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Original and Selected Papers.

ON TINCTURE OF PERCHLORIDE OF IRON OF THE BRITISH AND U. S. PHARMACOPŒIAS.

BY E. B. SHUTTLEWORTH.

In making any remarks on tincture of perchloride of iron, it is almost necessary to preface them by an apology for attempting to add anything to a subject which has already been so well-nigh exhausted. With pharmaceutical writers, few themes have been so prolific as this, but this triteness is, in great measure, excused by the importance of the topic. There is, perhaps, no tincture of greater consequence; either when considered in regard to its medicinal effects, or its general and extensive application.

In comparing the older method of preparation with that at present ordered to be employed, it is a question of some difficulty to decide which is to be preferred. The greater ease with which the old process of dissolving the hydrated oxide may be performed is more than counter-balanced by the unreliable character of the product. And though the more recent method furnishes a tolerable tincture, it is attended with considerable inconvenience in carrying

out its details. It is the opinion of the writer that if the same amount of care and labor were expended in the preparation of the oxide, and in its subsequent solution, which are, of necessity, bestowed in making the perchloride directly from the metal, the quality of the product would be favorable to the former. The quantity of acid can be regulated with a greater nicety, and though, at present, both the formulas of the British and United States Pharmacopœias indicate that a considerable excess of acid is intended, it is questionable whether the preparation is exactly what the designers of the old tincture desired it to be. In tonic effect the present tincture is perhaps in advance of the other, as the excess of acid would tend to this result, but the injury done to the teeth of the patient is much greater. And it may further be assumed, that if the physician wishes to employ a mineral acid, he should be left at liberty to do so, and not be forced to administer that agent whenever he treats his patient with iron.

Some years ago a process for making tincture of iron was designed by R. Rother,* in which the disagreeable employment of the nitric acid was avoided by the substitution of an equivalent of chlorate of potassium. Shortly after the publication of this notice, I made a pint of tincture by that formula, but used no more hydrochloric acid, than was, theoretically, necessary. It has remained perfectly clear and free from deposit up to the present time—a period of three years. Of course it contains chloride of potassium, and could not be substituted for the officinal tincture, but, nevertheless, the process is worthy of note.

In a former paper† I have indicated the method which I have found most advantageous in making the solution of iron, so that this part of the subject need not be pursued further. It may, however, be said that as the specific gravity of the liquor was then found to be 1.443, instead of 1.338, the density of the tincture will vary in like proportion.

The tincture of iron of the British Pharmacopœia, and that of the United States, are generally believed to be identical in strength, and are so stated by some authorities. There is, however, a difference of about ten per cent., which Canadians, who are in the habit

* Pharmacist and Chemical Record, Vol. II. No. 1; and Canadian Pharmaceutical Jour., Vol. II .No. 17.

† Can. Phar. Jour., Vol. VI. No. 57.

of using the two preparations indiscriminately, should take a note of. This is evident from the following considerations:—The British tincture contains 875 grains of iron in two imperial pints, or 18.440 wine minims; which is equivalent to 22.77 grains of iron in a wine ounce. In the United States formula, 1440 grains of iron are ordered to 11 troy ounces of hydrochloric acid, sp. gr. 1.160; but this amount of acid is only capable of dissolving 1304 grains. The tincture contains this quantity to 4 wine pints, or 30.720 minims; equalling 20.37 grains to the fluid ounce. The British tincture has, therefore, 2.4 grains of iron in each wine ounce more than the U. S. preparation; in other words, 9 parts of the former are nearly equal to 10 of the latter.

The keeping qualities of the tincture have given rise to considerable discussion, but if the directions of either of the pharmacopœias alluded to be carried out by an experienced hand, little objection can be made in regard to this particular. Carefully corked samples may be preserved, without deposit, any reasonable length of time; and though it may be undoubtedly true that certain ethereal bodies are formed at the expense of the acid, the process is one of long duration, and the stock of free acid sufficient to last for a long period. The safest plan to ensure a satisfactory tincture, when the character of the solution of iron is not known, is undoubtedly to mix it with the spirit in such quantities as may be required for immediate use.

The peculiar etherial odor common to a tincture containing free muriatic or nitric acid, is, by some persons, supposed to be an evidence of superior preparation. In a discussson on this subject at the last Pharmaceutical Conference, held at Brighton, Professor Markoe, of Boston,* said that American pharmacists took especial care not to dispense the tincture until it had acquired this odor; and it appears that some British physicians hold the same opinion relating to this matter. It is quite possible that a minute quantity of ether, whether of chlorinated or nitrous origin, might have a slight therapeutic effect. What this peculiar body is we are not informed; nor is there any statement of the quantity which should be present in the tincture. Until these details are satisfactorily adjusted we can only speak of this odor as the evidence of decomposition, and rank it accordingly.

* Proceedings in Phar. Jour. and Trans., No. 117, p. 234.

The substitution of the alcohol in the tincture by an equivalent bulk of water, although urged so strongly by Dr. Attfield, and also recognized in the last edition of the B. P., gains ground but slowly. I cannot see that the tincture presents any advantages except a greater range of miscibility with liquids containing resinous or oily constituents, while on the score of economy and permanence the liquor has a decided advantage. The matter might be compromised by using one-fourth strong liquor, one-fourth water, and one-half spirit. With a tincture of this kind, a prescription of the kind spoken of by Mr. Hazelden,* in which two drachms of the tincture of iron are mixed with fourteen drachms of tincture of cinnamon, might be put up without any decomposition of the latter. I think the tincture would, in all other respects, be perfectly satisfactory.

SPECIFIC GRAVITIES OF THE LIQUIDS OF THE BRITISH PHARMACOPŒIA, 1867.†

BY CHARLES UMNEY.

The insertion of the specific gravities of most of the liquids in the British Pharmacopœia of 1867 was one of those prominent features which made it surpass its predecessor of 1864, and also the previous editions of the London, Edinburg and Dublin Pharmacopœias.

The compilers undoubtedly regarded a determination of the density of the officinal fluids, when compared with their behaviour with various reagents, as one of the most rapid mothods by which the value of such liquids could be estimated.

Had the "characters and tests" of the Pharmacopœia been enumerated without the addition of the specific gravities of the liquids, then they must have been considered as incomplete; on the other hand, if the specific gravities only had been given without the tests which have been wisely appended by the authors, then such data might have induced some to view a density determination as an infallible method of determining real value.

To the pharmacist, the record of these specific gravities is of vast importance, as he is thereby enabled to make a comparison of the density of those liquids he receives in a manufactured form with those published in the Pharmacopœia, aud thus judge approximately of their strength and purity.

* Phar. Jour. and Trans., No. 117, p. 234.

† Pharm. Jour. & Trans., Nov. 1872.

Again, to the pharmacist, whose chief aim is to vouch for the value of every preparation he dispenses, no better means can be found for checking the accuracy of his work than a determination of specific gravity; and comparison of the results with the data of the Pharmacopœia.

In order to test the accuracy of the specific gravities given in the Pharmacopœia, I have from time to time since its publication made notes of numerous determinations, and more especially in those cases in which I have found deviations from the officinal density; the discrepancies noticed are but few, taking into consideration the numerous figures there given.

Thinking the publication of those specific gravities, which in my hands have seemed to differ from those of the Pharmacopœia, would not only be interesting to the readers of the Journal, but also give other workers an opportunity of testing their accuracy, I have arranged side by side in the following table the specific gravities as noted by me and those of the British Pharmacopœia.

	B. P. Sp. Gr.	Sp. Gr. Found.
Acid. Sulphurosum (9·2 per cent.)	1·040	1·048
Ext. Cinchonæ Liquidum	1·100	1·122
Liq. Bismuthi	1·122	1·134
Liq. Calcis Chloratæ	1·035	1·050
Liq. Ferri Perchlorid. Fort.	1·338	1·445
Liq. Hyd. Nitratis Acidus	2·246	2·130
Liq. Plumbi Subacet.	1·260	1·270
Liq. Sodæ Chloratæ	1·103	1.090
Syr. Ferri Iodidi	1·385	1·400
Syr. Mori	1·330	1·298
Syr. Papaveris	1·320	1·330
Syr. Sennæ	1·310	1·320
Tinct. Ferri Perchloridi	·992	1·007

It cannot be to much impressed upon every pharmacist that, in order to insure the uniformity so much to be desired in medicine, it is absolutely necessary that he should make frequent gravity determinations of those liquids which pass through his hands.

To the manufacturer a knowledge of specific gravities is invaluable; having once verified the divisions on the scale of his hydrometer, he uses it without reserve; for by its indications he is enabled to judge of the care and diligence bestowed upon the fabrication of a solution, the compotent of which have previously come under his eye even although he has no opportunity of watching the process.

Acid. Sulphurosum.—It has been shown [PHARMACEUTICAL JOURNAL, vol. X. p. 516, and Proceedings of the Pharmaceutical Conference, 1869, p. 77] that a solution containing 9·2 per cent. of

sulphurous anhydride will have a specific gravity of 1·048 and not 1·040, and that a solution of 5 per cent., the strength now adopted, is of specific gravity 1·027.

Extract Cinchonæ Liquid.—It is directed to evaporate the aqueous extractive from one pound of Calisaya bark to three fluid ounces, or until the specific gravity be 1·200, and to this add one ounce of alcohol [·838]. The resulting liquor is said be to 1·100 (about).

I have found that a mixture of fluid extract of cinchona and spirit of wine of the density described will be of specific gravity 1·122. I would modify, therefore, these directions, not only because of this discrepancy, but because they are wholly based upon an error, for it is assumed that *three fluid ounces* of liquor can be obtained from one pound of bark, a yield much beyond the average, and which would be defined with more accuracy as *two fluid ounces*. If the present proportions of volume of cinchona extractive and spirit of wine are to be adhered to, then the Pharmacopœia should direct that one-third of its volume of spirit of wine should be added to the fluid extract of cinchona, when the specific gravity would be 1·122, If, however, a 1·100 density be as concentrated as it is thought necessary to prepare the fluid extract of cinchona, then the directions should be amended thus; Evaporate the liquors to *two fluid ounces*, or until the specific gravity be 1·175; to this add one-third of its volume of rectified spirit, when the resulting liquor will have a specific gravity of about 1·100 [1·102].

Liq. Bismuthi.—Although perhaps the officinal method is seldom resorted to for the production of the liquor, still it would be well to amend the specific gravity as it now stands in the Pharmacopœia, to 1·134.

