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Original and Selected Papers.

PHARMACEUTICAL NOTES.

BY E. B. SHUTTLEWORTH.

NEW COMPOUND OF BICHLORIDE OF MERCURY AND BROMIDE OF POTASSIUM.

If to a solution of bromide of potassium be added an equivalent proportion of bichloride of mercury, in powder, the latter salt dissolves quite readily, and a solution is formed which, when evaporated, affords needle-shaped crystals, consisting, apparently, of a definite compound of the two salts; or it may be that an interchange of elements takes place, and that the new salt is composed of bromide of mercury and chloride of potassium. The solution deposits crystals of the same form even when evaporated to the last drop. These crystals are permanent in the air, and when just removed from the mother liquor are transparent, but, on drying, become white, with a nacreous appearance. The salt dissolves readily in water. It gives, with iodide of potassium, a scarlet precipitate of biniodide

of mercury; with nitrate of silver, a precipitate of bromide; with chlorine water, followed by chloroform, a solution of bromine in the latter liquid.

ADULTERATION OF ABSOLUTE ALCOHOL WITH ETHER.

It would not, at first, appear that this adulteration could be carried on profitably, but a case recently came under the observation of the writer, in which the specific gravity of a large quantity of alcohol, procured from Germany by a firm dealing in photographic chemicals, was lowered by this means. The odor of ether was not so apparent as to be noticed by those who used the alcohol, but in the manipulation of collodion, the want of tenacity, or *rottenness*, of the film gave evidence of the presence of water, and led to an examination of the materials, when the adulteration alluded to was detected. The quantity of ether was not determined.

I find that this adulteration may be readily detected by pouring upon a plate, or saucer, a small quantity of the suspected alcohol, and applying a light. Alcohol burns with a blue flame, almost destitute of luminosity, but if ether is present the flame becomes more or less white, or luminous, according to the proportion of ether present. A very slight trace may thus be detected.

REMOVAL OF GLASS STOPPERS.

It may not have occurred to every one—at all events it is not noticed in any of our treatises on practical pharmacy—that the easiest way to take out a stopper which has become fixed in the neck of a bottle is to reverse the motion given to it when putting it in, that is, to knock the stopper from *right* to *left*. In most instances when a stopper is fixed, without the intervention of an adhesive substance, it is by turning it as one would drive a screw. The direction is almost invariably from left to right, and thus a thread is formed, which it is easier to follow backwards than to break. The trouble with which the removal of stoppers is, usually, attended must form my apology for introducing a suggestion of so little apparent importance.

THE MUSTARD OF THE PHARMACOPŒIA.*

BY THOMAS GREENISH, F.C.S.

It might be thought by many persons that this subject is scarcely one suitable for a pharmaceutical meeting, but mustard holds a place in our materia medica, and enters into one of the preparations of the Pharmacopœia, the cataplasma sinapis. It is to mustard, in connection with this preparation, that I shall chiefly confine my remarks.

The mustard cataplasm is a therapeutic agent of great value, resorted to in a period of emergency, and frequently in the absence of medical aid; and if any further justification were necessary, I may add this fact also, that Dr. Redwood has mentioned 'Charta Sinapis' as likely to form part of the forthcoming Appendix to the British Pharmacopœia.

Mustard was first introduced into the Pharmacopœia of 1788, in the formula for cataplasma sinapis, the official mustard was the *Sinapis nigra*.

Cataplasma Sinapeos, 1788.

℞ Seminum Sinapeos pulverum tritorum
Medullæ Panis sing. p. libram dimid.
Aceti quantum satis sit.
Misce ut fiat cataplasma.

In the next Pharmacopœia, that of 1809, the official mustard being still *Sinapis nigra*, the formula was altered.

" *Cataplasma Sinapis*, 1809.

R Sinapis Seminum
Lini usitatissimi Sem.
Singulorum contrit. libram dimid.
Aceti Calid. q. s.
Ft. Cataplasma.

It will be observed that linseed is substituted for the bread-crumb, and the vinegar is directed to be boiling.

In the Pharmacopœia of 1824, and the one following, 1836, there was no alteration made either in the official mustard or the formula for the cataplasm; but in the edition of 1851, black and white mustard became official, and the cataplasm was ordered to be made with boiling water instead of vinegar.

* Read at the Evening Meeting of the Pharmaceutical Society of Great Britain, April, 1873, and published in the Phar. Jour. & Trans.

Cataplasma Sinapis, 1851.

℞ Aquæ Ferventis, uncias decem
Lini Semin. contrit.
Sinapis contrit. sing. uncias duas cum semisse vel quantum satis sit.

Pulveres prius inter se mixtos, aquæ paulatim adjice movens ut fiat cataplasma.

Mr. Phillips, in his translation of the Pharmacopœia of 1851, remarked, in reference to this preparation, "that the vinegar directed in the former Pharmacopœias was useless, if not injurious, to the excitant effect of the mustard." He also adds some caustic observations on mustard; he says that both varieties of mustard, black and white, are extensively cultivated in this country for preparing that much used condiment 'flour of mustard,' which is at the best flour of the seed mixed with wheaten flour, powdered capsicums and turmeric, and at the worst wholly destitute of mustard flour, consisting of the damaged flour of the cereals, etc., colored by turmeric and rendered stinging by capsicum."

I shall at this stage of the subject allude to a preparation introduced into the Pharmacopœia of 1809, and continued to that of 1851, in which mustard played an important part.

Infus. Armoraciæ Comp. 1809 *to* 1851.

℞ Armor. Rad. recent. concis.
Sinapis Sem. contus. sing. unciam
Aquæ Ferventis octavium.

Macera per horas duas in vase leviter clauso et cola, tum adjice Spt. Armoraciæ Comp. unciam.

This infusion was prescribed as a stimulant in paralysis.

In a paper read before this Society in 1845 (*Pharm. Journ.* Vol. V. 1st series, p. 62), I directed attention to the fact that if this infusion be made with boiling water, care being taken that the vessel used is of the same temperature, the result will be quite devoid of pungency, and consequently without value as a therapeutic agent. I then stated that "it is of the utmost importance that the laws which govern the formation of this volatile oil should be well understood." This infusion has been omitted since the Pharmacopœia of 1851.

We now arrive at the British Pharmacopæia, and find that both black and white mustard continue official, and that there is a further slight alteration, not in the ingredients or their proportions, but in the directions for making the mustard cataplasm.

Cataplasma Sinapis.

Take of—

Mustard in powder	2½ oz.
Linseed Meal	2½ oz.
Boiling Water	10 fluid oz.

Mix the linseed meal gradually with the water, and add the mustard with constant stirring.

The alteration here is, that the linseed meal is first mixed with water and mustard added afterwards, the temperature being thus reduced. This is another step in the right direction, and I shall have occasion by-and-bye to refer to it again.

Black mustard contains two proximate principles, myrosin and myronic acid, the latter in combination with potash, and it is to their mutual reaction that the formation of the volatile oil is due. Myrosin is an albuminous substance, soluble in cold and in lukewarm water, but coagulated by heat, alcohol, and acids. Here we have a reason for the successive alterations in the mustard cataplasm.

If black mustard flour be mixed with cold water, or water at a temperature below 100° F., the whole of the volatile oil it is capable of yielding may be obtained from it. If the temperature of the water be 140° or thereabouts, it does not yield more than half the quantity, and at 180° very little oil can be distilled from it. These variations are due to the partial or entire coagulation of the myrosin present. In making the cataplasm of the British Pharmacopœia, I find that when the linseed meal is added to the boiling water the temperature is reduced to 180°, and after the addition of the mustard to 160°. Either of these temperatures is too high for the full development of the volatile oil.

I would suggest here an alteration in the directions. Let the mustard be first mixed with two or three ounces of water under 100° or lukewarm. Boil the remaining part of the water, with which mix the linseed meal, and add to this the mustard, which has had time to develop its pungency. The temperature of the cataplasm will then be about 120°. It will be found at once fully efficient and about double the strength of that made by the present formula; and this, in many instances, may be of the utmost importance.

It is the speedy action which gives to a mustard poultice an advantage over a blister.

Mustard flour has never, I believe, been prepared by the pharmacist for medical use, and I may assume that this is never likely to be done in the pharmacy. Its preparation will be left to the manufacturer, who has special appliances for the purpose. In reference to this part of the subject, I cannot do better than quote the concise description of Dr. Pereira:—"The seeds of both black and white mustard are first crushed between rolls, and then pounded in mortars. The pounded seeds are then sifted. The residue in the sieve is called *dressings* or *siftings*; what passes through is *impure flour of mustard*. The latter by a second sifting yields *pure flour of mustard* and a second quantity of dressings. By pressure, the dressings or siftings yield a fixed oil (fixed oil of mustard), which is used for mixing with rape and other oils."

