

The President asked whether the crystals were deliquescent.

Mr. Williams said no; not when they are properly prepared In fact, they were rather efflorescent.

Professor Redwood said he had been happy to hear it stated by two manufacturers that they now advocated the adoption of the crystalline form of this salt. When the Pharmacopœia of 1867 was under revision the difficulty in the way of adopting the crystalline article originated with manufacturers; it was they who really stood in the way, and Mr. Williams had virtually admitted as much. There was one advocate of the crystalline form at that time, and that was Mr. Sandford, who had prepared it and showed it could be prepared. Nevertheless, the manufacturers who were consulted objected to its being ordered in that form: and that was the reason why this and some other salts were left as they are ordered in the amorphous condition. He was glad manufacturers had altered their opinion and were willing to admit that such articles should be ordered in a crystalline condition.

ON TINCTURE OF ARNICA.*

BY J. B. MOORE.

The directions given in the U. S. Pharmacopœia for the preparation of the Tincture of Arnica are as follows:

"Mix the alcohol and water, and having moistened the arnica slightly with a portion of the mixture, bruise it thoroughly in a mortar. Then pack it firmly in a cylindrical percolator, and pour upon it the remainder of the mixture, and afterwards diluted alcohol, until two pints of tincture are obtained."

The above plan of reducing the arnica to a proper condition for percolation I have never found satisfactory, and it is by no means calculated to afford the best results. In order to thoroughly exhaust

From the American Journal of Pharmacy.

arnica, in the proportion in which it is directed in the officinal formula, namely, six troy ounces to two pints of tincture, its bulkiness requires that the flowers should be in rather a fine state of division, and that the percolation should proceed slowly to yield a preparation of uniform and definite strength.

I have for several years been in the habit of departing somewhat from the officinal directions in making this tincture. My mode of procedure is as follows:

In the first place I take good care that the flowers are thoroughly dried by spreading them out on paper and exposing them to the sun and air for several hours, or, as is necessary in winter time, by placing them in the oven of the stove, or other warm and dry place where the temperature will not exceed 120°, in all cases occasionally disturbing them with the hand. Then, when they are sufficiently dried, I throw them upon a sieve of from twenty to thirty meshes to the inch, and rub them through it by means of the hand, and any portion which refuses to pass the sieve I reduce to the proper condition by bruising and rubbing in an iron mortar. The powder as thus obtained is to be well moistened with the menstruum, and then thoroughly beaten in an iron mortar. It is then to be packed firmly in a salt-mouthed bottle, or other suitable vessel, which should be stopped tightly and set aside to macerate in a moderately warm place for twenty-four hours. The powder is then to be firmly packed in a cylindrical percolator, and the process from this point is to be proceeded with according to the officinal directions. This process will invariably yield a reliable preparation.

Arnica flowers when moistened and bruised in a mortar according to the officinal directions, cannot, even after a great deal of labour, be brought to that fine and uniform state of comminution that is necessary for exhaustive percolation.

The flowers after they have been dried are very easily and quickly rubbed through a sieve of No. 20 to No. 30. A pound may be thus reduced to powder in a very short time; and no one who ever tries this plan will fail to appreciate its advantages.

I adopt this same plan in powdering chamomile flowers, hops, and other similar substances.

It is well for every apothecary to be provided with a set of strong iron-wire sieves of not less than from 12 to 18 inches in diameter, ranging from ten to forty meshes to the inch, with two small iron rods crossing each other at the bottom of the sieve, to strengthen and support the wire-work. They are much more substantial and more durable than the small, frail brass-wire sieves which pharmaceutists usually employ: of course, for sifting small quanties of *fine* powders for dispensing purposes and other small operations, it is necessary to be provided also with a set of the fine brass-wire sieves. A set of each, in fact, are essential to every well-regulated pharmacy.

The bruising, as directed above, of the moistened powder, before the preliminary maceration may appear superfluous, but such is not the case, as I have found it to afford better results than are obtained when this part of the process is omitted. Bruising the moistened powder seems to have the effect of enabling the menstruum to more readily penetrate the particles of the powder, and to exert its softening and solvent power with greater energy;—at least this is my belief, based upon close observation in oft-repeated workings of the process. Especially is this fact manifest when the percolation is proceeded with, omitting the twenty-four hours' preliminary maceration. The latter, however, I consider an important part of the process, as without it, when such bulky substances are treated, thorough and exhaustive percolation, always so desireable, is difficult to be attained.

I cannot see any good reason why so alcoholic a menstruum as is employed in the officinal formula should be used in making this tincture. Diluted alcohol is a better solvent for the active properties of arnica than the officinal menstruum, and is cheaper. Besides, it makes a deeper-coloured and richer-looking preparation, and for the great majority of cases in which the tincture of arnica is externally employed, a less alcoholic tincture would be better adapted and more desirable.

The tincture is much used in the treatment of cases where the cuticle is abraded or very sensitive, and as a lotion for cuts and inflamed surfaces, and in all such cases, the strongly alcoholic character of the officinal tincture is objectionable; while in all cases of rheumatism, sprains, etc., for which the tincture is so frequently used, it would be equally efficient if made with diluted alcohol.

I would propose to the committee to whom will be delegated the work of revision of our next Pharmacopœia, the propriety of substituting diluted alcohol as the menstruum for tincture of arnica for that employed in our present Pharmacopœia. It would be a change which I think the profession generally would heartily approve.

The physiological action of arnica flowers do not seem to have ever been carefully and fully investigated. They are certainly worthy of more attention at the hands of the therapeutist than they ever received.

As an internal remedy I know but little of their physiological action, excepting what is vaguely stated in our text books, but of their use as an external remedy, in the form of a tincture, infusion, etc., I am better prepared to speak, and am fully convinced of their value in rheumatism, sprains, bruises, etc., and in relieving the pain, swelling, and the soreness of injured parts. In fact, no remedy devoid of merit could ever have attained the almost universal popularity that arnica has acquired in its various preparations. It is largely employed in regular practice, while in domestic practice it is almost universally used. Many families buy the flowers and make

the tincture themselves, by macerating them in whiskey; and in this way it is used almost as a specific for all the outward ills that human flesh is heir to. There really seems to be soothing and anodyne properties inherant in them—properties that are not recognized or credited to them in any of our medical works.

Philadelphia, Pa., July, 1875.

A REPORT UPON THE PHYSIOLOGICAL ACTION OF AN ALKALOID OBTAINED FROM JABORANDI.*

BY WILLIAM MURRELL, F.R.C.P.

I have made, under the superintendence of Dr. Burdon Sanderson, several experiments in the physiological laboratory of the University College, on the alkaloid obtained by Mr. Gerrard from jaborandi.

A 1-10th grain dissolved in a few drops of water and injected into the jugular vein produced profuse salivation into a dog and rabbit which had been rendered insensible by chloral and morphia. In the rabbit the salivation commenced five minutes after the injection, and in the dog—a small black and tan—the effect was almost instantaneous, the viscid saliva at the expiration of two minutes running freely from the mouth. In both animals the flow continued for over an hour, but was readily arrested by the injection of grs. 1-200 of sulphate of atropine. In the dog especial attention was paid to the condition of the skin, but there was no increase in its secretion, a result which excites no surprise when the difficulty and rarity with which dogs ordinarily perspire is taken into consideration. In both animals the injection caused a retardation of the heart's action, and had a marked influence on the blood pressure.

The effect of the drug upon the lower animals was equally apparent. In frogs the subcutaneous injection of $\frac{1}{2}$ grain produced powerful tetanic symptoms, comparable to those resulting from the administration of strychnia. The tetanus was extremely powerful, the animal in several instances being jerked completely off the table. It was usually produced in from a quarter of an hour to an hour from the injection of the drug, and after its first appearance a paroxysm could be readily excited by the slightest touch, sometimes even by a breath of air; the injection of $\frac{1}{4}$ or $\frac{1}{8}$ grain was followed by the production of similar phenomena, although their appearance was longer delayed. Death usually resulted in from two to three hours, often in a much shorter time.

Smaller doses—gr. 1-75, 1-50 produced no tetanus, but caused

*Read at the British Pharmaceutical Conference and Published in the Pharm. Jour. and Trans.

well-marked neurotic symptoms, which proved fatal in from six to twelve hours. The gr. 1-200 was the smallest dose which in the frog produced definite results. The gr. 1-100 was in several experiments found to have no effect on the animal. In frogs the drug, even in the smallest doses, produced an extremely viscid condition of the skin, but no salivation.

The drug proved equally fatal to animals still lower in the scale. A fly was immersed for a few seconds in a 1 in 50 solution of the alkaloid. On being removed its wings were wet and impeded its movements. When dry the animal was placed upon the table and soon commenced crawling about, its movements being slow and unsteady, and no attempt at escape being made. On being thrown in the air there was no effort to fly. A slight breath sufficed to blow it over on its back, where it appeared to be quite incapable of retaining its normal position. It died in about three-quarters of an hour. The absolute necessity of obtaining the active principle of jaborandine was recognized from its first introduction. Mr. Gerrard has removed the chief difficulty in the way of a physiological or clinical investigation of its properties, the alkaloid being clearly capable of producing in a very much smaller dose the full effects obtained by the use of the plant itself. Its free solubility in water is for scientific purposes a matter for congratulation. The antagonism to atropine is a property of especial importance, and would seem likely to be productive of the most valuable results.

HOW TO MAKE COARSE WOOD LOOK LIKE POLISHED MAHOGANY.*

The following process taken from *The Manufacturer and Builder* will, we believe, interest our readers, for we are frequently asked similar queries by druggists who wish to improve the appearance of some of their store-fixtures.

The coarse wood is first coated with a coloured size, which is prepared by thoroughly mixing up in a warm solution of 1 part of commercial glue to 6 parts of water, a sufficient quantity of the commercial mahogany brown, which is in reality an iron oxide. This is best effected by adding in excess a sufficient quantity of the dry colour with the warm solution of glue, and thoroughly mixing the mass by means of a brush until a uniform paste is obtained, in which no more dry red particles are seen.