Liq. Calcis Chloratæ.—In this preparation we have an example of specific gravity being no indication of strength, as the chlorinated lime from which the solution is prepared, is a mixture of variable proportions of hypochlorite, chloride and hydrate of calcium, the specific gravity being chiefly influenced by the chloride of calcium present. I looked upon the specific gravity 1·035, identical as it is with that of the Dublin Pharmacopœia, as an error; for in my hands using 30 per cent chlorinated lime the specific gravity has not been less than 1·050, and in taking good commercial chloride of lime I have found specific gravity to be 1·057. Good commercial chlorinated lime never contains less than 33 per cent. and sometimes as much as 37 per cent. of available chlorine. My experience has taught me that chlorinated lime is sent into the market for the use of druggists, of such a low chlorine value as would not be accepted as bleaching powder in any manufactury where purchase is preceded by analysis, unless offered at a reduction in proportion to its real value. I should suggest that in future chlorinated lime should be described as containing *one-third* of its weight [33·3 per cent.] of available chlorine. I append the results of a recent examination of specimens of Liq. calc. chloratæ, B. P., of pharmacy.

	Spec. grav.	Available Chlorine per cent.
Brit Pharm.	1·035	2·958
No. 1	1.045	1·830
No. 2	1·049	2·780
No. 3	1·042	·590
No. 4	2·600	1·053

These show that anything but uniformity exists; and that the maximum chlorine value is seldom or ever attained. In all probability, were the standard of the chlorinated lime raised to 33·3 per cent., then we might have a liq. calcis chloratæ containing 3 per cent of available chlorine.

Liq. Ferri Perchloridi Fortior.—It has been shown by Abraham (PHARM JOURNAL, vol IX. 2nd series, p. 272) that the specific gravity of this liquor should be 1.445 and not 1·338, and this I can corroborate. While writing upon this solution, I would suggest that in future a somewhat smaller quantity of nitric acid be used than is at present ordered, as the great excess over and above the theoretical quantity acts powerfully on the spirit of wine with which the liquor is diluted for tincture, and renders the tincture most unacceptible to those who were accustomed to the tincture made by the London Pharmacopœia process.

Liq. Hydrarg. Nitr. Acidus.—In my hands the directions of the Pharmacopœia have been insufficient to ensure a uniform result.

We are told to "boil (the solution of mercury in the acid) gently for fifteen minutes, cool, and preserve the solution in a stoppered bottle. Specific gravity 2·246." No mention is made of making up the product to a given weight or measure.

On the several occasions on which I have made the solution, I have never obtained it of the officinal density, 2·246. The greatest gravity I have noticed after fifteen minutes' gentle boiling has been 2·130, sometimes it has been much less. I would suggest that the following clause be added to the directions:—"Let the product be made to measure 5 oz. 1½ fluid drachms, or to weigh eleven ounces. The specific gravity should be 2·130.

Liq. Plumb. Subacet.—The directions for preparing this liquor are almost identical with those of the London Pharmacopœia, although the proportions are somewhat varied—

	Pharm. Lond.	Brit. Pharm.
Acetate of Lead	2167 grains.	2187·5 grains.
Litharge	1280 grains.	1531·2 grains.
Water	20 oz	20 oz

The increase in the acetate of lead is unimportant, but the proportion of litharge is nearly 20 per cent. (19·6) greater in the British than in

the London Pharmacopœia. In Phillips's translation of the London Pharmacopœia, 1851, the specific gravity is described as 1·260; and although the proportion of litharge has been thus augmented, in the British Pharmacopœia the solution is still said to be of specific gravity 1·260.

Now I have found that it is possible to obtain a solution when making a large quantity with the greatest ease at 1·285, and even in making a quantity of one pint, which I imagine is seldom done, the resulting liquor will have a density of 1·270. This, I should suggest, should be recognized minimum gravity of the officinal solution.

Liq. Sodæ Chloratæ.—Although I have scheduled this solution, and have given a specific gravity which, I think, would represent a solution of carbonate of soda, 12 oz, in 36 oz. water (1·100), into which chlorine (not dried) has been passed to saturation and increased thereby in weight 3·3 per cent,—still I have never been able to obtain a solution containing 2·535 per cent. of available chlorine by this officinal process, neither have I been fortunate enough to meet with any manufacturer who has ever been more successful.

The strongest solution I have produced has contained 2·02 per cent of available chlorine when examined immediately after production, with specific gravity 1·090, but this has rapidly decreased in value, on account of free chlorine being present, which, decomposing the the bicarbonate of soda, is converted into chloride, and consequently unavailable chlorine. As far as I can estimate, this very nearly corresponds with the theoretical quantity that would be contained in the hypo-chlorite of soda formed, presuming the liquid to be in addition saturated with free chlorine. If the statement be true, that when the chlorine comes in contact with the solution of carbonate of soda, there are formed hypochlorite, chloride and bicarbonate of sodium; then the 12 oz. (5250 grains) of carbonate of soda ordered in the Pharmacopœia would require 651·6 grains of chlorine, 325·8 grains of which would be transformed into hypochlorite, and would be always available in the proportion of 1·469 per cent. of chlorine in the perfected solution.

Let us presume the addition to this of the quantity of chlorine in an aqueous solution, which is about ·606 per cent.

Then 1·469 Chlorine (as Hypochlorite)
\+ ·606 Chlorine (as free Chlorine)

= 2·075 per cent of available chlorine,

closely corresponding with the result I obtained in practice (2·02). It may be urged that this is rather speculative, bnt if we turn to Pereira's 'Materia Medica' (page 556), we find at any rate one part of corroborated as far as the hypochlorite is concerned, by the com-

position of the chlorinated soda of the London Pharmacopœia being expressed as,

Hypochlorite of soda	3·11
Chloride of Sodium	2·44
Bicarbonate of Soda	6·26
Water	88·19
	100.00

Now as hypochlorite of soda has 47·7 per cent. value of available chlorine, the quantity of hypochlorite in the solution of the London Pharmacopœia will be equal to 1·48 per cent. of available chlorine, free chlorine being altogether ignored. It is difficult to understand why there should be such a different statement as to strength in the two Pharmacopœias, when the same proportions of ingredients are given in both formulæ.

To confirm my opinion upon the impossibility, or at any rate the impractibility, of preparing this solution by the officinal process, I examined specimens of "Liq Sodæ Chlor. B.P." of pharmacy with the following corrobrative results:—

	Spec Grav.	Available Cl per cent.
Brit. Pharm.	1·103	2·53
No. 1	1·041	2·40
No. 2	1·070	1·72
No. 3	1·093	4·05
No. 4	1·047	2·08
No. 5	1·080	·71

A qualitative examination convinced me that most, if not all, had been made by a process of double decomposition between chlorinated lime and carbonate of soda; indeed, with some the decomposition had been so imperfect, that considerable quantities of lime salts were left in the solution. To remedy this very unsatisfactory state of things, I should suggest that in future the chlorinated soda be made by a double decomposition process, as in the Dublin Pharmacopœia and French Codex, altering the proportions, however, thus

"Take good commercial Chlorinated Lime (33 to 35 per cent. Cl.)	16 oz.
Carbonate of Soda	24 oz.
Water	1 gallon.

"Dissolve the carbonate in two pints of the water, and triturate the chlorinated lime with the remainder, allow the solution to stand three hours, then filter; add the carbonate of soda solution, separ-

ate precipitate by a second filtration," or the whole might be accomplished by one precipitation and filtration as in the French Codex. The specific gravity of such a solution will be 1·054, and will contain at least 2·53 per cent. [the present Pharmacopœia quantity] of available chlorine.

This process has also the advantage that the solution can be made in three or four hours, by any pharmacist, whereas the British Pharmacopœia process is only suited for a chemical factory, and the result very unsatisfactory.

Syrupus Ferri Iodidi.—If the directions of the Pharmacopœia are strictly followed, and the weight of the syrup there ordered be made from two ounces of iodine be made up to *two pounds eleven ounces*, then the specific pravity of the syrup will be 1·400 and not 1·385.

If the syrup of 1·400 specific gravity be put aside for a few days it will soon be found that the sides of the bottle will be studded with crystals. I have placed several bottles, taken at various times, aside for the purpose of noting the change. In all, crystals of sugar well defined, as large as crystals of sulphate of soda, can be seen. It is also worthy of remark that in all these specimens of 1·400 specific gravity, in which the crystallization of sugar has been going on, the upper part of the liquid is tinged with free iodine, whereas in a syrup of the 1·385 density placed side by side with the other specimens, no such color has made its appearance, neither is there the least sign of crystallization.

It would be well, therefore, to amend the Pharmacopœia directions, thus, "The product should weigh when cold *two pounds eleven ounces and three quarters*, and should have the specific gravity 1·385.

Syrupus Mori.—If the directions for preparing syrup of mulberries be strictly followed, the spirit added, and the product made to weigh *three pounds six ounces*, then the specific gravity will be 1·298, and not 1·330.

It can be seen by a comparison of the proportion of sugar ordered for this syrup, with the quantity directed to be used for syrup of lemons, or even some of the other officinal syrups, that if 1·330 be the correct specific gravity of the mulberry syrup, the the other syrups are incorrectly described in density. It would be well to amend the formula thus:—

Mulberry Juice	[sp. gr. 1·060]	1 pint.
Refined Sugar	"	2 pounds 3 ounces.
Rectified spirit	"	2½ fluid ounces.

The product should weigh *three pounds six ounces*, and have the specific gravity 1·330.

Syrups of Poppy and Senna.—The slight variation is of little importance. In all probability it is due to the better exhaustion of the senna and poppies.

Tinct. Ferri Perchloridi.—As this tincture is a mixture of one fluid part of solution of perchloride of iron with three fluid parts of spirit of wine, it is obvious that if the specific gravity of the Liquor Ferri Perchlorid. Fort. is incorrect, then the tincture prepared from it will also be incorrect. From a *liquor* of 1·445 *the tincture* will be of specific gravity 1·007.

Having then given these criticisms upon the specific gravities of the Pharmacopœia, it would, perhaps, be interesting to append a list of some other specific gravities I have noted which are not figured in the Pharmacopœia at the present time, and although they are of but little importance. These, with the exhaustive schedule of specific gravities of tinctures, lately published by Stoddart and Tucker, will leave but few officinal preparations the densities of which have not been published.