The black and white mustard seeds are crushed separately, and then mixed in definite proportions. There is a special object in this to which I shall have occasion again to allude. The fixed oil has some reputation as an external remedy in rheumatism, due probably to a little volatile oil developed in it; but the demand is very limited, the bulk of it melts away into the rape oils of commerce, and the marc, as a solid cake, is sold for manure, and report says that it sometimes finds its way accidentally (?) into linseed cake. Formerly, when black pepper paid a duty, this mustard bran or dressings was extensively used in its adulteration. Through the courtesy of Messrs. Dewar & Sons, mustard manufacturers, of Newcastle-on-Tyne, I am enabled to place on the table samples of genuine mustard flour. I have here black mustard flour, white mustard flour, brown and white mixed, and another sample of the same from which a further portion of the husk has been sifted,* and also husks to which the name of dressings has been applied, and from which the fixed oil is expressed; a sample of the fixed oil and of the mustard cake are likewise on the table.

The question will naturally occur, why mix white with black seeds? The explanation is this. The quantity of myrosin in the black mustard seed is not sufficient for the decomposition of all the myronate of potassium present, and as the white mustard seed contains a large quantity of myrosin and no myronate of potassium, it is added with advantage and economy. If water be added to pure flour of black mustard seed, the essential oil allowed to form and then removed, a further addition of flour of white mustard seed will again give rise to more essential oil, and thus prove that all the myronate has not been decomposed by the quantity of myrosin naturally present in the black seed; and I believe that by decomposing this excess of myronate of potassium, the bitter taste in the black mustard can be entirely removed, making it more agreeable for table use.

I think it would be an advantage if some certain proportions of

* In a letter received from Mr. Frazer respecting this latter article he says:

"It must now be some twenty or twenty-five years since we adopted Dewar of Newcastle's pure brown mustard as the sole article of mustard kept by my firm in Glasgow. For two or three years we had to fight against a widespread prejudice in the public mind against its deeper color than that of the article commonly in use, as also against the dark specks present in it.

"Finding this prejudice to be so strong as practically to render the sale of it almost impossible, I suggested to Mr. Dewar to so modify, if practicable, his process of manufacture, as to reduce the amount of dark specks to a minimum.

"Mr. Dewar did so, and the result was the production of a mustard at once absolutely genuine, and yet so near to the color of that in ordinary use, that at length we were able to induce the public to give it a fair trial.

"Since then we have kept nothing but the pure article, and the results are such as to amply compensate us for the patience we had to exercise in its introduction."

the two seeds were given in our materia medica, so as to define absolutely what is to be understood as the official mustard.

Having considered mustard from a pharmaceutical point of view, I will now add a few remarks on the mustards of commerce, neither of which can be called the mustard of the Pharmacopœia.

I have examined a large number of commercial mustards, and find that they are all more or less mixed compounds. I am indebted to Mr. Martindale for several samples obtained in various parts of the metropolis, in one of which there is from 30 to 50 per cent. of a mixture of wheat and pea flour, the color of the latter admirably adapting it for this purpose.*

It is not my intention on this occasion to consider the dietetic uses of mustard; but I would express this opinion that there is no necessity for the admixture of any foreign ingredient such as wheat flour, turmeric, or capsicum.

Black mustard flour mixed with one-sixth of its weight of white will make a condiment acceptable for table use, and at the same time suitable for the Cataplasma sinapis.

The consideration of the Charta sinapis of the future would occupy too much of our time this evening; and I hope on a future occasion to bring this subject specially under your notice.

FLUID EXTRACT OF IPECACUANHA.†

BY B. F. M'INTYRE.

The Pharmacopœia of 1860 and the revision recently published give formulas for the preparation of Fluid Extract of Ipecac. The alteration of the old formula, given in the new edition, suggested the following experiments to determine whether the change is an improvement.

The results obtained seemed of sufficient importance to bring before the annual meeting of the Alumni.

The Pharmacopœia of 1860 directs that powdered ipecac be exhausted with stronger alcohol, the alcohol partially recovered by distillation, the concentrated extract mixed with water and acetic acid, the filtrate evaporated to a definite measure, a portion of alcohol added to preserve the preparation, the finished fluid extract measuring 16 f. oz. for every 16 Troy oz. powder manipulated.

The details of this process will be considered further on.

* The author exhibited drawings of the microscopical characteristics of black and white mustard. These are reproduced in the original text, but we have to omit them.—ED. CAN. PHAR. JOUR.

† From the Am. Druggists' Circular.

The Pharmacopœia of 1870 directs that two menstrua be used to exhaust the powder, the first a mixture (24 f. oz. stronger alcohol, 12 f. oz. water), followed with diluted alcohol until the resultant percolate measures 32 f. oz.; one half-pint glycerine is added to this 32 f. oz. of percolate, and the whole evaporated at a temperature not exceeding 140° F.

The first of the menstrua given in the formula was used to exhaust the ipecac. Each successive pint of percolate from the drug was accurately weighed at 62° F., the several differences found and the proportional distribution of extract through the percolate, calculated in the manner indicated by Dr. Squibb before the American Pharmaceutical Association in 1870.

One pint of the menstruum weighed 6,590 grs., the powder required 10 f. oz. to moisten it thoroughly, and, after four day's maceration, 26 f. oz., before the percolation commenced.

A tabular statement of the rate of exhaustion is given:

	Weight.	Difference.	Extract.
1 pint	7,108 grs.	518 grs.	1,299 grs.
2 "	6,805 "	215 "	560 "
3 "	6,670 "	80 "	200 "
4 "	6,635 "	45 "	112 "
5 "	6,630 "	40 "	100 "
6 "	6,622 "	32 "	69 "
		930	2,340 grs.
Quantity powder percolated			7,680 "
Dried residue, after exhaustion			5,327 "
Loss by percolation, solid extract			2,353 "

The Pharmacopœia percolates 2 pints. Percentage of total extract 80 per cent. Extract in pint when of 80 per cent., 1,859 grains.

The weight of 8 f. oz. glycerine, specific gravity 1.25, was found to be 4,574 grains: this, mixed with the first 32 f. oz., percolate, and evaporated to 16 f. oz., weighed 8,310 grains finished fluid extract.

A practical difficulty presents itself in the manufacture of this preparation. Economy of alcohol in the manipulation of fluid extracts is an important consideration, and this is paramount wherever it can be practised without injury to the preparation.

The Pharmacopœia directs that the first 32 f. oz. percolate be evaporated at a temperature not exceeding 140° F., therefore the recovery of alcohol from the tincture is impossible, the temperature given is too low for distilation; if it is heated to the boiling point, the finished preparation will be gelatinized and unsatisfactory.

If the evaporation is conducted at 140° after filtering, the finished fluid extract has a syrupy consistence, dark rich color, odor strong and characteristic of the drug.

The new formula provides no method for the separation of the inert resin, which is the troublesome object that required attention. The writer made several experiments, varying the process, but adhering to the glycerine and low temperature, and found in every instance that a syrup made from the fluid extract precipitated the resin, giving the syrup a dirty appearance, which is a cause for complaint.

The loss of alcohol is great, first in the residue or exhausted powder, then from the tincture, finally glycerine is added, and the preparation has gained nothing but density and color. Emetia, the active principle in ipecac, is perfectly soluble in alcohol and sparingly soluble in water, U. S. Disp.—page 495.

This fact suggests stronger alcohol as the proper menstruum; the rate of exhaustion is given below, 16 f. oz. stronger alcohol weighing about 5,907 grains.

1 pint	weighed	6,333 grs.	Difference,	624 grs.
2 "	"	6,110 "	"	203 "
3 "	"	6,065 "	"	158 "
4 "	"	6,055 "	"	148 "
5 "	"	6,055 "	"	148 "
6 "	"	6,060 "	"	153 "
7 "	"	6,038 "	"	131 "
				1,367 "
Quantity of powder percolated				7,680 "
Dried residue after exhaustion				6,320 "
Loss by percolation, solid extract				1,360 "

The dried residue, after powdering, was wet up with water (weight of 16 f. oz. water about 7,300 grains) and exhausted.

