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CANADIAN

PHARMACEUTICAL JOURNAL

VOL. VIII, No. 10. TORONTO, MAY, 1875. WHOLE No. LXXXIV

Original and Selected Papers.

IS BOTANY ESSENTIAL TO A PHARMACEUTICAL EDUCATION?

BY "MONAD."

This question may claim kinship with such as "The Percentage System," "Early Closing" and "Physicians' Prescriptions," although it has not been abused to the same extent as some of the latter, probably because it is not thought to appeal so *directly* to the pharmacist's pocket. However, the question is one that is frequently put to, and asked by, those interested in pharmaceutical education, and is well worthy of our most careful consideration, not only because of the intrinsic value of the original question, but because its very existence is evidence of a state of opinion which is calculated to hinder our improvement in pharmacy.

In following his profession, the pharmacist has to deal with an almost unlimited number of bodies from every department of nature, indeed there are few substances which may not directly or indirectly come within his province. The very number of these substances bespeaks an amount of careful observation which is far from trifling. If to this we add the influence many of these drugs have on the human system, and the important uses to which others are put in the arts; and if we also consider the position of the pharmacist—standing between the physician and the public—and take into account the fact, that the reputation and success of the physician depends very materially on the qualifications of the former, as the health and life

of the patients is continually in his hands; then can we realize somewhat of the importance and responsibility of the duties of the pharmacist, and the necessity of a well-defined scientific system of education for the proper performance of them. Therefore, if anyone is willing to undertake these responsibilities, it is his bounden duty to qualify himself that none may suffer from his ignorance, and it should be his ambition to make himself worthy of all confidence. He should be acquainted with all the characters and relations of the bodies with which he has to deal; his information should only be limited by his abilities and circumstances. He should know the appearances of the articles, their physical properties, their source and modes of preparation, their actions on one another, and to a certain extent their action on the human system, and their doses when used internally. He should be able to judge intelligently of differences in quality, and of adulterations; and lastly he should be able to compound skillfully. Any information which will enable him to understand more clearly the characters and properties of the drugs he uses, or perform more intelligently his various duties, is worthy of his attention.

A very large proportion of the articles in our Materia Medica are productions of the vegetable kingdom. Apart from our knowledge of the chemical and physical properties, and physiological action of these bodies, there are many facts concerning them of which the above branches do not take cognizance. We speak of the shapes and structures of roots, stems, and leaves, of the distinction between various plants, of their habitat, and conditions of growth. These, and other similar considerations, form the subject-matter of that branch of science known as botany. We would draw attention to this point, because those who disparage the value of botany in a pharmaceutical education are apt to forget that a large part of our ordinary knowledge concerning vegetables and vegetable productions is strictly botanical in its nature, and is correct and valuable only so far as it corresponds with the teachings of that branch of science. Every pharmacist employs this kind of knowledge in his daily calling, empirically it may be in many cases, but most successful where most rational. If, then, a vague indefinite kind of botanical knowledge is found valuable and absolutely necessary for the ordinary performance of the pharmacist's duties, how much more valuable and trustworthy would that knowledge be if it were more exact and extended.

But the settlement of the question at the head of this paper is not so much our object, as is the desire to combat the prevalent opinion that renders such a question necessary. We believe that pharmacy in its better features is scarcely second to the professions of medicine and law: that it is fast rising above those occupations in which money-getting is the sole end and aim; that its subject-matter possesses attractions which may induce one to follow it for its own sake; and that he who would excel therein must have a large and varied fund of scientific knowledge—both theoretical and practical. He who quibbles about the necessity of learning this or that, when both may be shown to be advantageous if not necessary, can scarcely be said to possess that ambition which is a necessary factor in a successful career. Legal limitations are not the bounds above which we must not rise. They form the level below which we must not descend. We do not call a man necessarily honorable merely because he conforms to the civil and criminal laws of the land, nor can we admire that pharmacist who grudgingly toes the mark of legal qualifications, and who deprecates any further advance as unnecessary and a waste of time. If our ambition incites to nothing more than we can attain with ease, we will fail in reaching anything worthy of the name of knowledge. If we would improve, it must be by raising an ideal above our present attainments, and which will be worthy of our highest efforts. A strictly perfect ideal will, of course, always be superior to our accomplishments, but this is no valid objection as the same thing holds true of everything human. Let all combine to render the name of pharmacist a source of honest pride to its owner, let all seek to improve the tone and character of the class by raising the educational standards as rapidly as is consistent with our opportunities, and very soon we shall be able to speak without sarcasm when we seek to uphold the dignity of the pharmaceutical *profession*.

DEER TONGUE IN PERFUMERY.*

BY ADOLPH W. MILLER, M. D., PH. D.

Deer Tongue, Southern vanilla (*Liatris odoratissima*, Willd.), seems destined to become a commercial staple of some importance, chiefly, so far, on account of its large consumption as a flavor for tobacco. It is stated to be also used to some extent in the South for the purpose of preserving clothing, woollen fabrics, etc., from the attacks of moths. To the best of my knowledge, these are the only applications which have yet been found for these highly odoriferous leaves. The chemistry of deer tongue has been treated of very ably and exhaustively by Prof. Procter, in the 31st vol. of this Journal, 1859), proving it to contain a large percentage of coumarin

As it has been a matter of surprise to me that no perfumer has, as yet, availed himself of the Southern vanilla, I have contrived the following formulæ, which, in my opinion, furnish quite satisfactory results, and I invite a special examination of the specimens herewith presented.

Tincture of Deer Tongue.—Percolate two ounces of ground deer tongue leaves with cologne spirits until one pint of tincture is obtained. This is of a handsome light-green color, so that it can be readily employed as an addition to various extracts, colognes or toilet waters. In its pure state, it may be used as a substitute for the essence of May wine (a tincture of the fresh leaves of *Asperula odorata*), which is used extensively in Germany as a pleasant addition to wine, converting it into the so-called May drink (*Maitrank*).

Extract of New-mown Hay.

Tincture of Deer Tongue	8 ounces.
Extract of Rose from Pomade, . .	4 "
" Orange Flower from Pomade, .	4 "
Oil of Rose, Virgin Serail, . . .	16 drops.

New-mown Hay Sachet Powders.

Ground Deer Tongue Leaves, . . .	2 ounces.
" Florentine Orris Root,	
" Damascene Rose Petals,	
" Orange Flowers, . . . of each,	1 ounce.

Mix thoroughly and sift.

Sachet Bouquet.

Ground Deer Tongue Leaves, . . .	2 ounces.
" White Santal Wood, . . .	½ ounce.
" Florentine Orris Root, . . .	1 "
" Ambretta Seeds, . . .	½ "
" Benzoin, ...	¼ "
" Damascene Rose Leaves . .	1 "

Mix, and sift to remove coarse particles.

*From the American Journal of Pharmacy.

"Gray's Botany" states that the leaves, when bruised, exhale the odor of vanilla, but I cannot confirm the assertion. I have tried various combinations of vanilla and dear tongue, with a view to its use as a flavor, but each of them was unsatisfactory. The odor and taste of coumarin appear to be so much stronger and so much more persistent than that of vanilla, that it is only spoiling good vanilla to add tonka or deer tongue to it.

Deer tongue is specially adapted to imitating the odor of new-mown hay, the perfume of this also resides in the coumarin contained in *Anthoxanthum odoratum*, Lin., or sweet-scented vernal grass.

A CHEAP AND ACCURATE THERMOMETER.*

A. Jaksch, of Kreibitz, in Bohemia, has devised a convenient form of air thermometer, in which the liquid employed is glycerin. The air thermometer has long been known and regarded as more accurate than any other form of thermometer, as air, like other gases, expands equally for equal increments of temperature. When water is employed in the air thermometer, it cannot be employed for low temperatures; with glycerin this disadvantage is overcome, while glycerin does not evaporate so readily as alcohol.

The glycerin thermometer is thus described by Jaksch: An ounce bottle is two-thirds filled with glycerin of any desired color, and the bottle placed in a freezing mixture of sal ammoniac, saltpetre and water, so as to cool the liquid to 32° F. A glass tube, twelve to fifteen inches long, is passed through a good-fitting cork, so as to dip nearly an inch into the glycerin. The cork is inserted in the neck of the bottle and rendered air-tight with sealing wax, or a cement of varnish and chalk, and the thermometer is then ready to be graduated. On inserting the cork, the liquid rises in the tube a few inches.

The bottle is placed in melting ice, and the level of the liquid marked 32°, if the scale is to be Fahrenheit's. It is next placed in warm water, say at 132°, and this point marked. The space between these points is divided into one hundred equal parts, and this division carried down to the Fahrenheit zero, and upward to the top of the tube. This method of graduation is necessary, as the thermometer cannot be exposed to the temperature of boiling water like other thermometers. This thermometer is exceedingly delicate and accurate, but cannot be employed for high temperatures, owing to the great length of the tube that would be required. It can be so easily and cheaply constructed that every family can afford to have one in each room, as well as in the cellars, stables, gardens, conservatories and other places where it is desirable to know or regulate the temperature.

Journal of Applied Chemistry.

IODINE.*

At present, iodine is ruling at very low figures—very much lower, indeed, than it has for years past—but it is now firmly held, and an advance is not improbable, as prices are regarded as not being remunerative. In this connection it may be proper to observe that quotations for iodide of pottasium also are quite low, even at the minimum rates named for crude iodine.

"Iodine—an article of so much importance in medicine and the arts—is produced chiefly in Scotland, where it is made from kelp. Sea-weed is collected on the west coast of Ireland and the western islands of Scotland. The sun-dried sea-weed is incinerated in shallow excavations, at a low temperature; for, if the temperature was allowed to rise too high, a considerable quantity of iodide of sodium would be lost by volatilization. The half-fused ash, or kelp, which remains, is broken into fragments and treated with boiling water, which dissolves about one-half the ash." "The liquid, thus obtained, is evaporated, and in cooling, the more crystallizable salts separate, namely, sulphate and carbonate of sodium, with some chloride of potassium. The mother-liquor still contains the iodide of sodium, sulphite of sodium, sulphide and carbonate of sodium."

"The liquor is then mixed with sulphuric acid, and allowed to stand for some hours. Carbonic and sulphurous acid and sulphuretted hydrogen gases escape, a fresh quantity of sulphate of sodium crystallizing out, mixed with a precipitate of sulphur."

"The supernatant acid-liquor is then transferred to the still, and then heated and binoxide of manganese added. The iodine sublimes into condensers, and may be purified by resublimation."

"The average produce of a ton of kelp is about ten (10) pounds of iodine. Besides iodine, kelp yields muriate and sulphate of potassium."

"Iodine is also made in Peru, from the mother-liquor of the 'caliche,' which contains, on an average, about one-third of one per cent. of iodate of sodium."