Acet Scillæ	1·038
Ext. Filicis Liquid	1·000
Liq. Ammoniæ Acetatis	1·022
" Ammoniæ Citratis	1·062
" Zinci Chloridi	1·460
Mist. Sennæ Comp	1·115
Mori Succus	1·060
Rhamni Succus	1·070
Spiritus Ammoniæ Fœtidus	·847
" Armoraciæ Comp	·920
" Camphoræ	·850
Syrupus Aurantii	1·282
" Ferri Phosphatis	1·305
" Rhei	1·310
" Rhamni	1·320
" Scillæ	1·345
" Zingiberis	1·312

Upon these but few remarks are necessary.

Ext. Filicis Liquid., if carefully prepared, will have a specific gravity of at least 1·000. It is to be regretted that much of the oil of male fern of pharmacy, and more especially that imported, is of much less specific gravity, on account of about 20 per cent. of ether being either mixed with the fluid extract, or from the imperfect evaporation of the ether.

Rhamni Succus is seldom met with in a state of purity; generally it contains 50 per cent. of additional water, and sometimes more. True juice will have a specific gravity of 1·070, and sometimes, when expressed from berries in a dry season, it will be of the density 1·075. [This year the crop of buckthorn berries has been a total failure on account of the late spring frosts.]

Spiritus Armoraciæ Comp.—It is necessary in distilling one gal-

lon, as directed in the Pharmacopœia, to add *three* pints of water instead of *two* pints. If two pints only be used, it will be found, that so much water is absorbed by the dried orange peel and horse-radish, that the gallon of distillate will be at least deficient some *fourteen* or *fifteen ounces*.

Syrupus Rhei.—It would be an improvement to continue the evaporation of the percolate to *fourteen* fluid ounces only instead of *thirteen* fluid ounces, or until the specific gravity be 1·026; and also to add, "The product should weigh *two pounds eleven ounces*, and should have the specific gravity of 1·310.

Syrupus Rhamni.—Although this is perhaps the least important of the syrups, still, since it has a place in the Pharmacopœia, it is advisable that the best and most uniform preparation possible should be made. The present formula I fear, on account of the various dilutions of buckthorn juice, and also from "five pounds of sugar *or a sufficiency*" being ordered, and from no weight being given for the perfected syrup, but merely a specific gravity of 1·320, is scarcely the best that could be devised. I would suggest the following;—

Ginger Pimento	of each	¾ ounces,
Refined sugar		5 pounds.
Rectified spirit		6 fluid ounces.

Evaporate the juice to two pints and a half, or until is of specific gravity 1·100; add the ginger and pimento and digest at a gentle heat for three or four hours and strain. When cold add the spirit; let the mixtnre stand for 14 hours, then decant the clear liquor, and in this dissolve the sugar with a gentle heat. The product should weigh *seven pounds twelve ounces* and have a specific gratity 1·330.

A CHAPTER ON CEMENTS.

The subject of cements is well nigh exhausted by the following article which is taken from the *Journal of Applied Chemistry*. Some of the formula have already appeared in this journal, but the paper will prove so handy for reference that we produce it in its entirety.

A good rubber cement may be prepared by dissolving one part india-rubber in two parts linseed oil, and adding to the solution a snfficient quantity of bole, say about three parts.

For amber and tortoiseshell, a cement is made by mixing together equal parts of mastic and linseed oil, and warming gently. This cement should be used warm.

To unite wood to wood, a thick solution of shellac in alcohol

may be used. It is well to put a piece of fine gauze or crape between the broken surfaces of wood, and then press them tightly together until the cement becomes prefectly firm. Another good, durable cement for woodwork is made by fusing together shellac, mastic and common turpentine, and adding some broken isinglass.

For attaching small objects to anything turned, a mixture of colophonium, turpentine and yellow wax, with the addition of a little pulverized sealing wax, answer nicely. The cement sets quickly and holds well.

To fasten knives and forks in silver handles, we may use a mixture of 2 parts of melted black pitch and 1 part of fine brick dust. It must be used warm.

A varnish or cement to protect wood from the action of mineral acids, alkalies and corrosive gases like chlorine, is made from 6 parts of colophonium and 3 parts of wood tar by heating together in an iron kettle on a furnace in the open air, and then stirring in 4 parts of fine brick dust. The varnish is applied with a brush while warm.

An excellent cement for glass is made by dissolving 1 part india-rubber in 60 parts of chloroform, then adding 34 of mastic, and letting it digest for a week at a gentle heat. This cement is also applied with a brush, and is especially distinguished by its transparency.

Another cement for glass and porcelain is made by digesting small pieces of isinglass in 16 times their weight of water for 24 hours. The solution is evaporated to one-half, strained, and, while still hot, 8 parts of alcohol is added, and at the same time a solution of 1 part mastic in 6 parts warm alcohol. One-half part of finely-powdered gum ammoniac is triturated in the warm solution until the whole mass is homogeneous. When used, both the cement and the object to be mended are warmed. This cement is highly recommended for its adhesive qualities.

GLUE AND GUM CEMENTS.

These are very tender and well adapted to mending ornaments. They resist the action of water and atmosphere. There are various kinds of these cements for bone, ivory, whalebone, mother of pearl and precious stones.

One of these is made by dissolving 2 parts isinglass and 4 parts colorless glue in 60 parts water, evaporating to half its volume, then adding 1-15 part mastic dissolved in 1 part alcohol, and stirring in 2 parts zinc white. The surfaces are warmed when the cement is applied to them. This cement holds well, dries easily, and may be kept a long time in tightly-corked bottles.

For bone, ivory, whalebone, mother of pearl, etc., a cement with a beautiful gloss may be prepared as follows:—Soak common cabinetmakers' glue in hot water, warm the jelly formed, add enough

pulverulent slaked lime to give it consistency. Warm the object to be cemented, clean the surfaces carefully, apply the cement and tie the parts firmly together. In a few days it gets very hard. Even common glue, with pulverized chalk stirred in, makes an excellent cement for wood and metals.

For fastening leather to metal, the metal should be coated with a hot solution of glue, and the leather with a hot extract of nut-galls. Allow them to dry quietly, and they adhere well.

For porcelain, the well-known white-of-egg cement is best. To prepare this it is only necessary to stir the white of eggs into quite a stiff solution of glue, and then apply to the fracture.

A cement of gum for porcelain is made by pulverized 4 parts of oyster shells and mixing intimately with 2 parts pulverized gum arabic. The powder is kept in a well-stoppered bottle, and when needed for use is rubbed up with white of egg, or warm water, to a thick dough, applied to the object and dried by a gentle heat. Another cement for glass and porcelain is made from 8 parts well-burnt pulverized alabaster gypsum and 2 parts fine gum arabic, mixed with water to a thick paste, and 40 to 50 drops of oil of turpentine added to an ounce of the cement.

CEMENTS FROM CASEINE.

For glass, porcelain, stone and wood, the very best cement is made of a suitable quantity of old cheese rubbed fine and mixed with water to a thick magma, and a fourth part of pulverized lime added.

A still stronger cement for the same purpose is made by slaking 1 pound of quick-lime in water, and mixing with ¾ pound pulverized lime or sandstone and 1 pound pulverized cheese. Before using, it is well to moisten the fracture or edges with warm water.

A so-called caseine waterglass is made as follows: The caseine of skimmed milk is separated from it by the addition of acetic acid, filtered, and the acid washed out with water. The pure caseine thus obtained is mixed with six times its volume of concentrated waterglass. This cement is thoroughly commendable, and well repays the trouble taken to make it.

An excellent cement for artificial meerschaum, and that may be used to give consistency to silk goods or to coat artificial flowers and court plaster, to give more adhesiveness and firmness, is made by rubbing two to four parts of the above caseine with cold borax solution till a thick liquid is obtained that becomes clear on standing This also renders goods waterproof.

WATERGLASS CEMENTS.

For glass, earthenware, porcelain, and all kinds of stoneware, these cements are excellent. A cement for glass and marble is prepared by rubbing together one part of fine, pulverized glass and two

parts of pulverized fluorspar, and then adding enough waterglass solution to give it the consistency necessary in a cement.

Waterglass mixed with hydraulic cement to a thick dough makes a good cement for the edges and joints of stone and marble slabs. It is well to mix but little at a time, as it hardens very quickly.

LIME, GYPSUM, CLAY AND CEMENT, MIXED WITH WATER, OIL OR BLOOD.

For cementing stone and for filling crevices in buildings, before they are painted, the masons use a cement made of fresh blood, slaked lime, brick dust, broken up coal ashes, hammerslag and sand in all proportions. This excellent cement hardens quickly and offers great resistance to the action of the weather.

A lime cement for connecting water pipes, bathing tubs, etc ; a mixture of two-thirds fine brick dust, two-thirds unslaked lime, and two-thirds hammerslag, is made and stirred up with lye or hot oil to a stiff dough.

Another cement, intended to render Hessian clay retorts impenetrable, is obained by rubbing freshly slaked lime into a concentrated solution of borax. The solution is applied with a stiff brush and allowed to dry, after which it is heated until the glazing begins to fuse.

Clay mixed with water and fresh warm blood, containing some unslaked lime, is used in Germany to close the joints in their stoves. The cement is applied while the stove is hot. Wood ashes, fire clay and salt mixed with water is used for the same purpose. Fat and burnt clay, in equal proportions, moulded with water into a dough is also used.

Plaster of Paris mixed with water and a cold solution of alum is an excellent cement for stoneware. It sets slowly but becomes as hard as stone.

IRON CEMENTS.

Their essential constituents are iron filings or borings. By the addition of some common salt or sal-ammoniac they are rapidly oxidized, and the escape of carbonic acid increases the volume of the cement and completely fills the crevices where it is put. An excellent luting or cement for the joints and crevices in iron surfaces, and for rendering tight cast iron steam and water pipes and water tanks is made of filings of cast iron. The filings are sifted to obtain those of the size of a grain of rice, and then rubbed with horse urine and one-part sal ammoniac, well worked to-gether, and an equal quantity of flowers of sulphur added. The mass is hammered until it gets warm, and then cold, and, finally, it begins to be brittle. In this condition it is put in the joints, and soon hardens. The surfaces where it is applied must be free from rust. Greasy and oily substances are most readily removed by rubbing with cotton dipped in benzine. The cement keeps best under water.

