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CANADIAN

PHARMACEUTICAL JOURNAL

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Original and Selected Papers.

LIQUOR FERRI PERCHLOR. FORT.

BY E. B. SHUTTLEWORTH.

Although this preparation has been officinal since the publication of the first British Pharmacopœia, it has not found much favor with pharmacists. As a material for making the tincture—and it may be presumed that it was, principally, for this purpose that the compound was introduced—it is by no means generally used. Many persons prefer to forego their allegiance to the standard authority rather than undertake a process which is inconvenient in detail, and often unsatisfactory in its results; and which, after all, possesses but questionable advantages over the older method of dissolving the peroxide.

Not a little of the disfavor in which the liquor is held may be attributed to its unfortunate introduction. This was not at all of a character which tended to the general recognition or acceptance of the preparation. It will be remembered that the formula laid down in the edition of 1864 could not possibly be successfully fol-

lowed; and, although the errors then made have since been corrected, the prejudice arising therefrom has not been entirely eradicated.

As the formula stands at present it is capable of some slight modification, especially if the quantities of the ingredients operated upon are much larger than those indicated. The specific gravity of the finished preparation is incorrectly stated, and though this has been pointed out by some writers, it is not generally known. It is somewhat remarkable that this error should have escaped the revision of 1867; especially as the attention of the revisors was particularly called to this preparation.

It appears desirable, for all the purposes to which the liquor is applied, that it contain no greater excess of acid than is actually necessary to ensure the keeping qualities of the solution, or any of its prepartions. It is seldom or ever employed by itself, except as a local application; as for painting diphtheric growths, or as a styptic. For these uses a solution as near neutral as possible is preferred. In preparing the tincture a slight excess of acid is necessary to ensure stability, but a larger quantity, though perhaps more beneficial than injurious as far as the tonic properties of the medicine are concerned, is decidedly objectionable on account of its destructive action on the teeth of those to whom it is administered.

Practically, it is a matter of some difficulty to produce a liquor in which the quantity of acid is nicely regulated. The theoretical proportions of the ingredients are indicated by the following equation :—

$$6\,Fe + 12\,HCl = 6\,FeCl_2 \times 6H2 = 6H_2$$

$$6\,FeCl_2 + 6\,HCl + 2\,HNO_3 = 3\,Fe_2\,Cl_6 + 2\,NO + 4\,H_2\,0$$

Six atoms, or 336 parts of iron, and 438 parts of hydrochloric acid, produce 762 parts of ferrous chloride, which, by the further addition of 219 parts of hydrochloric acid, and 126 parts of nitric acid produce 975 parts of ferric chloride. Applying these proportions to the pharmacopœial quantity of iron, we find that 2 parts of that metal require, for complete conversion, 3.91 parts of gaseous hydrochloric acid, or 12.295 parts of the officinal strength (sp. gr. 1.16, or more correctly 1.1578; containing 31.8 per cent. of the gas), and 0.75 part of nitric acid, or 1.071 part of acid of the officinal density (1.42).

These theoretical quantities do not work well in practice, because of the loss of acid by evaporation during the solution of the metal, and on the subsequent boiling; and again, on account of the unstable nature of the solution of ferrous chloride first formed, which, if it contain not an excess of acid, immediately begins to change, acquiring a skin or pellicle of oxychloride, which is afterwards deposited. If the filtration be long delayed, the strength of the solution would thus be reduced.

The quantity of hydrochloric acid ordered by the Pharmacopœia over that actually required is 1.624 oz. by weight, or nearly 1½ fluid ounces. I have ascertained by repeated experiments that the prescribed amount is judiciously proportioned, and will yield a preparation of a perfectly stable character.

The quantity of nitric acid, as well as the manner of its addition, might be altered with material advantage. In operating upon quantities no larger than that ordered, and by employing large vessels the operation may, possibly, be managed, without loss; but even in that case the proportion of nitric acid cannot be nicely regulated. If the quantity of materials should be large it would be almost impossible to control the action. In operations which I am frequently called upon to conduct, ten pounds of iron are dissolved, and in treating the solution with nitric acid, it requires the most careful addition of this agent, as well as the utmost diligence of the operator, as far as stirring and regulating the heat is concerned, to keep the mixture within the pot; although a vessel capable of holding twice the bulk of the liquid is employed. The sudden and violent disengagement of nitric oxide which marks the final addition of acid, and the completion of this part of the process, is always difficult enough to control, however, little acid be added at a time, and I am convinced that if the officinal process were followed, would be quite unmanageable.

Those who have had much experience with this preparation will, doubtless, have discovered the advantages of adding the acid gradually, and by small portions, using no more than is actually required. In the officinal formula, the excess of nitric acid is considerable. Nine fluid drachms are ordered for two ounces of iron, while only a little over two-thirds of this quantity is necessary. For 2 parts of metal 1.07 parts of acid sp. gr. 1.42 should suffice, and practically, I find that only a slight excess over this is required.