"Iodine is imported into England as iodine and iodide of copper. The present quotation is 8*d*. per ounce. Since July, 1874, the price has, in consequence of the accumulation of the Chilian make in England and on the continent of Europe, gradually declined from one shilling to the above quotation."

"The demand for the article not being sufficient to absorb the Chilian importations, as well as the undiminished production of Scotland, it is now thought that we are at a point where makers, either in Peru or in Scotland—or probably in both countries—will regulate their productions more in accordance with the want of consumers. Indeed, there are already symptoms of such a policy be-

*Philadelphia Drug Exchange, in American Journal of Pharmacy.

ing adopted by makers and importers, and therefore buyers have great confidence in the stability of prices, and are making contracts with greater freedom."

"*Peru.*—Regarding iodine, we beg to state that we have never heard of its being produced in Chili, but only in Peru, on this side. It is produced in the province of Tarapaca, out of the 'caliche.'

"In our 'officinas,' we produce it in the form of iodide of copper, which contains about 60 per cent. of pure iodine. This iodide of copper has been frequently sent to London, but it has met with very few buyers. Of late it has been sent to Germany, where it is sold in its original form as iodide, or after having been transformed into kalium iodatum or iodum resublimatum. . . . .

"In some of our 'officinas,' in Tarapaca, it is produced in the form of pure iodine, and, so far as we know, sent, for sale, to England.

"When, formerly, the production of iodine was a monopoly in this country, it was separated in the form of moist, dirty paste; but now this has ceased.

"The form in which the iodine is extracted out of the 'caliche,' depends upon the opinions of the different chemists. Some consider that the form of cuprum iodidum is the most profitable one, and that the production of pure iodine is too expensive. The necessary arrangements for the manufacture of iodine are quite costly, and the machinery to be used requires a large sum of money, and therefore only in few 'officinas' in Tarapaca, this article, as such is produced.

"The manufacturers all consign their product to England, or elsewhere, so that there is no possibility to buy it here in this country.

"Regarding the contents of the iodine in the 'caliche,' we beg to say that some 'caliche' does not contain iodine at all; other contains more or less. According to our experience in this business, 1,000 quintals of 'caliche' yield about 25 lbs. iodine." (The quintal of Castille, Chili, Mexico, Peru=101·61 lbs.)

As to the future price of iodine (and this, of course, will regulate the rates for iodide of potassium and other preparations) a great deal will depend upon circumstances, about which considerable uncertainty still exists; but from such facts as we have it would seem probable that extremely high figures (such as ruled in 1871 and 1872—25*d.* per ounce) are not likely to be demanded again.

Much depends—and this applies to every commodity—upon supply and demand. Now, as to the supply—it would appear that the South American manufacturers will be able to furnish it in considerable quantities. A correspondent states: "The quantity of iodine in Peru will be increased during the present year" (1874); and this added to the amount made in Europe will certainly furnish an abundant supply for every demand likely to occur, at least for

medicinal purposes—hence *excessive* prices, based on limited production, can hardly be anticipated.

Iodine, however, is also employed in the arts—by color makers. The requirements of fashion are somewhat arbitrary and exacting, at times, and certain shades of color become extremely popular, so that immense quantities of material are required, occasionally, at short notice, resulting in an enhancement of prices. Such has been the case in years past with corrosive sublimate, iodine and other chemicals, and, of course, a repetition is not impossible.

Again, the quality of the South American iodine must enter into consideration. We can readily appreciate the prejudice that must exist in the minds of those so long accustomed to use Scotch iodine, against any new material; but, as stated in our circular No. 22, "it has been acknowledged, we have been advised, in the London market to be equal to the Scotch," and, although *all* that has been sent from South America to London has not been equally pure, it has *generally* been 97 to 97½ per cent. pure, and it can be bought by test. We do not see, therefore, why the price of the Scotch iodine (we may take as the standard) should be higher than the South American, and, in fact, they now rate about the same.

It must be expected that the European manufacturers will not be disposed to relinquish the business so long as it pays a profit; and it may become a question who can make iodine the cheapest and control the market. We think it quite likely that iodine can be produced in South America at a comparatively low cost, being a by-product, extracted during the process of manufacturing nitrate of soda; but what the effect of a great fall in price would be upon the producers of Peruvian, we are unable to say, as we are unacquainted with the method by which they extract it.

Neither can we speak *definitely* as to the cost of the European, but in our circular No. 22 it is stated: "The production in France is certainly less now than last year, and two factories of importance are closed already, and others threaten to follow, as they pretend they work under a loss, particularly by the enormous depreciation of muriate and sulphate of potash." It is generally supposed that the present rates are not very remunerative to the Scotch and French makers.

If the Peruvians can produce iodine to the extent indicated by advices received from South America, and can make it so much more cheaply as to afford to send it to Europe and undersell their competitors, and still be content with the profits, the entire business may eventually be absorbed by them. Under such circumstances a combination would be improbable.

If, on the other hand, the cost to manufacture shall be found to be about equal, a combination for mutual protection might be formed and prices be advanced.

The question has received serious consideration in Europe as to

combination or competition between the foreign and home producers. So far a conservative policy seems to have been observed by the agents of the Peruvians, in London and elsewhere, and an indisposition manifested, on their part, to unnecessarily depress prices. Should they offer their consignments on arrival, without reserve, the result would be that, in a short time, they would discover—

First. Whether a much lower price would stimulate consumption.

Secondly. Whether such concession in price would affect production either in Scotland or South America, or in both.

From such information as we have, therefore, a combination to materially advance prices seems quite improbable, but it is possible that about present rates may be steadily maintained.

MIST. GENTIANÆ COMP.*

BY CHARLES SYMES, PH.D.

This preparation, after having undergone some amount of transition, both in character and name, has become a comparatively popular medicine, being daily prescribed by many practitioners; it still, however, admits of some improvement.

In the P. L., 1851, it consisted of

Inf. Gentianæ Co.
Inf. Sennæ Co.
Tinct. Card. Co.

Banished in name from the B. P., of 1864, it existed there in composition as Infusum, not the old mixture, not the infusion of the P. L., but that of the U. S. Pharmacopœia, which in the present B. P. receives the name of Mist. Gentianæ Co.

Now there can be no objection to copying from the Pharmacopœias of other countries, either continental or transatlantic, but we certainly should show our discretion by avoiding their faults. When we copy Pulv. Glycrrhizæ from Prussia, we improve it into something which the bulk of the profession object to prescribe; but when we copy the U. S. Inf. Gent. Co. we take it, faults and all, even though dissatisfaction has been expressed concerning it in the country of its origin, and although some slight modification is introduced, it tends rather to increase than diminish its unsatisfactory appearance.

When this preparation has been kept a few days it commences to throw down a flocculent pectic-like deposit which floats near the bottom of the containing vessel; the upper half of the fluid might be poured off moderately clear, but the lower portion will be exceedingly

*From the Pharm. Jour. and Trans.

turbid, unless it is filtered through paper, after which slow process it is too bright to correspond with the former, and thus two mixtures made with these portions respectively will have a somewhat different appearance. This, perhaps, is only a small difficulty, but one which causes frequent annoyance to the dispenser, and is quite worth surmounting. To do this satisfactorily it is necessary to consider, first, the characters of the materials we have to deal with—gentian, orange-peel, coriander seeds, and as menstrua or solvents, proof spirit and water. From the gentian we desire to extract the bitter principle soluble in both the latter; from the orange-peel a small quantity of aromatic bitter principle and some volatile oil, and from the coriander, volatile oil, both sparingly soluble in water, more so in proof spirit. To accomplish this we are instructed, first, to macerate the ingredients with the proof spirit for two hours, and then to add the water and continue the maceration for a like period, resulting in the preparation above described. If the proof spirit and water be divided respectively into three portions and the three ingredients are treated with these separately, according to the Pharmacopœia directions, and the strained liquors are placed in separate bottles, the coriander solution is clear, the gentian and the orange *slightly* turbid. In a few days a flocculent deposit begins to form in the latter, so that on slight agitation it will be seen that the turbidity has much increased; the gentian changes very little, the coriander not at all. From our experience in the manufacture of Tinct. Aurantii, we know that proof spirits dissolves nothing from the peel which produces this deposit, and we conclude that the water subsequently added does this. Experience thus gained points us to another experiment as follows: In one vessel place the coriander seeds and orange peel, pouring on them the proof spirit; in another place the gentian, pour on it the water; at the end of two hours strain off separately and mix. Mist. Gentianæ Co. is thus produced in one half the usual time, possessing the full aroma of the flavoring ingredients, the bitterness of the gentian, and a brightness similar to that of its infusion. Samples which have been kept two months have undergone no change, other than the very slight deposit which always occurs in fresh infusions after standing a few hours, and from which the clear liquor is readily decanted.

It might require some caution on the part of one decidedly opposed to *concentration* of infusions to recommend it here; but giving my readers credit for readily distinguishing between things which so widely differ, I do not hesitate to point out that in the case of Mist. Gent. Co., not only is it unobjectionable, but positively beneficial. In treating the gentian by the B. P. process, or by the modification indicated above, a quantity of mucilaginous matter is dissolved by the water, which to say the least is undesirable; by concentration in the following manner this is readily got rid of. To produce one pint—

Take of burised coriander seeds.....
Bitter orange peel..... } of each 240 grains.
Pour on proof spirit ..... 16 ounces,
and set aside to macerate.
Gentian root very thinly sliced (or better in coarse powder) ..... 2 ounces.

Put on this, distilled water, rather more than sufficient to cover it, allow to stand one hour, pour off the liquor, and repeat the process to the third or fourth time, when less than a pint of the fluid will be obtained, and the exhaustion will be completed; evaporate to four fluid ounces, and mix with tincture previously strained from the coriander and orange peel. The mucilage is precipitated by the spirit, and by filtration a bright concentrated liquid is produced, which keeps as well as any tincture, and on dilution in the proportion of one part to three of distilled water forms Mist. Gentianæ Co. that will compare favourably with, and contain nothing which is not contained in that freshly prepared by the Pharmacopœia process, and over which it possesses the decided advantage of keeping a longer time without change.

NEW ARTIFICIAL LIGHT.*

A new light for photographic purposes has been devised by Mr. Spiller, the President of the Photographic Society. Desiring to obviate the danger attendant on the use of the new light produced from bisulphide of carbon and nitric oxide, which we described on page 10 of the January number, he experimented with saltpetre and sulphur, and has succeeded in obtaining a light which, when a few minor details of a mechanical nature have been arranged, promises to be all that can be desired for photographic purposes. Briefly described, the process consists in heating saltpetre in a hard glass tube to a temperature beyond the point of fusion, and then dropping in a piece of roll brimstone. One ounce of saltpetre, fed with 8 to 10 grains of sulphur at a time will keep up a brilliant light for about ten minutes, at a nominal cost, when suitable apparatus is devised; for, owing to the intense heat, the wear and tear of apparatus is a considerable item in the expenditure account. A spirit lamp is sufficient to melt the nitre, and that state obtained, it may be removed, sulphur alone being necessary to keep up the reaction as long as the saltpetre lasts. One part by weight of sulphur is required for three of saltpetre.