Another good iron cement is made by stirring 5 parts clay, 1

part salt, and 15 parts iron filings together with vinegar to a magma. It will stand heat, and is used for bellows and air pipes.

OIL CEMENTS.

An excellent oil cement for porcelain and for luting of retorts, flasks and porcelain evaporating dishes is obtained when ordinary brick dust is powdered, sifted and mixed with an equal quantity of red lead, and then rubbed, under great pressure, into old boiled linseed oil to a thick paste, which is mixed with coarse sand to the stiffness of cement. When a dish is to be covered with, paste is applied before the sand is put in, and the sand then strewn upon it. The dish is afterwards exposed to a steady heat for a long time.

For larger vessels take 6 parts litharge, 4 parts fresh-burnt pulverized lime and 2 parts white bole, and mix with cold linseed oil.

To fasten metallic letters to a smooth surface a cement is made as follows: 30 parts copal varnish, 10 parts linseed oil varnish, 6 parts crude oil of turpentine, 10 parts glue dissolved in a little warm water, and 20 parts pulverulent slaked lime. It is very pliant and soon hardens.

To unite copper and sandstone, take 3½ parts white lead, 3 parts bole, 2 parts broken glass, and rub up with 2 parts linseed oil varnish.

As a polish for gravestones, basins, etc., a paint is made of 9 parts of finely sifted and burnt brick clay and 1 part litharge, mixed with a sufficient quantity of linseed oil.

For connecting cast iron water pipes, 12 parts Roman cement 4 parts white lead, 1 part litharge and ½ part colophonium are pulverized and mixed; from 2½ to 3 pounds of it is triturated with old linseed oil, in which is boiled 2 ounces of colophonium.

Another for the same purpose is made of equal parts of burnt lime, Roman cement, potters' clay and clay, separately well dried, finely ground, sifted, well mixed and triturated with linseed oil. Common lead lute for stopping openings in apparatus is best made from litharge and red lead mixed with old boiled oil. In all cases the surfaces must be clean. They stand well under water.

As lead lutings are somewhat expensive, the following is recommended; Take 2 parts red lead, 5 parts white lead, and 5 parts of the finest clay, and mix with boiled linseed oil.

A good oil cement for wood, especially for antique carvings, is made of 1 part pulverized slaked lime and 2 parts rye flour, mixed with linseed oil varnish. It takes any desired color and polish.

To make water holders tight we may use pulverized slaked lime and cod liver oil.

A cement to make chemical apparatus tight can be prepared from oil cake or pressed almond cake rubbed with water.

MISCELLANEOUS CEMENTS, ETC.

Furniture polish: Moisten 120 parts bees-wax with oil of turpentine, and add 7.5 parts finely pulverized resin, and enough aniline red to give the desired mahogany color.

Oil cement: 100 parts read lead. 250 parts white lead, 200 parts pipe clay: mix with boiled oil.

Water cement; 100 parts slaked lime, 190 parts brick dust, 160 parts sand, 50 parts blacksmiths' dross, 50 parts powdered lime: mix with water.

Another: 600 parts iron filings, 100 parts ignited sand, 100 parts powdered slaked lime; mix with water.

Iron and blood cement; 100 parts pulverized lime, triturated with bullock's blood, 290 parts cement and from 5 to 10 parts iron filings.

ON THE PHYSIOLOGICAL ACTION OF ALCOHOL.*

BY DR. VICTOR SUBBOTIN.

The question what alteration alcohol, after its ingestion, undergoes in the body is not yet fully answered. Magendie first showed that one hour after it was taken alcohol could be distilled from the blood, and other observers found it in other tissues or fluids, thus in the gall (Klencke, Percy); Wohler, on the other hand, as well as Royer-Collard and Bouchardat, could not find it in the urine. Vierordt, and afterwards Becker, observed a lessening in the excretion of carbonic acid, and the latter an absolute decrease in the urea. According to Duchek, the alcohol is changed in the blood into aldehyde, which is burnt more readily than the sugar, which it saves and allows to be converted into fat. According to Buchheim, Masing, Setschenow, &c., this is not the case, for they found unaltered alcohol in the blood, in the expired air, and also in the urine of animals poisoned with alcohol. Also, Lallemand, Perrin, and Duroy came to the same conclusion—that the alcohol exists as such in the body, is excreted as such, and does not undergo oxidation within the body. On the other hand, Thudicum asserts that the alcohol is almost entirely consumed in the body by oxidation.

The method of establishing the presence of alcohol employed by Dr. Subbotin consisted in the conversion of it into acetic acid by chromic acid. Sometimes he used the pure chromic acid, sometimes a proportional mixture of bichromate of potash and sulphuric acid. He mixed first the chrome salt or the chromic acid with the liquid to

*From Schmidt's Jahrbucher, in New Remedies, Jany. 1873.

be tested, and then added the sulphuric acid much diluted, closed the vessel, and kept the whole warm for 24 hours.

The acetic acid was then obtained by distillation and its amount estimated by the use of a soda solution.

The experiments were made by Dr. Subbotin, on the principle of Pettenkofer's breathing apparatus, The diluted alcohol (29 per cent. of absolute) was thrown into the stomach of an animal through the opened æsophagus in quantities of 5 to 10 to 15 cubic centimetres. The expired air was first drawn through an absorption apparatus as follows :—

The air was first passed through a vessel full of distilled water, and then through a series of pipes filled with glass pearls, the first of the pipes containing chromic acid solution and the last two a strong solution of caustic soda. The first pipe was, during the experiments, warmed by means of a water bath.

Experiments on rabbits gave the following results :—

1. Already in the first five hours after the ingestion of the alcohol a not inconsiderable quantity of it was excreted by lungs, skin, and kidneys.

2. Through the skin and lungs at least twice as much alcohol was separated as through the kidneys, in opposition to the assertions of Lallemand, Perrin, and Duroy.

3. The amount of alcohol obtained is only a fraction of what is really excreted, because so much is lost in various ways [These are enumerated, but for them we refer the reader to the original paper.—Ed.], and because, further, the experiments only last some five or six hours, whereas excretion is lively even after twenty-four hours, if the dose has been large.

Dr. Subbotin then made, periodically, frequently repeated experiments, carried on until the excretion had ceased or nearly so, and came to the conclusion that, in twenty-four hours after the ingestion of the alcohol, at least sixteen per cent. of it is excreted unchanged (or as aldehyde).

Although Dr. Subbotin has found a larger proportion of the alcohol excreted than was to have been expected, yet this does not prove that a portion of it is not used up by the system, nor does the absence of acetic acid in the blood disprove the oxidation of the alcohol, for the acid itself may be oxidized into carbonic acid and water at the moment of its formation.

The admission of the partial oxidation of alcohol, Dr. Subbotin thinks, does not show that it is really a food, for it lowers the tissue changes, as shown by the decrease of temperature and of the elimination of carbonic acid and urea; it is rather to be looked upon as a stimulant (Reizmittel).

THE ADMINISTRATION OF PHOSPHORUS.*

That medicinal remedies are subject to the rule of Fashion is well known, and judging from numerous inquiries which have lately been made respecting the methods for the internal administration of phosphorus, that substance is about to have its turn of more or less lasting popularity as a remedy. A short notice of the principal preparations will therefore probably be of service.

And first, to correct an error. A few weeks since Mr. S. M. Bradley, of Manchester, writing to the 'British Medical Journal,' described a case of neuralgia which, after having been unsuccessfully treated by himself with every remedy he could think of, was immediately relieved by a homœopath with two drops of "mother-tincture of phosphorus." Mr. Bradley—apparently misled by the fact that the "mother-tinctures" of the Homœopathic Pharmacopœia are usually calculated to contain all the soluble matter of one grain of a drug in ten minims of the tincture, and that saline solutions are made up to a strength of 1 in 10—went on to say that this "mother-tincture" was "phosphorus dissolved in alcohol in the proportion of 1 to 10," a statement which has been reproduced in a contemporary circulating among chemists and druggists, and sometimes providing them with homœopathic news. Mr. Bradley has since found out that in using this remedy, he has only been giving his patients a preparation containing 1 per cent. of phosphorus instead of 10 per cent., and he has published a correction of his former statement. However, since, many persons may see the original statement and not the contradiction, it will be as well to give the following from the Homœopathic Pharmacopœia, by which it will be seen that there are two recognized solutions of phosphorus, one in ether and one in absolute alcohol:—

"*Preparation.*—Trituration, using moist sugar of milk at first, and bruising the chips of phosphorus rather than rubbing them. Solution in ether, which, if very pure, will dissolve nearly 1 per cent. Solution in absolute alcohol. When making these solutions, the phosphorus should be cut into small chips, and, in the case of alcohol, at any rate, the mixture, in its bottle, with the stopper loose, should be plunged in hot water till the phosphorus melts, when the stopper should be made firm, and the melted phosphorus well shaken with the alcohol. The solution should be well secured in stoppered bottles and kept in the dark."

Phosphorated Oil (Huile phosphorée) is a preparation of the French Codex, of which the following is the formula:—

"Phosphorus 2
Oil of Sweet Almonds. . 100

*Pharm. Jour. and Trans.

"Put the oil into a bottle which it will nearly fill, and introduce the phosphorus. Heat in a water-bath for 15 or 20 minutes, agitating briskly from time to time. Keep the bottle closed during the operation, except at the commencement, when a passage for the air inside should be made by means of a paper placed between the neck of the bottle and the stopper. Let the solution cool and deposit, and then decant the clear oil into small, well-stoppered phials exactly filled."

There is also an "Oleum Phosphoratum" in the new German Pharmacopœia, similarly prepared, in which, however, the proportions are "phosphorus, well dried, 1; oil of almonds, 80." The preparation should be "limpidum, fumans, phosphorum redolens."