A trial coat is then laid upon a piece of wood. If it is desired to give a light mahogany colour to the object, it is only necessary to add less, and for a darker colour more, of the brown body colour. When the coat is dry it may be tested, by rubbing with the fingers,

*Druggists' Circular.

whether the colour easily separates or not. In the former case more glue must be added until the dry trial coat no longer perceptibly rubs off with the hands. Having ascertained in this way the right condition of the size colour with respect to tint and strength, it is then warmed slightly, and work through a hair sieve by means of a brush. After this it is rubbed upon the wood surface with the brush, which has been carefully washed. It is not necessary to keep the colour warm during the painting. Should it become thick by gelatinizing, it may be laid on the wood with the brush and dries more rapidly than when the colour is too thin. If the wood is porous and absorbs much colour, a second coat may be laid on the first when dry, which will be sufficient in all cases. On drying, the size colour appears dull and unsightly, but the following coat changes immediately the appearance of the surface. This coat is spirit varnish. For its production 3 parts of spirits of wine of 90° are added in excess to 1 part of red acaroid resin in one vessel, and in another 10 parts of shellac, with 40 parts of spirits of wine of 80°. By repeated agitation for three or four days, the spirit dissolves the resin completely. The shellac solution is then poured carefully from the sediment, or, better still, filtered through a fine cloth, when it may be observed that a slight milky turbidity is no detriment to its use. The resin solution is best filtered into the shellac solution by pouring through a funnel loosely packed with wadding.

When filtered, the solutions of both resins are mixed by agitating the vessel, and letting the varnish stand a few days. The acaroid resin colours the shellac, and imparts to it at the same time the degree of suppleness usually obtained by the addition of Venetian turpentine or linseed oil. If the varnish is to be employed as a coat, the upper layers are poured off at once from the vessel. One or two coats suffice, as a rule, to give the object an exceedingly pleasing effect. The coats dry very quickly, and care must be taken not to apply the second coat till the first is completely dry.

TOUGHENED GLASS.*

The real merits of an invention are generally obscured by the preliminary puffing which seems to be considered necessary now-a-days to introduce it to the public, and some time must, in nearly all cases, elapse before its really valuable points can be determined, and separated from the chaff of fulsome and exaggerated commendations with which a new discovery is generally ushered in by its sponsors. Bastie's discovery of a method of toughening glass is no exception to this general truth. While it seems to ensure for glass a somewhat enlarged sphere of application, by giving it greater durability, it has some weak points about it which show that the problem is yet far

*Manufacturers' Review.

from completely solved. Bastie's toughened glass resists blows from a hammer, the impact of metallic bodies, strains, etc., to a much greater extent than common glass; but, if it does finally break, it does not separate into a limited number of sharp angular fragments, but, with a sort of explosion, is shivered into fine dust. If it is touched with a diamond or a fine file, the same thing happens, though we understand that it can be cut by the wheel, and etched by means of hydrofluoric acid or by the sand-blast process. Now, this combination of qualities, showing resistance to one kind of destructive influences, and ready succumbence to another, is by no means new in glass; at least, to a certain extent, it exists in the so-called Bologna phials and Prince Rupert's drops.

To quote from a recent description, if a glass vessel be allowed to cool directly it has been made, and if, when cold, a small splinter of flint be dropped gently into it, the vessel will fly to pieces with great violence, sometimes directly, and sometimes not until after the lapse of several minutes. A slight scratch, too, will frequently cause unannealed glass to break, and even to become reduced to powder; whilst, on the other hand, singularly enough, it will often resist a smart blow. These curious physical properties are exemplified in the Bologna phial and the well known Prince Rupert's drops. Mr. Charles Tomlinson, the talented editor "The Cyclopædia of Useful Arts," which bears his name, some years since came into possession of some of these phials. They average four inches in length by one inch in diameter, with a thickness of about one-eighth of an inch. A leaden bullet dropped into one of these phials from a height of three feet will not break it, nor will a hard blow on the outside with a stick of wood fracture it. If, however, a grain of sand or a small splinter of flint be dropped into the phial, it will crack and fall into fragments. This result is sometimes produced immediately, and at others not until several minutes have elapsed. This remarkable property, Mr. Tomlinson states, appears to be destroyed by age, inasmuch as some of the Bologna phials in his possession, which were about fifty years old would not break on a grain of sand being dropped into them. They, however, flew to pieces upon the interior surface being scratched with a file. The phials, having been preserved for so many years in a moderate, and sometimes perhaps a warm temperature, may thus have been subjected to a slow and gradual, although partial annealing, which has destroyed their extreme fragility.

Similar phenomena are exhibited in a higher degree by Prince Rupert's drops, which derive their name from the prince who introduced them into England in 1661, exhibiting them first before Charles II. These *lachrymæ vitræ*, or glass tears, as they are also called, are made by allowing melted glass to drop into cold water, when a pear-shaped drop is formed, one extremity being globular and the other tapering off to a point. They may be hit smartly on the thick end without sustaining any damage, but if only a fragment

be broken off the tail, the drop bursts with a report, and is resolved into dust. Both the Rupert drops and the Bologna phials, however, may be divested of these properties by very careful annealing—that is, by heating and cooling them slowly.

The close analogy between the phenomena described and the properties exhibited by the Bastie glass, will be perceived at once, and we doubt not, that, however interested parties may dissent, the scientific verdict will be that this improved glass is in reality a Prince Rupert's drop on a large scale. It would be curious, but not at all surprising, to find that though it may withstand the beating with hammers and the pelting with brass and iron balls, it may vanish into "smithereens" at a slight scratch or friction.

PARAFFINIC ACID.*

M. Pouchet, the son of the late distinguished physiologist of Rouen, France, lately sent a paper to the Paris Academy of Sciences on the behavior of paraffin when treated with fuming nitric acid at 47° Baume. We know that it absorbs oxygen, and is transformed into an oily liquid, having a slight yellowish-green hue, called by M. Champion "paraffinic acid," a denomination to which M. Pouchet objects. He says that, in whatever way the attack be conducted, provided we do not exceed a temperature of 110° C., and stop the operation when the consistency of butter is obtained, the results are pretty nearly the same, and may be reduced to two kinds, viz., soluble and insoluble compounds. The former consists of caproic, then butyric, caprylic, capric and other fatty acids, accompanied with suberic valerianic, œnanthylic and similar acids, some of which may be obtained crystallized from the mother lye. As for the compound, that is insoluble in water, M. Pouchet having got rid of it by frequent washing from the acids which soil it, finds it to be a new fatty acid, to which he restricts the denomination of "Paraffinic." In support of this view, he says it is reduced to the state of an emulsion by the volatile fatty acids that encumber it; hence, if in this state it be subjected to long ebullition with water, the steam evolved will carry off all these parasitical compounds and decompose their nitrous derivatives, and solid paraffinic acid will alone remain in the retort. This compound, in its pure state, is of a slightly yellowish white, and lighter than water; it has a smell of wax. Its color deepens by melting, and is easily decomposed by heat into a variety of hydrocarburets of an exceeding unstable nature. Under the influence of moderate warmth it may be lighted with a match, and will then burn with a clear flame, emitting much fuliginous matter. It is insoluble in water, but will dissolve in diluted alcohol, and much more completely in concentrated spirits of wine, ether, chloroform, benzine, petroleum, etc.

*New Remedies.

COMBINATIONS OF GLACIAL ACETIC ACID WITH OILS.*

BY J. B. BARNES.

In my paper on "The Solubility of Alkaloids in Oil," it is stated that glacial acetic acid mixes with "fixed and essential oils in all proportions." Although this is true in a large number of cases it is not so in all, and lest some of the readers of the *Journal* might infer that my statement applies to all oils, I beg leave to submit the following, showing the result of experiments made to ascertain the exact proportions in which a considerable number unite with glacial acetic acid.

The *minimum* combining proportions of the following five commercial samples of oil I find to be :—

Almond Oil	7 vol.
Glacial Acetic Acid	1 "
Olive Oil	8 "
Glacial Acetic Acid	1 "
Cod Liver Oil	7 "
Glacial Acetic Acid	1 "
Linseed Oil	7 "
Glacial Acetic Acid	1 "
Oil of Rhodium	4 "
Glacial Acetic Acid	1 "

In this series the oils appear to dissolve the acid.

The *maximum* combining proportions of the next five are :—

Oil of Turpentine	1 vol.
Glacial Acetic Acid	2 "
Oil of Lemon	2 "
Glacial Acetic Acid	1 "
Oil of Lemon Grass	2 "
Glacial Acetic Acid	1 "
Oil of Copaiba	1 "
Glacial Acetic Acid	20 "
Oil of Juniper	1 "
Glacial Acetic Acid	1 "

Here the order is reversed, the acid dissolves the oils.

The following is a list of forty-one oils that will mix with glacial acetic acid in all proportions :—Castor, croton, cloves, caraway, rosemary, sandal, cajeput, orange, bergamot, anise, essential oil of almonds, origanum, chamomile, eucalyptus, sage, cinnamon, cassia, lavender, myrtle, marjoram, pennyroyal, citronella, pimento, sassafras, calamus, spearmint, wormwood, neroli, cubebs, coriander, cumin, peppermint, geranium, male fern, citron, fennel, rue, savin, amber, nutmeg, and essential oil of mustard.

*From the Pharm. Jour. and Trans.

PEPPERMINT.*

The peppermint that clothes the fields and scents the lanes in the parishes of Mitcham and Carshalton, although an indigenous plant in England, is not supposed to have been generally used until the middle of the last century, and afterwards, upon the recommendation of the English herbalists, it was introduced into Germany, where it has since been employed in medicine. The experience of one hundred years has not detracted from the acknowledged excellence of the qualities of the plant, but has completely established its hold upon the tastes of all classes of the population, both high and low. There is said to be nothing new under the sun, and this adage is confirmed by all our discoveries amid the buried and mouldering antiquities of the past. It is not, therefore, any subject for surprise that amongst the classical authors we should meet with references to the peppermint. That universal naturalist Pliny has not allowed this herb to escape his attention, for he mentions in one of his books that it is not possible for a stranger to pay a visit in the country to a husbandman and there to partake—as no doubt he often did himself whilst upon his botanizing excursions—of the frugal fare offered without discovering that all meats from one end to the other of the table were seasoned with mint. He also tells us of the uses to which this plant was put in the dairies, where, being placed in the milk, it prevented the same from curding or turning sour, and this quality might be easily tested at the present day. It appears that Ovid, who was another lover of nature and depictor of rural scenes, in his story of Baucis and Philemon mentions that the rustics perfumed or scoured their tables with this herb before they sat down to supper. In these lines he says:

> Then rubbed it o'er with newly gathered mint,
> A wholesome herb, that breathed a grateful scent.