*From the Journal of Applied Chemistry.

ANILINE COLOURS.

BY P. KUNTZ, PARIS.

The first colours employed were the violets; it was only in 1859 that aniline red was discovered, and by whom first is not clear. Aniline red, rosaniline, or fuchsine, is now usually prepared by the mixture of aniline with arsenical acid and water, or aniline and arsenical acid found in commerce in the state of syrup, and which contains sufficient water for the purpose. Pure rosaniline has scarcely any colour. According to the opinion of Hoffman, generally accepted, the colouring matters produced by the various reagents from aniline are all salts of one and the same basis, the rosaniline. The colours of the salts of rosaniline are not permanent; they will neither withstand lye, soap, nor the effect of light; but their base serves in the preparation of other colouring matters which are of great interest. The resinous residue of the preparation of fuchsine, treated with different solvents, gives the chrysaniline, violanile, mauvaniline, etc. The colour, recently introduced into commerce under the name of cerise, and the tint of which, less scarlet than that of fuchsine, approaches rather to poppy colour, is also obtained from the residue of fuchsine. By treating fuchsine by means of various agents and in various methods, the most varied tints of red are obtained. One of the colours most employed in the dyeing of silk, saffranine, the magnificent colour of which approaches scarlet, is obtained by a method, the details of which are but little known. The blue colours derived from aniline are produced by numerous methods, the greater parts of which remain laboratory curiosities. The number of processes which have entered into actual practice are relatively very few. The most advantageous are those first indicated by M. Girard and M. Laire, in which the salts of rosaniline are heated with rosaniline. It is believed that the production of these blues is based on the introduction of phenol into the composition of aniline. They are classed under the generic appellation of Lyons blue. Different phases of the manufacture yield different products, some of which are insoluble in water, and are called *bleu direct*, *bleu purifié*, or *bleu lumière*, the last being entirely exempt from any tinge of violet; the others, which are soluble in water, constitute the industrial colouring matters. The *bleu de Paris* is obtained by the action of the bichloride of tin on the aniline of commerce. Other blues have been successively added to the list, some discovered accidentally, others by scientific experiments. The violets likewise are the results of the actions of various agents. They seem to be produced by the mixture of blue and red in very different proportions; in many of the processes it is very difficult to obtain the precise tint required. According to the intensity of the preponderating tint, the violet is too blue or too red. The violet of Hoffman, dahlia, is obtained by

the mixture of rosaniline or of a salt of rosaniline with the iodide of ethyl and concentrated alcohol in different proportions. The violet of Paris results from the mixture of methylated spirit, chloride of ammonia, and aniline, by the method of MM. Poirier and Chappart. Perkins's violet, which was the starting point in an industrial sense, is prepared by bringing bichromate of potash into contact with sulphate of aniline, and treating the precipitate with wood-spirit, which absorbs the colouring matter. The spirit is then evaporated, and the residuum mixed with water with the addition of soda, which precipitates the colouring matter.

SEBACIC ACID. *

When castor oil is gently heated with sodium hydrate the whole solidifies, after much frothing, to a soft yellow waxy mass of sodium rincinoleate. On raising the heat, this salt melts and decomposes, an oily distillate passing over, and the residue yields sebacic acid. This acid, discovered in 1802 by Thenard, usually crystallizes in a multitude of long, fine, feathery crystals, which, when dry, have a peculiar pearly lustre, or from dilute saline solution in long thin needles; but under certain conditions, it separates from the ammonium sebates in very thin, brilliant laminæ, with a peculiar bright lustre. Soluble in 700 parts at 20°; in 400 parts at 40°; in 240 parts at 50; in 50 parts of water at 100° By prolonged boiling, it is possible to dissolve it in 22 parts of water, of which 1 part in 45 remains in solution at 96°. It is readily soluble in cold alcohol and ether, easily dissolved by hot ether, and extremely soluble in hot alcohol. It crystallizes from hot ether in short, transparent needles, and from hot alcohol in the same manner as from hot water. It is readily soluble in hot nitric acid, and not decomposed by boiling therewith for a moderate time, but separates out when cold; easily soluble in hot hydrochloric acid without change, crystallizing out on cooling; readily soluble in cold sulphuric acid, extremely soluble in sulphuric acid at 100°, and separates out unaltered on dilution with water; not sensibly attacked by digestion with nitrohydrochloric acid, or potassium permanganate and sulphuric acid. Aqueous sebacic acid reddens litmus strongly, tastes acid and bitter, completely neutralizes the alkaline hydrates, decomposes the carbonates of potassium, sodium, barium, strontium, and magnesium, and precipitates solutions of lead acetate and silver nitrate if dilute, but neither mercuric nor calcium chloride, nor silver nitrate if strong, but precipitates the silver ammonio-nitrate. Even after being twice recrystalized, it is apt to retain traces of a white solid hydrocarbon,

* Jour. of App. Science.

melting below 100°, and a pale yellow hydrocarbon, which can be removed only by repeated recrystallization. A trace of hydrochloric acid is also frequently retained, even after a second recrystallization, and is also best removed by repeated crystallization; but it is probably to this trace of retained hydrochloric acid that one or two of the discrepancies in the earlier descriptions are due. Of the two classes of salts formed by sebacic acid in its capacity of a bibasic acid, the neutral salts would appear to be the more stable, the second class, or the acid salts, being apparently decomposed more readily, and even in some instances by prolonged boiling of their concentrated solution. The acid salts seem to be all more or less soluble in water, and neutral salts of the heavy metals and of calcium insoluble in water, while the rest are soluble. By treatment of sebacic acid with the salts of various metals, a great variety of crystals and powders of different colours, blue, orange, green, red, white, and purple, some of magnificent character, are produced.

EXTRACT OF LITMUS.*

BY J. MARTENSON.

The colouring matter of litmus, when purified as much as possible, may be kept for an indefinite period unaltered in glycerine. Litmus is treated with hot water, and the solution, after concentration, is mixed with a sufficient quantity of alcohol (of 80 p. c.) to precipitate the colouring matter. After standing for twenty hours the alcohol is poured off, and carries with it a dirty blue foreign substance which frequently occurs in litmus, and is not altered by acids. The sediment is treated with hot water, which dissolves it on account of the potassium carbonate which is present. To remove this carbonate, sulphuric acid is added till the liquid assumes a faint wine-red tint; it is then heated to boiling for a few minutes, and again rendered blue by the addition of a few drops of lime water. After the lapse of twenty-four hours the liquid is filtered and evaporated to a syrup, and left all night in a cool place, when the potassium sulphate crystallizes out in the form of a crust. It is then filtered through moist cotton, mixed with glycerine, and carefully preserved from damp.

* From the Jour. of the Chemical Society.

FRAGRANT WOODS.

The properties and uses of woods are various. Some are sought for their beauty and utility for the cabinetmaker or pianoforte manufacturer, some for their adaptability for carving or engraving on, others for their coloring properties, and some for their medicinal uses. There are a few, however, which have the rare attraction of being fragrant and odorous, and hence are valued for small special fancy articles for ladies' use, or for the purposes of the perfumer, who distils pleasant scents from them.

Although fragrant odors are very generally diffused over the vegetable kingdom, yet they are not often centred in the woody fibre of the plants. We know these odors well in flowers, and we find them strongly diffused in many aromatic leaves, as those of the lemon and citronelle grasses of the Faham orchid (*Angræcum fragrans*) and of the *Eucalyptus citriodora E. odorata*. Sometimes the pleasant odor or pungent flavor is concentrated in the seeds and seed vessels, as in the nutmeg, the tonquin-bean (*Dipterix odorata*), the musk-seed (*Abelmoschus moschatus*), the odoriferous seeds of *Aydendron cujumary*, Nees., the vanilla pods, and those of *Myospermum erythoxylum*, of South America. In several trees the aromatic principle is strongest in the barks, as in the cassia and cinnamon, the sassafras of Tasmania, *Atherosperma moschata*, and *Croton Cascarilla* and *Eleuteria*, of the Bahamas. Essential oils are obtained from many of these.

The study and consideration of woods may be influenced by many causes, according to the purposes to which they are to be applied. The cabinetmaker will group them according to the disposition of their colors and the direction of their fibres, and will sometimes also take into consideration the odor, which is an essential point in the eyes of the perfumer. Two or three are tolerably well known, such as camphor, sandal, and cedarwoods; others have not been so generally described.

The bark of *Ocotea aromatica*, from New Caledonia, possesses a strong sassafras flavor, and there is a fragrant bark yielded by the *Alyxia Coffea* (*Ixora*) *odorata* of Tahiti which has a close and fragrant wood.

In Tasmania and Australia we have the musk-wood (*Eurybia argophylla*) with timber of a pleasant fragrance and a beautiful mottled color, well adapted for turnery, cabinet-work, and perfumery purposes. The native box-wood (*Bursaria Spinosa*, Cav.) has also a pleasant but fleeting scent. The scent wood of the same island (*Alyxia buxifolia*; R. Br.) has an odor similar to that of the Tonquin bean. It is but a straggling seaside shrub of three to five inches in diameter, and consequently does not produce wood of any size, but is fine and close-grained, of a lightish brown mottled appearance.

In the colony of Western Australia we have the raspberry-jam

wood, of a species of *Eucalyptus*, which derives its popular name from the similarity of the scent to that preserve. It is a handsome wood, well fitted for cabinet purposes.

Many of the Australian woods exhibit a peculiar beauty of structure, which adapts them for small furniture and turnery uses. Some are highly fragrant, and retain their agreeable odor for a considerable period of time; this renders them additionally pleasant and acceptable in the form of ornamental articles for the boudoir and drawing-room. The scented myall (*Acacia homalophylla*) is a very hard and heavy wood, having an intense and delightful smell of violets. It has a dark and beautiful "hardening," which makes it applicable to numerous purposes of the cabinetmaker and the wood-turner, and for an infinite variety of minor uses. It rarely exceeds a foot in diameter, but has been used as veneers. This tree is common in many parts of Australia. Since the London Exhibition of 1862, when caskets and other articles were shown from Queensland and the remarkable property it possessed became generally known to European manufacturers, the wood has been in request for making glove, handkerchief, and other fancy boxes. As long as it remains unpolished, it preserves this peculiar fragrance of violets, which does not occur with such perfection in any other known substance.