The plan of procedure which I have found most successful is to

add the iron wire to the dilute acid and let the action continue during the night. Most of the metal will thus be dissolved in the cold, a gentle heat may then be applied until the disappearance of the metal. The solution is then filtered; mixed with the reserved portion of hydrochloric acid, brought to the boiling temperature, and the nitric acid added, by small portions, so long as effervesence is produced, or until the liquor assumes the characteristic red color. The heat is then continued until the bulk is reduced to 8 fluid ounces, (for each 2 oz. of iron), and, when the solution is cold, the proper measure is made up with distilled water. In this way the liquor will have an excess of acid. This may be further reduced by continued evaporation, but I do not think it advisable to go beyond the point indicated, as insoluble crusts, and deposits, are liable to be formed, which are exceedingly difficult to dissolve. I do not think that any considerable amount of acid is present even when the solution is only evaporated to 10 fluid ounces, as there is only a difference of .01 sp. gr. when the liquor is reduced to 4 ounces, and again made up to the original bulk.

The specific gravity of the preparation is stated by the *British Pharmacopœia* to be 1.338. As pointed out by Squire, *(Companion to the Pharmacopœia)* this is an error. The result of my experiments does not correspond with the figure given by the latter authority, as I find the sp. gr. to be 1.443, while Squire gives it as 1.420. In the *U. S. Dispensatory* (Ed. 1867, p. 1201), it is stated that by continuing the evaporation to five fluid ounces, then adding sufficient water to make up ten fluid ounces, the sp. gr. will be 1.410. I have carried the evaporation as far as four fluid ounces, but find that when the stated bulk is made up, the density will be 1.432. These errors should be corrected, as they are calculated to mislead those who depend more on density than any stated measurement; and purchasers of a liquor are apt to question its reliability if it does not answer to all the officinal tests. I have no doubt but in this way manufacturers have been often charged with want of care when it did not rightly belong to them.

SUPPOSITORIES.*

BY R. ROTHER.

Oil of theobroma, in a pure condition, is not a suitable material for suppositories. But if it is mixed with one-half its weight of spermaceti, a very satisfactory excipient is obtained.

However, owing to the high price, and the ease with which it can be variously adulterated, very little, if any, pure oil of theobroma can be found in the market. The action is therefore barely justifiable to resort to such expensive material, at the risk of unconsciously employing a pernicious substitution, when much cheaper, equally adaptable, and always pure substances are so near at hand. The old British Pharmacopœia used for an excipient a mixture of lard and white wax. But the objections to white wax are even more serious than those pertaining to oil of theobroma. The present British Pharmacopœia has adopted as a menstruum oil of theobroma, with a small proportion of white wax. But it is said that the oil of theobroma used in this case is not a purified article, and that in fact the oil of theobroma of commerce was not impure by intentional adulteration, but simply lacked purity for want of being subjected to a refining process, by which moisture and albuminous matter are separated. Pure oil of theobroma is then said to have the desirable consistency that is imparted to the commercial article by the incorporation of a very little white wax. Be this as it may. But an article so purified does not occur in the market, and should it ever, its cost would undoubtedly be so exaggerated above that of the usual article that it would be but rarely in demand. Moreover, the statement does not seem plausible that purified oil of theobroma should retain in every case the exquisite consistency attributed to it, without the intervention of white wax, if moisture has the obnoxious tendency to impair this consistency; and which a small quantity of white wax has the power of restoring. Solid extracts are very much prescribed in suppositories, and great difficulty is experienced in properly incorporating them. Sometimes the extract is dried and pulverized for the purpose, but the usual method is to liquify them with a little water, and then mix the syrupy liquid with the excipient when near the point of congealation. Now, by this operation a considerable proportion of water enters the mixture, much more than a commercial article of oil of theobroma would probably contain, and therefore since wax or a similar agent is then necessary to supply the requisite firmness, a purified oil of theobroma would not be applicable in this case, unless a certain necessary proportion of white wax was also added.

Oil of theobroma is said to be purified by melting, and filtering

* Pharmacist and Chemical Record.

it through felt to separate solid impurities, and the filtrate is then heated for many hours to separate adhering moisture. Now, the removal of an almost appreciable amount of albumin, and an insignificant humidity is all well enough where it can be accomplished without extraordinary difficulties and eventually injuring the product. Fatty matters of whatever kind, when long exposed to hot air, invariably suffer decomposition. The consequent rancidity and acquired tendency to become still more rank and irritant, are the results of oxidation and dissociation, effected by the combined action of atmosphere and heat. But the subject in hand by no means requires such an absolutely pure article, and therefore all this superfluous refinement is simply ridiculous. If the market affords commercially pure oil of theobroma, which meets all requirements after its firmness has been properly adjusted by the necessary adjuvant, it is all that can be desired. The objection only rests against a wilfully adultetated article. But in case the addition is harmless and the compound answers the required purpose, then the objection only bears upon the pecuniary interest, as the price of commercially pure oil of theobroma barely holds comparison to that of spermaceti or tallow.

Therefore, when the writer had reference to pure oil of theobroma, not the so-called purified article was meant. The commercial article unmixed with spermaceti, wax, tallow, or any other adulterant, was the substance in view.