There are three different species—peppermint, spear mint or mintha mint, and pennyroyal, all cultivated in a similar manner. The mode of propagation is from young plants which spring from runners. Early in the spring, during the months of April and May, the plants are drawn and placed in rows, the space between varying according to the custom of each grower from one foot to eighteen inches. One of the most experienced growers at Mitcham adopts the latter distance, which he finds more favorable to the strong and healthy growth of the plant. By placing them closer, although a larger number are contained upon an acre of land, the amount of produce is diminished by the crowding. The opportunity of showery weather should be taken to place the cuttings, each five or six inches in length, about half way into the earth. The first season they require to be constantly attended to during the weeding-time,

* From *The Chemist and Druggist.*

and should receive six or more hoeings, which essential part of the cultivation should be scrupulously attended to every succeeding year, otherwise the quality of the oil would be injured in the distilling process. In the months of October, November, and December the beds are trenched like asparagus, the earth being piled up between the trenches to the width of three or four feet and of sufficient depth to protect the roots during winter. The fields are ploughed up and changed every five years, the first crop being generally the most abundant and the purest. The qualities of soil best suited are moist and loamy, and the effect produced by the soil is more striking in the case of peppermint than in any other plant. Two crops of peppermint standing side by side indicate when distilled considerable difference in the yield of oil; and the larger quantity is not unfrequently obtained from that crop which presented the least promising appearance. It has been remarked by many growers both at Carshalton and Mitcham that peppermint plants raised at the latter place and laid out at the former, although an adjacent parish, yield a very different product when distilled, both in the aroma of the oil and the quantity obtained.

At Mitcham, which is the original seat of the cultivation, most growers supply large, but evidently insufficient, quantities of manure to their land; as the yield is continually diminishing others plant potatoes after peppermint, then renew the soil with manure and again plant peppermint. For some reasons, however, the productions is considerably reduced, although a walk of several miles around the neighborhood, embracing Sutton, Bumstead, Wallington, and Beddington, will show that the peppermint and the lavender are peeping out in many places that were formerly occupied by ordinary agriculture. Within our knowledge persons have been obliged to give up their residence at Wallington, where, during certain months, the air has been found to be oppressive and unbearable in consequence of the perfume of the surrounding fields. The reverse has taken place at Mitcham, for, as we were informed, a large farm, consisting of more than a thousand acres, which was a few years ago laid out with lavender, peppermint, roses, camomile, etc., is now wholly employed for the production of the cereal crops, and the majority of growers, rather than incur the risk of this description of farming, prefer to lay out their land with culinary vegetables. The uncertainty of the seasons in England and the introduction of foreign produce are alleged as the causes of this change, but we should rather attribute it to some fault in the cultivation or else that the earth has been exhausted of certain of its chemical properties. There is scarcely any prettier or more charming sight to be witnessed than an August morning or afternoon, when the sun is shining brightly upon the golden fields of wheat interspersed amongst the varied purple colors of the lavender, the sombre hues of the peppermint and the sparkling brilliancy of the white camomile flower.

Any person who wishes to satisfy his curiosity can easily do so by taking the rail to Wallington, Sutton, or Mitcham. At either place he cannot fail to be amply requited for the trouble and trifling expense incurred by such a short and accessible excursion from the metropolis.

The harvesting takes place during the months of July and August, according to the propitious character or otherwise of the season. The produce varies from four to six tons per acre, the average being five tons, but the amount of oil yielded bears no definite relation to the quantity of the plant. When the summer has proved wet and cold, the plants, although bulky, have been known to produce only a small proportion of oil, and in other years, when the season has been warm and dry, the reverse has been the case, and small plants have yielded a double quantity of the oil. The spearmint produces about half as much as the peppermint, and it is therefore grown only in sufficient quantity to meet the actual demand, and in the absence of orders beforehand, the ground is otherwise appropriated. A native of this country, it may be seen growing wild in marshy places and around ponds. It has a strong aromatic odor, with a warm and slightly bitter taste, which is less pungent but more agreeable than that of peppermint. The oil of spearmint, which is of a pale yellow or greenish color when fresh, becomes darker with age, and ultimately of a mahogany color, and is used for the same purpose as the peppermint. In the spring the young leaves and tops are used with salads, or mixed with certain dishes, such as peas, etc., or made to flavor soups. Pennyroyal is the least valuable of the three species of mint. This plant was formerly called "pudding grass," from the old custom of using it in hog puddings, also "run by the ground" and "lurk in the ditch," from its creeping nature and preference for damp soils. How its name became converted is not known, but great quantities are said to have been brought to market from a common near London, called Mile's End, in the time of Queen Elizabeth.

The peppermint plant is generally cut about the latter part of August, and placed in small cocks like those of hay, which are allowed to stand in the fields some days before being taken in for distillation. At the beginning of the present century there were no stills at Mitcham, and the herb was sold fresh. Since then many of these buildings have been erected both at Mitcham and Wallington, where the smoke from the chimneys may be seen during the harvest season. Messrs. Piesse & Lubin, the celebrated perfumers, of Bond Street, have a distillery upon the high road to Mitcham, where the process may be witnessed upon an introduction to the firm. The whole apparatus is exceedingly simple. It consists of a boiler for raising steam, a still made of wood for receiving the charges of peppermint, a cooler for cooling the oil, and a receiver into which it flows. The plants are packed into the wooden still and trampled

down with the feet. When a full charge is thus ready, the lid of the still is put on and steam admitted at the bottom by a pipe from the boiler. When the peppermint is heated to about 212° Fahr. the essential oil passes over with the steam into a worm, which is placed in a cooler, and as it condenses into oil and water, it then passes out of the worm into a converted receiver, where the oil as it floats on the surface is lifted out with dippers, is then placed in tin cans, and becomes ready for sale. The refuse mint taken from the still is placed in piles, dried, and then makes tolorable fodder for sheep. The consumption in this country, as may be supposed, is very considerable, for as many as 12,000 lbs. of the oil are imported from abroad. The quality of the English grown is, however, so superior that a large export likewise takes place. At the great French Exhibition of Industry, held in Paris in 1855, which might be regarded as a crucial test, in competition with such excellent perfumers as the French manufacturers are known to be, the oil prepared in this country was considered the best then exhibited.

There has lately been a new kind of crystallized peppermint oil introduced from Japan, but it is not known at present from which plant this oil is obtained; but it is not greatly inferior in point of fragrance to the best Mitcham oil, and were a demand first to arise in this country from the confectioners and others, there is little doubt that it could be supplied at a lower price.

PURE SULPHATE OF NICKEL.*

The salts of nickel employed in the electro-deposition of that metal are prepared from commercial nickel, which is an alloy of nickel, copper, and iron, with traces of arsenic containing from 40 to 90 per cent. of actual nickel. The author's process consists of four operations: Solution of the crude metal in acids; precipitation of the copper by iron; peroxidation of the iron, and conversion of the metals into sulphates; precipitation of the iron by carbonate of baryta, and crystallization of the sulphate of nickel. The nickel is first dissolved in seven to eight times its weight of aqua regia; the solution is evaporated almost to dryness; the residue is redissolved in water, using about five times the weight of the nickel employed. A little arseniate of iron remains insoluble, and is removed by filtration. Metallic iron, preferable small nails, is introduced into the hot liquid, to about the weight of the nickel employed. It is stirred from time to time to detach the copper from the iron. As soon as a piece of bright iron, introduced into the liquid, is no longer coated with copper, this process is complete. The whole is thrown on a

*Scientific American.

filter and washed repeatedly. The copper is then collected by sifting it under water, in a sieve coarse enough to let pass the coppery metallic powder, but retain the iron. The copper is dried, and is then marketable. The filtrate now contains merely nickel and iron. The latter is peroxidized, either by a current of chlorine, or by treatment with nitric acid. Sulphuric acid at 66° Baume is then added, in the proportion of two parts to one of nickel employed, and the whole is evaporated to dryness to expel nitric and hydrochloric acids. The dry residue is re-dissolved in water, a part sometimes remaining insoluble, consisting of sub-sulphate of iron. From the solution the iron is thrown down by means of carbonate of baryta (artificial precipitated). This carbonate separates the iron as sesquioxide, and forms at the same time insoluble sulphate of baryta, without acting upon the sulphate of nickel. The last traces of arsenic are thrown down along with the sesquioxide of iron. The precipitation is effected by gradually adding a slight excess of carbonate of baryta to the liquid, slightly heated, but not so as to exceed 50° to 60° Fahr. It is complete when a further addition of carbonate occasions no effervescence, and does not become covered with peroxide of iron. Pure sulphate of nickel then remains in solution. It is separated from the precipitate by filtration, and the filtrate is evaporated till a pellicle appears on the surface, when it is set aside to crystallize.

A METHOD OF INCREASING THE SOLUBILITY OF SALICYLIC ACID.*

The solubility of salicylic acid is enormously increased by the addition of borax to the water, so that as much as ten parts of the acid can be dissolved in 100 parts of water, if eight parts of borax be present. This discovery we owe to Dr. H. Bose, assistant in the Surgical Clinic at Berlin, who has contributed a paper of much interest to the *Berliner Klinische Wochenschrift* (No. 28, July 12), to which we are indebted for the following details: The solution should be made by first dissolving the borax with the aid of heat, and then gradually adding the salicylic acid to the boiling fluid. Since commercial samples of both these drugs are not chemically pure, a small amount separates, and requires to be filtered off on cooling. The filtrate is a clear yellowish or light brown fluid, according to its concentration. The proof that the addition of borax does not convert more than a part of the salicylic acid into salicylate of soda—a salt devoid of antiseptic properties—is easily shown; for if we dissolve 6·9 part of the acid in 100 parts of boiling water, and then add 2·89 parts of bicarbonate of soda, the carbonic acid in the

*From the *Medical Times and Gazette.*

latter is set free, while the soda combines with the salicylic acid, and on cooling there is such an abundant deposition of the excessive acid that the whole liquid becomes nearly solid, owing to the formation of crystals. Now, if the whole be reheated until the acid is completely dissolved, and then 3·58 parts of boracic acid added, no deposit of any kind occurs on cooling. The most suitable strength in which the above solution can be used for direct application to wounds, is, according to Dr. Bose's experience, one which contains from 2½ to 5 per cent. of salicylic acid, and to 2 to 4 per cent. of borax. Solutions containing more than 5 per cent. of acid are too irritating, and give rise to a very abundant capillary hæmorrhage, if applied to the surface of a fresh wound. Dr. Bose speaks highly of the result obtained with the boro-salicylic dressing, in a number of cases of removal of small tumors. The operations were all performed without the spray, and only the sponges and forceps used were cleansed antiseptically with the above solution. The wound was thoroughly washed with the same liquid, and then a thick layer of salicylic wadding, also soaked with it, was laid on its apposed edges, so as to reach several finger's breadths beyond them, and fixed by means of a bandage; catgut was used to tie any vessels requiring ligature. In those cases where the edges of the wound could not be accurately brought together, Dr. Bose put in catgut sutures, and then filled the spaces between the edges with the salicylic solution, by means of a small syringe, and applied the wadding over all. The greater number of the cases thus treated healed by first intention, without the formation of a drop of pus.