The desert sandarac pine (*Callitris verrucosa*) is a tree of moderate size, from the vicinity of the River Murray, seldom attaining to more than 18 inches in diameter. It has a peculiar odor, from which it is sometimes called camphor-wood, and is said to be obnoxious to insects. The dark beauty of its wood makes it useful for many articles of small cabinet furniture. The mountain sandarac pine, another species similar to the preceding, is available for identical uses.

The sassafras tree (*Atherosperma moschata*) has an aromatic bark, which yields an essential oil, resembling the sassafras oil of America, with an admixture of oil of carraways. The timber, which is useful to the cabinetmaker, has a dark "hardening," and frequently exhibits a pleasant figure; it has also the quality of taking a beautiful polish. Sassafras wood (*Sassafras officinale*) which is brought over from North America in billets, is highly aromatic, both in smell and taste, owing to a yellow volatile oil it contains. As this repels insects, the wood is used in India for the interior work of trunks, drawers, boxes, etc.

Brazilian sassafras is the aromatic bark of *Nectandra cymbarum*, Nees. The fragrant bark of the swamp sassafras of the United States (*Magnolia glauca*) is greatly sought for by beavers, and hence is often called beaver wood. A common deception is much practised in the streets of London in selling artificially scented woods and roots, which have been steeped in *citronelle* and other pleasant essential oils.

In Europe the cedar-wood chiefly imported is *Cedrela odorata*

from Cuba, Mexico, and Central America, in quantities varying from 3,000 to 5,000 tons yearly, and the red, or pencil-cedar of Virginia and Bermuda, *Juniperus Virginiana.* Fragrant cedrine, an essential oil, is distilled from the wood. The cedar-wood of British Guiana (*Icica altissimr*, Aubl.) has also a strong aromatic odor which keeps away insects, and adapts it for cabinets, wardrobes, etc.—*The Chemical Review.*

COD LIVER OIL WITH QUININE.

BY M. H. STILES.

Twelve years ago, in a paper read before the Pharmaceutical Society, Dr. Attfield called attention to the fact that the natural alkaloids combine with oleic acid to form oleates which are soluble in oil.* Although he particularly instanced quinine, and suggested that the oleate of quinine would be a convenient medium for the preparation of "cod liver oil and quinine," I do not think the method has been adopted to any considerable extent.

I lately had occasion to prepare some cod liver oil with quinine. I employed what I believe to be the usual process, precipitating the alkaloid with ammonia, and, after washing and drying, dissolving it in pure ether, then mixing this ethereal solution with the oil. The customer, a lady, quickly returned it, having a very strong objection to the taste of the ether.

I therefore tried the plan of preparing the oleate and dissolving that in the cod liver oil, and found it perfectly satisfactory.

The preparation may be made as follows:

Take of Sulphate of Quinine	60 grains.
Diluted Sulphuric Acid	1 fluid dram.
Solution of Ammonia	a sufficiency.
Distilled Water	a sufficiency.
Purified Oleic Acid	1 fluid ounce.
Cod Liver Oil	29 fluid ounce.

Dissolve the quinine in the diluted sulphuric acid mixed with 4 ounces of water, add a slight excess of ammonia, stir well, transfer the whole to a calico filter, and after carefully washing the precipitate, press it between folds of bibulous paper and dry it by the heat of a water-bath. Dissolve the quinine thus obtained in the oleic acid by the aid of a gentle heat, mix the solution whilst warm with 5 ounces of cod liver oil also warm, strain through cotton wool, or filter through paper if necessary, then add the remainder of the oil. The product should measure 30 fl. oz.; each table-spoonful (½ ounce) contains oleate of quinine equal to one grain of sulphate.

* From the Pharm. Jour. & Trans.

The above preparation has the characteristic taste of quinine and cod liver oil, the oleic acid from its small amount not being perceptible.

A sample prepared two months ago has kept well, being quite clear, and as free from deposit and objectionable odor as on the day it was made.

Whilst writing on this subject, I may remark that I am surprised more attention has not been given to the production of ointments and oleaginous liniments containing the oleates of aconitia and atropia. I believe that these preparations would be more certain and uniform in their effects, and therefore more reliable, than the corresponding liniments of the Pharmacopœia.

Hull, January 28, 1875.

PREPARATION AND PROPERTIES OF GLYCERIN.*

BY E. SCHERING.

Crude glycerin is obtained as a by product in the manufacture of stearin. Formerly the dilute glycerin solution was allowed to run away, but no manufacturer does so any longer, for the article is too valuable and too much in demand. Different methods are employed to decompose the fats employed:

1st. Complete saponification by means of caustic lime; the glycerin separates with the excess of lime, and is evaporated.

2d. The fats are mixed with a few per cent. of sulphuric acid, and subjected to a high temperature. The glycerin that separates contains much sulpho-glyceric acid.

3d. The fats are decomposed by superheated steam alone, and the stearic acid as well as the glycerin distilled off.

The once-distilled glycerin is the best for cleaning and for distillation. It contains but little butyric and fatty acids, and has the sweet smell of glycerin. It is unnecessary to first remove the foreign organic acids, the caustic lime, or the sulphuric acid. To make purified glycerin *(glycerin. depurat. album)* from the crude, if the latter contains lime, carbonic acid is passed through it first, and then super-heated steam, in order to drive out the butyric acid. Finally it is passed through animal charcoal to decolorize it, which often requires from two to three weeks, according to the quality. It is then evaporated down in vacuo. If the glycerin contains sulphuric acid, it must be diluted and treated while hot with carbonate of barium.

Glycerin. depurat., so called, always contains more or less chlorine, sulphuric acid, fatty acids, lime, etc., and most of it has a for-

* From the Journal of Applied Chemistry.

eign odor, so that it cannot be employed for medicinal purposes. It is principally employed for mixing with soap, filling gas meters, and for different technical uses.

Glycerin. pur. distillat.—Crude glycerin is distilled in a retort or still with superheated steam, the greatest care being required, for if the steam is not hot enough it distils too slowly, while if the steam is too hot it comes over colored, and has an odor of acrolein. It is difficult to prevent very small quantities of chlorine and of lime being carried over. Suffice to say that this preparation offers innumerable difficulties, and it is seldom obtained so pure as to answer the strictest demands of pharmacy. It is either not entirely colorless and odorless, or it contains traces of chlorine or lime. Hence the test of the pharmacopœia may lead to false conclusions.

1. "It should not blacken when treated with dilute sulphuric acid and evaporated." How long should the evaporation be continued? If evaporated until the water in the dilute acid is all driven out, the glycerin is subjected to the action of concentrated acid, and, being an organic body, is of course charred and blackened. Is this a test for sugar, or what is its use?

2. "Glycerin does reduce a solution of ammonia nitrate of silver." Every specimen of distilled glycerin—and pure glycerin can only be prepared from the distilled—reduces silver. A beautiful mirror is formed at once on boiling, in a short time, if cold. The author was unable to remove the reducing body formed by overheating. The glycerin was boiled with an excess of oxide of mercury, which was reduced, but the filtered glycerin showed the same reaction toward silver.

3. "The pharmacopœia test with caustic potash and sulphate of copper, with which the glycerin should not turn red, is, the author thinks, a suitable and proper one. Fehling's solution, which is the most delicate test for sugar, cannot be employed here, since it gives a yellowish brown precipitate with glycerin. The tartaric acid of Fehling's solution seems to play some part in the reaction."

The difference in specific gravity from 1.23 to 1.25 is very great, and corresponds to a difference of 7 per cent. If the glycerin is very concentrated it irritates the skin, producing a smart, because in this concentrated state it has a great affinity for water. Hence it is better to employ the dilute of 1.23 specific gravity. Chemical tests made with specimens of glycerin from different and best known sources have shown only very slight qualitative variations, a proof that none of the methods of purification at present in use are able to produce another sort of glycerin.

ON THE DETECTION OF HYDROCYANIC ACID.*

BY M. CAREY LEA, PHILADELPHIA.

1. *New Test.*—If a little pure protosalt of iron (I have used ferrous ammonia sulphate) be dissolved together with a little uranic nitrate, we have a solution which, with a soluble cyanide, gives a purple precipitate, or in very dilute solutions of the cyanide, a grayish purple.

This test is very delicate. Used in the manner to be presently described, a solution of potassic cyanide, containing only $\frac{1}{6000}$ of a grain of anhydrous hydrocyanic acid, gives a perfectly distinct reaction. It is therefore not exceeded in delicacy by any known test for that substance.

The solution of iron and uranium must not be acidulated, but on the contrary should be quite neutral, and so dilute as to be nearly colorless. A grain or two of each salt may be dissolved in a half ounce of water. Two or three drops of the mixed solution are to be placed in a clean white porcelain capsule, and a drop or two of the liquid to be tested should be made to slip slowly down, that the reaction at the point of contact may be carefully noted.

Cobaltous nitrate may be substituted for the uranium salt, and gives an almost equally delicate reaction, but the color of the cobalt salt is an objection.

2. *Prussian Blue Test.*—The delicacy of the Prussian blue reaction for the detection of hydrocyanic acid has been much understated. Thus Taylor (quoted in Watts' Dict., ii. 219), affirms that while the sulphocyanide reaction is capable of distinctly indicating the presence of $\frac{1}{3980}$ of a grain of anhydrous prussic acid, the Prussian blue test will not detect less than $\frac{1}{780}$ of a grain. A much greater delicacy than this can be obtained by using appropriate precautions.

There must not be too much iron salt present, and the solution of iron salt must not be too strong: these two points are essential. For ferric salt, the ammonia citrate is to be preferred to ammonia ferric alum or ferric chloride. The best mode of proceeding is as follows:

A weak solution of iron is to be made, containing a ferrous salt, to which a little ferric ammonia citrate is to be added. Of this solution, acidified with hydrochloric acid, two or three drops only are to be placed in a white porcelain capsule. A drop of the liquid to be tested is then allowed to slip down the side of the capsule, and this meeting the iron solution will give rise to the production of a blue cloudiness.

If a grain of potassic cyanide be dissolved in four ounces of pure water, rendered slightly alkaline with caustic alkali, and a single

*From Silliman's Journal.

drop of the solution be allowed to flow down the capsule in the manner just described, a distinct blue coloration will result. This drop will have contained about $\frac{1}{2000}$ of a grain of cyanide, or about $\frac{1}{6000}$ of a grain of anhydrous prussic acid, a degree of delicacy very far surpassing that found by Mr. Taylor; surpassing, indeed, that claimed by him for the sulphocyanhydric test.

The advantage of using ferric ammonia citrate over ferric ammonia alum, may be curiously shown as follows:

Place in a small white porcelain basin about an ounce of a solution containing a few grains each of ferrous ammonia sulphate and ferric ammonia sulphate acidulated with hydrochloric acid. Take about a milligramme of cyanide of potassium, or about as much dust of that substance as can be distinctly perceived and shake it into the basin. Each infinitesimal particle will produce a blue coloration as it touches the liquid, but on agitating, the blue (if the quantity of cyanide has been small enough) will disappear. If now the same experiment be repeated with a solution of ferrous ammonia sulphate and ferric ammonia citrate, also acidulated, the blue color produced does not disappear on shaking, but presently settles or becomes more conspicuous.

