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E. B. SHUTTLEWORTH.

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ORIGINAL AND SELECTED PAPERS,

A FEW PRACTICAL NOTES ON COMMERCIAL ALCOHOL.

BY E. D. SHUTTLEWORTH.

It is not the intention of the writer to enter into a dissertation on the history and properties of this most valuable of solvents, but merely to offer some facts which are of interest to the pharmacist, in regard to the preparation and peculiarities of the several varieties of spirit met with in commerce; and also to present a few practical observations on the methods used for estimating the alcoholic value of liquids, and on the rules by which the so-called "mixing" of spirits is performed.

Before entering into a separate consideration of the various commercial spirits, it will be necessary to state, briefly, the method by which crude or raw spirit is obtained, as this forms the basis upon which all others depend.

Until later years, the distillation of spirits was carried on in stills of the ordinary simple form, consisting solely of a vessel which contained the wash, and to which fire was directly applied, and a spiral worm, which served for the condensation of the vapor. This form of apparatus has been almost entirely superseded, and is now only used for illicit purposes, or for the preparation of small quantities of particular liquors. The modern still is quite a complicated affair, which would be difficult to describe without the aid of diagrams. It may, however, be said to consist of a series of wooden columns of some two or three feet in diameter, and thirty or forty feet in height; these are, generally, lined with copper, and are fitted with a number of perforated shelves, which are so arranged that a liquid poured in at the top of the column will pass from one shelf to another in its descent. The wash liquor, or wort, is pumped to the top of these columns, and in passing, from shelf to shelf, is made to meet with an ascending current of steam, which, rushing upwards through the perforations, at once raises the wash to the boiling point, and deprives it of the spirit which it contains, carrying it upwards to the head of the column, and thence into an ordinary worm, where the mixed alcoholic and watery vapors are condensed and collected. The excellence of this arrangement is apparent when we consider the vast surface of liquor which is exposed to the action of the

steam, thereby ensuring the rapid and effectual separation of the spirit; and also the avoidance of danger from fire, both in regard to contamination of the product with empyreumatic impurities, and the loss of both product and apparatus by contact with actual flame—an accident which, in former times, was by no means of rare occurrence.

Raw spirit is loaded with impurities, and is never used but for the production of the commonest whisky. The effect of this on the human economy is well exemplified in the action of that celebrated Canadian beverage which is said to be effective at a distance of forty rods. The character of the impurities of raw spirit differs with the material from which the wash is made. In this country the material employed is principally Indian corn, with a greater or less amount of malted grain. These give rise to a large quantity of fusel oil, together with a number of volatile liquids, to which reference will be made in another part of this paper.

The purification of spirit is mainly effected by rectification; but, in most distilleries, a preliminary process is adopted, in which the spirit is first diluted with water, and is then made to pass through a series of percolators which are filled with charcoal. This separates a considerable quantity of the fusel oil, and from this percolated spirit an intermediate grade of whiskey is prepared. The final rectification is made in a copper still of one or two thousand gallons capacity, which terminates in a pipe leading into an upright column similar to that used in the first distillation. This column is maintained at a temperature above the boiling point of alcohol, but lower than that of water; consequently the watery vapor is condensed and flows back into the still, while the alcohol retains its vaporous condition. At the top of this separating column a "flavorer" is commonly attached. This consists of a large copper vessel, fitted with perforated shelves, on which may be placed the flavoring ingredients which are to determine whether the final product is to be whiskey, gin, brandy, or rum. We may mention, in passing, that the "flavorer" is little used, as the various spirituous liquors are more easily manufactured from spirit in its liquid form. Most commonly, then, the alcoholic vapor pursues its course unmolested through the perforations of the flavorer, and makes its way through the convolutions of a horizontal spiral pipe, which is immersed in a vessel of water called the "goose tub." The temperature of the water in this tub is such as to keep the alcohol in the vaporous condition, while

the fusel oil which it contains is condensed, and flows off by means of pipes which are attached to the bottom of each convolution of the worm, and which lead to a common receptacle. The fusel oil produced is that of commerce, and, as obtained at distilleries in this city, may be used for all the purposes of amylic alcohol. Rectification is seldom necessary, as the writer has, generally, found that the boiling point is constant at 269° F., after one twentieth of the original bulk has been drawn over. The alcohol vapor, thus freed from its fusel oil, passes on to the condenser, where it is commonly collected at a degree of strength equal to 65 over proof, on Sykes' scale. This alcohol is used for the manufacture of a third grade of whiskey, and is the spirit commonly employed for the making up of factitious liquors, and is also the spirit known to the drug trade as "alcohol." It is a stronger spirit than is commonly sold in other countries, and should not be employed indiscriminately as "spirit of wine," "high-wines," or "alcohol."

There yet remains another variety of alcohol to be described, which is known by the names of pure, silent, deodorized, or Cologne spirit. This is obtained by rectifying alcohol a second time, rejecting the portion which comes over first. The second rectification is sometimes omitted; the first portion obtained during the rectification of the raw spirit being collected apart, and set aside in a vessel known as the "low wines receiver." This "low wines" contains the pungent, ethereal products to which reference has been made; and the principal difference between alcohol and pure spirit may be attributed to the absence of these products in the latter. The biting, fiery taste and smell of alcohol is due to these impurities; and the writer is inclined to think that the peculiar bad effects realized from the use of liquors made from alcohol, and which cannot be attributed to the spirit alone, are mainly chargeable to these impurities. Some time ago, the writer received from one of our large distillers a sample of this "low wines," and, by fractional distillation, obtained a liquid possessed of an odor resembling those compounds obtained as a residue in the rectification of chloroform, but exceedingly pungent; indeed, quite as much so as liquor ammonia; producing, when inhaled, violent coughing, followed by intense headache and depression. We have not had time to examine these compounds further, and so cannot as yet pronounce upon their composition. Pure spirit forms the basis of our best liquors, and, in the diluted form of malt or rye whis-

key, is much preferable, to the doctored up and vile compounds which figure on our shelves as *Spiritus vini Gallici*.

As the impurities of alcohol are of a volatile and odorous character, it follows that the sense of smell may be advantageously employed for their detection. A common method is to rub a portion of the spirit between the palms of the hands; or better, to drop a few drops on a piece of clean filtering or blotting paper; after the evaporation of the spirit, the amount of the less volatile fusel oil may be estimated with some nicety, by those accustomed to this manner of testing. This method savors strongly of the "rule of thumb" system, but is, nevertheless, of much practical value from the fact of its ready application. A more scientific mode of procedure is that of mixing a portion of the spirit with a solution (1 to 40) of nitrate of silver, and exposing the mixture to bright sunlight; the presence of the fusel oil in greater or less quantity determines the degree and rapidity of coloration. Another method, is to add to two or three ounces of the spirit, a few drops of liquor potassa, and evaporate slowly to about two drachms; by adding to this residue a few drops of sulphuric acid, the peculiar pungent smell of fusel will be developed. The potash combines with the fusel oil, and thus prevents its evaporation with the spirit, while the acid again liberates it. It is said that fusel oil may also be detected by adding to the spirit an equal bulk of sulphuric acid; if the spirit is pure it will remain colorless; otherwise, the depth of tint may be taken as indicating the degree of impurity. For the detection of wood spirit, as in the mixture of so called methylated spirit and alcohol, Dr. Ure recommends the addition of a little powdered caustic potash: when as little as one per cent. of wood naphtha is present a yellow colour is developed, in about ten minutes, which in the course of half an hour becomes a decided brown.

Before closing this part of the subject, we may say that we have no certain knowledge that any of the tests which have been given are applicable to the detection of the peculiar compounds which have been mentioned as forming part of the "low wines." As these compounds are collected before pure spirit, or fusel oil, is obtained, it may be assumed that they are more volatile than either. In this case, if spirit so contaminated be rubbed between the hands, these impurities will instantly fly off, and if present in considerable quantity, will be easily characterized by their nauseous and peculiar odor. Indeed, it is principally to these compounds, that the peculiar and characteristic odor of commercial alcohol is to be attributed, as perfectly pure spirit has little or no smell.

To be Continued.

THE WATERS OF THE BRITISH PHARMACOPEIA.*

BY GEORGE BROWNEN.

Distilled waters form an important class of preparations in the B. P., and have often attracted the attention of pharmacists. Haselden, Proctor, and others, have examined them, and thrown some light on their manufacture and preservation; but our knowledge of them is still incomplete. Much that is mysterious goes on in them; they alter in taste and appearance. Opaque waters become nearly clear, and their harshness gradually tones down to mellowness.

All the B. P. waters but one are distillates, and that one—*aq. camphoræ*—is made with distilled water. The apparatus for distillation is familiar to us all. By its use volatile oils, though possessing higher boiling points than water, are diffused in steam, carried over and condensed, free from inert matter, which is left behind in the still. Forms are given in the British Pharmacopœia for preparing twelve or thirteen official waters; the other one, *aq. flor. aurant.*, is an imported article. For making some waters the directions are exceedingly minute; for others quite the contrary. In *aq. camphoræ*, for instance, the old stopper is no longer used; a glass rod must sink the camphor in the water. This may suit some, but not those who have to make this water in large quantities, as it is found that long glass rods are easily broken, and the advantages of long pieces of glass over short ones are not equivalent to the increased cost. On the other hand the camphor is only ordered to be in "pieces," but whether large or small the B. P. does not say. Yet this vagueness greatly affects the time necessary for saturation. Again, in the case of *aq. anethi*, bruising dill fruit is not an easy task, but having accomplished it, we distil the authorised quantity. Now, if we leave the residue in the still to macerate till the next day, and then distil another and an equal quantity, it would puzzle most people to know the right from the wrong article. Yet none of the waters of the British Pharmacopœia, except *aqua lauracerasi*, are supposed to want maceration. This curious mixture of careflessness and uncertainty strikes us, if we look on these waters as a class or section of the B. P.

Upon examining each separately, *aqua* and *aqua distillata* first attract notice. A hard taste must be no taste at all, pharmacopœially speaking, or we should have to reject the waters of some of our London water companies. In distilling water, the first 1-20th is rejected, the next 16-20ths saved. The tests given in the B. P. refer only to mineral waters, which, of course, are separated; but many volatile bodies, and the results of organic decomposition, still remain in the water, as well as substances having a high volatilizing point, but which come over with water in distillation. When a recently distilled water, giving no precipitate with *liq. calcis*, has been mixed with a little peroxide of hydrogen, and re-tested with *liq. calcis*, I have sometimes found a precipitate of calcic carbonate. I have attributed this to the oxidation of a carbon compound into carbonic acid. Another effect of this process of oxidation has been the destruction of that musty odor so common to recently-distilled water. I have theorized on these facts in this way:

*From the Pharmaceutical Journal, London.

these odors may be partly the result of electric action in the still, and partly the result of algeæ or infusorial decomposition; slowly these forms of matter pass into more highly oxidized, stable and odorless states, and we say the water has improved by keeping. Well, for medical purposes, so it has; and perhaps this may throw a ray of light on an after subject. Of substances volatilizing in connection with boiling water, ammonia nitrate may be taken as a type. If a solution of brucine be added to recently-distilled water, and sulphuric hydrate be allowed to trickle down the side of the test-tube, a rose-colored zone, changing to yellow, may be seen at the line of union in the two fluids, indicating nitrates, and ammonia may be readily found by Nessler's test. I have obtained the same results in distilled water when more than double the Pharmacopœia quantity has been rejected.

Gases, as nitrogen, etc., distil over with water. According to the experiments of Doumy and Grove, pure boiling water has not been obtained; their experiments tend to show that nitrogen, expanding by heat into a gaseous bubble, carried away an atmosphere of aqueous vapor; that in the process of boiling, nitrogen was absorbed as well as evolved; that in sealed tubes, boiled by electricity, it was still eliminated; and these and other experiments go a great way to prove that the action of heat on pure water would cause decomposition. But such refinement is not required for the pharmacopœial article. I have referred to it as confirmative of a theory I shall shortly state.