The subject of the solvent of phosphorus best suited for internal administration was studied by M. Dujardin-Beaumetz in 1868. He pointed out that phosphorus is soluble in sulphide of carbon, ether, chloroform, and oil. Of these the first, notwithstanding its great solvent power (according to Vogel† dissolving eighteen times its own weight of phosphorus without losing its fluidity) is excluded in consequence of its effects upon the system. Alcohol, also, he rejected, in consequence of the small proportion it dissolves (according to Buchner, 1 part in 320 cold alcohol, sp. gr. ·799). Solutions in ether, chloroform, and oil, were tried in the form of capsules, made to contain 1 milligram of phosphorus in each. The quantity of ether required was found to produce injurious effects, and was quickly abandoned. Ir may be remarked here that a case was mentioned at the meeting of the Société de Pharmacie, in April, 1870, where severe symptoms of poisoning followed the administration of 4 grains of phosphorated ether. It is also stated by Brugnatelli that the ethereal solution undergoes decomposition in the course of time. Chloroform, according to M. Beaumetz, dissolves easily two per cent. of phosphorus, and, therefore, 1 milligram doses could be administered in capsules containing 10 centigrams of the solution. Continued use of these capsules led, however, to considerable disturbance of the system, a result which, although at first referred to the phosphorus he afterwards believed to be due to the chloroform. He considers the phosphorized oil to be the best preparation, and as many as twelve or thirteen capsules of this oil have been taken daily by patients without inconvenience. But an objection exists in the deposit of insoluble phosphorus which gradually forms in them; and M. Beaumetz has proposed to use phosphide of zinc, prepared by bringing phosphorus vapour into contact with melted zinc, in an atmosphere of dry hydrogen.

The deposit that occurs in the phosphorated oil of the French Codex was investigated by M. Méhu. In a paper read before the Société de Pharmacie, at Paris, in May, 1861, he states that it is the result of the action of the phosphorus upon the albumen, resin, and other organic matters present in ordinary oil of almonds. These de-

posits are yellow, becoming reddish by exposure to light, and vary in quantity with the temperature and the quality of the oil; and since they carry down some of the phosphorus, the strength of the preparation is thus liable to variation. He proposes, therefore, to submit clear almond oil] to a temperature of 150° C. in a porcelain capsule for about a quarter of an hour; then for ten minutes to 200° C. or 250° C. By this means water is at first driven off, and then instable organic matters are destroyed or volatilized. The superheated oil deposits slightly after standing some time, or it may be filtered; it will then produce an absolutely clear and stable solution of phosphorus.

According to M. Méhu, sweet almond, olive or poppy seed oils will dissolve easily one-eightieth of their weight of phosphorus. He therefore proposes that only one part of phosphorus to 100 parts of oil, instead of the two parts of the Codex, should be used. Phosphorated oil of this strength is strongly luminous in the dark; but this luminosity may be entirely destroyed by the addition of a small quantity of ether, or of any of the essential oils not containing oxygen, such as bergamot, citron, copaiba, lavender, mace, mustard, rosemary turpentine, etc. Colza, rape, beechnut, linseed, and brown cod-liver oils each dissolve one-seventieth of their weight of phosphorus. Castor oil dissolves one part in one hundred and five. Cacao butter dissolves one per cent.; but if a colourless product be required, it should be treated as recommended for the oil of sweet almonds.

Dr. Radcliffe has recommended the following formula for gelatinized phosphorus pills:—

"Phosphorus	6 grains.
Suet	600 „

"Melt the suet in a stoppered bottle capable of holding twice the quantity indicated; put in the phosphorus, and when liquid agitate the mixture until it becomes solid; roll into 3 grain pills, and cover with gelatine.

The following formula by Soubeiran of a "Potion phosphorée." is given by Dorvault as the best method of administering phosphorus internally:—

"Phosphorated Oil	8
Gum Arabic	8
Peppermint Water	100
Syrup	60

Make an emulsion."

The phosphide of zinc before referred to is a compound easily decomposed by weak acids, such as lactic acid, yielding phosphuretted hydrogen. It contains one-fourth of its weight of phosphorus; but it

is said that experiments have shown that physiological effects equal only to half the weight of phosphorus result from it use, and that consequently it is necessary to use eight parts of the phosphide to obtain the effects of one part of phosphorus.

SUPPOSITORY MOULDS OF PLASTER PARIS.*

BY CHARLES E. DWIGHT.

Pharmacists who have had many suppositories to make with the old moulds have undoubtedly often hurt their fingers by pounding in trying to remove the suppositories. I have been for some time using a mould which parts through the centre and is made of plaster Paris, which gives so much satisfaction that I can but wish for others to try it; it may have been used by others, but is entirely original with myself.

The expense of buying moulds of metal which part through the centre has probably been detrimental to their universal use, while they are undoubtedly superior to those old finger smashers in being easily cleaned and oiled, and also facilitating the extraction of the suppositories when cold. For the benefit of those unused to the manipulation with plaster, I will give a general plan for preparing the moulds.

Into a vessel of about six inches long by two wide and one deep, (a pasteboard box will do), pour in plaster mixed to the consistency of thick cream, until half full; have ready six suppositories, moulded of wax, from other moulds of good shape, and while the plaster is yet soft immerse them to half their diameter, with their large end close to the edge of the box, all in a row and a uniform distance apart. When the plaster has set, gently remove the wax, and with a knife smooth off the surface and trim the edges of each mould sharp, and between each depression made by the wax suppository dig a small cavity about the size and shape of a small pea cut through the centre. Now we have half of our mould. When the face has become hard, oil or grease with linseed oil or lard, replace the wax suppositories and raise the edges of the box by wrapping heavy paper around, which will extend about another inch above the surface of the face; mix another portion of the plaster equal to the first, and in the same way, and gently pour over the greased surface until it will be about one inch deep above the other or lower half. When hard, the two parts can be easily pulled apart, the edges trimmed off and each part boiled for about an hour in linseed oil, which will prevent the adhesion of the substance to be

* American Journal of Pharmacy, Jan. 1873.

moulded. The plaster must be mixed thin *and well stirred* to be substantial.

By following the above plan almost any number of sizes can be made at small expense, and will, I think, be found to answer admirably. If this will in any way alleviate the frown which comes over the face of the pharmacist when he finds he has to make suppositories, the object of the writer will be fully attained.

Weeling, W. Va., Nov. 28, 1872

DETECTION OF ADULTERATION OF SOAP.

BY F. JEAN*

There are found in many soaps, large proportions of foreign matters, such as starch, (most soft soaps contain some of it) talc, ochres, clay, sulphates of the alkaline earths, etc.; which are fraudulently added to give weight to the soap. These matters are very easily separated. It is only necessary to disolve the soap in alcohol at 40°. All the foreign substances, a part of the chloride of sodium, the sulphate and carbonate of soda, are thus separated. One of the frauds, which is now becoming very common, is the introduction of very concentrated silicate of soda, in hard soaps, (sometimes 17 per cent.) The silicate of soda, being insoluble in alcohol, is easily separated. Then after dissolving it in water, by means of a dilute acid, the gelatinous silica is precipitated, or by boiling the solution with sal-ammoniac, the same is accomplished. It is precipitated in the form of the easily recognizable flakes.

The determination of the excess of alkali, which it is often useful to make, is generally accomplished, by treating the soap with alcohol. The carbonate of soda, is separated by this means. But the free caustic alkali, being soluble in alcohol, escapes detection. I employ for the determination of the free caustic alkali, the following process. An alcoholic solution of the soap is made, and after having separated the insoluble matters, the solution is placed on a water-bath, and a current of carbonic acid gas is passed into it. All the alkali not in combination with the fatty substances, becomes a carbonate, and therefore, insoluble. By filtering the separated carbonate, the quantity of caustic alkali in the soap may be determined. In saponifying pure fatty acids, with different quantities of soda, I have obtained 12·3, 12.5, 12.9, 12·4, of alkali; as a mean 12·6, per cent of soda. As it has been well demonstrated, that the soaps of fatty acids are true salts, knowing the quantity of combined alkali, contained in a soap, it becomes easy to calculate, the quantity of

*Conclusion of a paper on the Analysis of Soap, published in the *Moniteur Scientifique* and translated in the *American Chemist*, Nov. 1872.

fatty acids, which corresponds to it. The analysis, becomes therefore, a very simple problem, of alkalimetry. Two or three grammes of soap, are dissolved in alcohol, at 40°, and without disturbing the insoluble matters, a current of carbonic acid is passed into the solution, then it is filtered. The precipitate is washed with alcohol, in order to remove the traces of soap. The alcoholic solution is diluted with water, and boiled in order to drive away the alcohol. 5-10 c.c. of sulphuric acid are then added, and the ebullition is continued until the fatty acids have become very limpid. After cooling and solidifying the fatty acids are filtered off, and the precipitate and the fatty acids are washed with warm distilled water, until the washings are no longer acid. Then the excess of sulphuric acid is titered with a graduated solution of soda. The quantity of sulphuric acid saturated by the alkali of the soap is found by calculation, and, consequently, the quantity of alkali which corresponds to it. The quantity of alkali contained in 100 parts of the soap being known, it is only necessary to multiply by 100, and divide by 12·6, in order to find the weight of the anhydrous fatty acids, which it contains. The weight of the fatty acids, added to that of the alkali, and substracted from 100, gives the quantity of water, and of foreign substances, contained in the soap. This process of analysis is rapid and gives sufficiently accurate results to be used with advantage. It can not be used when the soaps contains resin. In the analysis of soaps made by the cold process, it is necessary before treating the soap with alcohol, to boil it in a saline water, in order to dissolve the different salts of soda, with organic acids, which the soap may contain; because these salts, not being decomposed by a current of carbonic acid, comport themselves like alkalies combined with fatty acids.

Some soaps often contain large quantities of water in excess; those for instance made from cocoa-oil, contain fabulous amounts (100 of cocoa-oil can make 500 of soap.) It is therefore important to calculate the quantity of water which a soap may contain. Generally from 2 to 5 grammes of soap, cut into fine shreds, are dried, and the weight taken as soon as the peices are reunited. When it is desired to make an exact analysis, the operation is not so simple, and the drying upon a stove, is rarely complete, because the soap in drying swells up, and thus encloses a certain amonnt of water, and firmly holds it; if the temperature is raised too high, the risk is run of carbonizing a part of the soap. In order to determine the percentage of water in soaps, I employ the following process: I dissolve in a little weighed porcelain capsule one or two grammes of soap, cut in fine shreds, in the smallest possible quantity of strong alcohol. Then I add a known weight of fine well-dried sand, sufficient to absorb all the liquid, and it is heated in the bath at 110 degrees. The drying is rapidly accomplished, and the siliceous powder finally treated with bisulphide of carbon, is used to determine the non-combined fatty matters.

*THE USE OF BULLOCK'S BLOOD IN MEDICINE.

BY WILLIAM C. BAKES.