For the same reason, ferric ammonia citrate will detect infinitessimal traces of potassic ferrocyanide in the ferridcyanide when ferric chloride and ferric ammonia alum will not, and therefore it should have the preference for testing the purity of potassic ferridcyanide.

MANUFACTURE OF ARCHIL AND CUDBEAR.

The *Chemical News* has a letter from a "Leeds Workman" on the above named subject, which we republish for the benefit of other "working-men."

"I am a working-man. I have looked in a great many works on chemistry for information on the manufacture of archil and cudbear, but in all the works out there is no real practical information on the subject. I will write this short sketch as well as I can for your information, so that, if ever you write a work on the subject, you can inform your readers of the real practical part of the manufacture, as well as the theoretical and chemical changes. You would confer a great boon on the masters in the trade, as well as the workmen, if ever you brought a work out on the subject. I believe one great obstacle in the way of authors getting information on the practical part is because the manufacturers keep it as secret as possible. As an instance, at the place where I work they will employ no one that has worked in any chemical trade; and when they do employ anyone, there is a deal of cross-questioning about where

they have worked, and whether they can read and write, and if they can, it is ten to one whether they employ him, because they want the men as ignorant as possible—they want them to do the bidding, but not to make any mistakes, and not to inquire into things. Then they will let any of us stop while we are old men, which is very common in chemical works. That is the main cause of so much secrecy.

"*Archil Liquor.*—To make liquid, put 300 lbs. Zanzibar orchella-weed into a cistern, about 120 gallons of ammonia at 3° strong on the top of it; steep day and night; run it out of the cistern into pans heated with steam pipes underneath, the size of which is 6 yards by 4, 1 foot deep, with a lid on the top. Take the lid off once a day, about five minutes, agitate it a little, and then it will be ready in about six weeks for storing up or dyeing with. Worth about 3d per pound.

"*Paste Archil.*—To make paste archil, the weed is ground a little; it is worked in pans heated with steam pipes underneath (size about 4½ feet long, 2¼ feet wide, 2 feet deep), with an iron lid to fit on to keep the ammonia gas in. In these pans we put 50 pounds of weed, 100 of ammonia 8° strong. It is turned over with a shovel twice a day (morning and night, and it will be ready for coming off in about eight days; then it is mixed with 20 lbs. of sulphuric acid and 200 of common salt. That is for four of these pans; contents of all four put into a cistern, the acid, salt, and water mixed together. Worth about 2½d. per pound.

"*Cudbear.*—To make cudbear is just the same as paste. Instead of mixing with salt, acid, and water, it is dried on an iron plate about ten yards square, with steam heating it underneath. When it is dried, it is ground to a powder; then it is cudbear of commerce. Worth about 8d. per pound.

"*Blue Archil.*—To make blue archil, put 100 lbs. of weed, 300 of ammonia 6° strong; work cold; turn over twice a week. It will be ready in about ten weeks. That is blue archil of commerce.—*Drug. Circular.*

WINE OF MANDRAGORA.

Dr. B. W. Richardson, whose name is so intimately associated with researches on anæsthetics, has lately delivered, before the Society of Arts, a series of lectures on "Alcohol, its action and uses." In that portion relating to wine we find the following reference to that formerly made from mandragora—the mandrake, about which such strange things are told—which was fabled to utter shrieks or terrible groans when taken from the ground and which choose for

its *habitat*, the neighbourhood of the gallows, the gibbet, or other dreadful location.

"Very early in history wine was employed for another purpose, that, namely, of extracting the active principles from plants and other substances possessing, or supposed to possess, medicinal virtues. Dioscorides, one of the fathers of medicine, and particularly of that part which pertains to the use of curative substances, or medicaments proper, is full of descriptions of vinous tinctures, some of which were sufficiently potent even for our present use. On the table before us is a vinous tincture of this kind, which has a singular and, I had almost said, romantic history. This is the wine of Mandragora. In the isles of Greece there has grown for ages a plant called mandrake; it belongs to the same family of plants as our belladonna, or deadly nightshade. From the root of this plant the Greeks extracted, by means of wine, a narcotic and what in this day we should call anæsthetic. Some, says our learned Dioscoride, boil the root in wine down to a third part and preserve the decoction, of which they administer a cyathus, about what would now be a common wineglassful, for want of sleep, or for severe pains of any part, and also before operations with the knife or cautery, that these may not be felt. Again, he says, a wine is prepared from the bark without boiling, and three pounds of it are put into a cadus (about eighteen gallons) of sweet wine, and three cyathi of this are given to those who are cut or cauterised, when, being thrown into a deep sleep, they do not feel any pain. Again he speaks of a preparation of mandragora, called morion, which causes infatuation and takes away the reason. Under the influence of this agent the person sleeps, without sense, in the attitude in which he took it, for three or four hours afterwards. Pliny, the Roman historian, much later, bears evidence to the same effect, and adds the singular remark that some persons have sought sleep from the smell of this medicine. And again, Lucius Apuleius, the author of the book called the 'Golden Ass,' who lived about 160 A.D., and of whose works eleven editions were republished in the fourteenth and fifteenth centuries, says that if a man has to have a limb mutilated, sawn, or burnt, he may take half an ounce of mandragora in wine, and whilst he sleeps the member may be cut off without pain or sense.

It is unquestionably to this same anæsthetic wine our own Shakespeare refers in his half-imaginary, half-legendary Middle Age history. This is the wine of that insane root, which, says Macbeth, 'takes the reason prisoner.' This is the wine that Juliet drinks, and the action of which the Friar Lawrence describes—

> "Through all thy voice shall run
> A cold and drowsy humour, which shall seize
> Each vital spirit; for no pulse shall keep
> His natural progress, but surcease to beat.

No warmth, no breath, shall testify thou liv'st,
The roses on thy lips and cheek shall fade
To paly ashes ; thy eyes' windows fall
Like death when he shuts up the day of life ;
Each part, deprived of supple government,
Shall stiff, and stark, and cold, appear like death ;
And in this borrow'd likeness of shrunk death
Thou shalt remain full two and forty hours,
Ane then awake as from a pleasant sleep."

It follows therefore from the history of scientific discovery that our modern great advance of removing pain during surgical operations is in fact, if not as old as the hills, as old almost as wine. But is the story true, you say ? I answer yes, and the answer is from experiment. Thinking it a subject of very great interest, I instituted, a few years ago, an inquiry into the matter. Through the kindness of my friend, Mr. Daniel Hanbury, F.R.S., I obtained a fine specimen of mandragora root, and I made once again, probably after the lapse of five centuries, mandragora wine. I tested this and found that it was a narcotic, having precisely the properties that were anciently ascribed to it. I found that in animals it would produce even the sleep of Juliet, not for thirty or forty hours, a term that must be accepted as a poetical license, but easily for the four hours named by Dioscorides, and that in awakening there was an excitement which tallies with the same phenomenon that was observed by the older physicians."

THE INDUSTRIAL USES OF BISULPHIDE OF CARBON.

Up to the year 1850, the sole industrial application of bisulphide of carbon was in the vulcanization and dissolution of caoutchouc; but since latter invention has found means of producing the material at low price, it has been applied to a multiplicity of uses in a large number of the arts. The extraction of oils from grains, the wholesale removal of fatty matter from wool, the treatment of spices to obtain the same in soluble form, the fabrication of prussiate of potash by the Géles process, and of sulphocyanide of ammonium for the preparation of the toys called Pharaoh's serpents, the purification of crude paraffin, the manufacture of liquid fire for incendiary projectiles, and as a means of destruction of vermin, are a few of the principal employments of bisulphide of carbon. As respects magnitude, however, and future influence upon manufactures, its adaptation to the utilization of waste residues is of chief importance, and is fast forming the groundwork of a new and distinct industry. The credit of first extracting the fatty matters from these refuse products, is due to M. Deiss, of Belgium, and by the aid of the bisulphide, the former are obtained in quantities sufficient to serve for lubrication of machinery or the fabrication of soaps and candles. In order to show the rapidly increasing value of this useful substance, we have

gathered quite a number of its most recent as well as most important applications, and are thus enabled to present a fair view of the various refuse matters in connection with which it is now employed. In the manufacture of fatty acids, brown compact deposits are precipitated. These, mixed with sawdust, in order to facilitate the action of the bisulphide, and treated with the latter, yield up to 20 per cent. of acids, which otherwise would go to waste. The pasty mass of metal filings, dirt, grease, etc., taken from car and waggon axles, is first treated with hot sulphuric acid, and then with bisulphide, and, lastly, washed and dried. This isolates the grease in a saponified state. Cotton waste, employed in or about machinery, is freed from its grease by sulphide and is again available for use. Residues of the manufacture of beeswax, which formerly found no sale except as manure, selling at about eight shillings a hundredweight in France, are now subjected to the action of bisulphide, and an excellent yellow wax is extracted; the final residue is still used as a fertilizer. Sawdust which has served to filter oils purified by sulphuric acid yields after pressure 15 per cent. of oil; again, 50 per cent. of oil is obtained from the muddy deposits due to the mingling of oils with sulphuric acid. These are washed in boiling water, dried, mixed with sawdust, and, lastly, treated with bisulphide. Balls of oleaginous grain, when they cannot be used as food for cattle, yield fatty matters; and their residue is an excellent fertilizer, as it contains large proportions of nitrogenized substances and phosphates. Bisulphide is also used to extract the grease from olives after they have been pressed, and from residues of tallow and suet after melting and pressure, also from the residues of the manufacture of cocoa. Bone fragments, when treated with bisulphide at 104° Fahrenheit, yield 12 per cent. of grease; they are subsequently unfit for the manufacture of gelatine, but answer excellently for the fabrication of bone black. The cleanings of wool cards, when acted upon by bisulphide, give about 30 per cent. of fatty substances utilisable for the manufacture of soaps. It is evident from the great number of waste products, and the abundance of some of them, that a very considerable amount of greasy and oleaginous matter can be returned to the various industries through the new process involving the use of bisulphide. The material has also been successfully employed in the scouring of wool and in the extraction of bitumen from schists and bituminiferous and sandstones. In the latter case the quantity of bitumen obtained is from 4 to 5 per cent. superior to that furnished by distillation, which only gives in all from 7 to 8 per cent. MM. Van Haecht, Emile, and Co., of Belgium, exhibited in the Vienna Exhibition a number of improved machines for carrying on these processes, and in which all species of fatty residues could be treated. The price of manufacture does not exceed, for certain purposes, twelve shillings per ton; about half a ton per hour can be treated. The loss of bisulphide is reduced to barely one-half per cent.