Dr. Bose concludes his paper by stating that he has as yet no experience of the value of the boro-salicylic acid solution in dressing *large* wounds, and that he has not found it invariably successful in the case of small ones.

MEDICINAL PROPERTIES OF THE PAWPAW AND SWEET-FLAG.

In a paper published in the *London Medical Record*, and reprinted from the *Indian Medical Gazette*, Surgeon B. Evers, civil surgeon at Seoni, gives some interesting facts relating to a number of Indian plants. We append notes on two of these—the Pawpaw, of the southern part of this continent, and the Sweet-flag, well known in Canada.

Carica Papaya (N. O. Papayaceæ, Pawpaw tree). The milky juice of the unripe fruit has long been known as one of the best vermifuges; and in the West Indies the seeds powdered are used for the same purpose. The seeds are said to possess emmenagogue properties also. Even the ripe fruit is said to act as an abortifa-

cient, and pregnant women are therefore prohibited from eating it. The juice of the pulp (of the ripe fruit, I imagine) removes, it is said, freckles caused by exposure to the sun. Browne, in his 'Natural History of Jamaica,' states "that water impregnated with the milky juice of this tree is thought to make all sorts of meat washed in it tender; but eight or ten minutes steeping, it is said, will make it so soft, that it will drop in pieces from the spit, or turn soon to rags in the boiling." Drury says that "this circumstance has been repeatedly confirmed, and, moreover, that old hogs and old poultry, which are fed upon the leaves and fruit, however tough the meat they afford might otherwise be, are thus rendered perfectly tender and good, if eaten as soon as killed, but that the flesh passes very soon into putridity, nay, the very vapor of the tree serves the purpose: hence, many people suspend the joints of meat, fowls, etc., in the upper part of the tree, in order to prepare them for the table." In Barbadoes, the farmers mix the milky juice with the drinking-water for their horses, for the purpose, as they express it, "to break down the blood; and this is a remarkable fact, that the effects of this dissolving power is not confined to muscular fibre, but acts on the circulating blood." In 1866, when I visited the island of Barbadoes, I found that the unripe fruit pickled was largely used as an article of diet. In this country it is not only eaten pickled but also curried. I can assure my readers that the unripe fruit makes a very palatable *chijki* (vegetable curry). I have employed the milky juice of the unripe fruit in the treatment of splenic and hepatic enlargements, and with good results. I have treated sixty patients with this drug, and in thirty-nine instances a cure was effected; in eighteen cases the results were not reported; and in three cases (of enormously enlarged spleens) relief was afforded. The mode of administration was this: About a teaspoonful of the juice is collected and mixed thoroughly with an equal quantity of sugar. This mass is divided into three boluses; one to be taken morning, noon, and evening. For children, a single drop of the juice, mixed with sugar is sufficient. The pulp of the unripe fruit (the rind being removed) "mashed" up with hot water, might be applied as a poultice over the enlarged gland. On this external application, however, I do not place much reliance. No ill effects result from the internal application of the drug. Some of the patients treated complained of a feeling of heat in the stomach, nothing more. When symptoms of gastric or intestinal irritation occur, I have found it necessary to combine opium or hyoscyamus with the juice. The drug appears to me to act as a tonic and deobstruent. My plan for ascertaining that there has been an actual diminution in the size of the enlarged gland, was to mark off with the nitrate of silver the limits of the affected organ when the patient applied for treatment; and after about a fortnight or month, percuss and mark off again in the same way. In very bad cases I have seen a decrease of from half an inch to an inch in

perpendicular dulness. Patients have told me again and again that they felt considerably lighter in the side; and that (*ab khana hazm hota*) their digestion was now good. I believe that the drug is most active in cases where the stages of ague-cake, *i. e.*, the genuine amyloid spleen, has not yet been attained—in fact, when the deposit in the gland is still albuminoid. It acts much more rapidly than the hydrochlorate of ammonia, the bromide of potassium, or the external application of the biniodide of mercury ointment. From twenty to twenty-five days is the longest time that a patient is generally kept under treatment. A nutritious and liberal diet is also an essential adjunct in these cases.

Acorus calamus (N. O. Acoraceæ, Sweet-flag). Ainslie says that "it is a very favorite medicine of the Indian practitioners, and is reckoned so valuable in the indigestion, stomach-aches, and bowel affections of children, that there is a penalty incurred by any druggist who will not open his door in the middle of the night and sell it if demanded." A bath made of the infusion of the root "is regarded as an effectual remedy for epilepsy in children." "Shroder informs us that it possesses virtues in obstruction of the menses, spleen, and liver." The Egyptians regard it as a valuable aromatic and stomachic. The Turks prepare a confection of the root, and employ it "as a preventive against contagion." European practitioners have considered the root as tonic and aromatic, and occasionally prescribe it in cases of intermittent fever and dyspepsia." Dr A. T. Thomson recommends it as an antiperiodic; and Dr. Æ. Ross reports that it is an excellent stimulant and diaphoretic; he looks upon it "as most serviceable in atonic and choleraic diarrhœa." As an insecticide, particularly with reference to fleas, I have always found it very efficacious; but for this purpose the root must be obtained fresh. Last year, the chief cause of mortality among the house patients of the Seoni Main Dispensary was dysentery; the gaol population also suffered very much from the same disease. The disease is most prevalent about the middle of the rainy season, that is, during the months of July and August. The disturbance probably of the water supply, especially when this is derived from tanks and streams, and the dampness of the season are, in some measures I think, accountable for the appearance of the disease. In many of these cases, a malarial taint could be detected. Ipecacuanha does not, I regret to say, always succeed in these cases. There were no less than sixty-nine cases of dysentery treated in the Main Dispensary during the months of July and August. I found a decoction of the rhizome of the *Acorus calamus* very effectual in arresting the flux of blood, especially in the dysentery of children. The decoction is prepared thus: Of the bruised rhizome, two ounces; coriander seed, one drachm; black pepper, half a drachm; water one pint; boil down to twelve ounces and set aside to cool. The dose for an adult is an ounce three times daily; for a child, one to three

drachms, sweetened with sugar, two or three times a day. Astringent extracts or quinine might be added if necessary. The decoction is not only useful in dysentery and diarrhœa, but also in the bronchitic affections of children. I have often taken it myself when suffering from a bad cold in the chest. I think the drug is one well worthy of more extended trial.

GALLIUM—A NEW ELEMENT.*

BY M. LECOCQ DE BOISBAUDRAN.

The day before yesterday, 27th Aug., between 3 and 4 p.m., I found indications of the probable existence of a new simple body in the products of a chemical examination of blende from the mine of Pierrefitte.

Here are the data which I have collected thus far :—

1. The oxide (or perhaps a sub-salt) is precipitated by metallic zinc in a solution containing chlorides and sulphates. It does not appear that it may be the metal itself which is reduced by the zinc.

2. The chloride is precipitated by a small quantity of ammonia. In a mixture containing an excess of chloride of zinc, the new body is precipitated before the zinc, when the liquid is treated with ammonia in insufficient quantity. After the second precipitation the proportion becomes less, almost all being found in the first portion.

3. Even in conditions which ought to correspond to a state of peroxidation† the oxide is soluble in ammonia in excess.

4. The salts are precipitated by sulphydrate of ammonia, of which an excess does not appear to dissolve notably the sulphide formed.

5. The salts are precipitated by sulphydric acid in the presence of acetate of ammonia and much free acetic acid. In presence of zinc the new body is concentrated in the first sulphides deposited. Nevertheless, six successive precipitations have been necessary to cause it to disappear almost completely from the sulphide of zinc.

6. The salts are not precipitated by sulphydric acid, in solution slightly acidulated with hydrochloric acid.

7. The oxide is re-dissolved in an excess of carbonate of ammonia, at the same time as the zinc.

8. The extremely small quantity of material which I have pre-

* Reported at a meeting of the French Academy; published in Comptes Rendus, lxxxi., (Sept.) p. 494; and translated for this Journal by "MONAD."

†On the hypothesis that the substance possess two degrees of oxidation analogous to those of iron.

pared has not allowed me to isolate the new body from the zinc which accompanies it. The few drops of chloride of zinc in which I have *concentrated* the new substance, give under the action of the electric light, a spectrum composed principally of a narrow violet ray, easily visible, placed very near to 417 of the scale of wave lengths.

I have also perceived a very feeble ray towards 404.

I am pursuing this study, and hope in a few days to be able to procure a little more of the new matter in order to determine the reactions of the new body.

* * * * * * * *

An additional note presented at the Session of this day contains the following supplementary details:—

The experiments that I have conducted since the 29th August, confirm me in the opinion that the body observed ought to be considered a new element, and to which I propose to give the name of *Gallium*.

9. The sulphide is really insoluble in an excess of sulphydrate of ammonia.

10. As the quantity I have at my disposal is yet very small I have obtained the chloride in such a state of concentration that the ray 417 is already sufficiently brilliant under the action of the inductive spark.

11. The chloride gives the ray 417 in a flame of gas, but it is more feeble than with the electric light on the solution.

12. The salts are easily precipitated in the cold by barium carbonate.

13. In a mixture with a large excess of chloride of zinc the new body is precipitated by sulphydrate of ammonia with the first portions of the sulphide of zinc.

14. Repeated evaporations with great excess of nitro-hydrochloric acid does not appear to occasion any loss by volatilization of the chloride.

15. It appears to me the sulphide ought to be white, as that of zinc. This point is to be cleared up after complete purification of the substance.

16. When the hydrated chloride of zinc containing the new body is heated until a small quantity of oxychloride of zinc is formed, all the *gallium* remains in an insoluble state (in the form of oxychloride, I suppose).‡

17. The spectrum is more brilliant with a light of medium length than with a very short one.

‡But is easily soluble in a few drops of hydrochloric acid.

Editorial.

DRUGGISTS AS MONOPOLISTS.

Many of our readers will no doubt have noticed, in a late issue of the Toronto *Globe*, a communication from a correspondent signing himself "Right," in which attention is directed to "one of the various drawbacks to which the Druggists of Ontario, as a class, are subjected." This monster evil is no less than that of allowing grocers and other unlicensed traders to deal in patent medicines—a privilege which "Right" considers should be legally confined to registered Pharmacists. In this respect the Pharmacy Act is stated to be very defective, and it is recommended that, at the next sitting of Parliament, a measure be introduced embodying the necessary protective clauses.

To this modest suggestion the editor of the *Globe* appends the following gracious assent. "Certainly; why not! Pass a general Act providing that no man shall carry on more than one business at the same time. Then everybody will be happy. We congratulate "Right" on his liberal idea. He ought to be a member of the Medical Board."