In the last number of the Journal, on page 410, appeared an extract from the *Pharm. Journ. and Trans.*, July 27, 1872, from a correspondent of *The Med. Times and Gazette*, under the title of "Bullock's Blood—A New Remedy," in which the use of blood is referred to as a new remedial agent for anæmia, and mentioning that cases of phthisis pulmonalis have been as much benefitted by it as they would have been by cod liver oil. The writer also states that a French pharmacien has prepared an extract of blood, which is administered in the form of pills, each of which, weighing about three grains, is said to be equivalent to half an ounce of blood. My purpose in calling attention to this article is to state that, though the use of powdered blood may be a novelty in Europe, it is not a new thing in this country. In 1852, at the suggestion of of the late Professor Samuel Jackson, M. D., Mr. Elias Durand, an eminent pharmaceutist of this city, carefully evaporated fresh bullock's blood to the consistence of an extract, which was reduced to powder, and prescribed by Dr. Jackson, under the title of pulv. sanguinis. The following is a copy of one of his prescriptions:

R. Pulv. sanguinis, ... one drachm.
" aromat.,
" sacchari, *aa*, ... half a drachm.
M. et divide in chart. No. xij.

Dr. Jackson prescribed this preparation in a large number of cases with satisfactory results, and I think I am correct in stating that the use of this remedy suggested to him the compound mixture of phosphates, afterwards considerably modified, and now popularly known under the name of chemical food.

The use of blood, both pure and in combination with wine and other adjuvants, has frequently been suggested, and experience may yet prove its adaptation as a nutritive tonic and useful in anæmic conditions of the system.

*From the American Journal of Pharmacy, Vol. xliv. No. 10.

ON THE AMOUNT OF CAFFEINE CONTAINED IN COFFEE, AND ON ITS PHYSIOLOGICAL ACTION.*

BY HERMANN AUBERT.

Although the quantity of caffeine contained in raw coffee is known, no attempt has ever been made to ascertain how much of the alkaloid is contained in a cup of coffee, and it is also uncertain whether the beans should be slightly or strongly roasted, and whether the ground coffee must be boiled to extract its active principles or simple infusion is sufficient. By extracting the coffee with water, either by percolation or decoction, and evaporating to a syrup, which is then treated from five to eight times with chloroform at nearly 60° till all the caffeine has been dissolved out, he obtains a larger quantity than previous experimenters. Raw beans of the yellow Java kind yielded 0·709—0·849 per cent. by this method, while they gave only 0·474 by Garot's method of precipitation with basic lead acetate. When much roasted, coffee loses a certain quantity of caffeine, which sublimes, whereas it loses none by slight roasting. Notwithstanding this, the coffee made in the usual way by percolation from strongly roasted coffee contains rather more caffeine than that made from an equal weight of slightly roasted coffee, as the roasting renders it more easy to extract.

When coffee is prepared in the usual domestic fashion by pouring six to ten times its weight of boiling water three or four times over ground coffee, nearly the whole of the caffeine is extracted, hardly one-fifth of it remaining in the grounds. The quantity of caffeine in a cup of coffee prepared from 10½ grams of coffee is about 0·1 to 0·12 gram. A cup of tea prepared in the ordinary way from 5—6 grams of Pekoe tea contains also about 0·1 to 0·12 grams of caffeine. Caffeine acts upon the spinal cord and causes tetanus in doses of 0·005 gram for a frog, injected subcutaneously; for a rabbit, 0·120 gram (injected into the jugular vein), for cats; 0·200, injected in the same way; and the same quantity for dogs. It has a peculiar action on the muscles of frogs, especially when directly applied to them, causing them to become rigid and white, apparently from coagulation of the myosin. It does not exert this action on the muscles of mammalia. The tetanus is removed by artificial respiration, and if this process is kept up for about a quarter of an hour no recurrence of the tetanus takes place, even though the respiration is then discontinued, showing that the caffeine is quickly eliminated or destroyed in the organism. Occasionally it produces a paralysis of the hind legs in rabbits, but the author is uncertain to what cause this is to be attributed. It quickens the heart and at the same time

*(Pflueger's Archiv. fur Physiologie, v. 589—628.)

Abstract prepared by T. L. BRUNTON, M. D., D. Sc., *for the London Chem. Soc.*

reduces the blood pressure. This effect he believes to be due to stimulation of the cardiac ganglia, combined with diminution of what he regards as cardiac *tone*, due to paralysis of the nerves passing from these ganglia to the muscular substance.

The action of caffeine does not explain the stimulating and reviving action of coffee.

ON SOME IMPURITIES IN THE COMMERCIAL RHIZOME OF CYPRIPEDIUM.*

BY JOHN M. MAISCH.

Read at the Pharmaceutical Meeting, held Dec. 17th.

In a paper read before the pharmaceutical meeting, held in April last, I called attention to the fact that two different rhizomes are met with in commerce under the name of cypripedium or ladies' slipper. Through the kindness of several readers of the American Journal of Pharmacy, I was subsequently enabled to convince myself that the two plants furnishing the commercial article are *Cypripedium pubescens*, Willd. and *C. parviflorum*, Salisb., of the rhizomes of which I gave a short description. I then stated that the rhizomes and rootlets of these two species are the only ones constituting the commercial article, with which I have had but a limited acquaintance and experience, and the commercial specimens obtained several years ago for my cabinet prove the correctness of my observation.

Recently, however, Mr. G. L. Truckenmiller, a student of this college, directed my attention to an admixture with the rhizome of *Hydrastis canadensis*, Lin., which he had observed in commercial cypripedium, stating that an herbalist of this city had informed him that it was almost impossible to collect the latter free from the former, since the two plants grew together in the same localities, and their interwoven rootlets rendered the separation of the two rhizomes extremely difficult.

The two species of cypripedium prefer bogs and marshes, but are said to be also found in rich low woodlands, in localities in which hydrastis grows. I have observed this latter plant to be pretty frequent in some localities in the mountains of the north-eastern section of Schuylkill County, Pa., but did not find any cypripedium there, and it seems to me as if hydrastis could hardly grow in swamps, where the other plants probably thrive best.

However this may be, it is a fact that occasionally, at least, cypripedium is mixed with a considerable proportion of hydrastis,

*From the American Journal of Pharmacy, Jan. 1873.

which may escape detection on superficial examination, particularly if *Cypripedium parviflorum* has been principally collected, the color of the rhizome of which is a brownish grey, resembling the yellowish grey of the corky layer on hydrastis, while the rhizome of *Cypripedium pubescens* has a blackish brown color externally. There is, however, no difficulty in distinguishing the admixture by its growth, as well as by its structure and color internally. *Cypripedium parviflorum* has the cup-shaped scars of the overground stems directly upon and above the rhizome, which is hollowed out considerably and bent zigzag up and down; hydrastis has an oblique rhizome, with very distinct nodes, and bears the stem scars upon short but distinct branches, of which only the older ones have concave or cup-shaped terminations. It breaks with a short fracture, exhibiting a resinous lustre and a reddish to a brownish yellow color in which the eight to twelve almost linear light yellow ligneous rays are distinctly visible, enclosing an orange yellow pith. The rhizomes of both species of cypripedium break likewise short, parviflorum usually circular, pubescens often nearly two-edged upon the fracture, which has little lustre, is white, almost mealy in appearance, and, with the scattered bundles of ligneous tissue, very indistinct. The rootlets exhibit a similar difference, those of hydrastis being bright yellow, with a central ligneous cord of a quadrangular or triangular shape.

In another specimen of ladies' slipper root, some senega and roots of other dicotyledonous plants, not further determined, were observed.

It appears from the foregoing that the pharmacist must exercise care in selecting ladies' slipper root for medicinal use, lest it may be contaminated with other medicinal and non-medicinal roots to such an extent that garbling may be too tedious and expensive an operation.

Editorial.

A correspondent asks for information in regard to the law regulating the granting of patents, and puts the question in the form of the following inquiry, stating, at the same time, that an elucidation of the subject would not only be highly satisfactory to himself, but to the class of druggists generally:—"Can the following process "for sweetening castor oil be patented? ℞. Ol. Ricini Opt. 4 oz., "Ol. Anisi, Carui, and Mentha pip. *q. s.* Warm the oil and add "the other ingredients. Shake well."

This is a matter for the Commissioner of Patents rather than the editor of a journal. It is, however, no difficult matter to state the laws on the subject, and point out its particular bearing on the case in question, leaving our correspondent to draw his own conclusions.

Waiving all conditions pertaining to the qualifications of the patentee, and confining ourselves to the thing to be patented, we find that the first requirement is that the invention or discovery must have originated with the applicant, or the person whom he legally represents, and that the manufacture or composition of matter must not have been known or used by others before his invention or discovery thereof; or in public use, or for sale in Canada by the consent of the applicant, prior to the date of the application. This is further exemplified by a special clause in the Act, which states that the Commissioner may object to grant a patent "when it appears that the invention or discovery has been described in a book, or other printed publication, before the date of the application."

In regard to the patent itself, it is enacted that the specification "shall state clearly and distinctly the contrivances and things which are claimed as new, and for the use of which an exclusive privilege is claimed." And it is further stated that after a patent is obtained, and it is found that, through *mistake* or *inadvertence*, a specification has been made too broad; or more is claimed than the inventor had a legal right to; or any material or substantial part of the discovery did not originate with the patentee—a disclaimer may be made, and the true state of the case properly recorded.

Having stated the requirements and conditions to be fulfilled, it only remains to apply them to the case instanced. The following questions may be asked :—Is the formula an original one? Has it ever been in use, or appeared in any printed publication? Is it the combination which is claimed as new? If only part is original, what part? We leave these questions to our correspondent, as he is, no doubt, best qualified to answer them. We think, however, that without some one could show that a combination of chloroform and certain essential oils had been previously used to "sweeten" castor oil, a process based on the formula might form the subject for an incontestable and valid patent.

DUTIES ON PETROLEUM AND SULPHURIC ACID.

At the recent meeting of the Dominion Board of Trade, on the 16th ult., the subject of the excise duty on refined petroleum was discussed, and an unsuccessful attempt was made to pass a resolution that, in the opinion of the Board, such duty should be removed. During the discussion some interesting facts were elicited. Most of the crude petroleum is sold through an Association which rules the prices according to the rates of refined oil in the New York market. These prices are regulated on the fifteenth of each month. During the last year, the amount received for crude oil was $805,769. This figure does not include that sold by outside parties, nor is any estimate given of the quantity thus disposed of. The annual export of oil to foreign markets, by way of the Suspension Bridge, amounted to 6,904,981 gallons, which, at an average price of twenty cents per gallon, would amount to $1,380,816. The revenue derived from the excise duty amounted, last year, to $247,000.