MINERAL OILS AS DISINFECTANTS.

The London *Medical Times and Gazette* observes that Dr. John Day, of Geelong, in a paper read before the Medical Society of Victoria on May 6th, and published in the *Australian Medical Journal* for June, strongly recommends a trial of the mineral oils as disinfectants. He believes that all the mineral oils possess the property of absorbing oxygen from the atmosphere, and imparting to it increased activity by converting it into peroxide of hydrogen a substance possessed of very high oxidizing powers. For example, a sheet of paper, brushed over with kerosene or gasoline, yields the characteristic reaction with guaiacum resin and blood. Now, it is generally allowed that all true disinfectants are oxidizers. From his knowledge, therefore, of the oxidizing powers of gasoline, and from the fact that it is much cleaner and more volatile than kerosene, Dr. Day recommends this hydrocarbon for disinfecting purposes. He states that he has lately been using it for the purpose of disinfecting the walls, flooring, furniture, etc., of rooms in which scarlet fever patients were placed, and with most satisfactory results; but he has also had the patients freely rubbed three times a day with ethereal solution of peroxide of hydrogen and lard, in the proportion of one part to eight. A trial of gasoline is further earnestly urged on the profession as a disinfectant in puerperal fever. It might be applied with a brush or sponge to any article of clothing without doing it the slightest harm; and it would not only disinfect it, but also impart to it disinfecting properties which would last for a considerable time. For among the peculiar properties of the mineral oils as disinfectants is that of their being continuous in their action. Instead of being injured or destroyed by age and exposure to atmospheric influences, as all other disinfectants are, they absolutely improve and gather force. The practitioner might also disinfect his hands by bathing them in gasoline and allowing them to dry in the open air. One caution is necessary in the use of gasoline; from its volatile and inflammable nature it should never be employed near a fire or lights.

COLLODIUM ANTIPHELIDICUM.—The *Pharmaceutische Zeitung* says that cullodium to which 2 per cent of zinc sulphocarbolate has been added is an effective application for sunburn, freckles, and other natural skin spots. The prescription runs:—

R Zinci sulphocarbolici - - - - - - 1-0
In pulverem terendo redactum immitte in
Collodii optimi - - - - - - 45-0
Olei citri - - - - - - - - 1-0
Spiritus vini - - - - - - - - 5-0
Sæpius agit, sepone et decantha.

—*Chemist and Druggist.*

Editorial.

NOTICE TO MEMBERS.

The Registrar desires us to call attention to the fact that the annual fees become due on May 1st. As this Journal will not reach our subscribers before that date the notice certainly appears to be overdue, if not useless; but, from past experience in these matters we have learned that some members are liable to forget their responsibilities,and that the first of May often finds many in arrears. To these it may be necessary to say that fees cannot be received later than the tenth of June, as the Registrar is required to publish, on the fifteenth of that month, a list of persons entitled to keep open shop, and this enumeration has also to serve the purpose of a voter's list for the election which is to be held on July first. The publication of this list has sometimes been deferred, and, as at the last election, has thus given rise to much inconvenience. We learn that it is now the intention to conform strictly to the requirements of the law, and, in accordance with this, the list will be issued on the date above mentioned, and will comprise the names of all those to whom voting papers will be sent.

PREPARATION OF SUPPOSITORIES.

The suppository question appears to be an interminable one—and one cannot help getting a little tired of it. In our last number (p. 331), Mr. Kennedy advocates the hand process, and this is opposed by Mr. Mattinson *(American Journal of Pharmacy)*, who says that, without moulds, suppositories cannot, by one apothecary in a hundred, be made to compare with those prepared with moulds. Hand-made suppositories lack the smooth, glossy surface, the elegant shape, the perfect distribution of medicament, the firmness and solidity which characterize the moulded article. The process recommended by the writer is as follows: Place the mould, preferably a hinged one, capable of holding twelve or fifteen suppositories, upon ice, and put the quantity of cacoa butter in a capsule;

melt quickly, thoroughly incorporating the active ingredient. Stir, while cooling, until brought to the consistence of thick honey; pour into the moulds and allow to solidify. No lycopodium or steatite is necessary, as there is no difficulty experienced through sticking. Breakages need not amount to one per cent. If an extract is used, dissolve in a little hot water, and pour upon the mixture the melted butter. Incorporate as before. In dispensing, place white or pink cotton in a box and place the suppository thereon; cover with cotton and label as usual, Mr. W. McIntyre prefers to form a plastic mass with the butter and medicament, and cutting the mixture into cylindrical pieces, to place them in a hinged mould and shape them by pressure. Mr. Sloan, of Indianopolis, has contrived a mould resembling an ordinary syringe, except that the nozzle is replaced by a socket of stout brass, in which a conical cavity is turned, and which forms the apex of the suppository. By means of a piston considerable pressure can be given, but the suppository so formed is said to be open to the same objection as that made with a hinged mould—the mottled appearance, want of uniform consistence, and absence of gloss. Mr. J. Kemble, in the periodical above cited, also contributes a paper on this subject. This writer favors the hand process; but instead of lycopodium, prefers the flour of elm, to prevent adherence to the fingers. This preference is based on therapeutical grounds. It is recommended that the suppository be wrapped in waxed paper, but it is always well to caution the applicant as to its removal.

THE QUEBEC PHARMACY ACT AND DRUGGIST'S ASSISTANTS IN ONTARIO.

The Registrar of the Pharmaceutical Association of Quebec has sent to our College an official notification to the effect that the Pharmacy Act of 1874 prevents the Council from receiving any certificates from other colleges, except those granted by examination, or on the ground of the applicant having been actually engaged in business, on his own account, as a chemist and druggist, for a certain period prior to the passing of the Act.

This decision virtually cuts off those qualified assistants, who, by reason of having fulfilled the specified term of service, registered

under the Ontario Act, and who are, to all intent and purposes, entitled to the full rights and privileges of those actually in business. The qualification and experience of these persons cannot well be questioned, as an experience of eight years may surely be accounted sufficient; especially when an Act is retrospective in some of its clauses, and is supposed to regard vested rights. That qualified assistants have vested rights it is needless to affirm, and we hold that as possessing such they are entitled to every respect.

We look at this matter as an obvious injustice, and an equally obvious defect in the Quebec Act; but Ontario assistants—several of whom have already been refused registration—need not think themselves singular in this exclusion, as assistants in Quebec are subject to the same legal restrictions and conditions of admission. We understand, however, that the law leaves all the power in the hands of the board of examiners, and allows for the institution of a modified examination. This power has already been exercised in behalf of Quebec assistants, and by passing this examination they have been placed on the register as "Certified Clerks." We think, in all justice, that assistants holding the Ontario certificate, are at least entitled to the same privilege, and we would respectfully submit this suggestion to the consideration of the Quebec council.

ARTIFICIAL OIL OF WINTERGREEN.—At an evening meeting of the British Pharmaceutical Society, Mr. John Williams exhibited a specimen of this product, and read a short paper upon the subject. The oil was prepared from salicylic acid, obtained by the new method of Kolbe, by the combination of carbonic anhydride and hydride of phenyl, in presence of caustic soda. The oil, or, more properly, salicylate of methyl, exhibited, was quite identical in flavor with that obtained from *Gaultheria procumbens*, and will no doubt in time be substituted for it. During the discussion which followed the reading of the paper, the production of salicylic acid was alluded to and the hope experienced that in a short time the cost of the acid might be reduced to a few shillings per pound. Dr. Paul said that the manufacture was exciting much interest in Germany, and he was glad to see that English chemists were following up the discovery. We can say the same of America, as, a few weeks ago, we had the

pleasure of seeing some acid of home-production, and of inspecting the complete apparatus with which Dr. Squibb, of Brooklyn, is now operating upon quite a large scale. The pure product is of unexceptionable appearance, and a crude acid is also produced, which, for manufacturing purposes, as in the preparation of the oil, would be quite pure enough, being merely tinged with colour. An interesting paper, by Dr. Squibb, giving a summary of the literature of the subject, together with original observations, will be found in this, or the succeeding number of this journal.

ACKNOWLEDGMENT.—The *Chemist and Druggist* of London says:—"A Student's Department has been established in the *Canadian Pharmaceutical Journal*, and seems to create a fair amount of interest among the younger readers of that journal. We think we are not too eager in seizing on a compliment in assuming that the department has been modelled after our own 'Corner.'" To our esteemed contemporary we willingly tender our acknowledgment of indebtedness in the respect indicated, and though at present the respective departments are conducted in a different manner and embrace a different range of subjects, yet the system and object is the same. We can only hope that our efforts may be crowned with that success which has marked the labours of our contemporary, and in this we have some encouragement from remembering that those who engaged in the competition in the Student's Department, carried on in the old series of this journal in 1870-71, have, without exception, distinguished themselves in the semi-annual college examinations, and have generally been prize-men.

Editorial Summary.

PHYSICAL PROPERTIES OF QUINIA.—In a paper by M. Jules Regnauld *(Jour. de Pharm. et de Chim.)*, translated in *Pharm. Jour. & Trans.*, the following conclusions are arrived at:

(1.) The solubility of quinia in water is at 15° C., 1 in 2,024, and at 100° C., 1 in 760; in absolute alcohol, at 15 C., 1 in 1,133; in chloroform, at 15° C., 1 in 1,926; in pure sulphuric ether, at 15° C., 1 in 22·632.

(2.) The solubility of tannate of quinia in water is below 1 in 20,000.

(3.) The fluorescent power of quinia becomes twenty times more energetic under the influence of an excess of sulphuric acid.

(4.) By means of this exalted fluorescence, it is possibie to recognize the presence of the alkaloid in a solution containing quinia only in the proportion of one part in five hundred thousand, a degree rather beyond that stated by Flückiger, who recommends this reaction. The author finds it to surpass in delicacy, in the ratio of 5 to 4, the opalescence caused by the double iodide of mercury and potassium, which, however, furnishes no clue as to the nature of the alkaloid of which it reveals the existence.