	Weight.	Difference.	Extract.
1 pint	7,630 grs.	330 grs.	734 grs.
2 "	7,415 "	115 "	255 "
3 "	7,335 "	35 "	77 "
		480 "	1,066 "
Quantity residue percolated.....			6,320 "
Dried residue, after exhaustion			5,252 "
Loss by percolation, solid extract			1068 "

The three pints aqueous percolate, when evaporated to dryness, gave of extract 1,150 grains. This extract has a perceptible odor, and in 10-grain doses produced nausea and slight emetic effect; its taste is peculiar and disagreeable. Ten grains of the extract would be equivalent to seventy grains of the powder, if the former had special medicinal value. The separation of resin from fluid ipecac

is difficult; the Pharmacopœia process of 1860 will not effect its removal. The formula directs 10 f. oz. water with 1 f. oz. acetic acid to be mixed with the concentrated alcoholic extract—the writer has found it necessary to use from five to 10 pints of water with 1 f. oz. acetic acid for every Pharmacopœia portion—frequently this dilution is repeated before the prepâration is free from resin.

One pint of fluid ipecac made by the old process, weighs about 7,980 grains at 65° F. fluid extract of ipecac prepared by the process given in the 1860 Pharmacopœia, is rarely found free from resin. The following formula for syrup of ipecac has proved reliable, producing a clear, elegant syrup:

Fluid ipecac	f. oz. i.
Water	f. oz. xvii.
Gran. sugar	troy oz. xii.

Dilute the fluid extract with 16 f. oz. water, set aside for twelve hours, filter, evaporate to 6 f. oz., filter, add through filter 1 f. oz. water, then dissolve sugar with gentle heat, the finished syrup to measure 16 f. oz.

The conclusion of these experiments indicate that the old formula is reliable and economical, though difficult in manipulation. The physician rarely has cause to criticise the effectiveness of fluid ipecac when prepared from good root, and by the old process.

The pharmacist wants a fluid extract of ipecac that will not precipitate when in the form of the officinal syrup.

The formula in the Pharmacopœia of 1870 does not supply this want.

ON THE SALTS OF IRON AND ON A NEW SERIES OF TASTELESS IRON COMBINATIONS.

BY J. CREUSE, OF BROOKLYN, NEW YORK.

It is not my intention here to treat on the medical properties and uses of ferruginous compounds as a class; this has been done before me by more competent persons. My purpose is only to discuss the relative physiological and chemical properties of the various iron combinations and describe a new series of tasteless ferruginous compounds.

Iron has been used in medicine, it may be said, from time immemorial. Metallic iron, green copperas, iron rust, carbonate of iron, bole armenia, etc., are mentioned in the oldest authors on medicine and pharmacy. It seems also that in former times little

Read before the Alumni Association of the New York College of Pharmacy; published in the annual report and reprinted in the New York Druggists' Circular.

importance was attached to the peculiar form in which iron was administered. Some fifty or sixty years ago, however, a decided preference began to be shown for metallic iron, finely comminuted, and for the protosalts of iron. It was thought then that the easy solubility of those preparations in the stomach was a great advantage, and that theory gave rise to a number of officinal remedies like iron by hydrogen, Vallet's mass, proto-iodide, of iron, etc., etc., well known to all pharmacists.

But of late years, especially since the discovery of citro-ammoniacal pyrophosphate of iron by Robiquet, my old master, salts of sesquoixide of iron have been steadily growing into favor. It has been argued, with reason, that, since iron in human economy is invariably found in the shape of sesquisalts, such compounds should be preferred to all others whenever iron is indicated. I may add, also, that it is always in the form of sesqui-salts that iron exists in all vegetable and animal substances which compose human food, and that metallic iron or its proto-salts cannot be mixed with the simplest aliments without completely decomposing them. Protoxide of iron is as unyielding as it is unstable; when you have combined it with strong acids you can go no further with its salts; you can do nothing with them, not even make an alum. Sesqioxide of iron, on the contrary, is a perfect Proteus; sometimes a base, sometimes an acid, it is always ready to enter into some combination or other on the slightest provocation.

In a paper published some time ago I demonstrated that nearly all the insoluble sesqui-salts of iron could be combined with the alkaline citrates, forming soluble and tasteless compounds, to which I gave the name of quadruple citrates.

Since then further experiments have shown me that other vegetable salts, besides the citrates, possessed also the same property, and that not only the insoluble but also the soluble sesqui-salts or iron could form similar combinations.

In other words, I may lay down this rule: *All the salts of sesquioxide of iron without exception, soluble or insoluble, form combinations with all the alkaline citrates, tartrates and oxalates.* Such combinations are invariably green, whatever may be the color of the iron salt; they are all soluble in water, nearly insoluble in alcohol; they are all free from ferruginous taste, all perfectly stable, and miscible with preparations of Peruvian bark without decomposition. In all of them the presence of iron is so disguised as not to be detected by chemical reagents, unless after the addition of strong acids or sulphuretted hydrogen, both of which destroy the combination.

In other papers I have described the soluble compounds obtained in combining the phosphate, hypophosphate, valerianite and arseniate of iron with the alkaline citrates. In this I will merely describe the tasteless combinations of the alkaline citrates with iodide, chloride, sulphate and nitrate of iron.

TASTELESS IODIDE OF IRON.

This is no doubt the most important of the whole series, both therapeutically and chemically; therapeutically, because iodide of iron is admitted to be the best of all iron combinations; chemically, because all the reactions happening during its preparation are so remarkable and so easy to follow with accuracy as to be likely to give a key to the real composition of the rest of the series—a result which can hardly be obtained with any of the other similar combinations.

The salt is obtained in the following manner: 126.3 grs. (1 eq.) of iodine are first combined with metallic iron, in the usual way to obtain the proto-iodide of iron; this is filtered, and 63 grs. (½ eq.) of iodine are dissolved into it. Then, a solution of 201 grs. (1 eq.) of citric acid saturated with a fixed alkali, such as potassa, for instance, is added by small portions to the sesqui-iodide of iron. The ferruginous solution which is at first of a ruby red color and has a strong smell of iodine, becomes lighter by degrees, till, as the last drop of citrate is added, it takes a bright apple green color; at the same time, all smell of iodine, all taste of iron have disappeared; the solution strikes no color on starch paper, and gives no precipitate with either tannin or ferrocyanide of potassium. It may be then evaporated at a low heat, with gentle stirring to dryness, when it gives a green mass formed of very small acidular crystals, looking somewhat like cauliflowers. It is tasteless, perfectly stable, unless exposed to direct sunlight, and may be exhibited, in the shape of syrup, elixir, solution, tincture, pills, etc. The dose of it need not be more than one-half of that of the proto-iodide of iron, as it is absorbed much more readily.

Chemically, this iodide of iron seems to be a combination in which sesqui-iodide of iron plays the part of an acid and the alkaline citrate that of a base; but the subject requires further investigation before it can be decided with complete certitude.

The other alkaline citrates may be used instead of citrate of potassa; similar combinations may also be obtained with the alkaline tartrates, oxalates, and malates, but none are so tasteless, and especially none so *stable* as the one just mentioned.

I must add a few words on this subject, which is a most important one, for the same remarks may be applied to all the other analogous iron combinations, pyrophosphate included. On reading the above process, some may think that, after all, the product is only a mixture of citrate of iron, iodide and iodate of potassium. But, aside of the fact that the different ingredients are not in proportion to form such combinations, chemical tests show that such is not the case. Citrate of iron, for instance, is of a ruby red color and turns immediately ink-black on the addition of tannin, while tasteless iodide of iron is bright green and is not colored black by tannin, but

only turned to a light purple hue, after some time. Iodide of potassium dissolves iodine freely; the new salt dissolves it but sparingly, unless when in a concentrated solution. Iodate of potassium is colored red by solutions of morphia; no coloration is produced by them in solutions of the new salt. This last reaction is important, as iodate of potassium is deemed poisonous by some physicians.

TASTELESS CHLORIDE OF IRON.

Sesquichloride of iron, the salt which enters in the preparation generally known as tincture of muriate of iron, has the property of forming combinations precisely similar to those of the sesqui-iodide. If an alkaline citrate be added to a solution of sesqui-chloride of iron, in the proportion of two equivalents of the former to each three equivalents of chlorine, a new salt will be obtained of a green color, quite tasteless, and miscible with vegetable preparations such as infusions of bark, quassia, etc., without change or discoloration.

This tasteless muriate of iron may be dissolved in diluted alcohol in the porportion required by the Pharmacopœia of the United States; it forms, then, a tincture of muriate of iron, which is as superior to the old one as a civilized man is above a barbarian. Its effects, I know, from experience, are fully equal to those of the officinal tincture.

I cannot give the exact weight of citric acid required for a given quantity of the officinal tincture of muriate of iron, on account of the great variation in the strength and acidity of that preparation, but, on an average, 90 to 100 grains of citric acid saturated with either soda or ammonia will answer for one fluid ounce of the tincture. This is to be added to the iron solution before the alcohol, and the alcoholic strength of the tincture, when finished, must not be more than 30 or 40 p. c. instead of 70 p. c. as usual.