This was probably the best way of settling the matter as far as the correspondent was concerned; and but for certain indirect reasons we should never have revived a subject so absurd. Emanating however from one of the community of druggists, and obtaining the benefit of publication in a paper of wide circulation, the communication demands from this organ, and the class it represents, the most emphatic repudiation. It may be possible, and actually appears to be the case, that some few persons hold views akin to those of the writer referred to, but the majority entertain opinions which we trust indicate a more progressive spirit than that of the narrow-minded monopolist. Of all things under the sun we do not want a monopoly of patent medicines. The traffic is, at best, of a very questionable character. If it be right, the medicines so sold are self-recommended, involve no responsibility on the part of the vendor, and may therefore be disposed of by any one. If it be wrong—and on this point we have often given our opinion—the druggists of Ontario don't want to have anything to do with it.

We are quite content with the aim and extent of the present Pharmacy Act, and only wish it so amended as to render it more perfect in its details, and more easily carried into execution. We desire no protection save that which should be afforded to all citizens in regard to the dispensing and sale of the more actively poisonous substances, and only ask that the sale of these be restricted to those who possess a thorough knowledge of their properties, and are trained in habits of carefulness, and skilled in the art of compounding medicines. This is demanded no more by the druggist than by the public in general, nor can it be regarded as a trade monopoly, but simply as a precautionary measure necessary to the welfare and safety of mankind.

PHARMACEUTICAL EXAMINATIONS IN GREAT BRITAIN.

By a regulation in force in Great Britain the examinations conducted by the Pharmaceutical Society, under the Pharmacy Act, are subject to the supervision of certain official inspectors, called Government Visitors, who attend from time to time and report on the manner of conducting the examinations, the educational standard, and other kindred subjects.

Dr. Greenhow, visitor at the London Board, and Dr. Maclagan, visitor at Edinburgh, have lately presented their respective reports on the examinations held during the past year. These documents relate, principally, to matters of local interest, but also contain statistics and details which may be usefully turned to account as data to which the results of our examinations in Ontario may be referred for comparison.

It may be stated that the examinations held in Great Britain are three in number, and in this respect, as well as in their general scope, are identical with those spoken of in the proposed amendments to our present Pharmacy Act. The "Preliminary" examination covers Latin, English, and Arithmetic; the "Minor" examination is of a technical character, and those passing it are entitled to conduct the business of a chemist and druggist. The "Major" examination is not compulsatory, and may be regarded as a means of honourable distinction, conferring on those who satisfactorily answer to

its requirements the legal right to assume the title of "Pharmaceutical Chemist"—a distinction humble enough, but not by any means without a certain scientific value.

At London the Board of Examiners met four times in order to conduct the Preliminary examination. 1121 candidates presented themselves, of whom 52·18 per cent. failed. This proportion has of late years steadily increased, being in 1872, 38 per cent., and in 1873, 48 per cent. Forty-two technical examinations were held during the year, and at the minor examination 980 candidates were present, but of these over 69 per cent. were rejected. This result was in some part attributable to an anticipated change in the requirements of the examination which had the effect of causing a large number of incompetent candidates to endeavour to pass before such change came into effect. 65 candidates went up for the "Major," and 26·15 per cent. were rejected.

In addition to the three regular examinations there is also one termed the "modified" examination. This is provided for such persons as had been engaged for three years in compounding prescriptions previous to 1868, the time of the passing of the Pharmacy Act. The number of persons examined under this form has gradually diminished. Only 61 presented themselves last year, and the number of rejections amounted to 46 per cent.

At Edinburgh the number of candidates was of course much smaller. For the Preliminary 118, 43·2 per cent. rejected; Minor 137, 57.6 per cent. rejected; Major 7, 14·3 per cent. rejected; Modified 15, 26·6 per cent. rejected. The weakest branch noticed at the Preliminary was arithmetic, and especially decimal fractions: 78 per cent. were deficient in this particular. At the Minor the branches in which students were most deficient were chemistry and botany. Many of the candidates were quite familiar with the more practical and empirical department of their profession, but ignorant of those which rest on a proper scientific basis. The following figures, representing the proportionate number of failures in the various branches, illustrate this very aptly: Prescription reading, 2; Pharmacy, 1; Materia Medica, 1; Dispensing, 1; Botany, 22; Chemistry, 26. At our examinations in this country we have frequently noticed this peculiarity, and never was this more evident than at our last examination, when one of the best, if not *the* best dispenser present, failed in obtaining one-fifth of the full number of marks assigned to other branches.

Comparing these figures with the results of the examinations held under the auspices of the Ontario College, and estimating the requirements of our examination as being of equal value with those of the Minor examination, we may congratulate ourselves that our students are well up to the mark. At the last examination, which was in all respects the best yet held, the number of failures only amounted to 25 per cent., and never have exceeded 40 per cent. This shows a very creditable degree of proficiency; and when we remember that the standard of merit in Great Britain is four-tenths, against six-tenths here, while the questions are, as far as we are able to judge, equally difficult, we have every reason to conclude that our educated pharmacists will at least bear comparison with those of Great Britain.

Despite the large number of the "plucked" the Government visitors strongly advocate the maintenance of the present standard of education. Of chemistry and botany Dr. Maclagan says, "It is self-evident that the standard of requirement in botany and chemistry, especially the latter, must, to say the least, be in no respect lowered, because the object of such examinations is not only to give security to the public that its chemists and druggists are duly acquainted with their business but to elevate the profession of pharmacy by insisting on proper scientific requirements in those who practice it."

The introduction of a knowledge of the use of the microscope as one of the requirements of the Minor examination is strongly urged, and, we think, not without reason. To the pharmacist the microscope is one of the most useful aids in the detection of adulteration, and is in these times almost indispensable. Setting the practical utility of such knowledge entirely out of the question, it must be admitted that a want of familiarity with so common an instrument is an essential of scientific education which cannot be disregarded even by those of the most meagre pretensions. We should be glad to see this feature introduced in our Ontario examinations.

DRUGGIST'S MISTAKES.

The last number of the Chicago *Pharmacist* contains a very sensible and well-written paper on the subject of accidental poisoning. The author, Mr. J. B. Moore, thinks that little reliance can be

placed in poison closets, bottles of peculiar shape or color, or other devices or expedients which have been suggested for the prevention of that class of mistakes which are most frequent—those arising from carelessness in the selection of bottles containing poisonous substances. It is justly argued that the adoption of these expedients might, in some measure, answer a good purpose, but would not affect those habits which are the root and source of the evil. The true course would be that of cultivating habits of carefulness in ourselves, and in educating and confirming our assistants in continued watchfulness.

"A young man, from the day he enters upon his apprenticeship in pharmacy, needs constant looking after, and should be carefully instructed in every detail, from the washing of a bottle to the most important operation, and should be cautioned and taught to be careful, thoughtful and attentive in everything. It is only this constant watchfulness on the part of the preceptor, and careful training, that makes the reliable, intelligent and skillful pharmacist, upon whom the public can rely for safety in dispensing.

"If young men are permitted to do as they like, vegetate as it were, pick up what knowledge they can by the wayside, as is too often the case, instead of being watched closely and instructed in everything they do, and habits of attention inculcated from day to day, they will soon fall into listless, careless and negligent habits, which will adhere to them for life.

"Constant looking after and stirring up, if the expression may be permitted, wakens them, brightens their ideas, and quickens their perceptions. and causes them to think what they are about, and to rivet their attention upon the business in hand, and they will thus day by day acquire carefulness, which becomes a habit, a part of their nature, which fortifies them against the liability to mistakes.

"It is to this more than to all other means that pharmacists must look for careful assistants, and the public for the nearest approach to perfect security against druggists' mistakes."

In our opinion this writer takes a correct view of the case. It is not by the use of any peculiar receptacles for poisons, nor by legal restrictions, nor even education, that druggists' mistakes are to be effectually avoided. Such safeguards are all very well, and not to be disregarded, but it is by training that the evil is to be remedied. It is to carelessness, not ignorance, that mistakes are generally to be attributed, and therefore does training take precedence of education. The simple habit of labelling every medicine distinctly, and, before using any substance so designated, of looking twice at the

label—not in a hurried, careless, or abstracted manner, but with mind and eyes wide awake—is worth all the precautionary measures which can be devised.

A good many of the so-called druggists' mistakes are really chargeable to another source:

"If the public only knew how badly and how carelessly prescriptions are sometimes written by some medical men, the incorrect abbreviations, the obsolete and improper names of medicines often employed, and the mutilated pieces of paper upon which prescriptions are sometimes written—two or more prescriptions being not infrequently written upon the fly-leaf of a book which is not large enough for one—they could then in a measure appreciate the difficulties under which the pharmacist often labors. The names of the medicines and the directions are often so jumbled up together and in such a state of chaos, and the chirography often so bad as to require a longer time for the pharmacist to decipher the prescription than it would to compound it.

"It must not be supposed, however, that these remarks are applicable to all or even the majority of physicians, many of whom write their prescriptions clearly, upon good paper or prescription blanks provided for the purpose, but only to a few members of the profession. I have often wondered myself, knowing and appreciating the dangers which beset the pharmacist, that the business can possibly be conducted with such comparative immunity from serious mistakes. The record of pharmacy in this respect is such that its votaries may well feel proud. It certainly proves them to be, as a class, among the most careful people engaged in any business or profession."

SCHOOL OF PRACTICAL SCIENCE.

A course of lectures on Elementary Chemistry has been commenced in this institution. The class meets on Monday and Friday evenings, at 8 o'clock. Lectures on Geology and some branch of Physics are announced to be given after the Christmas holidays. A class in Practical Chemistry will shortly be formed, to meet weekly, every Wednesday evening. Instruction will be given in chemical manipulation and qualitative analysis. The fee for the course, comprising about thirty lessons, will be ten dollars. This charge will include the use of apparatus, and an allowance will be made, at the end of the course, for all apparatus returned in good condition.

Pharmaceutical Students, either residing in town or here for purposes of study, will do well to attend these lectures; but we do

not wish it to be understood that an attendance at this institution alone would justify any student coming to this city in order to prepare for examination.

STUDENT'S DEPARTMENT.—On account of the small number of answers which have been received, the questions will be continued another month.

Editorial Summary.