Although the Board did not deem it expedient to recommend the abolition of the existing duty, it was decided that in the event of any future reciprocity in articles with the United States, that petroleum should be included in the list.

Mr. Kirby, the gentleman who proposed the repeal of the duty on oil, advocated the removal of the import duty upon sulphuric acid. This was generally opposed by members of the Board. It was stated by the Hon. John Young that a very large sum of money had been subscribed, and that a company had been formed in Scot-

land for the purpose of manufacturing acid from the copper pyrites of Acton. There were already one hundred and fifty men at work, and the removal of the present protection would tend to damp the enterprise. It was advanced that the present high price of acid checked, in some measure, the oil interests, as Canadian oil refiners had not an equal chance with those of the United States, as, in the latter country, sulphuric acid could be procured at one and-a-half cents per pound, while in Canada the price is double. Mr. Wilkes asked how it was, that with such abundant facilities and cheaper labor, that we could not compete with American manufacturers. In reply it was stated that the sulphur, of which American vitriol is, for the most part, made, is brought as ballast by Mediterranean traders, and is sold at a very low price. Mr. Kerry said that he had been informed by the proprietors of the Point Levis Acid Factory that they could make vitriol for two pence per pound.

It was finally concluded that the existing protection on sulphuric acid should be maintained.

DEATH FROM CHLORAL HYDRATE.—On Wednesday evening, Jan. 16th, Dr. C. B. Jones, a homœopathic practitioner of this city, died suddenly under circumstances which led to the supposition that his decease was occasioned by chloral hydrate, administered by Dr. Campbell, another gentleman of the homœopathic fraternity, who had been attending him during a recent sickness. An inquest was held on the next day, and from the evidence given we glean the following particulars:—For some time previous deceased had been suffering from a severe affection of the rectum, and it had been determined that an operation should be attempted. This was accordingly done, and at the close of the operation, which was performed by Dr. Campbell, a dose of chloral, equivalent to forty grains was given. After the expiration of twenty-five minutes, th was followed by a second dose, combined with one quarter ot grain of morphia. The patient soon became unconscious, and in short time symptoms were developed that the sleep was of a dangerous character. Dr. Campbell, junior, was summoned, who immediately applied ammonia to the nostrils, and also tried the effects of galvanism. These were of no avail, and in a short time

the unfortunate gentleman breathed his last. The jury, after a short deliberation, arrived at the conclusion that death resulted from the effects of chloral hydrate, which had been given at the previous request of the deceased.

SUBSTITUTE FOR THE STOMACH PUMP.—At a late meeting of the Medical Section of the Canadian Institute, Dr. Roseburgh exhibited a stomach pump constructed on a similar principle to that proposed by Dr. Hogden, of St. Louis. It is exceedingly simple in its manner of application, and the apparatus may be extemporized very readily. A stomach tube is passed down the æsophagus, and the other extremity is introduced into a vessel of water. By raising this vessel the water may be made to pass into the stomach, when the vessel is again lowered, the tube acts as a syphon, and entirely clears the stomach of its contents. Druggists can easily extemporize an apparatus of this kind from a piece of ordinary india-rubber tubing and a small funnel, through which the water necessary to set the syphon running might be poured. By repeating the operation, the stomach might be thoroughly washed out.

REGISTRATION OF PARTNERS.—We have received several communications in regard to infringement of that portion of the Pharmacy Act which relates to the registration of the several members composing any firm carrying on business as chemists and druggists. We are well aware of the grievance alluded to, but as the Council meeting is so near at hand, and as this subject will, doubtless, be fully discussed, we think it better not to say anything further at present.

Editorial Summary.

VANILLIC ACID.—The efflorescence of crystalline needles with which vanilla pods are frequently covered, is generally supposed to be benzoic acid. The melting points of the two substances do not, however, agree, nor does the melting point of the crystals coincide with that of cinnamic acid, or coumarine. Vee and Stokkebye asserted that the crystals consisted of a peculiar substance, for which the name vanillic acid was proposed. The composition of this body, as well as its melting point, have been variously stated. M. Carles *(L'Union Pharmaceutique*, in *Pharm. Jour. and Trans.)* has been induced to undertake an investigation of the subject, and finds the acid collected from the bottom of various cases in which vanilla had been kept, and purified by repeated crystallizations from aqueous solutions, to be possessed of the following characteristics: Odor, feeble, but increased by heat; taste, piquant; melting point between 80° and 81° C; volatilizes without decomposition, but is distilled with difficulty from a retort, at a temperature of 280° C. Very soluble in cold alcohol, ether, chloroform, sulphide of carbon, and the fixed and volatile oils. Water at 15° C., dissolves 1.2 per cent, but boiling water dissolves it readily. It decomposes the bicarbonates with effervescence, and saturates the alkaline bases in the cold, and the earthy bases with heat. Concentrated nitric acid quickly converts it into oxalic acid. Sulphuric acid, containing a trace of nitric, developes a scarlet color. It is precipitated by acids from alkaline solutions with little evident modification. It colors the per-salts of iron blue; reduces nitrate of silver, and is precipitated by the acetates of lead. Its formula, as given by M. Carles, is $C_8 H_8 O_3$.

OCCURRENCE OF SILVER IN LIQUOR BISMUTHI.—Mr. C. Ekin, F.C.S., *(Phar. Jour. and Trans.)* has lately made an examination of twelve samples of liquor bismuthi, obtained from first-class houses, and found in two of the samples a considerable quantity of silver, and, in a third, a very appreciable trace. Three samples of

commercial bismuth were also examined; two of them were found to contain silver and copper, and the third lead. Two specimens of the metal, labelled *Bismuthum Purificatum, B. P.*, were both contaminated with silver, and one of them with lead. It will be remembered that Mr. Ekin found similar impurities in the commercial subnitrate (See this Journal p. 223).

SOLANIA IN THE TOMATO PLANT.—Mr. G. W, Kennedy *(Am. Jour. Pharm.)* has made an examination of this plant for solania, and found that alkaloid to be present. The method employed consisted in bruising the leaves and stems with water, and macerating the pulpy mass, for forty-eight hours, with more water, strongly acidulated with sulphuric acid. The liquid is then expressed, and the residue treated again with sulphuric acid and water, as in the first maceration. It is now expressed as before, the two liquids are mixed, and, after standing for some days, filtered and treated with water of ammonia, sp. gr. 0.960, in excess. The precipitate that forms is separated by straining, dried in heated air at 120° F, and then boiled several times with alcohol. The alcoholic solution, having been filtered while hot, will, upon cooling, deposit the solania in small feathery-like crystals, resembling quinine in appearance, having a smell like that of potatoes, and a taste rather nauseous, bitter and somewhat sweetish. With sulphuric acid, it gives a bright red color, passing into reddish brown. With iodine a characteristic yellowish brown color is produced. Besides solania, there was also found in the herb some fixed oil, gum, chlorophyll and inorganic salts.

SYRUP OF THE PHOSPHATES.—At a meeting of the British Pharmaceutical Association, Mr. Giles read a paper on this subject, in which he referred to the difficulties sometimes experienced *in obtaining* a satisfactory and *permanent* solution of the phosphates of which the syrups were composed, and of avoiding a tendency to discoloration. Specimens of syrup of phosphate of iron and syrup of phosphates of iron, quinine and strychnia were exhibited, which had been kept for upwards of a year without material deposit or discolor-

ation. He considered that these inconveniences might be avoided by the following simple precautions, viz :—To accomplish the process with the greatest possible rapidity and manipulation, to exclude every source of impurity, and to dissolve the sugar without heat. With this object *distilled* water should be used *copiously* for washing the precipitates, which should then be dried by strong pressure, and the purest loaf sugar (in a state of rough powder) should be used for completing the syrup. If likely to be kept long, the syrup should be bottled in sizes convenient for use. In the preparation of syrupus phosphatis comp., Professor Parrish's published formula was stated to produce a syrup harsh to the taste and objectionable to patients, particularly to children, for whom it is largely employed. This appeared to be overcome in the American manufactured syrup by the substitution of a sensible proportion of hydrochloric acid for its equivalent of phosphoric, which equally well retains the phosphates in solution, and gives a soft saline taste to the product. The presence of arsenic in phosphoric acid, to an extent capable of communicating irritating proporties to phosphoric syrups, was also stated. The author was indebted for this information to the careful observation of Mr. Randall, of Southampton. The arsenic probably finds its way into phoshorus in consequence of pyritic sulphuric acid (which is commonly contaminated with arsenic) being employed by the phosphorus manufacturers on account of its cheapness.

Active Principle of Eucalyptus.—M. Rabuteau *(Comptes Rendus* in *Phar. Jour. and Trans.)* has been led to examine the leaves of the eucalyptus for a basic principle, similar to the alkaloids of cinchona. The febrifuge properties of the leaves are analagous to those of quinine, but the result of M. Rabuteau's examination proves that no such alkaloid or alkaloids exist in the drug. The treatment adopted consisted in evaporating an alcoholic tincture to half its volume. The addition of water caused a plentiful precipitation of yellowish resin, which blackened upon exposure to air. A few drops of hydrochloric acid considerably favored the separation of this resin, which was soluble in alkalies, and formed with them resinates. The slight alkalinity of the saliva was sufficient to dissolve it, with extreme slowness, but in appreciable quantity. A preparation might therefore be made from it analogous to certain medi-

cinal tars, soluble upon the addition of an alkali. The liquor, separated from the resin and filtered, contained tannin, which imparted astringency to it, and was removed by a salt of iron. It was then treated with a solution of iodine in iodide of potassium, to precipitate an alkaloid if present; also with phosphomolybdic acid, but without success, although the latter reagent is said to be such a delicate test for an alkoloid that it gives a plentiful yellow precipitate when caffeine is present in a solution in the proportion of 1 part to 20,000, and a yellow turbidity with 1 part in 80,000. A decoction of powdered leaves of *Eucalyptus globulus*, in water acidulated to separate all the resin, treated with the same reagents, yielded no trace of an alkaloid.