In *aqua destillata* we possess the most powerful solvent known, and as such it is one of the most delicate articles to keep. It absorbs gases as rapidly as it is distilled; some, as oxygen and nitrogen, with remarkable avidity and force; and others, as the common laboratory gases, carbonic acid and ammonia, also with great rapidity, and then minute important and puzzling changes are the result. Not only salts and minutely-divided substances, but metals, also, are attacked by water. Iron is dissolved as ferrous and ferric oxides, and lead, zinc, and its compound, pewter, with their well-known injurious results. Copper is as easily dissolved as either of the others. Cupreous water gives the blue coloration with ammonia. Manganese, mercury, silver, gold and platinum are also attacked. Tin is dissolved by the worn, tinned vessels, etc., and after a little time thrown down as stannic oxide; to this action Parrish attributed the unpleasant odor of distilled water. Cadmium, bismuth, silica and glass may be added to the list, and it is probable, if I could have experimented with the whole list of elements, nothing would have completely resisted aqueous action, or the almost, if not entirely, nascent condition of its gases. What, then, should we use as vessels for *aq. destillata*? I think this shows that glass, or metallic cisterns, coated with their most insoluble compound, would be the safest and best. And yet we need not wish the absorbent and changeful properties of water less, or nature's great sanitary operations might be interfered with. Sewage and decaying matter soon find their way into water, and if water could not quickly change them into innocuous compounds, there would be death in the pot of the teetotallers and non-abstainers alike. Especially should Londoners be thankful—with chimneys overhead, dustbins and other surface pollutions, and sewage under foot,

evolving putrid gases, etc.—that water is so industriously and incessantly turning the noxious into less hurtful compounds.

I have dwelt thus long on distilled water as all the substances found in that water, including the rejected distillate, are also found in the medicated waters of the Pharmacopœia. To these waters I now briefly call attention.

Aqua Anethi.—1 lb. of the fruit yields from 3 to 7 drachms of oil, sp. g. .90. In a note to his translation of the P. L., Phillips says that this oil is soluble in 1,500 parts of water; if so, it is evident the proportion of fruit or oil is excessive in the B. P. form. This is a fact, and if maceration had been ordered, the quantity might have been halved and a superstratum of oil still obtained.

Aq. Flor. Aurant.—The foreign preparation, with which a syrup is made, often substituted for syr. capillaire. The tests given for this water should have Goble's test, Ph. J. Ap. 66, added to them; this test detects orange leaf and oil of neroli water. 1 lb. of orange flowers yields about 3 ss of oil, sp. g. .88.

Aq. Camphoræ I have already referred to. If the camphor is beaten in a mortar without spirit, I find it can be reduced to a coarse powder, incapable of sifting through the muslin, but sufficiently fine to make the water quickly.

Aq. Carui is very similar to aq. anethi; both preparations are reduced in quantity from the P. L., and by the adoption of maceration previous to distillation, might still further be reduced. 1 lb. of caraway fruit yields 3 iij to 3 x of oil of sp. g. .94.

Aq. Cinnamonii is slightly altered in proportions from the B. P. Using the bark, we are not so likely to use cassia. Pereira says these barks may be known apart by the iodine reaction, but the oils are not so easily distinguished. 1 lb. of cinnamon yields 3 i to 3 iij of oil, sp. g. 1.006.

Aq. Fœniculi comes from Scotland. Possibly Englishmen are not yet alive to its value, as it is not much in request amongst us. 1 lb of fennel yields 3 iij to 3 vj of oil, sp. g. .94.

Aq. Laurocerasi has been investigated by Draper, Pooley, and others. It is one of the most uncertain articles in the Pharmacopœia. Draper advised standardizing its hydrocyanic acid; a weak solution of hydrocyanic and sulphuric acids has been praised by others; some say make a stronger water and dilute when wanted; others omit the maceration process; so, altogether, it is a dangerous and uncertain article. The oil varies from .06 to .6 per cent. (Umney.)

Aq. Menth. Pip. and Aq. Menth. Vir. represent the Labiatae; they are the only waters made from oils, as recommended by Haselden, and are improvements on the herb-distilled waters of the P. L. The oil should be divided by trituration with some solid before it is put in the still.

Aq. Pimentæ has been reduced $\frac{1}{4}$ th, that is, 2 oz. less pimento to the gallon. A thin layer of oil lies at the bottom of the water; this opaque water becomes clearer by age, and deposits crystals, to be afterwards noticed. 1 lb. of the berries yields 3 iij to 3 v of oil, sp. g. 1.02.

Aq. Rosæ, ordered to be made from rose petals, is often made with otto or rose geranium oil. Real otto is a scarce article, 100 lbs. of petals yielding less than 3 iij of solid otto fusing at 86°. To the salt process I shall refer presently.

The last water of the Pharmacopœia is **Aq. Flor Sambuci**; this, as well as aq. rosæ, the B. P. allows to be made from the salted flowers. I have found the use of salt unsatisfactory and injurious. Often after salting and keeping in a cool, dry place, I have found that before the next flower season came round, an odor of chlorine and sawdust was developed by distillation. The metal still was corroded; the water smelled like a dilute solution of chlorine and precipitated argentic nitrate; I therefore discontinued the salting process, and distilled a stronger water and diluted it when wanted. This water I have found to keep; I have some two years old. Elder flowers yield scarcely .32 per cent. of a volatile oil slightly lighter than water, yellow, solid, and with a powerful smell of elder flowers even when largely diluted.

These are the waters of the Pharmacopœia, lime water is among the liquors—the B. P. definition of waters evidently being solutions of essential oils in water. Why is aq. pulegii omitted? It is wanted as much as some that are official. Standard forms are also wanted for aq. anisi and caryophylli.

When first made, many of these waters are harsh and musty, but by keeping they mellow down. What is the cause of this? Returning to what I noticed in aq. destillata, has there been any of that slow but surely oxidizing force of water at work on these aqueous solutions of oils? Alcohol has been shown by Warrington to change in distilled water to acetic acid. And these essential oils, composed of alcohols and camphors, probably succumb to the same influences. At the bottom of such waters as aq. pimentæ and aq. cinnamonii, resinous matter has often been noticed. But what is resin? The term is as correct chemically as copperas for ferri sulph.; it is only a generic name for a series of acids probably oxidized from oils. This goes a long way to show that essential oils are changed as well as alcohol. By which of the compounds in the oils is the resin yielded—the alcohol, the camphor, or both? But resinification or change commencing, what is to hinder the new product modifying or etherifying the remainder? Such action would, in the case of a water, be slow and small in quantity, but such a re-arrangement of matter would remarkably alter some of the characteristics of the oil and water. In the laboratory it may be difficult to acidify some of these oils, but to acidify quickly and completely is one thing, to acidify or modify small quantities in the presence and by the aid of powerful agents constantly at work is another; some action, we know, takes place which mellows the waters as they are kept after distillation. So much for what is in solution. These waters should always have a superstratum of oil (except, of course, pimento and cinnamon) floating on them, as Haselden suggested; adding, also, that such oil is as good as the original oil. So it is, but I have sometimes noticed an oleographic difference. After long contact with water, the oil drop does not give so good a "roll," and the figure is slightly altered and slower in its formation. Between the oil and water there is always a muddy layer. A great deal of this is debris, or matter floated over by the steam, as well as the results of changes in the water. On examining these formations microscopically I have sometimes noticed small crystalline forms which, when carefully separated, easily melt, and give an odor resembling the essen-

tial oil used. These crystals, as in cinnamon, pimento, caryoph., and menth. pip., have been nearly colorless, few in number, only seen with high powers, and possessed of polarizing properties. Are these the hydrates of a portion of oil similar to turpentine hydrate? and if so, may not a hydration of the oil, especially of that dissolved, materially assist in maturing these waters? These are subjects opening a wide field of research from what appears a very simple subject.

Lastly, the modes of preparing medicinal waters require attention; the only authorized plan in B. P. is distillation (except in the instance of camphor.) The first conclusion one draws from these notes is that spirituous essences are objectionable; they make clear waters, but the result of oxidizing alcohol is acetic acid. This was found to be the fact by Warrington in 1845, and every observer since has confirmed the fact. In rejecting the Dublin form for waters, the compilers of the Pharmacopœia were wise and justified by these facts. Oils have been rubbed down with magnesia and chalk; these, too, are objectionable, as soaps are formed as pointed out by Brady and Atfield; the water also acquires an unpleasant odor. Silix, according to the old London Pharmacopœia, and kaolin, or fine clay, as suggested by others, have been used for dividing the oil with variable results.

I find that if a small tube, containing an essential oil, is placed in water in a position opposite to the specific gravity of the oil, and the ends of the tube are closed with membrane, vegetable parchment, etc., exosmosis of the oil commences, and in twenty-four or forty-eight hours the water is saturated, and may be drawn off and replaced by a fresh portion. I do not propose this as a plan in opposition to distillation; it is too long in operation, perhaps, but as a convenient way of making those waters only wanted occasionally, and which are frequently made by rubbing down the oil with some other substance.

ON THE ANILINE OR COAL-TAR COLORS.*

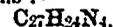
BY W. H. PERKINS, F. R. S.

(Continued from p. 164, vol. III.)

Mauve, Magenta, and some of their Derivatives.

You will remember that in my last lecture we went over all the various steps between coal and color. We saw how coal-tar was produced from coal; how coal-tar, naphtha, and benzole were separated from coal-tar; how nitrobenzole and aniline were made from benzol, and concluded with an account of the preparation of aniline purple, or mauve from aniline. We will now proceed to the study of some of the most remarkable properties of aniline purple.

This coloring matter is sometimes supplied to customers in a clear and beautifully crystalline condition. This product is found to be a salt of a compound, chemically termed an organic base. This base has been called "mauveine;" it is composed exclusively of carbon, hydrogen, and nitrogen, in the following proportions:—



Mauveine, although the base of aniline pur-

* The Cantor Lectures, delivered before the Society of Arts, published in the Chemical News.

ple, when in solution is not of a purple but a dull violet shade, and in the solid state is a nearly black crystalline powder. The moment, however, mauveine is brought in contact with an acid so as to form a salt, its solution changes to a purple color. This takes place even with that feeble acid carbonic. I have here a dilute solution of mauveine; you will observe the dull violet color it possesses; but if my assistant only breathes through it a few moments, the carbonic acid of his breath will combine with it, and it will acquire the ordinary color of aniline purple.

Mauveine is a most powerful chemical body, and will easily decompose ammoniacal salts. This may be readily seen if some mauveine be heated with chloride of ammonium and a little water, when an abundance of ammonia gas will be evolved, which can be distinguished not only by its odor, but by the white fumes it produces with hydrochloric acid.

The salts of mauveine are beautifully crystalline, and possess a splendid green metallic lustre. The crystallized commercial product consists of the acetate. Mauveine possesses one of the peculiar properties of indigo. Indigo, when treated with reducing agents, such as a mixture of sulphate of iron and lime, is rendered nearly colorless and soluble, but this colorless indigo, when subjected to the oxidizing influence of the atmosphere, rapidly becomes blue again. I here refer to the indigo vat so much used by dyers. Mauveine, when treated in a similar manner, is also nearly decolorized, changing to a pale brownish-yellow fluid, but the moment this is exposed to the air it assumes its original color far more quickly than indigo. This remarkable fact may be strikingly illustrated by boiling an alcoholic solution of salt of mauveine with a few strips of zinc in a sealed tube, from which the air has been previously removed. The dark purple solution will gradually lose its color, and change to a very pale yellowish-brown shade.

I have a tube containing some aniline purple decolorized in this manner, and now, if I open it, the air rushes in and the solution instantly assumes the ordinary purple color.