PRICES OF THE METALS.—In a former number we gave a list taken from the *Scientific Press* of San Francisco. It is claimed by a writer in the *Pharmacal Gazette*, that these quotations were not accurate, nor the list complete. The following has been substituted, and gives the prices in the United States. In Europe these figures are much lower, as duties, freights, exchange and insurance often double original values :—

	Per Avoir. Pound.		*Per Avoir. Pound.*
Vanadium	$10,000 00	Gold	$335 00
Rubidium	9,070 00	Molybdenum	225 00
Zirconium	7,200 00	Thallium	225 00
Lithium	7,000 00	Platinum	150 00
Glucinium	5,400 00	Manganese	130 00
Calcium	4,500 00	Tungsten	115 00
Strontium	4,200 00	Magnesium	64 00
Terbium	4,080 00	Potassium	56 00
Yttrium	4,080 00	Aluminium	32 00
Erbium	3,400 00	Silver	20 00
Cerium	3,400 00	Cobalt	16 00
Didymium	3,200 00	Sodium	8 00
Indium	3,200 00	Nickel	5 00
Ruthenium	2,400 00	Cadmium	4 00
Rhodium	2,300 00	Bismuth	2 50
Niobium	2,300 00	Mercury	95
Barium	1,800 00	Arsenic	50
Palladium	1,400 00	Tin	25
Osmium	1,300 00	Copper	25
Iridium	1,090 00	Antimony	15
Uranium	900 00	Zinc	11
Titanium	680 00	Lead	08
Chromium	565 00	Iron	02

ADULTERATION OF OIL OF CLOVES WITH CARBOLIC ACID.—According to E. Jacqemin, (*Jour. de Pharm. et de Chim.*) this adulteration is occasionally practised. Fluckiger's test consists in agitating a few grammes of the oil with one hundred times its weight of hot water, decanting the clear liquor and concentrating to a few cubic centimeters, and adding one drop of ammonia and a pinch of chloride of lime. If the oil contains carbolic acid, the mixture will become green on agitation, and afterwards change to blue. Pure oil gives no coloration. M. Jacqemin considers the following method to posess advantages over that described. A minute quantity of anilin is added to a few drops of the oil and shaken with 5 or 6 c. c. of distilled water. If carbolic acid be present, the addition of a few drops of solution of hypochlorite of soda changes the beautiful purple to distinct blue. The mixture should not be shaken. This test is said to be so delicate as to detect 1 per cent of acid in a drop of the oil; with 5 per cent the color is very strongly marked.

IMITATION CORAL GROWTHS.—The *Pharmacal Gazette* gives directions for making a curious window ornament, resembling the "Alaska landscape" but of different color. We are not told as to the stability of the preparation, but some of our young readers may experiment for themselves: Prepare a solution of iodide of potassium in water, using about 250 grains to the pint. Place the solution in a tall jar, and in this solution suspend a hard lump of corrosive sublimate, the latter being securely tied by a piece of fine thread. The jar should be ten or twelve inches in length, and the corrosive sublimate should be suspended at the upper part of the solution. At once a number of peculiar yellowish colored streams seem to flow from the lower part of the suspended lump, which, as they descend, lose their color; after a short time brilliant scarlet tubes, several inches in length, attach themselves to the lump, and the colored liquid passes out through the tubes. This goes on for several days, during which time, if the jar is not disturbed, the growth of these tubes continues, and presents an appearance of coral. These tubes consist of biniodide of mercury, produced by the action of the iodide of potassium upon the solution of corrosive sublimate, which gradually dissolves.

NEW APPLIANCE FOR PREPARATION OF EMULSIONS.—In our last number we called attention to a suggestion for the use of an egg-beater for the preparations of emulsions and soft ointments. We have now to describe another appliance which has been proposed by Mr. C. F. Harvie, in the *Pharmacist* for October. The apparatus

is best suited for small quantities of emulsion—below four ounces—for which the egg-beater is not suitable. The mixture to be emulsified is put into a suitable receptacle, say a wide mouthed bottle, and a one ounce vaginal syringe is placed therein, either held by the hand, or through an aperture in a cork, and the plunger is worked until the object is accomplished, a result which is said to require a surprisingly short period of time. This appears to be a very roundabout and unworkmanlike method of performing a simple operation, but the suggestion may, nevertheless, be useful.

East Indian Quinine.—From an editorial in the *Pharm. Jour. and Trans.*, we learn that the attempt made by the British Government to manufacture "amorphous quinine" in India, from Indian bark, has proved a failure, and that the factory is, for the time, to be abandoned. During 1872 and 1873, the amount of amorphous quinine made amounted to 445 pounds, valued at £1,500, while the expenses amounted to £3,000. The results are not given for 1873-74, but it is stated that a mistake in one of the operations led to the loss of a considerable quantity of material—a circumstance which the profits cannot be expected to cover. The *Madras Mail* says that efforts will be made to induce the Secretary of State to arrange with the Messrs. Howard, or other competent persons, so that the manufacture may be continued.

Solutions of Alkaloids in Oils.—In the *Pharm. Jour. and Trans.*, Mr. J. B. Barnes suggests the use of glacial acetic acid as a means of preparing solutions of alkaloids in oil when required for liniments. This acid is miscible in certain proportions with fixed and essential oils. Solutions of aconitia, atropia, morphia, and veratria, in the glacial acid, and of any desired strength, form, with almond oil, or oil of turpentine, clear mixtures which appear to be perfectly stable, and may be mixed with chloroform or camphor without losing their transparency. Such solutions may be employed instead of those made with oleic acid, and are free from the disagreeable odor of the latter substances. (See paper on this subject in another part of this journal.)

Linimentum Terebinthinæ Aceticum.—A paper on this subject was read by Mr. W. Symons, at the late meeting of the British Pharmaceutical Conference. The well-known difficulty in making a homogenous mixture by following the officinal directions was allud-

ed to, and it was stated that by the addition of castor oil, or some other oil soluble in alcohol, a liniment might be produced which would not separate. The following formulas were recommended; Glacial acetic acid and castor oil, of each, one part; spirit of camphor, turpentine, of each, two parts. Or: Camphor liniment, castor oil, turpentine, of each, two parts; glacial acetic acid, one part.

MIXTURE OF SALICYLIC ACID FOR DISINFECTING PURPOSES.—Mr. Rozsnyay recommends a solution, applicable for general use, to be made by dissolving one part of salicylic acid, and two parts of sulphite of soda, in fifty to one hundred parts of water. The soda salt increases the solubility of the acid, and is also stated to augment the disinfecting power. The solution alluded to may be employed as an application to wounds, and does not produce the slightest irritating effect.

DETECTION OF FUSEL OIL IN ALCOHOL.—One or two fluid drachms of spirit is diluted with six or seven times its bulk of water and agitated with about twenty miniums of chloroform. The chloroform is allowed to settle, separated, and allowed to evaporate. Fusel oil, if present, may be recognized by its odor, or a little acetic acid, or acetate of soda and sulphuric acid may be added, when the smell of acetate of amyloxyd, or essence of pear, will be developed. This test will show 0·05 per cent, of fusel oil.

IRON FOR PRESERVING LEECHES.—A correspondent of the *Druggists' Circular* says that the addition of a little subcarbonate of iron to the water in which leeches are kept will have the effect of preserving them in a perfectly healthy condition. The water need not be changed, but the loss from evaporation, or other causes, must be made up. In the *Pharm. Jour. and Trans.*, "Hirudo" recommends for the same purpose a piece of old iron, which, being kept in the water, is stated to preserve effectually the health of the leeches. This plan has been pursued for four or five years with perfect success. The conditions considered essential are: 1st, rain water; 2nd, a glass jar; 3rd, presence of iron; 4th, plenty of light; 5th, as little disturbance as possible.

DISCOVERY OF A NEW ELEMENT.—In a paper communicated to the French Academy through M. Wurtz, and having for its author, M.

Lecocq de Boisbaudran, (*Comptes Rendus* Sept. 1875) the chemical and spectroscopical characters of a supposed new element are detailed. This body—for which the name *Gallium* has been proposed —was discovered in a specimen of blende, from the mine of Pierrefitte, in the valley of Argeles, (Pyrenees). M. Boisbaudran's paper has been translated by our correspondent "Monad" and will be found in another part of this number.

The Digestive Principle of Carnivorous Plants.—At the last meeting of the British Medical Association, Mr. Lawson Tait communicated some particulars of experiments made for the purpose of separating the digestive principle on which the remarkable power possessed by certain plants is dependant. The evidences of this power have been pointed out by Mr. Darwin, Dr. Hooker, and others (see this journal, vol. viii., p. 231). It was found possible to isolate this principle, but the experiments made by Mr. Tait are yet unfinished, but sufficient has been done to warrant the assertion that the digestive process in these cases is identical with that of animals.

Discoloration of Ointment of Iodide of Potassium.—A correspondent of the *Pharmacist* thinks that the directions of the German Pharmacopœia—to add one part of hyposulphite of sodium to one hundred parts of the ointment—might be advantageously followed, and that explanation to patients might be thus avoided. It is also suggested that benzoin, benzoic, or salicylic acid be tried.

Action of Hot Sulphuric Acid on Lead and its Alloys.—After detailing the results of many experiments made with a view of determining the composition best fitted to resist the action of hot sulphuric acid, M. A. Bauer *(Berichte der Deutscher Chemischen Gesellschaft)* arrives at the conclusion that the addition of a little antimony or copper is advantageous, but any admixture of bismuth has the reverse effect.

Formula for Florida Water.—In the journal mentioned above the following formula is said to give a satisfactory result: Oils of lavender and bergamot, of each 4 ounces; oils cinnamon and neroli, of each 2 drachms; oil cloves, 1 drachm; pure musk, 4 grains; cologne spirit, 95 per cent., 1 gallon (wine); tincture of

tonqua, sufficient to color. Macerate fifteen days, and filter through paper.

CASE OF POISONING FROM EATING A POTATO BEETLE.—The medical journals report the case of a child residing in Berks Co., Pennsylvania, who swallowed, or eat a potato beetle. Nausea and vomiting supervened, and it was only by prompt medical efforts that a fatal result was prevented.

We notice that at a meeting of the "Zeta Phi" Society, Philadelphia College of Pharmacy, Mr. W. F. Fleming, of Ottawa was elected to the position of president.

BELLADONNA AN ANTIDOTE TO POISONING BY FUNGI.—M. Vulpian, a celebrated Paris physician, says that belladonna may be used successfully as an antidote to mushroom poison.

Transactions of Pharmaceutical Colleges and Societies.

MONTREAL COLLEGE OF PHARMACY.

The adjourned annual meeting of the Montreal College of Pharmacy took place at the rooms, 628 Lagauchetiere street, on Friday evening, October 8th, Mr. Henry R. Gray, President, in the chair. After Mr. E. Muir, the Secretary, had read the minutes of the last annual meeting, a motion was proposed that the Board of the College should in future be composed of the resident members of the Council of the Pharmaceutical Association. After some discussion this was agreed to unanimously. It was also decided to suspend for a time the monthly meetings, in consequence of the lecture room being required every evening for the regular lecture course.