The sesqui-sulphate and the sesqui-nitrate of iron form also combinations precisely alike to those described above, but present no special interest to be entitled to more than a simple mention.

All these new combinations, however, lack the property of coagulating the blood, and for that reason cannot be used as styptics in cases of hemorrhagia, etc. The old officinal preparation will have to be retained for external use, the only thing they are fit for in a civilized community.

NOTE.—The tasteless iodide of iron has been patented, but with no intention of interfering with any druggist who wishes to make it himself for his own dispensing.

CULINARY ESSENCES.*

BY ALBERT B. EBERT.

Flavor of Almond.

Take of Oil of bitter almonds, one fluid drachm.
Alcohol, 95%, ten fluid-ounces.
Water, six fluid-ounces
Dissolve the oil in the alcohol and add the water, and filter.
This flavor should not be sold without a caution as to its poisonous nature, and directions as to the quantity to be used.

Flavor of Caraway.

Take of Caraway seed, bruised, one troy ounce.
Oil of Caraway seed, two fluid drachms.
Diluted alcohol, sixteen fluid-ounces.
Digest for 8 or 10 days, and filter.

Flavor of Celery.

Take of Celery seed, bruised, four troy ounces.
Diluted alcohol, sixteen fluid-ounces.
Digest for 8 or 10 days, and filter.

Flavor of Cinnamon.

Take of Ceylon cinnamon, bruised, two troy ounces.
Oil of cinnamon, half a fluid-drachm.
Diluted alcohol, sixteen fluid-ounces.
Digest for 14 days, and filter.

Flavor of Cloves.

Take of Cloves, bruised, one troy ounce.
Oil of cloves, two fluid-drachms.
Diluted alcohol, sixteen fluid-ounces.
Digest for 8 or 10 days, and filter.

Flavor of Ginger.

Take of Ginger root, bruised, two troy ounces.
Wild ginger, (asarum) bruised, one drachm.
Lemon peel, bruised, one troy ounce.
Diluted alcohol, sixteen fluid-ounces.
Macerate for 14 days, and filter.

Flavor of Lemon.

Take of Lemon peel (fresh), cut thin, two troy ounces.
Oil of Lemon (fresh), one fluid-ounce.
Alcohol, 95%, twelve fluid-ounces.
Water, four fluid-ounces.
Digest for 8 or 10 days, and filter.

* From the Pharmacist.

Flavor of Nutmegs.

Take of Nutmegs (grated), one troy ounce.
Oil of nutmegs, two fluid drachms.
Diluted alcohol, sixteen fluid-ounces.
Digest for 8 or 10 days, and filter.

Flavor of Orange.

Take of Orange peel (fresh), cut thin, two troy ounces.
Oil of orange (fresh), half a fluid ounce.
Alcohol, 95%, twelve fluid-ounces.
Water, four fluid-ounces.
Digest for 8 or 10 days, and filter.

Flavor of Rose.

Take of Red rose leaves in coarse powder, half a troy ounce.
Oil of rose, pure, five drops.
Alcohol, 95%, six fluid-ounces.
Water, 10 fluid-ounces.
Dissolve the oil in the alcohol, mix with the water and macerate the rose leaves for 8 or 10 days in the menstruum, and filter.

Flavor of Tonqua Bean.

Take of Tonqua bean, bruised, four troy ounces.
Orris root, in powder, half a troy ounce.
Diluted alcohol, sixteen fluid-ounces.
Digest for 14 days, and filter.

Flavor of Vanilla.

Take of Vanilla bean, cut very small, two troy ounces.
Diluted alcohol, sixteen fluid-ounces.
Digest for 3 or 4 weeks, and filter.

Flavors of banana, pineapple, raspberry and strawberry, termed fruit essences, are alcoholic solutions of the amyl and ethyl ether series.

Flavor of Pineapple.

Take essence of pineapple (artificial), six fluid-drachms.
Diluted alcohol, fourteen fluid-ounces.
Simple Syrup, one fluid-ounce.
Tincture of Cinnamon, two fluid-drachms.
Mix.

Flavor of Raspberry.

Take of Essence of Raspberry (artificial), one fluid-ounce.
Diluted alcohol, twelve fluid-ounces.
Syrup of raspberry (fruit), two fluid-ounces.
Tincture of orris root (four ounces to the pint).
Tincture of cochineal, of each half a fluid-ounce.
Mix.

Flavor of Strawberry.

Take of Essence of Strawberry (artificial), one fluid-ounce.
Diluted alcohol, thirteen fluid-ounces.
Syrup of raspberry (fruit).
Syrup of pineapple (fruit), of each six fluid-drachms.
Tincture of cochineal, of each half a fluid-ounce.
Mix.

STUPIDITIES.

Under this head, Dr. Hall, in his *Journal of Health*, for March, 1873, humorously discourses on the tendency of the times, as follows:—"It is really a great wonder that everybody is not dead and buried, and the world itself used up entirely, if the thousandth part of what is told us about microscopical and other 'discoveries,' so called, is true. One man will have it that the glorious Union over which the stripes and stars float so proudly will soon become depopulated, because respectable people don't have children; another has discovered myriads of bugs in the chatelaines and waterfalls of the ladies, boring into their skulls, and sucking out all the remaining brains of the dear delightfuls. A German *savan* now tells us that every sip of tea we take is full of oily globules, which get into the lungs direct, weaken them, set up a cough, and the person dies of consumption. Another man has found that the purest spring water, clear as crystal to all appearance, if let alone, will deposit a sediment which generates typhoid fever; hence he proposes that everybody shall quit drinking water. Another says that bread has so much lime in it that it is turning us all to bone, and makes us stiff in the joints, that being the reason we have no lithe, sprightly old men nowadays; hence we are full of limps and rheumatics long before our time; therefore we had better quit eating bread altogether, and live on rice and sago and tapioca. The water cure folk assure us that pork and beans and ham and eggs are full of abominable *trichinæ*, and that, if one is swallowed, and gets fairly nestled into the system, he, she, or it will breed a million more in a short time, and that roast beef has juvenile tapeworms in it. And here come Tom, Dick, and Harry, all in a row, loaded down with microscopes and spy-glasses, which show as plain as day that the air is swarming with living monsters and putrid poisons, which fly into the mouth, and crawl up the nose, and creep into the ear; hence it is death to breathe such pestilential air, and that the best way is to keep the mouth shut, plug up the nose, and ram cotton into the ears. Ever so many learned professioal gentlemen have been torturing poor figures for years to make them tell the stupendous fib that everybody is either crazy or soon will be; that the annual increase is 10

per cent, consequently in eleven years everybody will be crazy, and more too. The fact is that the people who spend their time in hatching out these tom-fooleries ought to be put to work, and be made to earn an honest living This world has been pretty well taken care of for some thousands of years, increasing in comfort and wealth and life, the average length of which last has doubled within two centuries, and the population increased perhaps threefold; and the presumption is that the Great Maker of all will so arrange all the antagonistic forces of life for the future as eventually to make 'the wilderness and solitary place to be glad, and the desert to rejoice and blossom as the rose,' and the race by happy still."—*Chemist & Druggist.*

THE DIFFERENCE BETWEEN BENZOLE AND BENZINE.

So much confusion prevails, in consequence of the indiscriminate use of the words benzole and benzine, that it may be proper to state what these substances really are, and in what particulars they differ, and in what they are alike.

In the year 1825, Faraday discovered a peculiar liquid in the holders which at that time were used for conveying illuminating gas to private houses in London. He gave to it the name of bicarburet of hydrogen, and published a pretty full account of its properties. Nearly ten years afterwards, the Berlin chemist Mitscherlich produced the same substance from benzoic acid, and in allusion to its origin he proposed the name benzine. Liebig reprinted Mitscherlich's article in his "Annalen," and in a foot note remarks that, as the termination *ine* is too suggestive of strychnine, quinine, etc., bodies with which it has no analogies, it would be better to change the word into benzole, and this he accordingly did. It was thus that the word benzole was first introduced into our language. The French writers adhered to Mitscherlich's original name, and in their dictionaries we find the word benzine, while the English have adopted Liebig's proposition, and speak of benzole. We should have been spared much confusion if Faraday's original name had been retained by all parties.