Ordinary indigo is quite insoluble in water, and, therefore, its property of becoming soluble, as well as colorless, when treated with reducing agents, is of great practical value, as the dyer, by immersing his goods in this solution of indigo, and then exposing them to the oxidizing influence of the air gets the coloring matter firmly fixed in the fibre of his materials. But as the mauve is always soluble in water, this property has not been found of any practical value.

Aniline purple, when introduced as a dye, being the first color of its kind, had to encounter many prejudices, and, on account of its peculiar nature, required the adoption of new or modified processes for its application. These difficulties, however, once overcome, its progress was very rapid. At first it was principally employed by the silk dyer and printer, its application to silk being comparatively easy, but it was not used by the calico-printer till a few years afterwards.

I distinctly remember, the first time I induced a calico-printer to make trials of this color, that the only report I obtained was that it was too dear, and it was not until nearly two years afterwards, when French printers put aniline purple into their patterns, that it began to interest British printers.

It will be seen that to introduce a new coal-tar color after the mauve was a compar-

atively simple matter. The difficulty in the manufacture of all the raw materials had been overcome, as well as the obstacles in the way of the practical applications of an aniline color to the arts.

We will now turn our attention to a coloring matter which has often been confounded with aniline purple. I have designated it as "Runge's blue," as it was first observed by Runge. I have mentioned that Runge, when he first obtained aniline, termed it "kyanoi," or blue oil, on account of the blue-colored solution it gave with chloride of lime.

After discovering the mauve, I naturally made experiments with this colored product of Runge's, to see if it contained aniline purple, but my experiments answered the inquiry in the negative. A few years afterwards, however, I was puzzled by finding that French manufacturers were beginning to produce aniline purple by the agency of chloride of lime and salt of aniline; being much occupied at that time, I was unable to look carefully into the matter; and it was not until investigating these apparently opposite results a short time since that I was able to understand them. I will perform Runge's experiments, and for that purpose will take a solution of hydrochlorate of aniline, and add to it a very dilute solution of chloride of lime (taking care not to add too much). The solution is now changing, and getting slightly opaque; by daylight it has an appearance like indigo, but if I render it clear by the addition of alcohol, and place it before the magnesium lamp, it is seen to be of a brilliant color, and nearly pure blue, quite unlike aniline purple.

I have lately succeeded in obtaining this blue product in the solid condition by treating a solution of hydrochlorate of aniline with a dilute solution of chloride of lime, and precipitating the resulting coloring matter with common salt; it is thus obtained in an impure condition, and may be collected upon a filter; by treatment with cold ether or benzol, a large quantity of brown impurities are separated, the coloring matter being left in the solid condition. This substance dissolves in alcohol, forming a nearly pure blue solution, and is capable of dyeing silk a blue or blue-violet color.

An alcoholic solution of Runge's blue behaves with caustic potash quite differently to aniline purple, forming a brownish-red colored solution instead of a violet. Therefore, there can no longer be any reason for confounding this body with aniline purple, it being entirely different both in color and chemical properties. But as this coloring matter is produced by oxidizing hydrochlorate of aniline with chloride of lime, how is it that manufacturers have succeeded in preparing aniline purple with the same reagents? This question I find is very easy to answer: the manufacturer has gone a step further and boiled his product. Now if I take a piece of silk dyed with Runge's blue, and, instead of boiling it, which would wet it, and make it difficult to manipulate, do that which is equivalent—steam it—a very remarkable change takes place—Runge's blue being changed into the mauve. So, here we have cleared up the mystery, and find that by the action of chloride of lime on hydrochlorate of aniline, we first get Runge's blue, and then, by heating this blue, we change it into mauve. Runge's blue is a very unstable body, and of no practical value, as alcoholic solution changing into mauve in

a day or two. This change takes place directly by boiling.

We must now pass on to another coloring matter, in name well known to all of you, I mean magenta, also called roseine, fuchsine, aniline red, and various other names. The discovery of this body and its manufacture were strangely dependent upon the source which had been selected for the preparation of aniline for the mauve. Had the aniline contained in coal-tar, or the aniline obtained from indigo, been employed for the preparation of the mauve, instead of that prepared from commercial benzol, magenta and its train of colored derivatives would, in all probability, have remained unknown to this present day, from the simple fact that magenta cannot be produced from pure aniline, a second body being also required.

You will observe, by reference to the table of coal-tar products, that next to benzol there is a substance named toluol, a substance having a boiling point not very much above that of benzol. On this account toluol is always contained in commercial benzol, and possesses most of its properties. With nitric acid it forms nitrotoluol, very similar to nitrobenzol; with iron and acetic acid it is converted into a base toluidine, very similar to aniline, except that it is solid, instead of liquid, when pure. Therefore aniline prepared from commercial benzol always contains a little toluidine, and this is the second body requisite for the formation of magenta.

An apparatus for the fractional distillation of coal-tar naphtha has been devised, so that its constituents may be almost completely separated from each other, and thus pure benzol or pure toluol may be obtained.* Having obtained these hydrocarbons, pure aniline and pure toluidine may be prepared and then mixed in the most suitable proportions for manufacturing magenta. This process is not very generally employed, however, but the quality of the mixture of aniline and toluidine is determined by distillation, noting the quantities which come over at different temperatures. The necessity of toluidine as well as aniline for the production of magenta was discovered by Dr. Hofmann, who found that it could not be produced by perfectly pure aniline, nor perfectly pure toluidine, but that a mixture of these two bases yielded it in quantity. Magenta was apparently first observed by Natanson, in 1856, when examining the action of chloride of ethylene on aniline, and afterwards by Dr. Hofmann, in 1858, when studying the action of tetrachloride of carbon on aniline, but industrially the discovery of magenta was made by M. Virguin, of Lyons, in 1859, three years after the mauve. M. Virguin's process consisted in treating commercial aniline with a fuming liquid; called tetrachloride of tin, and was first carried out by Messrs. Renard Bros., of Lyons. Since 1869, patents have been taken out for the production of this coloring matter with aniline, and almost all chemicals known, whether capable or incapable of forming magenta. I may mention one process which was extensively employed, and is still used to some extent in Germany, and that is the method of making magenta with commercial aniline and nitrate of mercury. With care this process works very well, and the coloring matter produced is of good quality. When first introduced, magenta prepared by this method was not purified, but sent into the market in a crude form, so that

*See "Clarke's Specification," June 5th, 1863, No. 1405.

before using it the dyer had to extract it with water. In the preparation of magenta by this process, all the mercury of the nitrate of mercury employed is recovered in the metallic state; but, although this process may possess some advantages, yet the use of mercury salts is most undesirable on account of their fearfully deleterious influence upon the workmen.

The process which has almost superseded all others is that from the use of arsenic acid, as proposed by Medlock, and patented by him in January, 1860.

Commercial magenta consists of brilliant crystals, sometimes half an inch in length, having a beautiful golden-green metallic appearance; these dissolve in water almost entirely, forming an intense purplish-red solution. Dr. Hofmann has carefully studied the chemical nature of magenta, and has found it to consist of the salt of an organic base, which he has called rosaniline. This base may be obtained from the commercial product by dissolving it in water and boiling it with an alkali, or alkaline earth, such as ammonia, potash or lime; it is thus rendered nearly colorless, and after filtration rosaniline separates from the clear solution, on cooling, in colorless crystals. It is composed of carbon, hydrogen and nitrogen when anhydrous, but generally contains an equivalent of water also. The anhydrous base has the formula;



This colorless base immediately becomes dark red upon combining with an acid, as I can show you by heating some with acetic acid, when the color is immediately developed. The magenta produced by heating commercial aniline with nitrate of mercury is the nitrate of rosaniline; that produced with the arsenic is the arseniate, but in the process of purification this latter salt becomes converted into hydrochlorate, which is the salt most generally found in the market. Other salts are also commercially manufactured, such as the oxalate and acetate, especially when a very pure product is required; these salts are generally prepared from pure rosaniline, by combining it with the required acid, and crystallizing from water.

The acetate of rosaniline crystallizes in beautiful octahedra, possessing the ordinary golden-green metallic lustre to a very high degree; it is also the most soluble salt of rosaniline known. The affinity of rosaniline salts for animal fibres is very great; it does not, however, resist the action of light nearly to the same extent as the mauve. All the derivatives of rosaniline also possess a very great affinity for animal fibres, in most cases quite equal to that of magenta itself.

When speaking of aniline purple, I showed you that by reducing agents it became colorless, or nearly so, but that the original color was developed when it was exposed to the oxygen of the air. Salts of rosaniline or magenta are also decolorized by reducing agents, but, unlike aniline purple, the color is not restored by exposure to the air. Dr. Hofmann has found that in this case a new organic base is produced which he has called leucaniline. This substance differs only from rosaniline in containing an additional quantity of hydrogen. It may be re-converted into rosaniline by oxidizing agents, such as bichromate of potassium, &c.

There is another very peculiar reaction of rosaniline. This base, when brought in contact with hydrocyanic acid, instead of forming a colored hydrocyanate of rosaniline, yields a perfectly colorless body, which is not

a salt but a base. This remarkable fact was discovered by Dr. Hugo Muller, and he has called this new body hydrocyanrosiline. We shall have occasion to refer again to this substance and leucaniline.

In the formation of magenta, a second product is obtained, commercially called phosphine. This substance was first introduced by Mr. E. Nicholson. Dr. Hofmann has investigated it, and found it also to contain an organic base, which he has called chrysaniline.

Phosphine or chrysaniline is not capable of being produced at will, and the quantity formed in the manufacture of magenta is variable. In shade it is of rather a yellow orange. This coloring matter differs from rosaniline, the base of magenta, is exactly the opposite direction to leucaniline, containing two atoms less of hydrogen. Leucaniline, rosaniline, and chrysaniline, are thus related:—



The principal use of phosphine is for the formation of a scarlet with magenta. It is not converted into magenta, nor decolorized with reducing agents or hydrocyanic acid, and, therefore, does not seem to be of the same class of coloring matters as rosaniline.

From the residues obtained in the manufacture of magenta three new colors have been obtained by Messrs. Girard and Delaire, but, I am sorry to say, my time will not allow me to enter into the particulars of these products. I believe they have not been commercially introduced as yet.

Magenta is now more used as a source of other colors than as a dye. This has caused its manufacture to be conducted on a very extensive scale, and it is now looked upon by the manufacturer as a raw material much in the same way as aniline was regarded in the early days of aniline purple.

We will next consider some of the derivatives of magenta, and the first we will study is aniline blue or bleu de Lyon. If aniline be treated with a salt of rosaniline or magenta, a remarkable change takes place; at first the color gradually becomes purple, but afterwards gets quite blue, ammonia being evolved at the same time. This peculiar reaction was observed by MM. Girard and Delaire, who found that this change of color was due to the formation of a new body, which they termed the bleu de Lyon; intermediate products were likewise obtained, to which we shall refer presently. MM. Girard and Delaire patented their process in January, 1861. This new aniline blue is one of the most important of the artificial coloring matters, and its manufacture has been very much improved upon since its discovery. There are several circumstances which materially influence the beauty of its tint, such as the quality of the aniline and the particular salt of rosaniline employed in its manufacture. It is found by experience that the aniline should be as pure and free from toluidine as possible, and that the salt of rosaniline should contain a feeble acid, such as the acetate, valerate, oleate, or benzoate; but why the latter is necessary chemists are unable to understand at present. Practically, the various salts of rosaniline required from the manufacture of the blue are not prepared separately, but are produced in the operation by double decomposition, which is simply a process of exchange; thus, if acetate of rosaniline is required, a mixture of hydroch-

lorate of rosaniline and acetate of sodium is employed; these react on each other, and change into acetate of rosaniline and chloride of sodium.

Solubility of Glue in Glycerine.