METHOD OF USING TEST PAPER.—Mr. C. J. Lawler *(Jour of App. Chem.)* alludes to the liability of inexperienced persons forming erroneous conclusions from the indications afforded by litmus paper, and also refers to the difficulty of determining the exact point of neutralization. The following facts may be advantageously borne in mind:

(1.) When litmus paper is wet with distilled water, the blue appears more blue and red acquires a more distinct pink than when dry. (2.) Any change occurring in the wet test daper, though imperceptible when viewed by itself, is easily recognized when compared with a piece of the same wet colored paper to which the test has not been applied. (3.) The contrast in color is still plainer if both the tested and untested papers are compared on a bright yellow groundwork. (4.) The change is more readily perceptible if the solution is quite warm. The following is an expeditious method of using litmus paper in accordance with the preceding facts: Take a bright lemon-colored porcelain plate (when this is not attainable, a white porcelain plate or pill tile is the best substitute), and on one side of the upper surface, and as evenly as is convenient, distribute small squares of blue litmus paper, wet, about three-eighths of an

inch apart; distribute the red in like manner on the other side of the upper surface. Now, with a pointed glass rod, apply a drop of the solution to be tested to one of the squares. If any reaction occurs, though slight, it is at once perceived by contrasting it with the adjacent squares, the bright groundwork still further enhancing the contrast. Small squares of test paper are used instead of strips, because more economical. The paper being used wet, its capillarity is increased. A drop of the test solution applied to one end of a wet strip rapidly diffuses itself through the whole strip, and the force of contrast is lost.

PREPARATION OF OLEIC ACID FOR OLEATE OF MERCURY.—In a paper read before the American Pharmaceutical Association, Mr. Charles Rice, describes a process for the purification of commercial oleic acid. This product, which is known as "red oil," is repeatedly exposed to a temperature of 45° F., and the liquid portion expressed. This is mixed with an equal bulk of sulphurous acid, exposed to the light, and frequently agitated until no more color is discharged:

A crude acid, prepared from clear and fresh fats, and collected as the first run from the hydraulic press, before the pressure has been raised high, will discharge nearly all its color; generally, however, the acid is of a light straw color. Finally, the oleic acid is separated, washed repeatedly with cold, distilled water, and put into bottles, which should be kept full and in a cool place. Oleic acid thus prepared dissolves metallic oxides readily and completely, and mercuric oxide without reduction. Solution should be made at ordinary temperatures, since experience has shown that all heating is injurious. The mercuric oxide used should be *thoroughly dry*, and sifted in small portions at a time, upon the surface of the oleic acid, each fresh portion being well incorporated before another is added.

PRESENCE OF LEAD IN OIL OF LEMON.—Dr. Stevenson Macadam recently pointed out the fact that oil of lemon frequently contains lead, derived from the metallic lining of the coppers in which it is imported. Considering the quantity of aerated water and syrups, flavored with lemon, which is consumed, it is not remarkable that this announcement produced a little sensation. According, however, to the conclusions of Mr. H. N. Draper, F.C.S., (*Pharm. Jour. and Trans.*,) there is no occasion for alarm. An examination of Messina oil, which, for eleven months had been in contact with its metallic-lined container, revealed the fact that though lead was present, its proportion was very small, amounting only to about one-

fourth of a grain in each pint of oil. It is calculated that this quantity of essence would make 83 gallons of syrup, and the amount of lead in this would be altogether insignificant. The lining of the copper was examined, and found to contain 81·03 per cent. of tin, and certainly not more than 19 per cent. of lead.

THE EMPLOYMENT OF COAL OILS IN THE PREPARATION OF ALKALOIDS.—MM. Boiraux and Leger (*Repert. de Pharm.* in *Pharm. Jour. and Trans.)* found that the so-called coal oils may be advantageously employed for the separation and extraction of vegetable alkaloids. For this purpose the light oil, benzole, boiling between 50°and 100° C., was found generally useful; but the heavier oil, coming over between 80° and 120° C., was sometimes required. The addition to the preceding of 5 per cent. of carbolic acid was occasionally of advantage. These solvents have but little solvent action upon the extract of plants, and yield, at once, nearly colourless solutions of the alkaloids, from which crystals may often be obtained, but it is generally necessary and preferable to pass the alkaloids into an acid liquor, and then precipitate. Certain fatty and resinous bodies are thus removed, and the product rendered perfectly white. For particulars regarding the manner of procedure we must refer our readers to the authority last named, Feb. 13th, 1875, and following number, where the extraction of most of the vegetable alkaloids is treated of in detail.

INCREASE IN THE NUMBER OF PHYSICIANS AND DRUGGISTS IN THE UNITED STATES.—A writer in the *American Journal of Pharmacy* has been making some statistical inquiries relating to the number of physicians, druggists, &c. in the United States, and from a comparison of the last three Census Reports, 1850, 1860, 1870, gleans the following interesting items. In 1850, in a population of 23,391,876, the number of physicians was 40,554, or 1 to 572; of druggists 6,139, or 1 to 3,778; of patent medicine manufacturers, 59, or 1 to 369,472. In 1860, population 31,443,221: physicians 54,543, or 1 to 576; druggists 11,031, or 1 to 2,850; patent medicine manufacturers, 203, or 1 to 154,893. In 1870, population 38,558,371; physicians, 62,283, or 1 to 638; druggists, 17,369, or 1 to 2,219; patent medicine manufacturers, 409, or 1 to 94,274. It will be noticed that the physicians have increased in about the same ratio as the population, while druggists have increased in much greater proportion, viz., from 1850 to 1860, 79·7 per cent. to an increase of population of 34 per cent.; and from 1860 to 1870, 57·4

per cent. to 23 per cent. increase of population. The patent medicine manufacturers have increased at each interval over 100 per cent.

PITYRIASIS CAPITIS.—For the relief of this obstinate and troublesome affection an exchange recommends the following: Ol. Theobromæ, ol. Amygdala dulc., ol. Ricini; of each five drachms; Hydrarg. Sulph. flav. fifteen grains. Make an ointment. Anoint the scalp thrice daily, and wash with soap three times a week. The hair should be cut short; and the scalp may be smartly brushed after each application.

INVISIBLE INK.—A correspondent of the *Druggists' Circular* contributes to that journal a formula for invisible ink: Hyposulphite of soda, ten grains; water, one ounce. Use a perfectly clean pen, and, when the writing is dry, rub the paper with a paper folder, or knife, to remove all traces of the dry salt. Exposure to the heat of a bright coal fire develops dark colored writing.

COMPOSITION OF SOZODONT.—"Polyphistor," a contributor to the journal named in the above paragraph, gives from *Wigger's Jahresbericht*, the result of analyses of some American patent medicines; and, amongst others, of Van Buskirk's Sodozont, which is said to be of the following composition: Castile soap 5 parts, glycerine 5, alcohol 30, water twenty parts, and a mixture of the oils of peppermint, cloves, cinnamon, and anise, sufficient to impart the necessary odor and flavor.

NOTE ON POMADES.—An inquirer of the "Notes and Queries" department of the *Pharmaceutical Journal* of London, asked information as to means of preventing that misty appearance often observed on the inside of glass bottles containing pomade. In answer to this a correspondent says that this unsightly result may be obviated by dipping the bottles, after the pomade has become cold, into warm water, allowing them to remain immersed for about one minute.

Students' Department.

Answers to the following questions must be sent in so as as to be received by the editor before the twentieth of each month. Competitors must be engaged in the drug business, not being proprietors or having passed examination, and must furnish, with the answers sent, their real names and addresses. Answers to each of the questions must be written on *separate sheets* or slips of paper, and must be followed by the name and address of the competitor. It is trusted that all answers sent will be the *bona fide* work of competitors, and that no assistance will be sought except such as is afforded by books. Any attempt to copy *verbatim*, or in part, from any published work, will impair or altogether nullify any value which might otherwise have been assigned to such answer.

The same competitor may not carry off more than one First Prize and one Second Prize during the term of six months.

Answers requiring calculation and involving fractions must be given in decimals, which need not be carried beyond the third place.

The following books are offered this month as prizes:

Successful competitors may select from any of the above works, and, on notifying the Editor, the book selected will be forwarded by post.

All communications to be addressed, E. B. SHUTTLEWORTH, Box 517, Toronto.

QUESTIONS.

1. *Chemistry.*—Explain in writing, and by drawings, the typical forms of the various crystalline systems; give examples of substances belonging to each; define the terms *dimorphous*, *isomorphous*, and *amorphous*.

2. *Pharmacy.*—Make separate enumerations of the extracts of the *British Pharmacopœia*, basing the classification on similiarities in (*a*) menstruum used; (*b*) consistence; (*c*) solid material—as (1) fruit, (2) flowers, (3) leaves, (4) bark, (5) wood, (6) root, (7) other substances; (*d*) medicinal properties.

3. *Materia Medica.*—Explain the difference between salts of the metals and salts of the alkalies; enumerate the latter which are officinal, and give doses.

4. *Botany.* (*a*)—Explain the difference between Simple and Multiple Primary and Secondary roots; (*b*) between the Pepo, the Pome and the Drupe; (*c*) give, frrm the Pharmacopœia, instances of the Rhizome, Corm, and Tuber.

5. *Dispensing.*—In how many forms are suppositories prepared? What are the excipients used? State the disadvantages of each, and describe the different methods of manipulation.

6. *Prescriptions.*—Translate the following prescription, and parse the first line.

Recipe, Ferri Sulphatis, semiunciam.

Acidi nitrici, (per ponderam) semiunciam.

Tere probe simul in mortario vitreo donec effervescentia peracta ; dein adde gradatim, Aquæ Destillatæ unciam et semisse. Postea per chartam cola. Dosis a quatuor ad decem guttas, ter quaterve, quotidie, in Quassiæ, vel Zingeberis, vel Caryophylli Infusione.

LAST MONTH'S QUESTIONS.

The questions on chemistry and pharmacy were very indifferently answered, and, on this account we intend to give our students another trial, say in June. With this end in view, we cannot, therefore, enter at present into any explanations, but in order to prevent the repetition of an error, we may say that the attempt to estimate the specific gravity of potassium, by weighing it in water, would be attended with results more astonishing than satisfactory.

Mr. Yeomans reports that the answers in materia medica and botany, are beyond the average, and it is more than probable that the questions will be continued in June. E. B. S.

Dispensing.—The only ingredients that are absolutely necessary for making Copaiba into a presentable emulsion are powdered Acacia and water. Of the former, three drachms, or about one-third the quantity of Copaiba used, should be put into a mortar, and made into a very thick mucilage with about two drachms of water. The Balsam should then be gradually added and triturated briskly until it is emulsified. Lastly the water necessary to make up eight ounces must be gradually added. A satisfactory emulsion cannot be made with the Mucilage of Acacia of the Pharmacopœia without a very unnecessary amount of labor. Students are recommended to read p.p. 342 and 343 " Mohr and Rockwood's Practical Pharmacy."

NOTE.—By an error, either of the writer or of the printer, I know not which, the marks given to students in Dispensing were credited to Prescriptions, and *vice-versa*. E. G.

Prescriptions.—The prescription given last month should read as follows :—

Recipe. Acidi Tannici, drachmam.
Potassæ Chloratis, drachmas duas.
Tincturæ Opii, drachmam.
Tincturæ Ferri Perchloridi, drachmas duas.
Mellis, unciam.
Aquæ ad uncias octo.

Fiat gargarisma cujus aeger cochleare magnum omni bihorio utatur.