The following is Mr. Gray's address:

This being the last meeting at which I shall be called upon to

preside over the affairs of this College, I propose, according to custom, to say a few words to you. In reviewing the condition and prospects of the College, we have every cause for congratulation and encouragement. It is true we are not at the zenith of success, and let us hope we never shall be, for to have attained the highest point augurs a succeeding descent. We are, however, on the right road, and the *eclat* which has attended the opening of this, our Eighth Lecture Session, speaks well for our future.

The staff of professors has been increased, Dr. J. Baker Edwards and Dr. McConnell having been added to the list. Dr. Edwards is an old war-horse in pharmaceutical matters; his name alone is a tower of strength and his experience (I allude to his actual shop experience, the facts of which he related so well to us the other evening,) will doubtless be of great service to his class. That his heart is in his work I have reason to know, and I can prophecy a course of lectures on Pharmaceutical Chemistry which our students in years to come will look back to with pride.

In Dr. McConnell we have a botanist *con amore*. With him Botany is a passion, a hobby, and if he does not succeed in inoculating his class with some of his own love for this interesting science I shall be much mistaken.

Lastly, we have our old professor, Dr. Kollmyer. His appointment to the chair of Materia Medica dates back to 1867; this is consequently the eighth course he will have been called upon to deliver, and if practice makes perfect, our students will have no cause to complain. Dr. Kollmyer is also an old pharmacist, having served a regular apprenticeship to the business with the late Mr. Rexford. Upon the whole, gentlemen, I think you will agree with me that your Board has done its best in the matter of presenting good mental pabulum to our students.

It has been said that the Lecture Fees are too high for the pockets of pharmaceutical students. I had the honour, as your President, of being on the committee appointed to make arrangements for the session, and I can assure you every effort was made to place the fees as low as possible, but it was found to be utterly impracticable to insure a course of lectures which would be a credit to the College and a temptation to our young men to attend, at a lower figure. Suffice it to say the interests of the students were well looked after, and it remains for them to make a small sacrifice in order to support the Board in the position it has taken in providing a really good course of lectures.

I cannot let this opportunity pass without appealing to those employers who are present to do all that lies in their power, by closing their establishments at a decent and respectable hour to enable their young men to attend these lectures. The hour is from half-past eight to half-past nine in the evening. It is not asking a very great favour to allow a young man to leave at half-past eight in the

evening for such a laudable purpose. Depend upon it, those young men who express a desire to attend the lectures of our College will be found in every way more trustworthy and intelligent than they who are so very foolish as to devote the spare hours of their youth to idleness or amusement.

What can be more forlorn, or what gives a poorer idea of the business ability of the proprietor of a store, than to pass his place of business at nine or ten o'clock at night and see a poor wretched clerk, or the still more wretched proprietor himself, half asleep at the counter. Surely such a man has a duty to himself to perform quite as pressing as any imaginary duty he owes to the public. What must be the home pleasures of that man's family? Is it not possible, *even though we are druggists*, to earn an honest livelihood without encroaching on the hours usually devoted to the family circle; and then as to the clerk, what opportunity for self-improvement has he? Who can blame him if he leaves such an ungenial occupation in disgust?

Of course there are medical men who would willingly convert the pharmacist into a call-boy, to be at their beck and nod morning, noon and night. If very urgent cases arise physicians ought to be prepared for the emergency, and in point of fact most of them are; and have we not on our side the dictum of a late number of the London *Graphic*, which says there is no necessity whatever for druggists keeping open later than other shopkeepers, and when they do it is the narrow-minded spirit of the man himself rather than the necessities of the case.

Amongst the followers of the art of pharmacy we of course have carpers, but then they are to be found in every trade and profession under the sun. These men will ask you, Where is the necessity for all this study? Why necessitate examinations? My answer is, Because the united wisdom of the pharmacists of England, France, Germany, and other countries are agreed upon the point, and we are at least following a good lead. It is without doubt to our material interest to do so, for if no qualification is required in Canada we shall soon be overrun by the muffs and incapables who are unable to pass an examination elsewhere. In Ontario a stringent act is in force, and even now Nova Scotia is asking for a similar one; certain it is we cannot allow the Province of Quebec to lag behind.

Twenty years ago Calomel, Rhubarb, Jalap, Salts and Senna, Tinctures, Infusions and Decoctions were the order of the day, now the most powerful Alkaloids and the most concentrated Fluid Extracts are daily and hourly prescribed. Science has made rapid strides around us, and the pharmacist is expected to advance with the march of intellect. No man can fail to observe the confidence reposed in the pharmacist by the public. Does a new drug make its appearance on the market, or is a new chemical ever hinted at in the

medical journals—the doctor forthwith applies to the pharmacist for information. The engineer, the dyer, the hatter, the tinsmith, all apply to him for every imaginable kind of information with regard to the many chemicals they are called upon to use; and only the other day I was consulted by a photographer as to a technicality in his art. Now I ask my hearers if to our profession or art, above all others, the old adage, "Knowledge is power," does not apply?

In a few words, the object of our College is, to enable pharmaceutical students to fulfil the law, and obtain the requisite number of Lecture Tickets, without infringing on business hours; and to provide a solid pharmaceutical education, which shall be especially adapted to qualify them for their daily duties and responsibilities.

To turn to another subject which has a most important bearing on the well being, the honour and integrity of pharmacists the wide world over. I will read you a resolution which has recently been passed by the Ontario College of Pharmacy: "Moved by Mr. Jordan, seconded by Mr. Miller, That we discountenance in every way the giving of percentages on prescriptions to medical men, as being not only wrong in principle, but immoral in its tendency."

You will remember that the old Pharmaceutical Association some years ago sent a communication on this matter to the Medico-Chirurgical Society of Montreal, which I think was acknowledged, *and that was all.*

It seems to me that our College, as guardian and teacher of pharmaceutical morality, should occupy itself more with the discussion of such matters, and every member of the Board should consider himself in an especial manner bound to raise his voice to check this and those other sharp practices (such, for instance, as the selling of counterfeits or close resemblances of the articles in which our neighbour may have a specialty,) which so frequently disgrace the relations of pharmacists to one another.

A matter intimately connected with the stability of our College is the establishment of Life Memberships on the payment of a certain sum. The interest from the sum might be employed as a subsidy in aid of a practical Chemistry class, or in offering prizes to our best students.

In cnncluding my address allow me to congratulate the members of the College on the many important results already attained by their perseverance under many discouragements, in the great cause of pharmaceutical advancement. The lectures delivered at this College have been the means of very materially raising the standard of education among our rising pharmacists, who, although for their own peace of mind may sometimes wish that the celebrated pharmacopœia of Dr. Sangrado still existed (for you well remember his first remedy was blood letting, his second warm water, and as for his third, he had no third at all,) nevertheless may safely assert that the education they have acquired here, aided by their own

observations in the store, has well fitted them to recognize and manipulate the great remedial agents, with which the great book of nature is so amply stored.

On retiring from the important position in which your too partial kindness placed me, I beg to thank you for the forbearance shewn in all my shortcomings, and to assure you that I have endeavoured to do my duty to the best of my ability.

The meeting then adjourned.

The Secretary was instructed to call together the new Board in a few days in order to elect the officers for the coming year.

Varieties.

FLORIDA WATER.—Take oil lavender, 2 fl. drs. ; oil bergamot, 2 do.; oil lemon, 2 do. ; oil neroli, 1 do. ; tincture turmeric, 1 do., attar of roses, 10 drops ; alcohol, deodorized, 2 pints ; orange-flower water ; rose-water, each 3 fl. ozs. Dissolve the oils in the alcohol, add the perfumed waters and the tincture of tumeric, and allow the whole to stand one month, with daily agitation before filtration.—*Druggists' Circular.*

REMOVAL OF FUSEL OIL AND CLARIFICATION OF LIQUORS.—Franz Plattner has patented, in Germany, the following process for the above purpose: 8 litres of the liquor, tincture, elixir, etc., are agitated for a while with a mixture of 30 grams pure starch, 15 grams finely-powdered albumen and 15 grams of powdered milk-sugar. After 24 hours the liquid will be found free from all fusel oil, of a brilliant transparency, and greatly improved in taste.—*Polyt. Notizbl. in Am. Jour. Pharm.*

Registrar's Notices.

RENEWALS CONTINUED.

Carr, Thos., Thornhill.
Clark, S., Dresden.
Hearn, Wm., Ottawa.
Higginbotham, J., Bowmanville.
Hutton, Jas., Forest.
Johnston, W. S., Peterboro.
Preston, E., Harriston.
Rounds, E., Drumbo.
Sanderson, J. H., Thornhill.
Sanderson, H., Thornhill.
Sanderson, W. A., Thornhill.
Trott, S. W., Winnipeg.

NEW REGISTRATIONS.

Pearson, R. M., Toronto.

All communications for the Secretary and Registrar, to be addressed to the office, 305 Yonge Street, Toronto.

GEO. HODGETTS, Sec. & Registrar.