Mr. J. M. Maisch read before the Philadelphia College of Pharmacy an account of some experiments on the solubility of glue in glycerine, the results of which may be summed up as follows:

1. Glue is soluble at the ordinary temperature in a large proportion of glycerine.

2. Glue is permeable by glycerine, slowly at the ordinary, more rapidly at an elevated temperature.

3. Glue swelled in consequence of the absorption of water, remains unchanged in appearance under glycerine, that is to say, even if the glycerine should abstract the water, the former will take the place of the latter liquid, thus preventing the shrinking of the glue.

4. Glue by continued digestion, dissolves completely in glycerine, gelatinizing on cooling.

5. The solution of glue in glycerine is accelerated by previous maceration in glycerine, and by increasing the temperature (doubtless, also, by increasing the pressure).

6. Glue thoroughly permeated by water dissolves in hot glycerine about as readily as it does in hot water.

The author considered that the behaviour of gelatine to unite to a jelly of any desired consistence, might probably be made use of in pharmacy as a vehicle for medicines of an unpleasant taste. The antiseptic properties of glycerine would, doubtless, render such a jelly perfectly unchangeable, while its non-drying qualities would retain to the jelly its soft consistence. There is no difficulty in imparting to such a preparation any desirable flavor.

In the analysis, gelatine is used to estimate the quantity of tannin contained in astringent vegetables. There has always been a difficulty connected with such operations, due to the changes which gelatine undergoes so very readily when in aqueous solution thus rendering the making of a new solution and its titration necessary. The complete solubility of gelatine in even concentrated glycerine, and the well-known antiseptic quality of the latter, render it very probable that a solution of the former in even dilute glycerine may be kept unaltered for some time, in which case much time would be saved in such establishments where the assaying of tanning material has to be frequently performed.—*Chemist and Druggist.*

Magic Lantern Pictures by a New Method.

Mr. Shepherd Holman, of the Franklin Institute, Philadelphia, has devised the following method of preparing pictures for the magic lantern: A sheet of gelatine, such as is used for tracing, is securely fixed over an engraving, and with a sharp steel point (made by grinding down the end of a small round file), the lines of the original are traced pretty deeply on the transparent substance. Lead pencil or crayon dust is then lightly rubbed in with the finger, and the picture is at once ready for use. The effect of these drawings in the lantern is said to be excellent.—*Physician and Pharmaceutist.*

EDITORIAL.

Correspondence and general communications, of a character suited to the objects of this JOURNAL, are invited, and will always be welcome. The writer's name should accompany his communication, but not necessarily for publication.

Subscriptions will not be acknowledged by letter, as our sending the paper may be taken as sufficient evidence of the receipt of the money.

All communications connected with the paper to be addressed, post-paid.

"EDITOR CANADIAN PHARMACEUTICAL JOURNAL
TORONTO."

SALE OF ALCOHOL AND SUNDAY TRADING.

In addition to the prosecutions against druggists for selling poisons and postage stamps, it is rumoured that they are to be proceeded against for selling alcohol, and for Sunday trading.

In regard to selling alcohol, prosecutions would be for selling spirituous liquors contrary to the provisions of Sec. 1, of 32 Vic., Cap. 32, which reads as follows:

"Preamble:—Whereas it is expedient to amend and consolidate the several enactments relating to tavern and shop licenses. Therefore, &c. * * * * *

"Sec. 1. No person shall sell, by retail, any spirituous, fermented, or other manufactured liquors, within the Province of Ontario, without having first obtained a license authorizing him so to do.

Sec. 37. In this act the words "liquors" or "liquor" shall be understood to mean and comprehend all spirituous and malt liquors, and all combinations of liquors and drinkable liquid, which are intoxicating."

It is manifest that everything depends on whether this act is construed on broad general principles, or according to a constrained meaning of some of its phrases. We contend that the term "spirituous liquors" is used in its common acceptance of distilled alcoholic spirits, intended to be used as a beverage.

It is only by construing this term, spirituous liquors, as meaning every compound containing spirit, (which would include tinctures) that alcohol, intended for use in the arts, can be brought within the meaning of the act.

The *Globe*, in its answers to correspondents, settles the question against the druggists; but a careful review of the whole act leads us to an opposite conclusion. The chief danger to the continuance of rights, freely exercised by druggists, for centuries, lies in the concurrent existence of a police magistrate, so bigotedly total abstinent in his views, that his judgment would be clouded in any case of this kind—and an informer who has proved that he will commit perjury to establish a system of black mail.

These are elements, however, that cannot be left out of account, in answering the practical question. Would conviction follow a prosecution against a druggist for selling alcohol in this city? Against any such charge we urge the following reasoning:

The preamble declares the purposes of the law "to consolidate and amend the several enactments, relating to tavern and shop licenses." There is no intention declared of interfering with the trade of the chemist and druggist, except his place of business comes under the term "shop." When, however, we examine the act further, we find that the "shop" used in connection with "license," is a place where alcoholic beverages may be sold in quantities not less than a quart—a description that does not in any way apply to a druggists' shop.

In short, at the time the act was passed there were three classes who sold alcoholic compounds—the tavern keeper, and shop-keeper, whose wares caused a great part of the expense of criminal justice, and are in themselves luxuries; and the druggist whose goods caused no expense beyond their immediate cost, and are used to relieve suffering, or in the useful process of manufacture. The law carefully describes the first two branches as subject to license, while the drug trade is not even remotely alluded to.

This meaning seems more clear from the 37th clause, which defines "liquor," as drinkable liquids which are intoxicating. Neither medicinal tinctures, nor strong alcohol can be so defined; but if a druggist sells wine, brandy, or ale, for use as beverages, no doubt he keeps a "shop," within the meaning of the act, and must pay license, or be subject to fine.

In regard to Sunday trading the law expressly allows the sale of drugs and medicines, but not of cigars, perfumery or soda water, and prohibits these goods from being publicly shown forth.

It is, therefore, necessary for druggists to keep up their shutters, or to keep their inside blinds down on Sunday.

The exact wording of the Act is in the following quotation, and may be found in Consolidated Statutes of Upper Canada, Cap. CIV., sec. 1:—

"It is not lawful for any merchant, tradesman, artificer, mechanic, workman, labourer, or other person whatsoever, on the Lord's day to sell, or publicly show forth, or expose, or offer for sale, or to purchase, any goods, chattels, or other personal property, or any real estate whatsoever, or to do or exercise any worldly labour, business or work at his ordinary calling; conveying travellers or Her Majesty's mail, by land or by water, selling drugs or medicine, and other works of necessity, and works of charity, only excepted."

There is one noticeable feature in this clause; that the purchaser is equally guilty

with the vendor. It follows that if the prosecutor procures evidence by getting another to purchase goods unlawfully, he thereby becomes liable to a fine double what what he would receive as informer.

We trust, however, that our friends will not make themselves liable to the penalties of this Act by the sale of any articles not necessary for the relief of suffering humanity. Apart from any religious principle involved in Sunday trading, these are sound physical reasons for confining work on the Sabbath to the smallest possible limits, as a necessary corrective to the long continued labours which druggists are required to perform on the remaining six days of the week. The fact that this course is required by the laws of the land is a sufficient reason to all good citizens; and it is especially necessary, when we are asking for a legal status, that we should give cheerful obedience to laws intended for the general well-being of the community.

R. W. E.

PROGRESS OF PHARMACEUTICAL LEGISLATION.

It will be remembered that last session the Pharmacy Bill obtained a first and second reading, and was amended in committee. Had it not been for great press of business, we have no doubt but it would have received a final reading, but the close of the session left it in the category of "discharged." In such cases, parliamentary usage requires that discharged bills, when introduced at a subsequent period, must be brought before the House as new measures. This has been done, and, since our last issue, the bill has been read a first and second time. On the second reading, which took place on the 11th inst., a short debate took place:

Mr. Blake said there could be no objection to the Bill going to a select committee. The principle of it, however, being to extend restriction of trade, unless there were strong public reasons for it, was one he must oppose. The idea was not a novel one, but was that of the ancient guilds of the middle ages. He thought that evil results flowed from the want of knowledge on the part of men who were engaged in drug stores; and if the principle of the Bill was just, there was much greater force in its application to such men as engine-drivers. The real object of the Bill was to create a close corporation, and shut up another of the trades of the country from free rivalry.

Mr. Matchett, as an apothecary, said the object of the Bill was not to establish a close corporation. The protection of the people was the object of the Bill, which only provided that druggists should know their business.

Mr. Boyd thought that the Bill dealt with trade and commerce, and did not come with-

in the purview of the House, and that it was a private Bill.

Hon. Mr. Cameron said the Dentistry Bill, the Medical Bill, and the Law Society Bill, had been considered public Bills, and this was of a cognate character.

The Bill was then read a second time, and referred to a select committee, consisting of Messrs. Wood, Boulter, Baxter, Rykert, Pardee, Matchett, Blake and the mover.

A meeting of the Committee has been appointed for Tuesday, the 17th inst., when those gentlemen appointed by the Society will be in attendance to answer such inquiries or objections as may be advanced.

THE SALE OF POISONS CASES.

After three or four weeks deliberation, the Police Magistrate at length rendered his decision in the cases of prosecution for illegal sale of poison, and imposed on each of the offenders a fine of twenty-five dollars and costs. We understand that the druggists intend to carry the matter before a high court, and as the evidence taken in the case tried as a test, was in some points defective, another case has been brought up and proceeded with. We hope by the time the appeal is made that the Pharmacy Bill, at present before the Legislature, will have become law, as, in that measure, the classification of "opium, and its preparations, including laudanum," is such as to show, at once, their true position in the category of poisons. It will be remembered that these compounds occupy a place on the secondary list, which includes those poisons not considered "deadly." This fact ought to have an influence, should matters turn out as we anticipate, and will undoubtedly affect favorably, the legal view of the case.

THE apostolic injunction, "Whatsoever thy hand findeth to do, do it with all thy might," is echoed in the following remarks, which appears in an American paper, and which we commend to the attention of both employer and employed:—

"The servant, man or woman, who begins a negotiation for service by inquiring what privileges are attached to the offered situation, and whose energy is spent chiefly in stipulations, and reservations, and conditions designed to 'lessen the burden' of the place, will not be found worth the hiring. The clerk whose last place was 'too hard for him' has a poor introduction to a new sphere of duty. There is only one spirit that ever achieves a great success. The man who seeks only how to make himself most useful, whose aim it is to render himself indispensable to his employer, whose whole being is animated with the purpose to fill the largest possible place in the walk assigned to him, has in the exhibition of that spirit the guarantee of success. He commands the situation, and shall walk in the light of prosperity all his

days. On the other hand, the man who accepts the unwholesome advice of the demagogue, and seeks only how little he may do, and how easy he may render his place, and not lose his employment altogether, is unfit for service, and as soon as a supernumerary is on the list, he becomes disengaged as the least valuable to his employers. The man who is afraid of doing too much is near akin to him who seeks to do nothing, and was begot in the remotest degree a blood relation to the man whose willingness to do everything possible to his touch places him at the head of the active list."

EDITORIAL SUMMARY.

Detection of Chloral Alcoholate in the Hydrate.