HYGROMETRICAL TEST PAPER.—Mr. G. Smith, *(Journal of Applied Chemistry)* notices a paper often used in Paris for detecting moisture in the atmosphere. It is prepared by dipping strips of paper into a strong solution of cobalt salt, containing a small quantity of gum arabic and common salt. The paper, when dry, presents a blue color. In a moist air, this changes to various shades of red, of a degree of intensity corresponding to the amount of moisture present.

PRECIPITATED PYROXYLINE FOR COLLODION.—Dr. Monckhoven, *(Photo. Mittheilungen)* proposes the following method for producing gun cotton for solution. It is said to make good collodion for photographic purposes, and will be useful in furnishing a way for utilizing badly prepared cotton or collodion, particularly those varieties which gives opalescent, rotten, or otherwise unsatisfactory films. Forty grammes of pyroxyline (no matter what quality) are dissolved in two litres of a mixture of equal parts of alcohol and ether. The solution is poured into five times its bulk of water and shaken violently. The precipitated cotton, collected on muslin, washed, pressed, and died, will weigh from 20 to 35 grammes. It will be of very superior quality, even if made from very indifferent cotton, and will be almost perfectly soluble in alcohol.

To Empty a Bottle Rapidly.—In the *Chemical News* it is stated that by inverting a bottle and giving it a rotary motion, most liquids will issue in a tubular form, the air gaining access to the interior of the bottle through the aperture thus formed. It is said that a bottle may, in this manner, be emptied in half the time usually required.

Correspondence.

A JEWEL OF FAIR PLAY AGAIN.

Mr. Editor,—The writer who addressed your readers, under the above heading in last month's Journal, has displayed very great ignorance of the subject of which he speaks. We should not notice this communication, but as "Justice" is appealed to, we beg to leave the matter with your many readers to judge how far we had violated the law of trade marks. We shall endeavor to do this from your correspondent's own words. He says, in the first place, that there is no firm in the Patent Medicine trade who have more zealously defended their trade mark and all infringements upon it than we. To this we fully assent, we have always endeavored to protect ourselves, and the public, against all adventurers who might pirate our trade mark *Pain Killer*, or delude the unwary purchaser by articles, in their appearance, so like ours as to deceive him in taking one for the other. He then follows on to say that we, who are so jealous of our own rights, have lately invaded our neighbor's field, and unfolds the following valuable information. "'Savage's Ursina' is a trade "mark and its style of putting up is also a trade mark. This point "Perry Davis & Son have always insisted on, yet their firm have "lately put on the market as close an imitation of the 'Ursina' "as the law will admit, calling it 'Bearine.'"

Now, out of your many intelligent readers, is there one who can see wherein "Bearine" (our trade mark) resembles, in the least degree, the other trade mark, "Savage's Ursina." There is nothing in common in the form of the words or sounds, in fact, it would be difficult to select two trade marks more at variance with one another. However, as he says, the style of putting up is also a trade mark, it may be that it is there we are invading our neighbor's field, which he complains of. As a portion of your readers have, as yet, never seen the Bearine, we beg to compare, as far as possibly, in this letter, "the style of putting up the Ursina," and the style of putting up the "Bearine," both of which are trade marks. In the first place

the Ursina will be found put up in an ordinary wide mouth Pomade bottle without lettering, such as every druggist uses in his daily business. This is surrounded by a birch bark label, while a common white paper slip surrounds the neck of the bottle upon which is printed matter, &c., the names of the original proprietors of the Ursina. The cork is covered with a coating of common wax, and surrounding the whole is a plain white wrapper with these words only to be seen, "Savage's Ursina," which are printed in heavy type and in a prominent manner. We believe this is the style that article is put up which is called their "trade mark."

Now if we examine the "Bearine" we will find an entirely new style of bottle, made from a private mould and particularly suited for the Pomade Jar, this bottle is surrounded by a fine white label (not birch bark), and it bears no strip around the neck as does the Ursina. The cork is entirely covered with metal and tin foil, so as to make it pleasant to handle, and always clean. The bottle is then enclosed in a square card-board box trimmed with brown and gold of a very new pattern, opening only at the bottom, which is again covered with a finely engraved white wrapper, bearing upon it a cut of the Canada Bear. The four sides are closely printed in the English, French and German language. The top of the box is covered with a brown label, printed in gold letters, giving directions how to open it, &c.

We have endeavored to give a true discription of the modes of putting up the two preparations, and we respectfully submit the question, have we invaded our neighbor's field in putting on the market "Bearine," or has our neighbor done us a gross injustice by bringing a false accusation against us?

Very truly yours,
PERRY DAVIS & SON.

Montreal, January 17, 1873.

Practical Formulæ

An unhutful hair-dye is suggested by Dr. Hagar, as follows: 10 of subnitrate of bismuth and 150 p. of glycerin are mixed in a glass vessel and heated in a water-bath; solution of potassa is then added in small portions and with continued agitation, until a clear solution has been obtained, to which a concentrated solution of citric acid is added until merely a slight alkaline reaction is observed. Enough orange-flower water is added to make the whole liquid weigh 300 parts; the addition of a small quantity of solution of an anilin color completes the preparation.—*Pharm. Centralhalle*, 1872, *No.* 46. *in Am. Jour. Pharm.*

DRUGS, MEDICINES, &c.	$ c.		$ c.
Acid, Acetic, fort.	0 12	@	0 14
Benzoic, pure	0 25		0 35
Citric	1 40		1 50
Muriatic	0 05		0 06
Nitric	0 11½		0 15
Oxalic	0 35		0 40
Sulphuric	0 03¾		0 07
Tartaric, pulv.	0 50		0 50
Ammon, carb. casks	0 22		0 22
" jars	0 22		0 22
Liquor, 880	0 25		0 28
Muriate	0 12½		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 45		0 65
Alum	0 02¾		0 03½
Balsam, Canada	0 40		0 42
Copaiba	0 80		0 85
Peru	3 80		4 00
Tolu	0 90		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 15
Berries, Cubebs, ground	0 20		0 25
Juniper	0 06		0 10
Beans, Tonquin	0 62		1 10
Vanilla	28 00		28 00
Bismuth, Alb	3 60		4 00
Carb.	3 65		4 00
Camphor, Crude	0 38		0 47
Refined	0 50		0 55
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 70		0 75
Elaterium oz	5 80		5 90
Ergot	0 65		0 75
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	—		—
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.	0 95		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 40		0 42
British or Dextrine	0 13		0 15
Benzoin	0 35		0 75
Catechu	0 12		0 15
" powdered	0 25		0 30
Euphorb, pulv.	0 35		0 40
Gamboge	1 25		1 35
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 50		0 55
Gum, Shellac, liver	0 45		0 50
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 30		0 35
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 17		0 20
" Sacchar.	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	10 50		11 00
Resublimed	15 00		—
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 45		0 50
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 25		4 50
Bergamot, super	5 50		6 00
Carraway	4 00		4 20
Cassia	2 40		2 50
Castor, E. I	0 15		0 15
Crystal	0 22		0 25
Italian	0 26		0 28
Citronella	1 35		1 50
Cloves, Ang.	1 75		2 00
Cod Liver	1 45		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	5 25		5 50
Origanum	0 65		0 75
Peppermint Ang.	13 00		14 40
" Amer.	3 25		3 50
Rose, Virgin	8 00		8 25
" good	5 75		6 00
Sassafras	1 00		1 20
Wintergreen	6 00		6 50
Wormwood, pure	4 00		6 50
Ointment, blue	0 90		1 00
Opium, Turkey	8 50		8 75
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 30	0 32
Carbonate	0 14	0 20
Chlorate	0 65	0 70
Nitrate	10 50	11 00
Potassium, Bromide	1 25	1 40
Cyanide	0 75	0 80
Iodide	9 50	10 00
Sulphuret	0 25	0 35
Pepsin, Boudault's...oz	1 50	—
Houghton's..... doz.	8 00	9 00
Morson's.....oz.	0 85	1 10
Phosphorus	0 75	0 85
Podophyllin	0 50	0 60
Quinine, Pelletier's	—	2 45
Howard's	2 50	—
" 100 oz. case.	2 45	—
" 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, "	2 20	2 30
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	1
Sarsap., Hond	0 40	0 45
" Jam	0 88	0 90
Squills	0 10	0 15½
Senega	1 35	1 50
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 85	2 95
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	9 00	10 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 25	6 50
" Howard's	0 14	0 16
Caustic	0 06½	0 06½
Spirits Ammon., arom	0 25	0 35
Strychnine, Crystals	2 20	2 50
Sulphur. Precip	0 10	0 12½
Sublimed	0 03½	0 05
Roll	0 03	0 04½
Vinegar, Wine, pure	0 55	0 60
Verdigris	0 35	0 40
Wax, White, pure	0 75	0 80
Zinc. Chloride.....oz	0 10	0 15
Sulphate, pure	0 10	0 15
" common	0 06	0 10
DYESTUFFS.		
Annatto	0 35 @	0 60
Analine, Magenta, cryst	3 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 50	0 35

DYESTUFFS—*Continued.*		
Japonica	0 06½	0 08
Lacdye, powdered	0 33	0 36
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 15	0 17
2nd quality	0 14	0 16
Quercitron	0 03	0 05
Sumac	0 06	0 08
Tin, Muriate	0 10½	0 12
Redwood	0 05	0 06
SPICES.		
Allspice	0 11½@	0 12
Cassia	0 39	0 40
Cloves	0 21	0 22
Cayenne	0 25	0 28
Ginger, E. I.	0 12	0 14
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 30	1 35
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 03½	0 04½
Yellow Ochre	0 08	0 12
White Lead, gen. 25 lb. tins	2 25	—
" No. 1	2 05	—
" No. 2	1 85	—
" No. 3	1 65	—
" 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 80	0 85
Tar Wood	5 00	5 25
OILS.		
Cod	0 63 @	0 65
Lard, extra	0 90	—
No. 1	0 90	0 95
No. 2	0 75	0 90
Linseed, Raw	0 77½	0 80
Boiled	0 82½	0 85
Olive, Common	1 15	1 35
Salad	1 80	2 30
" Pints, cases	4 20	4 40
" Quarts	3 25	3 50
Seal Oil, Pale	0 80	0 80
Straw	0 70	0 75
Sesame Salad	1 30	1 35
Sperm, genuine	2 15	2 40
Whale refined	0 90	0 95