Drugs, Medicines, &c.	$ c.	$ c.
Acid, Acetic, fort	0 13 @	0 14
Benzoic, pure	0 22	0 27
Citric	1 05	1 15
Muriatic	0 03½	0 05
Nitric	0 10	0 13
Oxalic	0 20	0 23
Sulphuric	0 03	0 05
Tartaric, pulv	0 49	0 50
Ammon, carb. casks	0 22	0 24
" jars	0 23	0 24
Liquor, 880	0 25	0 28
Muriate	0 14	0 15
Nitrate	0 45	0 60
Æther, Acetic	0 45	0 50
Nitrous	0 40	0 42
Sulphuric	0 50	0 50
Antim. Crude, pulv	0 15	0 17
Tart "	0 52	0 60
Alcohol, 95 per ct.....Cash	2 19	0 00
Arrowroot, Jamaica	0 18	0 22
Bermuda	0 50	0 65
Alum	0 02¾	0 03½
Balsam, Canada	0 33	0 38
Copaiba	1 10	1 15
Peru	3 40	3 75
Tolu	3 00	3 50
Bark, Bayberry, pulv	0 18	0 20
Canella	0 17	0 20
Peruvian, yel. pulv	0 35	0 50
" red "	1 60	1 70
Slippery Elm, g. b	0 18	0 20
" flour, packets	0 28	0 32
Sassafras	0 15	0 18
Berries, Cubebs, ground	0 20	0 25
Juniper	0 06	0 10
Beans, Tonquin	0 62	1 10
Vanilla	18 00	20 00
Bismuth, Alb	2 50	2 75
Carb.	2 65	2 90
Camphor, Crude	0 33	0 40
Refined	0 43	0 47
Cantharides	2 10	2 20
Powdered	2 20	2 30
Charcoal, Animal	0 04	0 06
Wood, powdered	0 10	0 15
Chiretta	0 23	0 30
Chloroform	1 10	1 55
Cochineal, S. G	0 58	0 70
Black	0 75	0 90
Colocynth, pulv	0 60	0 65
Collodion	0 70	0 80
Elaterium oz	3 20	4 00
Ergot	0 70	0 75
Extract Belladonna	1 90	2 00
Colocynth, Co	1 25	1 75
Gentian	0 50	0 60
Hemlock, Ang	0 00	0 95
Henbane, "	1 80	1 90
Jalap	5 00	5 50
Mandrake	1 75	2 00
Nux Vomic oz	0 40	0 50
Opium oz	1 10	
Rhubarb	5 00	5 50
Sarsap. Hon. Co	1 00	1 20
" Jam. Co	3 50	4 00
Taraxacum, Ang	0 70	0 80
Flowers, Arnica	0 17	0 25
Chamomile	0 28	0 32
Gum, Aloes, Barb. extra	0 70	0 80
" " good	0 40	0 50
" Cape	0 16	0 20
" " powdered	0 20	0 30
" Socot	0 50	1 35
" " pulv	1 00	0 00
Arabic, White	0 38	0 60
" powdered	0 60	0 75
" sorts	0 19	0 24
" " powdered	0 42	0 50
" com. Gedda	0 13	0 16
Assafœtida	0 40	0 42
British or Dextrine	0 13	0 15
Benzoin	0 35	0 75
Catechu	0 12	0 15
" powdered	0 25	0 30
Euphorb, pulv	0 35	0 40
Gamboge	1 00	1 20
Guaiacum	0 45	1 00
Myrrh	0 50	0 85

Drugs, Medicines, &c.—*Contd.*	$ c.	$ c.
Sang Dracon	0 60	
Scammony, powdered	5 50	6 00
" Virg. "	14 50	—
Shellac, Orange	0 75	0 80
Gum, Shellac, liver	0 55	0 60
Storax	0 40	0 45
Tragacanth, flake	1 10	1 75
" common	0 53	0 65
Galls	0 22	0 30
Gelatine, Cox's 6d	1 15	1 20
Glycerine, common	0 18	0 23
Vienna	0 25	0 28
Prices	0 60	0 75
Honey, Canada, best	0 16	0 17
Lower Canada	0 14	0 16
Iron, Carb. Precip	0 20	0 25
" Sacchar	0 40	0 55
Citrate Ammon	1 40	1 50
" & Quinine, oz	0 52	0 55
" & Strychine	0 20	0 25
Sulphate, pure	0 08	0 10
Iodine, good	4 30	5 00
Resublimed	5 10	5 50
Jalapin	1 25	1 50
Kreosote	2 40	2 50
Leaves, Buchu	0 22	0 32
Foxglove	0 25	0 30
Henbane	0 35	0 40
Senna, Alex	0 27	0 60
" E. I.	0 14	0 20
" Tinnevilly	0 20	0 30
Uva Ursi	0 15	0 17
Lime, Carbolate.....brl	5 50	—
Chloride	0 05	0 06
Sulphate	0 08	0 12½
Lead, Acetate	0 15	0 16¾
Leptandrin.....oz.	0 60	—
Liq. Bismuth	0 50	0 60
Lye, Concentrated	1 50	1 60
Liquorice, 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 19	0 20
Calcined	0 65	0 75
Citrate.....gran.	0 60	0 75
Mercury	1 25	1 35
Bichlor	1 30	1 50
Chloride	1 50	1 70
C. Chalk	0 65	0 70
Nit. Oxyd	1 70	1 90
Morphia Acet	3 00	3 20
Mur.	3 00	3 20
Sulph	3 20	3 40
Musk, pure grain.....oz	25 00	—
Canton	0 60	1 20
Oil, Almonds, sweet	0 45	0 47
" bitter	14 00	15 00
Aniseed	4 25	4 50
Bergamot, super	7 00	7 50
Caraway	3 20	3 50
Cassia	2 00	2 25
Castor, E. I	0 13¾	0 14
Crystal	0 22	0 25
Italian	0 26	0 28
Citronella	1 05	1 15
Cloves, Ang	3 75	3 80
Cod Liver	1 25	1 50
Croton	1 40	1 50
Juniper Wood	0 80	1 00
Berries	2 75	3 00
Lavand, Ang.....oz.	0 00	1 00
Exotic	1 25	1 50
Lemon, super	3 80	4 00
ord	3 20	3 40
Orange	3 00	3 25
Origanum	0 65	0 75
Peppermint Ang	15 00	16 00
" Amer	5 00	6 00
Rose, Virgin	8 50	8 75
" good	7 00	7 25
Sassafras	0 75	1 90
Wintergreen	4 40	4 60
Wormwood, pure	4 00	6 00
Ointment, blue	1 00	1 10
Opium, Turkey	6 25	6 50
pulv	9 00	9 50

DRUGS, MEDICINES, &c.—*Cont'd*	$ c.	$ c
Orange Peel, opt.	0 35	0 36
" good	0 15	0 20
Pill, Blue, Mass.	1 00	1 20
Potash, Bi-chrom	0 16	0 18
Bi-tart	0 33	0 35
Carbonate	0 14	0 20
Chlorate	0 35	0 40
Nitrate	8 00	9 00
Potass um, Bromide	60	0 70
Cyanide	0 60	0 70
Iodide	3 40	3 60
Sulphuret	0 25	0 35
Pepsin, Boudault's oz	1 40	—
Houghton's doz.	8 00	9 00
Morson's oz.	0 85	1 10
Phosphorous	1 10	1 20
Podophyllin	0 50	0 60
Quinine, Pelletier's	—	2 45
Howard's	2 17	—
" 100 oz. case.	2 12	—
" 25 oz. tin..	2 12	—
Root, Colombo	0 13	0 20
Curcuma, grd	0 12½	0 17
Dandelion	0 17	0 20
Elecampane	0 16	0 17
Gentian	0 08	0 10
" pulv	0 15	0 20
Hellebore, pulv.	0 17	0 20
Ipecac, "	1 50	1 60
Jalap, Vera Cruz	90	1 15
" Tampico	0 70	1 00
Liquorice, select	0 12	0 13
" powdered	0 15	0 20
Mandrake "	0 20	0 25
Orris, "	0 20	0 25
Rhubarb, Turkey	2 10	2 25
" E. I.	0 75	0 90
" " pulv	1 60	1 10
" " 2nd	0 60	0 70
" French	0 75	—
Sarsap., Hond	0 60	0 65
" Jam	0 95	1 00
Squills	0 10	0 15½
Senega	1 00	1 10
Spigelia	0 25	0 30
Sal., Epsom	2 50	3 00
Rochelle	0 30	0 32
Soda	0 02½	0 03
Seed, Anise	0 13	0 16
Canary	0 17	0 17
Cardamon	2 00	2 10
Fenugreek, g'd	0 08	0 09
Hemp	0 06½	—
Mustard, white	0 14	0 16
Saffron, American	0 75	0 85
Spanish	10 00	11 00
Santonine	8 50	8 75
Sago	0 08	0 09
Silver, Nitrate Cash	14 85	16 50
Soap, Castile, mottled	0 11	0 14
Soda, Ash	0 03¾	0 05
Bicarb. Newcastle	5 75	6 25
" Howard's	0 14	0 16
Caustic.	0 05½	0 05¾
Spirits Ammon., arom	0 35	0 35
Strychnine, Crystals	2 00	2 20
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 70	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
Aniline, Magenta, cryst	2 65	2 80
" liquid	2 00	—
Argols, ground	0 15	0 25
Blue Vitrol, pure	0 09	0 10
Camwood	0 07	0 08
Copperas, Green	0 01½	0 02
Cudbear	0 16	0 25
Fustic, Cuban	0 03	0 04
Indigo, Bengal	2 40	2 50
Madras.	0 85	0 90
Extract	0 26	0 30

DYESTUFFS—*Continued.*		
Japonica	0 07	0 08
Lacdye, powdered	0 33	0 38
Logwood	0 01⅞	0 03
Logwood, Camp	0 02½	0 03
Extract	0 12½	0 13
" 1 lb. bxs.	0 15	—
" ½ lb. "	0 14	—
Madder, best Dutch	0 11	0 12
2nd quality	0 10	0 11
Quercitron	0 03	0 05
Sumac	0 06	0 08
Tin, Muriate	0 10½	0 12½
Redwood	0 05	0 06
SPICES.		
Allspice	0 11½ @	0 12
Cassia	0 26	0 28
Cloves	0 55	0 60
Cayenne	0 22	0 28
Ginger, E. I.	0 19	0 20
Jam	0 30	0 30
Mace	1 40	1 60
Mustard, com	0 20	0 25
Nutmegs	1 15	1 25
Pepper, Black	0 20	0 21
White	0 31	0 32
PAINTS, DRY.		
Black, Lamp, com	0 09 @	0 10
" 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 30	0 35
Magnesia	0 20	0 25
Litharge	0 07	0 09
Pink, Rose	0 12½	0 15
Red Lead	0 07¼	0 08
Venetian	0 02½	0 03½
Sienna, B. & G.	0 07	0 08
Umber	0 07	0 10
Vermillion, English	1 50	1 60
American	0 25	0 35
Whiting	0 1	0 1¼
White Lead, dry, gen	0 08½	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 45	—
" No. 1	2 20	—
" No, 2	1 95	—
" No. 3	1 70	—
" com	1 30	—
White Zinc, Snow	2 75	3 25
NAVAL STORES.		
Black Pitch	3 90 @	4 25
Rosin, Strained	3 30	4 25
Clear, pale	5 75	7 25
Spirits Turpentine	0 53	0 56
Tar Wood	3 90	4 25
OILS.		
Cod	0 65 @	0 70
Lard, extra	1 10	1 20
No. 1	105	1 10
No. 2	0 90	0 95
Linseed, Raw	0 58	0 60
Boiled	0 62	0 64
Olive, Common	1 05	1 10
Salad	1 80	2 30
" Pints, cases	4 20	4 40
" Quarts	3 25	3 50
Seal Oil, Pale	0 67½	0 70
Straw	0 62½	0 65
Sesame Salad	1 30	1 35
Sperm, genuine	2 65	
Whale refined		