In a communication to the *Pharmaceutical Journal*, of London, Mr. Umney alludes to the substitution of alcoholate of chloral for hydrate. As the former product can be sold at a much lower rate than the latter, it has already found its way into commerce, but not only is it inferior in chloral value, but Dr. Leibreich asserts that its medicinal properties are quite dissimilar to those of the hydrate. Mr. Umney suggests the following method for determining the value of commercial samples:—For testing the hydrate, take 500 grains of the salt, and dissolve in about one ounce of distilled water; transfer to a 1000-grain graduated tube, and make up the measure of the solution to 700 grain measures; to this add solution of caustic ammonia, (891) until the whole measures 1000 grains. Agitate; immerse the tube in warm water, to assist in the reaction, and set aside for twelve hours. Upon examination, the fluid will be found to have perfectly separated into two layers, the lower being chloroform, (from fine specimens of the hydrate nearly colorless), the upper, a deep sherry-colored solution of formiate of ammonia. The volume of the chloroform layer should not be less than 235 grain-measures, which, calculated at the sp. gr. of chloroform (1.497), would give 351.7 grains by weight, a quantity equal to about 70 per cent. (70.3) of the chloral compound employed. The alcoholate is tested in a similar manner. In this case the chloroform layer will be about 200 grain-measures, or by weight 299 grains, an equivalent of about 60 per cent. by weight (59.8) of the chloral alcoholate. Such a difference, it must be apparent, is of great importance, as the physiological action of chloral is principally due to its transformation into chloroform in the blood. An eye accustomed to the rate of solution of the hydrate in water can soon detect the alcoholate by its much less solubility. The hydrate in detached crystals, resembling crystals of sulphate of magnesia, is a much more soluble form than the ordinary hydrate

in masses; it will also produce upon decomposition with ammonia 70 per cent. by weight of chloroform. The difference in the boiling-point of the hydrate (95° Cent.) and of the alcoholate (116° Cent.) is alone almost sufficient to enable the pharmacist to give with accuracy an opinion upon the purity of any chloral hydrate.

The Microscope in Pharmacy.

Dr. Hale (*Am. Journal of Microscopy*), in speaking of the value of the microscope to the pharmacist, says that the deterioration to which many drugs are subject by being long kept may, in a great number of instances, be traced to the agency of animal-culc. In speaking of fungi he remarks:—

Unless the preserved substance can be kept absolutely free from moisture, its surface, and even its deepest interior, will become infected with fungi, that more or less rapidly destroy the integrity of its tissues, until the preparation made therefrom is useless as a medicinal agent. The leaves of *Atropa Belladonna*, the seeds of the *Conium Maculatum*, and various other powerful narcotic and poisonous substances, are probably rendered inert by the destructive process set up in their interior by fungi which obtain access to them.

These injurious changes are not discoverable to the unaided vision. It is notorious that the most carefully prepared tinctures and extracts of certain drugs are sometimes devoid of medicinal power. It has been supposed that certain volatile constituents escape from the substances from which such tinctures are prepared; but of this we have no certain proof. Why is it that the leaves of belladonna may in some instances be kept for years, and at the end of that period be capable of yielding a reliable preparation, while other specimens, when kept only a few months, are worthless? It must be because of some destructive process going on in the substance, which cannot be discovered with the naked eye.

In some of my experiments with the microscope, I have been able to detect the utter worthlessness of the leaves of belladonna and digitalis. In place of the healthy tissue, a mass of fungi appeared to monopolize the place. A thin section of the root of aconite, placed under a low magnifying power, has revealed the presence of such a quantity of fungi as to render the specimen worthless for the pharmacist. In other cases the substance of the root examined would be found destroyed by some insect, which had left only the debris of the tissue it had digested or destroyed in its migrations. The pharmacist should first learn to recognize the natural healthy appearance, under the microscope, of all the vegetable substances he works upon; then he should subject a specimen of every substance he prepares to a careful examination, and if he discovers the presence of vegetable or animal parasites, such substance should be rejected. The world is flooded with inert medicinal preparations. Doubtless many such preparations are made worthless by improper methods of manufacture; but it is my opinion that in many instances their worthlessness is due to the fact that the substances used have been injured by certain agencies which could have been discovered by the intelligent use of the microscope.

Beech Nut Oil.

In an article on the products obtained from the common beech—(*Fagus Sylvatica*.) Dr. Wetherbee alludes to the oil obtained from the nuts, and gives the following particulars in regard to it: At 60 degrees Fahrenheit, it has a specific gravity of 0.9225, and at 29 degrees, it becomes solid. One thousand parts of alcohol of 90 per cent will dissolve four parts of the oil, but it is completely insoluble in water. Its composition is carbon, 79.77; hydrogen, 10.5; and oxygen, 9.12, with a trace of extraneous matter, etc., in each one hundred parts. Like other expressed oils, it produces acrolein, or the hydrated oxide of acryl, by destructive distillation at a high temperature. By treatment with nitric acid, it also, like other nut oils, yields elaidin or elaidic acid, in combination oxide of glyceryle, and in about 103 minutes, by this process, is converted into a bluish green solid. The soap made from this oil is of a dirty gray color, becoming yellow by exposure to the air, and having a slightly characteristic odor of the oil. It is somewhat greasy and pasty, and for these reasons is less valuable to the soap-maker than many other kinds of vegetable oils, though in France it is extensively used for this purpose. Three pounds of the oil will make five and a quarter pounds of soap, as taken from the frame, which in two or three months, by drying, will lose a considerable portion of its weight.

Beech-nut oil, however, is most valuable for culinary and lighting purposes, for the former of which it is considered very wholesome and palatable, and to a great extent takes the place of butter and lard among the French and German inhabitants of certain districts, and when used for the latter, it burns well, gives a good light, which is free from smoke.

When properly refined it is good for lubricating delicate machinery, such as clocks, etc., and for the preparation of hair-oils, pomatums, liniments, ointments, and for many other purposes it is not inferior to most of the vegetable fatty oils.

New Process for Sulphophenate of Zinc.

A correspondent of the *American Journal of Pharmacy* recommends the following process for the preparation of this salt: A crude sulpho-carbolic acid is first prepared in the usual way, by heating together sulphuric and carbolic acids—seventeen parts of the former to sixteen of the latter. This is diluted with ten times its volume of water, and saturated with carbonate of lead. Into the filtered solution of sulpho-carbolate of lead is introduced a quantity of pure granulated zinc equal in weight to the carbolic acid employed. At the end of twenty-four hours the solution will usually be found free from lead, giving

no precipitate with sulphuric acid, or potassium iodide. When quite freed from lead, as indicated by these tests, the solution is decanted, heated to boiling, filtered, and evaporated to a small bulk to crystallize; or the evaporation is carried to complete dryness, the salt being obtained in the granular form. The salt procured in this way is of necessity free from sulphate, and yields fine, large colorless crystals, without any empyreumatic odor.

Incompatibility of Digitalis and Sulphate of Quinine.

The *Journal de Pharmacie et de Chimie* says that a physician ordered syrup of digitalis, of the Paris Codex, and directed the addition of acid sulphate of quinine. He observed a precipitate at the bottom of the bottle containing the mixture, and took it back to the apothecary who had prepared it, supposing a mistake had been made, but was informed that the ingredients were incompatible with one another, as the tannin contained in the digitalis combined with the quinine, forming an insoluble tannate.

Crystallized Sulphocarbolate of Quinia.

Considerable difficulty is realized in obtaining this salt in well-defined crystals, and also in separating the fine needles from the concentrated solution with which they are surrounded. Dr. C. J. Rademaker (*Amer. Journal of Pharmacy*) found that a solution of about sixteen grains of the gelatinous mass in three-fourths of an ounce of water and one-fourth alcohol, deposited, in four or five weeks' time, well-defined crystals. In the course of two months, one-third of the salt had crystallized out. The crystals were proved to be those of the sulphocarbolate, and were found to be freely soluble in water, slightly soluble in alcohol, and not at all deliquescent.

Adulteration of Quinine with Salicine.

Dr. Solenén has comparatively tested the various methods for the detection of the above adulteration, and finds that the presence of 1-100th of salicine may be readily shown by putting in a watch glass, which should be placed on a sheet of white paper, two or three drops of pure concentrated sulphuric acid, free from nitric, and dropping therein a few crystals of the suspected quinine. If pure, no discoloration ensues; but with 1 per cent. of salicine, a decided red is developed.

Fraudulent Ext. Taraxaci.

One of the most outrageous frauds in the pharmaceutical line is reported by the *Journal of Materia Medica*. It appears that in an establishment in that State which has already become notorious for its wooden nutmegs, a quantity of residuum is obtained in

the distillation of oil of fir. This is boiled with a few dandelion tops and roots, and when reduced to a proper consistence, is put up and sold as ext. taraxaci. A manufacturing house in Philadelphia is reported to have purchased 2,000 pounds of it at 14 to 20 cents a pound. We can only repeat the usual caution—"Beware of cheap extracts."

A Savannah apothecary says that the irresistible itching caused by *Macuna pruriens* can be at once relieved by the application of soap liniment.

Incompatibility of Quinine and Veratrum Viride.

Dr. Bradley, of Marys, Ohio, reports that when a patient is under the influence of veratrum viride, it is highly dangerous to administer quinine. The effects are most alarming—immediate sinking and irregularity of the pulse, which in some instances reaches collapse. He ran great risk of losing three patients before he became aware of the actual cause.—*Med. and Surg. Reporter*.

New Test for Albumen in the Urine.

Take a mixture of equal measures of acetic acid and phenic (carbolic) acid, and make the preliminary test that water produces no cloudiness in it, and add acid if necessary, until water has no effect. The normal solution is then ready for use, and will then give the reaction for albumen, diluted by 15,000 parts water, whereas nitric acid shows no results beyond 8,000.—*Scientific American*.

BOOKS AND PAMPHLETS.

AMERICAN JOURNAL OF MICROSCOPY, November, Vol. 1, No. 1. G. Mead & Co., Chicago.

This is the title of a neat monthly, devoted to the general dissemination of the knowledge of microscopic science, and as it is the only journal of the kind published on this side of the Atlantic, it cannot fail to prove acceptable, and will doubtless be useful in popularizing the particular branch of science to which it is devoted.

THE NORTHWESTERN MEDICAL AND SURGICAL JOURNAL, November Vol I, No. 6. Edited by A. J. Stone, M.D., St. Paul, Minn.

VICK'S FLORAL GUIDE FOR 1871.

This catalogue of seeds has grown to the proportion of a handsome annual, and the present number, which comprises over 100 pages, and of which an edition of 150 thousand copies has been issued, reflects great credit on its originator. It is got up in the best style of typography, and is illustrated with a large number of wood engravings, and two really pretty colored plates. The guide is supplied gratis to customers, and those dealing in seeds will do well to send to Mr. Vick, Rochester, for a copy.

STUDENTS' DEPARTMENT.

Answers must be forwarded to the Editor before the fifth of each month. It will be preferable for students to employ the system of atomic weights and formulæ as adopted in Fownes' *Manual of Chemistry*, or Roscoe's *Lessons in Elementary Chemistry*; but in case the student is not familiar with the more modern system, the older method may be resorted to. Weights and measures, except when otherwise expressed, are those of the British Pharmacopœia. Calculations need not be carried beyond the first place of decimals.

QUESTIONS.

- I.—Reduce 100° Fahrenheit to corresponding degrees on the Centigrade, and Réaumur scales?
- II.—What will be the volume occupied by 100 cubic feet of oxygen measured at 0°C., when the temperature is raised ten degrees C.?
- III.—How much official sulphuric acid can be obtained from 1,000 pounds of sulphur?
- IV.—How much sulphate of mercury (HgSO_4), and chloride of sodium will be required to produce 5 pounds of corrosive sublimate?
- V.—How may quinia be best obtained from the sulphate, and what quantity will be required to yield 10 grains of the alkaloid?
- VI.—A new ten dollar gold piece, U. S., weighs exactly 258 grains; its fineness is 900-1000ths. What quantity of commercial chloride of gold should be obtained from it?
- VII.—How would you determine the strength of a sample of hydrocyanic acid?
- VIII.—How would you estimate the quantity of alcohol present in a tincture?
- IX.—A sample of calomel is suspected of containing traces of bichloride of mercury; how might its purity be determined?
- X.—Give the preparation, chemical properties, adulterations, tests for purity, and medical properties of iodine. Details must not exceed one page of foolscap.

ANSWERS.