It will thus be seen that, at the outset, benzine and benzole meant identically the same thing, but after the discovery of petroleum it was observed by chemists that the native rock oil was quite a different substance from the coal product of the gas house. The various hydrocarbons which can be distilled from petroleum have a different chemical composition, and vary in specific gravity and properties from the coal tar products. Benzole has a fixed molecular composition; it is a true chemical compound, as much

so as alcohol or water; its properties have been fully studied and described, so that on this point no doubts need prevail. On the other hand, the volatile substances which come over during the fractional distillation of petroleum are of a mixed and indefinite character, and it is difficult for chemists to agree upon a definite specific gravity, boiling point, etc. By degrees it has become customary in the United States to call the liquid which has the specific gravity of 62° to 65° Baume (=0.73) benzine; the lighter hydrocarbons are called naptha, rhigoline, and chymogene; the latter is condensed by pumps and is used for an ice machine. This class of liquids differs considerably from the true benzole of coal tar; the latter has a specific gravity of 0.85, and freezes at 37° Fah. The light oils of petroleum have never been frozen, and their specific gravity is very low; any product of the distillation of petroleum having so great a specific gravity as 0.85 (that of benzole) would be too thick to burn in a lamp and could only be used for lubricating purposes. The solvent properties of benzole and benzine are analogous, though by no means indentical; benzole rapidly dissolves asphaltum while benzine scarcely attacks it; benzole is a better solvent of resins; benzole is far superior to benzine in carbureting air or gas for illuminating purposes. The most marked difference between the two exists in the fact that benzole can be converted by nitric acid into nitro-benzole, and by further treatment into aniline; whereas benzine from petroleum is not thus acted upon, and cannot be employed in the manufacture of aniline colors. Benzine can be readily ignited at a distance, while benzole must have the flame brought a little nearer; although it is volatile at all temperatures, and gives rise to explosive compounds. Benzole costs from six to eight times as much as benzine, according to the state of the market. Nearly all the benzole of the world is sent to Germany to be there manufactured into aniline, from which are subsequently made the favorite aniline colors. It will thus appear that although benzine and benzole started into life meaning one and the same thing, they have, in the course of time, come to be two widely different substances. Benzole is made from coal tar, benzoic acid, and numerous other bodies, and can be converted into aniline. Benzine comes from petroleum, is very light, cannot be frozen, and cannot be converted into aniline. We find from our foreign exchanges that the English, French and German writers are beginning to recognize this distinction, and it will be better for all parties to agree upon what boiling point, specific gravity, and chemical formula they will adopt for benzine. Benzole contains about 92.5 per cent. carbon, and 7.5 per cent hydrogen; benzine is approximately composed of 84 per cent. carbon and 16 per cent. hydrogen. In America, therefore, benzole and benzine mean different bodies of different origin, and having different uses.—*Scientific American.*

IMPROVED FORMULA FOR CAMPHOR WATER.*

BY WM. B. ADDINGTON, NORFOLK, VA.

℞.	Camphoræ, ...	ʒiv,
	Magnes. Carb., ...	ʒii,
	Aquæ Destillat., ...	Oiv.
	Alcohol., ...	q. s.

Take just enough alcohol to dissolve the camphor and bring it to a liquid state; while liquid add the magnesia and triturate (during this time the alcohol will evaporate). Then mix the water, as usual, and filter. By making a perfect solution of the camphor, the particles are thoroughly divided, whereas by the U. S. P. process only enough alcohol is added to break up the adhesion of its particles and reduce it to powder, and all must have noticed the numerous small grains of camphor left on the filter by the present process. Camphor water is made by the process I suggest in one-half the time; magnesia is saved by it, and all the camphor directed is taken up in the solution. By the present process it is not. There is no deposit formed on the bottom or sides of the jar by standing. I have tried this formula for the last eight months, and am very much pleased with it.

PURE ANIMAL CHARCOAL.

The ordinary animal charcoal has a low decolorizing power, and is often largely contaminated with gypsum. A large amount is consequently needed in any operation which involves tedious washing, to escape loss and equally tedious filtration. Graeger obtains a pure animal charcoal by the following process:—The ordinary commercial bone-black is boiled with from four to six parts of water, containing 4 to 5 per cent. of crystalized carbonate of soda. The whole is then allowed to settle, which requires three or four days. The liquid is then run off and washed by decantation, allowing each time perfect subsidence. It is then treated with equal parts of hydrochloric acid and water, heat being applied. A sufficiency of acid must be used. It is not sufficient that a faint acid reaction should be produced. The action of the acids should be continued till a few drops of the solution, when filtered, do not give an immediate precipitate with ammonia. It is then subjected to prolonged washing till no trace of acid remains, and then dried at 100° to 120° C—*Druggist Circular.*

*From the American Journal of Pharmacy.

Editorial.

ELECTION OF COUNCIL.

The issue of this number of the JOURNAL has been delayed a few days beyond the ordinary time in order that our readers may be made acquainted with the result of the election which took place on Wednesday, July 2nd. The candidates who were nominated and consented to stand numbered twenty-five, and of these the thirteen who obtained the greatest number of votes will compose the Council for the next two years. One hundred and ninety-two voting-papers were returned, and at the close of the examination of these the number of votes cast for each successful candidate was found to be as follows:

1. B. LYMAN	Toronto	180
2. W. SAUNDERS	London	172
3. H. MILLER	Toronto	160
4. J. W. BICKLE	Hamilton	157
5. E. H. PARKER	Kingston	117
6. J. ROBERTS	Ottawa	114
7. J. T. SHAPTER	Toronto	111
8. E. HARVEY	Guelph	109
9. C. BRENT	Port Hope	107
10. G. HODGETTS	Toronto	106
11. L. W. YEOMANS	Belleville	106
12. F. JORDAN	Goderich	104
13. S. J. PARKER	Owen Sound	93

It will be seen that seven out of the thirteen members comprising the late Council have been re-elected, the remaining six being new members. We trust that this liberal infusion of new blood will soon begin to show itself in an increase of vigor and energy in the working of the Council.

It will also be noticed that the distribution of representatives throughout the Province is more fairly equalized than formerly, and that ten separate districts are represented, Toronto returning four members against six as during the past term.

The first meeting of the Council will take place on Wednesday, August 6th, when the election of officers will take place. This is the most important meeting which the Council will have to attend, and it is hoped that every member will be in his place.

CHEMIST AND DRUGGISTS' IMPROVEMENT SOCIETY OF LONDON, ONT.

This association is composed of assistants and apprentices residing in London, and has just completed the second year of its existence. We understand that, during this period, it has been instrumental in accomplishing much towards the advancement of knowledge amongst its members. Regular meetings have been held throughout the winter season, and systematic courses of study taken up. The principle adopted has been that of mutual assistance, and most of the work has been performed by the unaided exertions of the students themselves.

It gives us much pleasure to call attention to this rising association, not only as providing means for the better education of our young members, but as being almost the sole representative of the system of local organizations which was inaugurated and provided for by the College. It will be remembered that the Council strongly recommended the formation of these societies and granted to each a sum of money, the amount of which was to be determined by the number of students regularly attending a course of lectures, extending over a period of six months. It is somewhat strange, and in no wise creditable, that with two exceptions, the aid thus extended has not been taken advantage of. There are, however, still some persons to be found who refuse to pay their annual dues, or contribute with as grudging a hand as if they were compelled to assist an imposition, indeavoring to justify themselves by the allegation that whatever pecuniary benefits accrue from connection with the college are reaped by those who reside in this city. It would be vastly more consistent if those who hold these opinions would put their shoulders to the wheel and by a trifling effort perform the labor necessary to entitle them to claim, on behalf of their local interests, a share in the general distribution of funds. The assistants and apprentices of London have set the example, and we are well assured that the Council would only be too glad to respond to similar claims from every town in the province, provided their resources were equal to the demand.

From a letter we have received from Mr. Jos. Williams, Secretary of the London society, we learn that the average attendance at the classes in chemistry and materia medica was nine and a half. The

examinations were held on Friday, May 2nd, with the following result:—

MATERIA MEDICA.

	First Prize.	*Second Prize.*
2nd year apprentices ..	James H. Bowman,	C. E. Williams.
3rd " " ...	Fred. Hogg.	G. Anderson.

CHEMISTRY.

	First Prize.	*Second Prize.*
2nd year apprentices...	James H. Bowman.	C. E. Williams.
3rd " " ...	Fred. Hogg.	W. M. Moore.

Editorial Summary.