The Tannic Acid is incompatible, both with the Tincture of Perchloide of Iron and with the Tincture of Opium. E. G.

ORDER OF MERIT.

Maximum Number of Marks = 60.0.

No.	NAME.	Chemistry.	Pharmacy.	Materia Medica.	Botany.	Dispensing.	Prescriptions.	Total.
1	R. McCormick, Ottawa	10	9	9.0	9.0	10	8	55.0
2	W. W. Stephen, Meaford	9	10	6.0	6.0	7	9	47.0
3	F. S. Greenwood, St. Catharines	6	5	10.0	9.0	7	9	46.0
4	A. J. Greenwood, St. Catharines	6	5	5.0	9.0	10	9	44.0
5	" Ether," Toronto	7	4	10.0	6.0	9	7	43.0
6	" Ethyl," Toronto	7	5	8.0	7.0	9	5	41.0
7	J. H. Mackenzie, Mt.Forest	1	4	4.0	5.0	9	10	33.0
8	T. G. H., Stratford	4	5	4.0	3.0	8	5	29.0
9	Wm. Howell	6	2	4.0	0.0	8	4	24.0

The first prize is awarded to Mr. Robert McCormick, Ottawa; the second prize to Mr. W. W. Stephen, Meaford.

Transactions of Pharmaceutical Colleges and Societies.

PHARMACEUTICAL ASSOCIATION OF QUEBEC.

The examinations conducted by the Board of Examiners of the Pharmaceutical Association of the Province of Quebec, in accordance with the Act recently passed, were held in Montreal, on Monday, Tuesday and Wednesday evenings, the 12th, 13th and 14th of April, when the following gentlemen passed the major examination and were registered as Licentiates in Pharmacy:—Wallace Dawson, R. H. Bryson, and J. A. Gordon; two others being unsuccessful, were recommended to continue their studies for another year. The following passed the minor examination and were registered as certified clerks:—T. M. Henderson, L. R. Barridon, and Elzear Lavoilette, seven others being referred back for further experience and study. The Board of Examiners will sit in Quebec on the 4th of May, for the convenience of candidates residing in that vicinity. The new Act under which these examinations have been held will be most

stringently enforced after the 1st of May; and all druggists, clerks and apprentices in the Province of Quebec, who have not already complied with the law should at once send in their names to the Registrar, E. Muir, Esq., Place d'Armes. The "Poison Book," one of which every druggist is required to use for the registration of the sale of poisons, is now ready and can be obtained from the Registrar. The following gentlemen comprise the Board of Examiners; Nathan Mercer, Alex. Manson, W. E. Brunet, Henry R. Gray, J. D. L. Ambrosse, H. F. Jackson and Henry Lyman. In the interest of the public in the Province of Quebec it should be generally known that all physicians keeping drug srores are obliged, equally with licensed druggists, to employ no one in their pharmacies as clerks or apprentices who are not duly registered under the Act; and all druggists holding the old License of the College of Physicians and Surgeons, authorizing them to practice pharmacy, are also obliged to register, according to the provisions of the new Act.

It would be well if Druggists generally would make themselves acquainted with the new law, or they may find themselves some day at the mercy of an informer. The provisions of the poison clause should more especially be well digested.

Varieties.

WICK FOR SPIRIT LAMPS.—After a year's experience, Forster *(Zeit. der Allgem. ostr. Apotheker-Vereins)* recommends as the best wick for spirit lamps a small roll of gray filtering paper.—*Chemist & Druggist.*

FOR CLEANING BRASS.—Finely rubbed bichromate of potassa mixed with twice its bulk of sulphuric acid and an equal quantity of water will clean the dirtiest brass very quickly.

BROMINE,—One hundred and thirty thousand pounds of bromine are stated to have been manufactured in the Ohio and Kanawha Valleys last year. One thousand pounds were produced in Pennsylvania.

POISONING BY CHLORAL.—In Berlin, a man who had attempted to commit suicide by taking a large dose of chloral (370 grains), was cured by the injection of 1-25th of a grain of strychnia, which was repeated in a short time. When the first dose was taken, collapse had already set in. Liebreich was the first to show the antagonism between these two substances. —*Am. Medical Weekly.*

A SPECIMEN OF NOMENCLATURE.—Our chemical readers will doubtless be pleased to learn that a series of acids have been investigated by M. Hayduck. One is orthoamidotoluenesulphonic acid; and another diazorthoamidoparatoluenesulphonic acid. A knowledge of these is not indispensable to the practice of medicine. The action of tin and hydrochloric acid on nitrobromacetanilide gives rise to the hydrochloride of ethenylbromophenyleneniamine.—*Phila. Med. & Surg. Rep.*

DRUGS, MEDICINES, &c.	$ c.		$ c.
Acid, Acetic, fort	0 14	@	0 15
Benzoic, pure	0 22		0 27
Citric	1 40		1 50
Muriatic	0 05		0 06
Nitric	0 11½		0 15
Oxalic	0 22		0 23
Sulphuric	0 03¾		0 07
Tartaric, pulv	0 50		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 55		0 65
Alcohol, 95 per ct.....Cash	2 02		2 05
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	2 50		2 60
Bark, Bayberry, pulv	0 20		0 22
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	30 00		30 00
Bismuth, Alb	2 50		2 75
Carb.	2 65		2 90
Camphor, Crude	0 38		0 40
Refined	0 43		0 47
Cantharides	2 20		2 30
Powdered	2 30		2 40
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 65		0 70
Black	0 85		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 50		1 60
Colocynth, Co	1 25		1 75
Gentian	0 50		0 60
Hemlock, Ang	0 00		0 95
Henbane, "	1 70		1 80
Jalap	5 00		5 50
Mandrake	1 75		2 00
Nux Vomic.....oz	0 40		0 50
Opium.....oz	1 80		
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 32		0 40
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 50		0 60
" powdered	0 60		0 75
" sorts	0 24		0 30
" " 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 80	0 85
Gum, Shellac, liver	0 60	0 70
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 19	0 26
Vienna	0 26	0 28
Prices	0 60	0 75
Honey, Canada, best	0 15	0 16
Lower Canada	0 14	0 16
Iron, Carb. Precip	0 20	0 25
" Sacchar	0 40	0 55
Citrate Ammon	1 75	1 80
" & 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 30	6 00
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 17	0 20
Calcined	0 65	0 75
Citrate.....gran.	0 60	0 75
Mercury	1 80	2 00
Bichlor	1 80	2 00
Chloride	2 10	2 15
C. Chalk	0 95	1 00
Nit. Oxyd	2 10	2 25
Morphia Acet	4 50	4 60
Mur.	4 50	4 60
Sulph	4 65	4 75
Musk, pure grain.....oz	25 00	—
Canton	0 60	1 20
Oil, Almonds, sweet	0 40	0 45
" bitter	14 00	15 00
Aniseed	4 00	4 25
Bergamot, super	7 75	8 00
Caraway	3 20	3 50
Cassia	2 00	2 25
Castor, E. I	0 15	0 17
Crystal	0 22	0 25
Italian	0 26	0 28
Citronella	1 05	1 15
Cloves, Ang	3 50	3 75
Cod Liver	1 25	1 50
Croton	1 75	2 00
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 50	7 00
Rose, Virgin	8 50	8 75
" good	7 00	7 25
Sassafras	0 75	1 90
Wintergreen	5 25	5 50
Wormwood, pure	4 00	6 00
Ointment, blue	1 40	1 50
Opium, Turkey	8 50	8 75
pulv	11 50	12 00

DRUGS, MEDICINES, &c.—*Cont'd*	$ c.	$ c
Orange Peel, opt.	0 30	0 36
" good	0 12½	0 20
Pill, Blue, Mass	1 40	1 50
Potash, Bi.chrom	0 18	0 20
Bi-tart	0 33	0 35
Carbonate	0 14	0 20
Chlorate	0 35	0 40
Nitrate	8 00	9 00
Potassium, Bromide	70	0 80
Cyanide	0 60	0 70
Iodide	3 80	4 00
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 20	—
" 100 oz. case.	2 17	—
" 25 oz. tin..	2 17	—
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 00	2 25
" E. I	0 75	0 90
" " pulv	1 00	1 10
" " 2nd	0 60	0 70
" French	0 75	—
Sarsap., Hond	0 53	0 60
" Jam	0 88	0 90
Squills	0 10	0 15½
Senega	1 10	1 10
Spigelia	0 25	0 30
Salts, Epsom	2 25	3 00
Rochelle	0 30	0 32
Soda	0 02½	0 03
Seed, Anise	0 13	0 16
Canary	0 15	0 16
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	12 00	13 00
Santonine	7 25	7 50
Sago	0 08	0 09
Silver, Nitrate.....Cash	14 85	16 50
Soap Castile, mottled	0 11	0 14
Soda Ash	0 03⅜	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 50	2 80
" liquid	2 00	—
Argols, ground	0 15	0 25
Blue Vitrol, pure	0 09	0 10
Camwood	0 06	0 09
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 01⅝	0 03
Extract	0 10½	0 12
" 1 lb. bxs	0 13	—
" 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 60	0 65
Cayenne	0 22	0 28
Ginger, E. I	0 19	0 20
Jam	0 30	0 30
Mace	1 50	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 07 @	0 08
" refined	0 25	0 30
Blue, Celestial	0 08	0 12
Prussian	0 65	0 75
Brown, Vandyke	0 10	0 12½
Chalk, White	0 01	0 01½
Green, Brunswick	0 07	0 10
Chrome	0 16	0 25
Paris	0 30	0 35
Magnesia	0 20	0 25
Litharge	0 07	0 09
Pink, Rose	0 12½	0 15
Red Lead	0 07½	0 08
Venetian	0 02½	0 03½
Sienna, B. & G	0 07	0 08
Umber	0 07	0 10
Vermillion, English	2 00	2 10
American	0 25	0 35
Whiting	0 1⅛	0 02
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 03⅜	0 04½
Yellow Ochre	0 08	0 12
White Lead, gen. 25 lb. tins	2 35	—
" No. 1	2 10	—
" No, 2	1 85	—
" No. 3	1 60	—
" com	1 30	—
White Zinc, Snow	2 75	3 25
NAVAL STORES.		
Black Pitch	4 10 @	4 50
Rosin, Strained	3 80	4 25
Clear, pale	5 75	7 25
Spirits Turpentine	0 50	0 52
Tar Wood	4 40	4 50
OILS.		
Cod	0 68 @	0 70
Lard, extra	1 10	1 20
No. 1	1 05	1 10
No. 2	0 90	0 95
Linseed, Raw	0 61	0 66
Boiled	0 65	0 68
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 72½	0 75
Straw	0 68	0 70
Sesame Salad	1 30	1 35
Sperm, genuine	2 55	
Whale refined	0 70	0 75