I.—In order to ascertain the specific gravity of a solid insoluble in water, we have to find the weight of a bulk of water exactly equal to that of the substance examined. This is determined by first weighing the substance in air, and then suspending it in water and again weighing it. The difference between these weights will represent the weight of the water displaced by the solid. Having thus determined the relation which the weight of the substance bears to that of an equal bulk of water, its proportional weight to 1,000 of water is shown by a simple calculation. In the example given in the question, a metal weighs

in air, 500 grains; in water 456 grains; the difference between these numbers — 44 grains — represents, exactly, the weight of water equal to the bulk of the metal. Then if 500 grains of metal occupy the same space as 44 grains of water, what weight of metal will equal the bulk of 1 grain of water? As 44 : 1 :: 500 : 11.36 Answer.

The student should render himself thoroughly familiar with the principles on which these calculations are based; he will then be able to understand the following rule, which is used for calculating the specific gravity of solids, and which may be usefully committed to memory. Divide the weight in air by the loss of weight in water; the quotient will be the specific gravity.

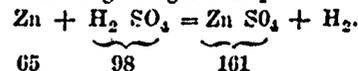
II.—The answers received to this question do not in any case correspond, the specific gravity being severally given as 9.84, 10.34, 11.00 and 12.00. Mr. Jackes and W. A. C., gave the data from which their calculations were made, and the difference between the answers of these students is clearly traceable to a difference in the weights employed; this may also account for the variation in the other answers. We have given, in the number of marks, full credit to each, as we think that it would not be just to charge the errors of bad scales and weights, to those who employ them. At the same time we should advise our friends to see that their scales are true and equally balanced; that the knife edges are clean and free from rust, and that the smaller denominations of weights correspond to the larger. In the absence of the proper means for comparison, the best guide will be to take the one drachm weight as a standard, as we have found that this is, generally, most correct.

When taken by a good balance, we found the weight of a new 25 cent piece, Canadian currency, to be 89.9 grains. When suspended by a horse-hair (which weighs 3.10ths of a grain) and immersed to the depth of about half an inch in a vessel of water having a temperature of 60° F. its weight was found to be 81.1 grains. The loss in weight 8.8 gr. when divided into 89.9—the weight in air—gives us a quotient 10.2, which may be said to be the specific gravity of the alloy.

III.—For making one imperial pint of *Sp. Tenuior B.P.*, 12.1 fluid ounces of commercial alcohol will be required, 160 parts of 65 o.p. are equal to 165 parts of proof spirit; what quantity will equal 20 parts of proof spirit? As 165 : 20 :: 160 : 12.1.

IV.—(a) $6 \text{ Fe} + 12 \text{ HCl} = 6 \text{ FeCl}_2 + 6 \text{ H}_2$
 (b) $6 \text{ FeCl}_2 + 6 \text{ HCl} + 2 \text{ HNO}_3$
 $= 3 \text{ Fe}_2 \text{ Cl}_6 + 2 \text{ NO} + 4 \text{ H}_2 \text{ O}$

V.—In the preparation of sulphate of zinc the following changes take place:

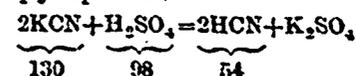


We find that 65 parts of zinc produce 161 parts of anhydrous sulphate; but the crystallized product contains 7 equivalents of water of crystallization, which must be added: $7 \text{ H}_2 \text{ O} = 126$ parts. These, with the 161 parts of Zn SO_4 make the yield of crystals from 65 parts of zinc equal 287 parts. Then, if 65 ozs. of zinc yield 287 oz. of sulphate, how much zinc will be required to produce 16 oz. sulphate? As 287 : 16 :: 65 : 3.9 oz. Answer.

VI.—In regard to this question it is first necessary to determine the amount of real acid, HNO_3 , which 4.4 parts of caustic soda are capable of combining with, or neutralizing. The molecular weight of HNO_3 is 63; that of caustic soda, $\text{Na HO} = 40$. If 40 parts Na HO will neutralize 63 parts HNO_3 , what will 4.4 neutralize? We find that 6.93 parts of nitric acid will be required for combination. It is evident then that if 10 oz. contain 6.93 oz. of real acid, 100 oz. will contain ten times that quantity, or 69.30 oz., and this will of course, represent the required percentage strength.

VII.—One pint of *Liq. Arsenicalis B.P.*, contains 80 grains of arsenious acid, or 4 grains to the ounce. Arsenious acid, arsenious anhydride, or arsenic trioxide, has the composition $\text{As}_2 \text{ O}_3$; this indicates that it contains, in 198 parts, 150 of metallic arsenic and 48 parts of oxygen. If 198 contain 150, what will 4 contain? 3.03 Answer.

VIII.—The process for preparing hydrocyanic acid by means of cyanide of potassium is not official, but, nevertheless, possesses its own peculiar advantages. The action of sulphuric acid on the cyanide may be simply expressed:—



According to this equation 130 parts of cyanide yield 54 parts of hydrocyanic acid; for producing 10 parts, 20.07 parts of cyanide will therefore be required. In respect to the quantity of sulphuric acid, we find that 98 parts, are sufficient for the decomposition of 130 parts cyanide; 20.07 parts will, according to the same proportion, require 18.105 parts of sulphuric acid; this is equivalent to 18.7 parts of the official acid, which contains 96.8 per cent. of $\text{H}_2 \text{ SO}_4$.

IX.—One of the best tests for distinguishing between citric and tartaric acids is based on the fact, that the calcium salt of the former acid is insoluble in a cold solu-

tion of potash, while that of the latter dissolves easily. For applying the test a quantity of the suspected powder may be dissolved in water and neutralized by soda; solution of chloride of calcium added, the precipitate collected and washed on a filter and then treated, in a test tube, with cold solution of potash. If the precipitate dissolves it may be taken to be a salt of tartaric acid; if insoluble it is a citrate.

X.—The presence of iodide of potassium in solution may be readily detected by testing with (a) solution of acetate of lead—a bright yellow precipitate is produced; or, (b) by a solution of corrosive sublimate—a brilliant red precipitate is thrown down if the solution of iodide be tolerably strong; (c) by adding cold decoction of starch and treating with chlorine—a blue colour is produced. Bromide of potassium may be shown by (a) the starch test, as for iodide, but the resulting colour is yellow or red; or, (b) by treating in a test tube, with chlorine water and chloroform; bromine is set free, which dissolving in the chloroform settles to the bottom of the tube, and exhibits a yellowish or reddish color; or, (c) by testing with a solution of nitrate of silver, a yellowish-white precipitate of bromide of silver falls, which is but sparingly soluble in ammonia. The latter test may be applied for the detection of chlorides, and in the case of the production of a white precipitate, insoluble in nitric acid, but readily soluble in ammonia, may be accounted decisive.

ORDER OF MERIT.

NUMBER OF MARKS AWARDED FOR ANSWERS.

Questions—	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	Total
1. P. Jucker.....	10	10	10	10	10	5	10	9	10	10	94
2. W. M. Rose.....	10	10	3	10	10	10	10	10	10	10	93
3. W. A. C.....	10	10	10	2	10	10	10	10	10	10	92
4. H. Macleagan.....	10	10	3	10	10	10	10	8	10	10	91

ONTARIO COLLEGE OF PHARMACY.

MONTHLY MEETING.

The regular monthly meeting, postponed from the 6th instant, at the request of the President, was held on Friday evening, 13th instant, the President in the chair. There was a full attendance of the city members.

After routine business the following new members were elected:—

Chas. T. Casselman.....Winchester.
W. R. Hilburn.....Hawksville.

ASSOCIATES.

Wm. Dagg.....Tiverton.

The Legislative Committee, appointed at the last meeting, reported, through Mr. R. W. Elliot, that they had interviewed the

Hon. Attorney-General, Mr. Blake, and a number of the other members, who nearly all seemed to look favorably on the Bill, as a whole: one or two clauses being considered as rather objectionable in their present shape, especially clause 27, and it remained for the Society to say whether any modification in that clause would be advisable. Mr. Elliot thought it would be well if such were done. He thought there should be some clause to prevent the putting up of laudanum and other dangerous drugs, under other names, and scattering them broadcast over the country; and that this might be done without interfering with the sale of legitimate patent medicines. A modification of the clause was suggested.

Mr. Margach moved in amendment, that the Committee on Legislation be authorized to withdraw clause 27 entirely. In supporting the amendment he said this clause had produced a great deal of opposition to the bill from all parts of the country, several of the members of parliament having received a number of letters in opposition to it. He felt convinced that an attempt to enforce this clause would jeopardize the bill itself, and whatever might be the opinion regarding its advisability as a measure, still he thought it would be better to get the Act first, and, at a future time, a well digested scheme for protecting the public from dangerous secret remedies might be introduced.

Mr. Miller, in supporting the amendment, said that it was certainly a very arbitrary proceeding to compel the proprietor of every patent medicine to send the formula to the Registrar. He felt sure it could never be carried out.

After remarks by many of the members, the amendment was carried.

Mr. Margach called the attention of the meeting to an omission in clause 3, which made no mention of Class 2 in schedule A.

Mr. R. W. Elliot explained that article 1 referred to both classes in the schedule, while article 3 only referred to class 1.

Mr. Miller said that paregoric being an article in such common use, should be made an exception to the articles in class 2.

This was adopted and the committee instructed to carry out these alterations when the bill came before the Committee of the Legislature, on Tuesday next.

Mr. R. W. Elliot said that the present method of publishing the nights of meeting was insufficient, and moved, seconded by Mr. Shuttleworth, "That the Secretary be authorized to get circulars printed, and mailed to each city member, notifying them of the days of meeting. Notices to be mailed on the day previous to the meeting."—Carried.

H. J. ROSE, Sec'y.

SELECTIONS.

Preparation of Nitrate of Iron.

The so-called nitrate of iron is a dark brown, oily liquid, which is used by dyers for black, blue, and green colors, and for making the material at the same time heavier. The chief agent of this solution is sesquioxide of iron. It is obtained by adding six atoms of copperas to a mixture of one atom of sulphuric acid and one of nitric acid, boiling of the whole, and after allowing to settle, drawing off the clear solution. E. Leussen has analyzed three different commercial articles of the kind, which all had a specific gravity of 50 degrees Baume, but contained only from 1.12 to 2.18 per cent. of nitric acid, while one was totally free from it. They contained 18.04 to 20.10 per cent. of sesquioxide of iron, 19.74 to 23.3 per cent. of sulphuric acid, the proportions between them being such that both salts, Fe_2O_3 , $3SO_3$, and Fe_2O_3 , $2SO_3$, have to be assumed in them. This proportion of both sulphates of the sesquioxide of iron seems to be characteristic and necessary. As, however, the natural sulphate of iron is precipitated from a concentrated solution in the shape of a white powder, a certain amount of copperas is necessary to keep it in solution. On the other hand, however, copperas reduces the solubility of the basic sulphate. It is necessary therefore to add in the preparation of the article, the sulphate of the protoxide of iron by degrees, to avoid an excess; and after the solution has become clear by standing, to reduce part of the sesquioxide of iron by digestion with metallic iron. The article is best when it contains iron and sulphuric acid in proportion of two to five. The following proportions have been found to answer best in practice:—18 parts of water to 6 parts of sulphuric acid of 66° B.; 7 or 8 parts of nitric acid of 35° B. To this mixture are gradually added 38 parts of copperas.

Detection of Adulteration in Copaiva Balsam.