A NEW SOLUTION OF CHLORIDE OF IRON.—(Edward Butler, *Pharm. Jour. & Trans.*,) If the deposit from Liquor Ferri Alkalini, P. L., 1824, be collected and washed frequently, and added while moist to a weak solution of hydrochloric acid, (one fluid drachm acid to fifteen fluid drachms water) the solution, when filtered presents certain peculiarities. It has a deep garnet color; it has scarcely any taste, either of acid or iron, and is exceedingly astringent. The preparation is said by the author to answer to the Liq. Ferri Chloroxidi, mentioned by Mr. Squire, in his last edition of the *Companion to the Pharmacopœia.*

RESEARCHES ON SULPHOVINIC ACID.—In a letter to the President of the Paris Society of Pharmacy, published in the *Jour. de Pharm. et de Chemie*, and reproduced in the *Pharm. Jour. and Trans.*, Mr. Berthelot gives some interesting facts in relation to the production of sulphovinic acid from a mixture of sulphuric acid and alcohol. 1st. If the two bodies, previously cooled, be gradually mixed, avoiding rise of temperature, and keeping the whole at about 0° C., no reaction is, at first produced, but under the influence of prolonged contact a peculiar sulphovinic acid is gradually formed, giving a different and more unstable class of salts from the ordi-

nary acid. 2nd. Mixture of equivalent proportions of acid and absolute alcohol, without special precautions, gives rise to great disengagement of heat, followed by the production of ordinary sulphovinic acid, depending in quantity on the mode of mixing. Thus one part of sulphuric acid to five of alcohol gives, after one hour contact, 10 per cent of sulphovinic acid, and after 26 hours, 26 per cent., where one part of acid and two parts of alcohol are mixed the quantity of sulphovinic acid formed in twenty four hours was quite small, but in course of time the reaction progresses until the fixed limit is reached. From each 100 parts of sulphuric acid, the following yield was obtained:—After 40 hours, 56 per cent; 90 hours 59 per cent; 147 days, 58.8 per cent. 3rd. The reaction is greatly accelerated by heat. If the temperature of the mixture be kept at 100° C., 56 per cent of acid may be obtained in four hours. The further application of heat lessens the yield, for it was found that, at the expiration of ten hours, the quantity of acid present was only 42 per cent. This is due to the formation of ether. 4th. The production of ether becomes very plentiful at 145° C., and at 160 to 170° C., even ethylene is formed. The circumstances most favorable to the production of sulphovinic acid are therefore, that the mixture be raised to 100° C., and the heat be, after a short time, discontinued. The presence of water exercises an injurious effect in the reaction. Alcohol containing 25 per cent. of water, yielded, at the end of a month only 8 per cent of sulphovinic acid. These facts have an interesting bearing on the production of ether.

INFLUENCE OF WATER ON THE SULPHOVINATES.—In the paper referred to in the preceeding paragraph, M. Berthelot shows the action of water on this class of salts, decomposition ensuing, with reproduction of alcohol and acid. The salts are more slowly decomposed than is sulphovinic acid and it is in consequence of this that their solutions may be evaporated, but the solutions will not keep a great length of time. Neutral or alkaline solutions are more stable than if acid be present, and a little bi-carbonate of the alkali operated upon may be advantageously added in evaporation of solutions of the salts, the bi-carbonate remaining in the mother liquor. The author is unable to say whether a neutral sulphovinate, isolated in a crystalline state, and free from water, can be preserved; hitherto, all

the salts obtained contain water of crystallization, and after a longer or shorter time, perhaps even years, suffer decomposition.

FLUID EXTRACT OF VALERIAN CONTAINING GLYCERINE.—A correspondent of the *American Journal of Pharmacy* recommends the use of glycerine in preparing this fluid extract. The advantages claimed for the preparation are: its cheapness, when compared with the alcoholic product; the amount of time occupied in evaporation is less, as the material is exhausted by a smaller quantity of menstruum; lastly, that the preparation is superior to the officinal preparation. The pharmacopœial directions for preparing that class of extracts containing, when finished, four fluid ounces of glycerine, were followed, and the root was reduced to a "moderately fine powder."

A THIRD ALKALOID IN HYDRASTIS CANADENSIS.—From experiments made by A. K. Hall *(Am. Jour. Phar.)* it appears probable that there exists in hydrastis, another alkaloid besides berberina and hydrastia. After the berberina was removed from a watery percolate as a hydrochlorate, and also hydrastia by careful neutralization with ammonia, it was found that excess of ammonia produced another precipitate, more resembling berberina than hydrastia, but decidedly different from the former. The author does not determine the composition of this new substance, or even assert its existence as a third alkaloid, but obtained some reactions distinguishing it from the other alkaloids, which led him to make a note of the matter, and await further developments.

ADULTERATION OF CREAM OF TARTAR.—Geo. W. Kennedy *(Am. Phar. Jour.)* reports an examination of a sample which was found to contain five or six per cent. of tartarte of calcium, eight per cent. of ammonia alum, and two per cent. of starch.

REMEDY FOR CORNS.—A correspondent of the Philadelphia

Medical and Surgical Reporter says that an infallible cure may be effected by applying castor oil to the corn, after paring closely. The treatment should be repeated for several nights, or until the skin resumes its normal condition.

REMOVAL OF NITRIC ACID STAINS FROM THE HANDS.—It is said that a mixture of solutions of caustic potash and sulphate of ammonia will effect this object. It may be presumed that the skin will be removed at the same time as the stain.

NEW AND RAPID PROCESS FOR GENERATING SULPHURETTED HYDROGEN.—W. Skey, (*Chemical News*) describes a method which is said to be simple, expeditious and economical, and which has been used by the author, for over two years, giving entire satisfaction: Fragments of galena and granulated zinc, in proportions of about 1 to 1, are well mixed and put into a small apparatus of the kind generally in use for the preparation of this gas, and hydrochloric acid diluted with water (1 to 20 or so) poured upon them. Sulphuretted hydrogen is instantly given off, and its evolution is found to proceed energetically, regularly, and continuously for a great length of time—a length proportionate to that of the quantity of material used and its proper adjustment as to parts. A little hydrogen accompanies the gas named, and traces of hydrochloric acid. The acid is however, easily removed, by allowing it to pass through a little carbonate of lime before use, while the presence of hydrogen can have no bad effect for all ordinary purposes. After a sufficiency of the gas has been used it is best, in ordinary cases, simply to wash the galena and zinc with water, when the apparatus is ready for further use at a moment's notice; but when quantities are required in rapid succession a form of apparatus may be used which allows the separation of the acid liquid from the undecomposed substances within itself, when the delivery tube is closed.

Correspondence.

To the Editor of the Canadian Pharmaceutical Journal.

SIR,—In view of the coming Council meeting, I take this opportunity of addressing a few suggestions for publication in the JOURNAL, with the hope of attracting the attention of the Council to their import, and leading to a thorough discussion of their merits, which, I trust, may eventuate in an application for an amendment of the Pharmacy Act at the next meeting of the Legislature.

In consequence of the dissatisfaction now prevailing as to a renewal of the diploma, annually, by the payment of four dollars, or, in default, to forfeit membership and the right to dispense, thereby thus rendering the diploma void, would it not be better to grant a permanent diploma, as a guarantee that the party holding the same is properly qualified? Providing the College does not meet its own expenses, a tax might be levied, to be collected annually, without reference to the granting of a diploma, and in case of non-payment, to be sued as an ordinary debt. Such an alteration in the Pharmacy Act would, I believe, remove much harsh feeling, as a diploma should only be forfeited in case of felony or gross misconduct.

Much credit is due to the Council for its untiring and persevering efforts in laying a foundation for future and progressive prosperity, and every thinking man knows that they have had many difficulties to contend with hitherto; nevertheless their proceedings have shown an anxious interest for the welfare of all parties concerned. I have, therefore, much confidence in calling attention to the subject of education, and I think all will admit the propriety of raising the educational standard.

I would suggest that every student be required to matriculate during the course of his first year's apprenticeship, and that he be required to attend a course of lectures during his second year, and another course during his third year; then to graduate or pass an examination, paying suitable fees, as the College may define, for matriculation, lectures, graduating, diploma, and registration.

In making these suggestions I am guided by what a medical student has to expect, and as the Council has proposed to give assistance to pharmaceutical students, I think every student should expect to pay all reasonable fees ordered by the Council for the purpose of defraying the necessary expenses of the College. Medical students have to do so, and I think it is only just to every member of the College that our students should be required to do the same.

Some may object that they cannot lose the time to attend lectures, to which I reply that a provision can be made, making it a positive necessity, which, I think, none will deny. As to expense, none should aspire but those able and willing to pay, for apprenticeship does not cost them anything in Canada, whereas, in England they have to pay from fifteen to one hundred pounds, and spend five years in apprenticeship.

I would also suggest that a list of the members who have been registered, be published annually, and be *bona fide* evidence in all courts of law, thereby disposing of the necessity of framing and exposing a diploma, and being subject to carry the same into a court of law, in case of suing for a debt, should the defendant demand it.

I remain, yours respectfully,

J. H. BACHE.

Brantford, June 20: 1873.