Dr. H. Hager suggests tests for the detection of oil of sassafras and of turpentine in samples of balsam of copaiva. The presence of oil of sassafras in the balsam is detected as follows:—1 c.c. balsam and 2 c.c. concentrated sulphuric acid are mixed; after the mixture has cooled 20 c.c. of alcohol are added,—the mixture is heated to boiling, and then set aside. If the balsam be pure, after the addition of the alcohol, a milky grey-yellowish or pale reddish-yellow liquid is obtained, which on boiling becomes yellow, clear and transparent, a resinous compound settling to the bottom. If adulterated with oil of sassafras, the addition of alcohol produces a dark brown-red colour, becoming after boiling much darker, with a tint of violet, similar to the juice of black cherries. Oil of turpentine is readily detected by heating a few drops of the balsam dropped upon bibulous paper, in such a manner that no visible vapors are evolved. Oil of turpentine evaporates first, and is recognized by its odour. This test, however, is unreliable if the adulterant employed be Venice turpentine. The author invites experiments with the following test, which has given him good results: Five or six drops water and five to seven c.c. balsam are mixed in an evaporating dish with sufficient levigated litharge to

form a thick semi-liquid mass. At a temperature of 20° to 25° C. a well-marked turpentine odour is given off if the balsam contain but 10 per cent. Venice turpentine, and even 5 per cent. may be still recognized.—*Chemist and Druggist.*

Cutting off Necks of Bottles, etc.

The necks of the large retorts and flasks are cut off by means of a ring of iron fastened to the end of an iron rod, several of which rings of various sizes would be found very useful. A ring of the proper size for the object being chosen, it is brought to a full red heat, and stuck upon the neck which is to be cut. After a minute it is taken off and a few drops of cold water or a wet stick is applied to the heated glass, upon which the neck immediately flies off.

Another and better method of cutting off the necks of thick glass vessels, is by means of pastile glass cutters, which are prepared as follows: Take of gum arabic 1 part, of gum tragacanth 1 part, and digest them in hot water till you obtain a slimy mass. The mixture must make 10 parts.

Add one-sixth part of gum benzoin dissolved in the smallest possible quantity of alcohol, and 10 or 12 parts of extremely well pulverized charcoal. Mix the whole intimately together, work the mass into a stiff paste, roll it between two boards rubbed over with charcoal powder, into cylinders quarter inch thick and eight inches long, and let them dry.

It is of importance to have the charcoal thoroughly pulverized and sifted, and well kneaded with other ingredients.

These pastile glass cutters, when heated at one end, continue to burn like ordinary fumigating pastile, producing a red-hot point, by means of which a crack in a glass can be led in any direction with as much certainty as a line can be drawn with a pen. When the glass that is to be cut has no crack, it is necessary to make a scratch with a file, and then spring it open by approximating the heated pastile. When you wish to cut off the neck of a flask so as to obtain both pieces of the vessel in an unbroken state, or when you wish to cut a flask across the middle without first commencing at the edge, and so bringing down a vertical split, you obtain your object by first making a scratch or cut on the flask with a file, in the direction of the desired fracture. You then hold the lighted pastile close to the glass, and at a little distance (the eighth of an inch) from the end of the scratch, and in the direction in which you wish the split to be extended, and you push the pastile slowly toward the scratch till the split takes place, which generally is to the extent of the heated portion. You then again remove the pastile to eighth of an inch from the end of the split, and again push it toward the split; upon which a second extension takes place. The same operation can be repeated till the split has taken the whole course you desire it to do. It is useful to make an ink line, or to tie a thread round the vessel, to guide the pastile in a right line. With a little exercise you will be able to cut glass in this manner as straight and as neatly as by the use of a rule and diamond. When the pastile is first lighted it must be allowed to burn to a point before you attempt to cut glass with it. When you have finished your operation, you extinguish the fire by plunging the pastile into dry sand.

How to bore Holes in Glass.—Hard steel tools, such as drills, files, rasps, etc., cut glass with extraordinary facility when thoroughly wetted with a solution of camphor of oil in turpentine. With a sharp three-edged drill, and a drill bow, holes can be bored easily, and still better when the drill is fixed on a lathe, as rapid motion is useful. The drill can nevertheless be effectively used by the hand alone, but an abundant supply of the camphorized oil of turpentine must be applied to the cutting tool during the operation. In the same manner, a hole, when once made, can be readily enlarged, by a round file, the ragged edges of tubes or glass plates can be removed by a flat file, female screws can be cut in thick plates of flint glass, flat window glass can be sawed by a saw made of a watch spring; and, in short, glass, brittle and refractory as it is, yields so effectually to the action of camphorized oil of turpentine as to prove almost as readily workable with cutting tools as brass itself.—*Haney's Journal.*

PRACTICAL FORMULÆ,

Glycerine Cream.

Take of Spermoceti, four drachms.
White wax, one drachm.
Oil of almonds, two troy-ounces.
Glycerine, one troy-ounce.

Melt the spermoceti, wax and oil together and when cooling add the glycerine by stirring, and perfume.—*Pharmacist.*

Lip Salve.

Take of Spermoceti, one ounce.
Yellow wax, half an ounce.
Oil of almonds, two ounces.
Oil of rose, twelve drops.

Melt with gentle heat, and add alkanet root, q. s. to color, then strain, and lastly add the oil of rose.—*Pharmacist.*

Parchment Paper.—To convert paper into vegetable parchment, immerse for a few seconds in a cold mixture of one volume water and two volumes sulphuric acid. Wash out rapidly by plunging in a large quantity of cold water, and finally remove all traces of the acid by further immersion in water to which a small quantity of ammonia has been added. To prevent the tendency to contract when drying, it should be attached to a frame while wet, or allow it to dry under a press. Paper prepared in this way is very transparent, and can be used for copying by tracing. It is extensively employed as a substitute for parchment made from sheep-skin in diplomas, certificates, patents, and for envelopes.—*Physician and Pharmacist.*

CHANGES.

Dr. Carson has retired from the firm of Messrs. Tapscott & Co., Brantford; Mr. Jos. W. Craig takes his place. The style of the new firm is Tapscott & Craig.

Dr. Oakley has commenced a drug business in Port Perry.

Mr. P. Cruickshank, of Parkhill, has removed to his own premises, one door east of the old stand.

ONTARIO COLLEGE OF PHARMACY

PRESIDENT, - - - WM. ELLIOT, Esq.

The regular meetings of the College take place on the FIRST FRIDAY evening of each month, at the Mechanics' Institute, when, after the transaction of business, there is a paper read, or discussion engaged in, upon subjects of interest and value to the members.

The College admits as members, Chemists and Druggists of good standing, and their assistants and apprentices, as associates, on payment of the following fees:

Principals, - - - - \$4 00 per Annum
Assistants & Apprentices, 2 00 "

The JOURNAL is furnished FREE to all members.

Parties wishing to join the College may send their names for proposal to any of the members of the College. A copy of the Constitution and By-laws of the College will be furnished on application.

HENRY J. ROSE, Secretary.

TRADE REPORT.

Business continued pretty fair in volume till within a day or two of the holidays, when it fell off as usual. Since the New Year there has been a good demand for Drugs, but little for Sundries, Paints or Dyes:

Chloral Hydrat, Cochineal, Gamboge, Bichromate, Rhubarb and Sarsaparilla are easier, but call for no special remark.

Cantharides were withdrawn from the recent sales in London at higher prices than are now current, so that a rise may be expected. Herbs, and extracts from herbs produced in Germany are dearer and scarce, both from deficient crop, and the disturbance caused by the war. Belladonna, Hyosyamus, Stramonium are in this category.

Shellac continues to advance steadily, and American Saffron brings a price which it does not merit by its quality. Quinine is reported higher and scarce, and is quite firm at our quotations. Considerable lots have been sold at our 100 oz. quotation, nett cash. Citrate of Iron and Quinine is affected from this cause also.

Magenta is quoted at lower rates. Spirits of Turpentine is decidedly higher, the low rates current last summer caused a very liberal consumption and it is now discovered that there is not enough to last until the new crop comes to market, say about mid-summer.

Paint and Paint Oils are quiet and unchanged in this market, though English advices note a rise in Linseed Oil especially for March delivery.

WHOLESALE PRICES CURRENT.—JANUARY, 1971.