Practical Formulæ

Waterproofing Cloth.—In a bucket of soft water, put half a pound of sugar of lead, and half a pound of powdered alum; stir this at intervals until it becomes clear, then pour it off into another bucket, and put the garment therein, and let it be in for twenty-four hours, and then hang it up to dry without wringing it. Two of my party—a lady and gentleman—have worn garments thus treated in the wildest storms of wind and rain, without getting wet. The rain hangs upon the cloth in globules. In short, they are really waterproof. The gentleman, a fortnight ago, walked nine miles in a storm of rain and wind, such as you rarely see in the South; and, when he slipped off his overcoat, his underclothes were as dry as when he put them on. This is, I think, a secret worth knowing; for cloth, if it can be made to keep out wet, is, in every way, better than what we know as most waterproofs."

Pomade of Castor Oil and Glycerine.—

Take of white wax	1½ ounce.
Glycerine	2 drachms.
Castor oil	12 ounces.
Essence of lemon	5 drachms.
Essence of lavender	1 drachm.
Essence of bergamot	2 drachms.
Oil of cloves	10 drops.
Annatto	10 grains.
Alcohol	
Water, distilled, of each	q s.

Dissolve the wax with moderate heat in a little of the castor-oil and triturate with the remainder of the oil and the glycerine until it is cool; then add the essences and the volatile oils. Finally, rub the annatto with a drachm of water until it is thoroughly suspended, add a drachm of alcohol, and stir the coloring matter into the pomade until it is intimately incorporated.—*Drug. Circular.*

An Explosion of a Mixture of Chlorate of Potassium and Tannin, we are informed, occurred again in this city on the sixth of April last, and the dispenser was severely injured thereby in the face and on the hands. On page 470 of the *American Journal of Pharmacy* for 1869, a similar case is recorded, and others have been noticed by medical, pharmaceutical and chemical journals of this country and elsewhere. The explosive nature of mixtures of chlorate of potassium with combustible and oxidizable materials is well known to chemists, and chemical works usually draw attention to the danger attending the mixing of such articles in a dry state in a mortar or with pressure. Chemical students are familar with the lecture experiment of producing detonations by triturating the chlorate with some sulphur; such detonations unaccompanied by danger, are liable to occur even on rubbing, with some pressure, chlorate of potassium in a dusty mortar. The experiment, however, becomes at once dangerous, as soon as a sufficient quantity of a combustible article has been incorporated with the powdered chlorate, and the explosiveness of such mixtures increases with with the combustibility of their ingredients. The blasting and so-called white gun-powders which were recommended some twenty years ago, are such mixtures. The former contain red sulphuret of arsenic or ferrocyanide of potassium, or both, and their danger was made manifest by an accident which happened to the inventor and patentee, Mr. Callow, who was rendered a cripple for life. Such explosions are not only liable to take place by rubbing or by a blow, but also on the addition of acids sufficiently concentrated to decompose a portion of the chlorate and locally heat the mixture. Strong sulphuric acid is especially dangerous from the last named causes. Whenever chlorate of potassium is prescribed in the form of powder mixed with *any organic* or with an *oxidizable inorganic* compound, the only safe way to dispense such a proportion is to triturate the materials *separately* until they are reduced to a fine powder, and then mix the powders intimately upon paper without friction. In preparing gargles and other liquid medicines containing such ingredients, the latter should never be mixed in a mortar until after a sufficient quantity of water has been added. But even though such *dry* mixtures may be prepared by the pharmacist without danger to himself, we question whether the physician is justified to prescribe them, considering the danger to which he exposes his patient. Several years ago. we remember that such a mixture exploded, from some cause or other in the house of the patient, happily, however, without doing any injury, except setting fire to a few contiguous articles. —*American Journal of Pharmacy.*

DRUGS, MEDICINES, &c.	$ c.	$ c.
Acid, Acetic, fort	0 14 @	0 15
Benzoic, pure	0 25	0 35
Citric	1 60	1 70
Muriatic	0 05	0 06
Nitric	0 11½	0 15
Oxalic	0 27	0 30
Sulphuric	0 03¾	0 07
Tartaric, pulv	0 50	0 50
Ammon, carb. casks	0 23	0 24
" jars	0 23	0 24
Liquor, 880	0 25	0 28
Muriate	0 14	0 15
Nitrate	0 45	0 60
Æther, Acetic	0 45	0 50
Nitrous	0 35	0 37
Sulphuric	0 50	0 50
Antim. Crude, pulv	0 13	0 17
Tart "	0 65	0 70
Alcohol, 95 per ct.....Cash	1 60	1 72
Arrowroot, Jamaica	0 16	0 22
Bermuda	0 50	0 65
Alum	0 02¾	0 03½
Balsam, Canada	0 45	0 50
Copaiba	0 85	0 90
Peru	3 80	4 00
Tolu	0 50	1 00
Bark, Bayberry, pulv	0 20	0 22
Canella	0 17	0 20
Peruvian, yel. pulv	0 42	0 50
" red "	2 10	2 20
Slippery Elm, g. b	0 15	0 20
" flour, packets	0 28	0 32
Sassafras	0 15	0 20
Berries, Cubebs, ground	0 20	0 25
Juniper	0 06	0 10
Beans, Tonquin	0 62	1 10
Vanilla	24 00	28 00
Bismuth, Alb	3 60	4 00
Carb.	3 65	4 00
Camphor, Crude	0 38	0 40
Refined	0 45	0 50
Cantharides	2 80	3 00
Powdered	2 85	3 10
Charcoal, Animal	0 04	0 06
Wood, powdered	0 10	0 15
Chiretta	0 20	0 30
Chloroform	1 25	1 65
Cochineal, S. G	0 80	0 95
Black	1 10	1 20
Colocynth, pulv	0 50	0 60
Clolodion	0 95	1 00
Elaterium.....oz	5 80	5 90
Ergot	0 50	0 60
Extract Belladonna	2 00	2 25
Colocynth, Co	1 25	1 75
Gentian	0 50	0 60
Hemlock, Ang	0 85	0 95
Henbane, "	2 10	2 40
Jalap	5 00	5 50
Mandrake	1 75	2 00
Nux Vomic.....oz	0 40	0 50
Opium.....oz	1 50	
Rhubarb	5 00	5 50
Sarsap. Hon. Co	1 00	1 20
" Jam. Co	4 00	4 50
Taraxicum, Ang	0 70	0 80
Flowers, Arnica	0 25	0 35
Chamomile	0 32	0 40
Gum, Aloes, Barb. extra	0 70	0 80
" " good	0 40	0 50
" Cape	0 16	0 20
" " powdered	0 20	0 30
Socot	1 05	1 35
" " pulv	1 00	0 00
Arabic, White	0 70	0 75
" powdered	0 60	0 75
" sorts	0 28	0 30
" " powdered	0 42	0 50
" com. Gedda	0 13	0 16
Assafœtida	0 35	0 42
British or Dextrine	0 13	0 15
Benzoin	0 35	0 75
Catechu	0 12	0 15
" powdered	0 25	0 30
Euphorb, pulv	0 35	0 40
Gamboge	1 40	1 50
Guaiacum	0 35	1 00
Myrrh	0 50	0 70

DRUGS, MEDICINES, &c.—*Contd.*	$ c.	$ c.
Sang Dracon	0 60	0 70
Scammony, powdered	6 50	6 75
" Virg. "	14 50	—
Shellac, Orange	0 55	0 60
Gum, Shellac, liver	0 50	0 52
Storax	0 40	0 45
Tragacanth, flake	1 10	1 40
" common	0 53	0 65
Galls	0 28	0 32
Gelatine, Cox's 6d	1 15	1 20
Glycerine, common	0 25	0 30
Vienna	0 32	0 40
Prices	0 60	0 75
Honey, Canada, best	0 15	0 17
Lower Canada	0 14	0 16
Iron, Carb. Precip	0 20	0 25
" Saccbar	0 40	0 55
Citrate Ammon	1 50	1 50
" & Quinine, oz	0 55	0 60
" & Strychine "	0 17	0 25
Sulphate, pure	0 08	0 10
Iodine, good	8 75	9 00
Resublimed	9 50	—
Jalapin	1 25	1 50
Kreosote	2 40	2 50
Leaves, Buchu	0 22	0 30
Foxglove	0 25	0 30
Henbane	0 35	0 40
Senna, Alex	0 27	0 60
" E. I.	0 14	0 20
" Tinnevilly	0 20	0 30
Uva Ursi	0 15	0 17
Lime, Carbolate.....brl	5 50	—
Chloride	0 06	0 07
Sulphate	0 08	0 12½
Lead, Acetate	0 14	0 15
Leptandrin.....oz.	0 60	—
Liq. Bismuth	0 50	0 75
Lye, Concentrated	1 75	2 00
Liquorice, Solazzi	0 50	0 55
Cassano	0 23	0 40
Other brands	0 14	0 25
Liquorice, Refined	0 35	0 45
Magnesia, Carb..... 1 oz.	0 20	0 25
" ..... 4 oz.	0 17	0 20
Calcined	0 65	0 75
Citrate.....gran.	0 50	0 55
Mercury	1 30	1 35
Bichlor	1 15	1 20
Chloride	1 35	—
C. Chalk	0 65	—
Nit. Oxyd	1 50	—
Morphia Acet	4 45	4 60
Mur.	4 45	4 60
Sulph	4 60	4 75
Musk, pure grain.....oz	23 00	—
Canton	0 90	1 20
Oil, Amonds, sweet	0 42	0 50
" bitter	14 00	15 00
Aniseed	4 00	4 25
Bergamot, super	6 25	6 50
Carraway	3 20	3 50
Cassia	2 80	2 90
Castor, E. I	0 15	0 15
Crystal	0 22	0 25
Italian	0 26	0 28
Citronella	1 35	1 50
Cloves, Ang	2 20	2 40
Cod Liver	1 5	1 50
Croton	1 75	2 00
Juniper Wood	0 80	1 00
Berries	6 00	7 00
Lavand, Ang.....oz	0 90	1 00
Exotic	1 40	1 60
Lemon, super	5 00	5 50
ord	3 20	3 40
Orange	4 00	4 25
Origanum	0 65	0 75
Peppermint Ang	13 00	14 40
" Amer	3 50	3 75
Rose, Virgin	8 50	8 75
" good	6 80	7 00
Sassafras	0 90	1 00
Wintergreen	6 00	6 50
Wormwood, pure	4 00	6 50
Ointment, blue	0 90	1 00
Opium, Turkey	8 25	8 50
pulv	10 25	10 50

DRUGS, MEDICINES, &c.—*Cont'd*	$ c.	$ c
Orange Peel, opt.	0 30	0 36
" good	0 12½	0 20
Pill, Blue, Mass	1 00	1 00
Potash, Bi.chrom	0 23	0 27
Bi-tart	0 33	0 35
Carbonate	0 14	0 20
Chlorate	0 65	0 70
Nitrate	10 50	11 00
Potassium, Bromide	11 5	1 40
Cyanide	0 75	0 80
Iodide	8 50	9 00
Sulphuret	0 25	0 35
Pepsin, Boudault's oz	1 50	—
Houghton's doz.	8 00	9 00
Morson's oz.	0 85	1 10
Phosphorus	0 95	1 00
Podophyllin	0 50	0 60
Quinine, Pelletier's	—	2 45
Howard's	2 45	—
" 100 oz. case.	2 40	—
" 25 oz. tin.	2 40	—
Root, Colombo	0 13	0 20
Curcuma, grd	0 12½	0 17
Dandelion	0 17	0 20
Elecampane	0 16	0 17
Gentian	0 10	0 12½
" pulv	0 15	0 20
Hellebore, pulv	0 17	0 20
Ipecac, "	1 50	1 60
Jalap, Vera Cruz	1 00	1 25
" Tampico	0 70	1 00
Liquorice, select	0 12	0 13
" powdered	0 15	0 20
Mandrake "	0 20	0 25
Orris, "	0 20	0 25
Rhubarb, Turkey	2 50	2 75
" E. I.	1 10	1 20
" " pulv	1 20	1 30
" " 2nd	0 90	1 00
" French	0 75	—
Sarsap., Hond	0 40	0 45
" Jam	0 88	0 90
Squills	0 10	0 15½
Senega	1 20	1 30
Spigelia	0 40	0 45
Sal., Epsom	2 25	3 00
Rochelle	0 32	0 35
Soda	0 02½	0 03
Seed, Anise	0 13	0 16
Canary	0 05	0 06
Cardamon	2 25	2 50
Fenugreek, g'd	0 09	0 10
Hemp	0 06½	—
Mustard, white	0 14	0 16
Saffron, American	1 15	1 50
Spanish	15 00	17 00
Santonine	8 25	9 00
Sago	0 08	0 09
Silver, Nitrate Cash	14 85	16 50
Soap Castile, mottled	0 11	0 14
Soda Ash	0 04	0 05
Bicarb. Newcastle	—	6 50
" Howard's	0 14	0 16
Caustic	0 06½	0 06¾
Spirits Ammon., arom	0 35	0 35
Strychnine, Crystals	2 60	2 70
Sulphur. Precip	0 10	0 12½
Sublimed	0 03½	0 05
Roll	0 03	0 04½
Vinegar, Wine, pure	0 55	0 60
Verdigris	0 35	0 40
Wax, White, pure	0 75	0 80
Zinc. Chloride oz	0 10	0 15
Sulphate, pure	0 10	0 15
" common	0 06	0 10
DYESTUFFS.		
Annatto	0 35 @	0 60
Analine, Magenta, cryst	3 00	4 00
liquid	2 00	—
Argols, ground	0 15	0 25
Blue Vitrol, pure	0 10	0 10
Camwood	0 06	0 09
Copperas, Green	0 01½	0 02½
Cudbear	0 16	0 25
Fustic, Cuban	0 02½	0 04
Indigo, Bengal	2 40	2 50
Madras	0 95	1 10
Extract	0 30	0 35

DYESTUFFS—*Continued.*		
Japonica	0 06⅝	0 07
Lacdye, powdered	0 33	0 38
Logwood	0 02	0 03
Logwood, Camp	0 02	0 3½
Extract	0 10	0 14
" 1 lb. bxs	0 14	—
" ½ lb. "	0 15	—
Madder, best Dutch	0 16	0 17
2nd quality	0 14	0 16
Quercitron	0 03	0 05
Sumac	0 06	0 08
Tin, Muriate	0 10½	0 12½
Redwood	0 05	0 06
SPICES.		
Allspice	0 11½@	0 12
Cassia	0 39	0 40
Cloves	0 21	0 22
Cayenne	0 30	0 35
Ginger, E. I.	0 16	0 17
Jam	0 20	0 30
Mace	1 75	1 75
Mustard, com	0 20	0 25
Nutmegs	1 15	1 20
Pepper, Black	0 22½	0 23
White	0 48	0 50
PAINTS, DRY.		
Black, Lamp, com	0 07 @	0 08
" refined	0 25	0 30
Blue, Celestial	0 08	0 12
Prussian	0 65	0 75
Brown, Vandyke	0 10	0 12½
Chalk, White	0 01	0 01½
Green, Brunswick	0 07	0 10
Chrome	0 16	0 25
Paris	0 30	0 35
Magnesia	0 20	0 25
Litharge	0 07	0 09
Pink, Rose	0 12½	0 15
Red Lead	0 07	0 08
Venetian	0 02½	0 03½
Sienna, B. & G	0 10	0 15
Umber	0 07	0 10
Vermillion, English	1 50	1 60
American	0 25	0 35
Whiting	0 85	0 90
White Lead, dry, gen	0 08	0 09
" " No. 1	0 07	0 08
" " No. 2	0 05	0 07
Yellow Chrome	0 12½	0 35
" Ochre	0 02½	0 03½
Zinc White, Star	0 10	0 12
COLORS, IN OIL.		
Blue Paint	0 12 @	0 15
Fire Proof Paint	0 06	0 08
Green, Paris	0 30	0 37½
Red, Venetian	0 07	0 10
Patent Dryers, 1 lb tins	0 11	0 12
Putty	0 03¾	0 04½
Yellow Ochre	0 08	0 12
White Lead, gen. 25 lb. tins	2 50	—
" No. 1	2 25	—
" No. 2	2 00	—
" No. 3	1 75	—
" com	1 30	—
White Zinc, Snow	2 75	3 25
NAVAL STORES.		
Black Pitch	5 00 @	5 25
Rosin, Strained	5 50	—
Clear, pale	7 80	—
Spirits Turpentine	0 60	0 65
Tar Wood	5 50	5 75
OILS.		
Cod	0 63 @	0 65
Lard, extra	0 90	—
No. 1	0 80	0 85
No. 2	0 75	0 90
Linseed, Raw	0 76	0 80
Boiled	0 81	0 85
Olive, Common	1 10	1 20
Salad	1 80	2 30
" Pints, cases	4 20	4 40
" Quarts	3 25	3 50
Seal Oil, Pale	0 75	0 80
Straw	0 68	0 75
Sesame Salad	1 30	1 35
Sperm, genuine	2 20	2 40
Whale refined	0 90	0 95