DRUGS, MEDICINES, &c.		DRUGS, MEDICINES, &c.		DRUGS, MEDICINES, &c.		DRUGS, MEDICINES, &c.		DYE STUFFS—Continued	
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Acid, Acetic, fort.....	0 12 @ 0 14	Gum, Shellac, liver.....	0 30 @ 0 35	Potash, Bi-chrom.....	0 14 @ 0 16	Logwood, Camp.....	0 02 @ 0 03		
" Benzole, pure.....	0 25 0 35	" Storax.....	0 05 0 75	" Bi-tart.....	0 25 0 28	" Extract.....	0 10 0 14		
" Citric.....	0 75 0 85	" Tragacanth, flake.....	0 80 0 90	" Carbonate.....	0 18 0 20	" " 1lb hrs.....	0 14 —		
" Muriatic.....	0 05 0 07	" " common.....	0 35 0 40	" Chlorate.....	0 38 0 40	" " 1lb ".....	0 15 —		
" Nitric.....	0 11 0 15	Galls.....	0 27 0 32	" Nitrate.....	10 50 11 00	Madder, best Dutch.....	0 14 0 17		
" Oxalic do.....	0 24 0 30	Gelatine, Cox's, Gd.....	1 10 1 20	Potassium, Bromide.....	1 40 1 80	" 2nd quality.....	0 13 0 16		
" Sulphuric.....	0 03 0 07	Glycerine, com.....	0 26 0 30	" Cyanide.....	0 65 0 75	Quercitron.....	0 03 0 05		
" Tartaric, pulv.....	0 39 0 45	" Vienna.....	0 30 0 40	" Iodide.....	4 00 4 50	Sumac.....	0 06 0 08		
Ammon, carb casks.....	0 18 0 19	" Price's.....	0 65 0 75	" Sulphuret.....	0 25 0 35	Tin, Muriate.....	0 10 0 12		
" " jars.....	0 18 0 20	Honey, Canada, best.....	0 17 0 20	Pepsin, Boudault's.....	1 50 0 00	Redwood.....	0 05 0 06		
" " Liquor, 880.....	0 18 0 25	" Lower Canada.....	0 15 0 18	" Houghton's, oz.....	8 00 9 00				
" " Muriate.....	0 12 0 15	Iron, Carb. Precip.....	0 20 0 25	" Morson's.....oz.....	0 85 1 10	SPICES.			
" " Nitrate.....	0 45 0 60	" Sacchar.....	0 40 0 45	Phosphorus.....	0 75 0 85	Allspice.....	0 08 0 10		
Æther, Acetic.....	0 45 0 50	" Citrate Ammon.....	0 90 1 00	Podophyllin.....	0 50 0 60	Cassia.....	0 38 0 40		
" Nitrous.....	0 27 0 30	" & Quinine oz.....	0 43 0 48	Quinine, Pelletier's.....	2 10 2 15	Cloves.....	0 12 0 15		
" Sulphuric.....	0 45 0 50	" " & Strychnine.....	0 17 0 25	" Howard's.....	1 90 1 95	Cayenne.....	0 18 0 25		
Antim. Crude, pulv.....	0 15 0 15	" Sulphate, pure.....	0 08 0 10	" " 100oz. case.....	2 00 —	Ginger, E. I.....	0 12 0 14		
" " Tart.....	0 46 0 55	Iodine, good.....	4 50 5 00	" " 25 oz. tin.....	1 98 —	" Jan.....	0 20 0 30		
Alcohol, 95% Cash.....	1 67 1 72	" Resublimed.....	5 60 6 00	Root, Colombia.....	0 13 0 20	Mace.....	1 35 1 40		
Arrowroot, Jamaica.....	0 19 0 22	Jalapin.....oz.....	1 40 1 60	" Curcuma, grd.....	0 12 0 17	Mustard, com.....	0 20 0 25		
" " Bermuda.....	0 45 0 65	Kreosote.....oz.....	1 60 1 70	" Dandelion.....	0 25 0 35	" D. S.....	0 40 0 45		
Alum.....	0 02 0 03	Leaves, Buchu.....	0 25 0 30	" Elecampane.....	0 14 0 17	Nutmegs.....	0 73 0 78		
Balsam, Canada.....	0 24 0 35	" Foxglove.....	0 25 0 30	" Gentian.....	0 10 0 12	Pepper, Black.....	0 14 0 15		
" " Copaiba.....	0 68 0 75	" Henbane.....	0 35 0 40	" " pulv.....	0 15 0 20	" White.....	0 20 0 22		
" " Peru.....	3 80 4 00	" Senna, Alex.....	0 30 0 60	" Hellebore, pulv.....	0 17 0 25	PAINTS, DRY.			
" " Tolu.....	1 00 1 20	" " E. I.....	0 12 0 20	" Ipecac.....	1 75 2 20	Black, Lamp, com.....	0 07 @ 0 08		
Bark, Bayberry, pulv.....	0 10 0 20	" " Timneville.....	0 20 0 30	" Jalap, Vera Cruz.....	1 35 1 00	" " refined.....	0 25 0 30		
" " Canella.....	0 17 0 20	" Uva Ursi.....	0 15 0 20	" " Tampico.....	0 90 1 —	Blue, Celestial.....	0 08 0 12		
" " Peruvian, red pulv.....	0 45 0 40	Lime, Carbolate.....brl.....	5 50 —	" Liguorice, select.....	0 11 0 13	" Prussian.....	0 65 0 75		
" " yellow, yel.....	1 40 1 50	" Chloride.....oz.....	0 04 0 06	" " pow'd.....	0 15 0 20	Brown, Vandyke.....	0 10 0 12		
" " Slippery Elm, g. b.....	0 15 0 20	" Sulphate.....oz.....	0 08 0 12	" Mandrake.....	0 20 0 25	Chalk, White.....	0 01 0 01		
" " flour, pkt's.....	0 28 0 32	Lint, Taylor's bast.....	1 20 1 25	" Orris.....	0 20 0 25	" Red.....	0 05 0 10		
" " Sassafras.....	0 12 0 15	Leatl, Acetate.....	0 14 0 17	" Rhubarb, Turkey.....	3 50 0 00	Green, Brunswick.....	0 07 0 10		
Berries, Cubebs, ground.....	0 25 0 35	Leptandrin.....oz.....	0 75 —	" " E. I., China.....	1 25 2 00	" Chrome.....	0 20 0 25		
" " Juniper.....	0 06 0 10	Liq, Bismuthi.....oz.....	0 50 0 75	" " pulv.....	1 40 2 50	" Paris.....	0 30 0 35		
Beans, Tonquin.....	0 60 1 10	" " Opii, Battley's.....	6 60 8 00	" " " 2nd.....	1 30 1 50	" Magnesia.....	0 20 0 25		
" " Vanilla.....	14 00 15 50	Lye, Concentrated.....	1 50 2 00	" " French.....	0 75 —	Litharge.....	0 08 0 09		
Bismuth, Alb.....	4 80 5 00	Liquorice, Solazzi.....	0 42 0 45	" Sarsap, Hond.....	0 40 0 50	Pink, Rose.....	0 12 0 15		
" " Carb.....	4 80 5 00	" Cassano.....	0 23 0 40	" " Jam.....	0 88 0 90	Red Lead.....	0 06 0 08		
Camphor, Crude.....	0 35 0 45	" Other brands.....	0 14 0 25	" Squills.....	0 10 0 15	" Venetian.....	0 02 0 03		
" " Refined.....	0 45 0 55	Liquorice, Refined.....	0 35 @ 0 45	" Senega.....	0 97 1 00	Sienna, B. & G.....	0 10 0 15		
Cantharides.....	1 70 1 85	" Hessin's doz.....	2 00 —	" Spigelia.....	0 35 0 40	Umbur.....	0 07 0 10		
" " Powdered.....	1 89 1 90	Magnesia, Carb.....oz.....	0 20 0 25	Sal, Epsom.....	2 25 3 00	Vermillion, English.....	0 95 1 60		
Charcoal, Animal.....	0 04 0 06	" " " 4.....oz.....	0 17 0 20	" Rochelle.....	0 28 0 35	" American.....	0 28 0 36		
" " Wood, pow'd.....	0 12 0 15	" Calcined.....oz.....	0 65 0 75	" Soda.....oz.....	0 01 0 03	Whiting.....	0 85 1 25		
Chiretta.....	0 25 0 30	" Citrate gran.....oz.....	0 57 0 90	Seed, Anise.....	0 16 0 30	White Lead, dry, gen.....	0 07 0 09		
Chloroform.....	1 25 1 50	Mercury.....oz.....	0 90 0 95	" Canary.....	0 05 0 06	" " No. 1.....	0 06 0 08		
Cochineal, S. G.....	0 80 0 90	" Bichlor.....oz.....	0 95 0 00	" Cardamon.....	4 10 5 75	" " No. 2.....	0 05 0 07		
" " Black.....	1 09 1 20	" Bimidiid.....oz.....	0 35 0 40	" Fenugreek, gr'd.....	0 08 0 10	Yellow Chrome.....	0 12 0 35		
Colocynth, Pulv.....	0 50 0 60	" Chloride.....oz.....	1 10 0 00	" Hemp.....	0 06 0 06	" Ochre.....	0 02 0 03		
Colloidion.....	0 67 0 70	" C. Chalk.....oz.....	0 60 0 00	" Mustard, white.....	0 14 0 16	Zinc White, Star.....	0 10 0 12		
Ellaterium.....oz.....	4 50 5 00	" Nit. Oxyd.....oz.....	1 10 0 00	Saffron, Amer.....	4 00 5 00				
Ergot.....	0 70 0 80	Morphia, Acet.....oz.....	5 50 6 01	" Spanish.....	20 00 22 00				
Extract, Belladonna.....	2 75 0 00	" Mur.....oz.....	5 50 6 00	Santonine.....	9 50 10 50				
" " Colocynth, Co.....	1 25 1 75	" Sulph.....oz.....	5 70 6 20	Sago.....	0 07 0 09				
" " Gentian.....	0 50 0 60	Musk, Pure grain.....oz.....	21 00 —	Silver, Nitrate, cash.....	14 50 16 50				
" " Hemlock, Ang.....	1 12 1 25	" Canton.....oz.....	1 00 1 20	Soap, Castile, mottled.....	0 11 0 14				
" " Henbane.....	3 75 4 00	Oil, Almonds, sweet.....	0 40 0 45	Soda Ash.....	0 03 0 04				
" " Jalap.....	5 00 5 50	" " bitter.....oz.....	14 00 15 00	" Bicarb. Newcastle.....	3 75 4 00				
" " Mandrake.....	1 75 2 00	" Aniseed.....oz.....	3 40 4 00	" " Howard's.....	0 14 0 16				
" " Nux Vomica.....oz.....	0 60 0 70	" Bergamot, super.....oz.....	5 00 6 00	" " Caustic.....oz.....	0 04 0 05				
" " Opium.....oz.....	Variable.	" Caraway.....oz.....	4 00 4 20	Spirits Ammon, arom.....	0 25 0 35				
" " Rhubarb.....oz.....	7 50 —	" Cassia.....oz.....	1 75 2 00	Strychnine, Crystals.....	2 30 2 75				
" " Sarsap. Hon. Co.....	1 00 1 20	" Castor, E. I.....oz.....	0 14 0 15	Sulphur, Precip.....oz.....	0 10 0 12				
" " " Jam. Co.....	3 25 3 70	" Crystal.....oz.....	0 22 0 25	" Sublimed.....oz.....	0 4 0 05				
" " Taraxicum, Ang.....	0 70 0 80	" Italian.....oz.....	0 26 0 28	" Roll.....oz.....	0 03 0 04				
Flowers, Arnica.....	0 25 0 35	" Citronella.....oz.....	1 40 1 60	Tamarinds.....oz.....	0 15 0 20				
" " Chamomile.....oz.....	0 30 0 40	" Cloves, Ang.....oz.....	1 00 1 10	Tapioca.....oz.....	0 15 0 18				
Gum, Aloes, Barb. extra.....	0 70 0 80	" Cod Liver.....oz.....	1 35 1 50	Veratria.....oz.....	2 75 3 00				
" " " good.....oz.....	0 42 0 50	" Croton.....oz.....	1 70 2 00	Vinegar, Wine, pure.....	0 55 0 60				
" " " Cape.....oz.....	0 15 0 20	" Geranium, pure, oz.....	2 00 2 20	Verdigris.....oz.....	0 35 0 40				
" " " pow'd.....oz.....	0 25 0 30	" Juniper wood.....oz.....	0 80 1 00	" " Pow'd.....oz.....	0 45 0 50				
" " " Socot.....oz.....	0 50 0 75	" " Berries.....oz.....	6 00 7 00	Wax, White, pure.....oz.....	0 80 0 90				
" " " pulv.....oz.....	0 90 1 00	" Lavand, Ang.....oz.....	19 20 20 00	Zinc, Chloride.....oz.....	0 10 0 15				
" " Arabic, white.....oz.....	0 60 0 65	" " Exot.....oz.....	1 40 1 60	" Sulphate, pure.....oz.....	0 10 0 15				
" " " pow'd.....oz.....	0 50 0 55	" Lemon, super.....oz.....	3 30 3 60	" " com.....oz.....	0 06 0 10				
" " " sarts.....oz.....	0 34 0 37	" " ord.....oz.....	2 60 2 60	DYE STUFFS.					
" " " pow'd.....oz.....	0 42 0 50	" Orange.....oz.....	2 70 3 00	Annatto.....oz.....	0 40 @ 0 60				
" " com. Gedda.....oz.....	0 13 0 18	" Origanum.....oz.....	0 65 0 75	Aniline, Magenta, crys.....	4 00 —				
" " Assafoetida.....oz.....	0 31 0 35	" Peppermint, Ang.....oz.....	15 00 17 00	" liquid.....oz.....	2 00 —				
" " British or Dextrine.....oz.....	0 13 0 15	" " Amer.....oz.....	4 40 4 20	Argols, ground.....oz.....	0 15 0 25				
" " Benzoin.....oz.....	0 43 0 55	" Rose, virgin.....oz.....	7 75 8 00	Blue Vitriol, pure.....oz.....	0 08 0 10				
" " Catechu.....oz.....	0 12 0 15	" " good.....oz.....	4 40 5 50	Camwood, pure.....oz.....	0 06 0 09				
" " " pow'd.....oz.....	0 25 0 30	" Sassafras.....oz.....	0 85 0 95	Copperas, green.....oz.....	0 01 0 02				
" " Euphorb, pulv.....oz.....	0 32 0 40	" Wintergreen.....oz.....	6 00 6 50	Cudbear.....oz.....	0 16 0 25				
" " Gamboge.....oz.....	1 40 1 60	" Wormwood, pure.....oz.....	5 50 5 50	Fustic, Cuban.....oz.....	0 02 0 04				
" " Guaiacum.....oz.....	0 38 0 50	Ointment, blue.....oz.....	0 65 0 70	Indigo, Bengal.....oz.....	2 40 2 50				
" " Myrrh.....oz.....	0 48 0 60	Opium, Turkey.....oz.....	8 50 9 00	" Madras.....oz.....	1 09 1 10				
" " Saag Dracon.....oz.....	0 60 0 70	" " pulv.....oz.....	11 20 12 00	" Extract.....oz.....	0 28 0 35				
" " Scammony, pow'd.....oz.....	5 60 —	Orange Peel, opt.....oz.....	0 43 0 50	Japonica.....oz.....	0 05 0 06				
" " " Virg.....oz.....	14 50 —	" " good.....oz.....	0 12 0 20	Lacdye, pow'd.....oz.....	0 33 0 38				
" " Shellac, Orange.....oz.....	36 0 38	Pill, Blue, Mass.....oz.....	0 75 0 75	Logwood.....oz.....	0 02 0 03				