White wax is a very improper ingredient of any unctuous composition, its inherent rancidity is rapidly conveyed to the other components. Its price is unreasonably high; its purity cannot easily be determined, and its advantages are not above greatly purer and cheaper material. The writer would be in favor of seeing this indescribable substance pharmaceutically ignored.

Spermaceti is a very cheap substance; it is always commercially pure—that is, not absolutely pure, but pure enough for pharmaceutical purposes. As this substance, by reason of its inherent whiteness and natural purity, does not require to be subjected to any bleaching process, or other injurious influences, consequently its originally bland and indifferent character, particularly adapt it as the proper solidfying component of unctuous mixtures.

Pure lard is very cheap, and can always be procured without much difficulty. But the proper manner for the pharmaceutist to obtain it is to purchase the leaf ' d, and render it himself. In this condition it is then superior to most fatty matters, pure almond or olive oil not excepted. To enhance its permanence it should always he benzoinated, and thus prepared can be employed for most pharmaceutical purposes, with but few exceptions.

All so-called cerates, ointments and suppositories should have as a basis a plain mixture of spermaceti and lard, to the exclusion of white wax and olive oil.

The writer finds that a mixture of equal parts of spermaceti and pure lard forms an excellent excipient for suppositories, equal in all respects to the doubtful oil of theobroma, and therefore recommends this composition as the best procurable substance for the purpose.

But the writer's object, on this occasion, was to make special allusion, to the preparation of the popular class of suppositories containing solid extracts. No doubt the greatest difficulty in connection with the suppository question is the proper incorporation of solid extracts. The method at present in use has been described above. But with this procedure the mixture often becomes too thick to pour conveniently, and if heat be applied to liquify it, the extract most usually agglutinates and sinks to the bottom of the vessel in compact and unmanageable masses, the operation thus resulting in a complete failure. However, the writer finds that if some inert powder, as starch, or French chalk for instance, in proportion of several times the weight of the extract be also added, then no difficulty whatever will be experienced in the manipulation. The mixture can often thus be fully liquified without danger of precipitating ths extract which is held in perfect suspension by the powder. The powder can also be any pulverized crude material from which the extract is derived, but it is best of such a nature as not to become doughy when moist. The least possible moisture should be admitted, and to attain this the writer combines the extract by a peculiar manipulation. The spermaceti is first fused, the lard is then added, and after melting, a portion of the mixture is poured upon the extract in its ordinary state, without any addition whatever. The extract and solidifying mass can then be very easily and uniformly mixed with the pestle; the inert powder, which is preferably starch, is then also mixed in; the smooth mass is now added to the remainder of the fused menstruum, thoroughly mixed, and poured with constant stirring into the moulds which were previously cleaned, and well refrigerated with a mixture of ice and water. The suppository will have solidified in a few moments, and can easily be extracted from the mould by lightly tapping the edge of its base upon a solid support.

NOTE OF SUCCUS SCAPI TARAXACI.*

BY MR. HENRY BARTON, BRIGHTON.

Dissatisfied with the variable character of the usual preparations of dandelion, in 1862 I collected some flower stalks with the flower in full bloom, and expressed from them the juice. Gratified with the appearance, taste and effect, the next year the experiment was resumed, rejecting the flowers and crushing only the stalks. Our notes for 1863 may be thus condensed:—From 75 lb. 12 oz. flowering stalks as gathered, 12 lb. 6 oz. flower heads were picked off and rejected; and allowing about 1½ lb. for drying and waste, from the remaining 62 lb. stalks by crushing and pressure were obtained 31 lb. 8 oz. of juice, to which we added 25 per cent by measure of spirit, and stored in glass bottles; after some weeks it was filtered from the very small deposit, the resulting liquor remaining bright and retaining its characteristic taste.

From that time to this we have operated in much the same way, with the exception that on one occasion we added the spirit to the crushed pulp, and allowed it to remain twenty-four hours before submitting it to pressure; in the resulting liquor there was no appreciable difference from the former preparation either in odour, taste or color. Our note for the present year gives similar results: from 237 lb. of the stalks were obtained 123 lb. 4 oz. of the juice, also from 63 lb. flower heads we pressed 24 lb. 3 oz.; this latter we consider inferior and have kept it separate.

The yield would be greater if the plant came in direct from the collectors' hands; as it is, they gather it one day and forward it by carrier the next.

The stalk juice is not so rich in solid constituents as is that from the root; but if I may be permitted to quote Professor Bentley, who, when speaking of the juice from the latter collected in the summer months, remarked that "its value as a medicine most certainly did not depend solely upon the amount of solid constituents it contained, but principally, if not entirely, upon the presence of a bitter principle, which had been termed taraxacine. One of the best evidences therefore of the value of taraxacum and its fitness for medicinal use would be its taste, etc." If then we may be allowed to admit taste as one of the evidences of value, it will certainly be favorable to stalk juice, and judging from the frequent remarks of our friends in the medical profession and others who have taken it, I have reason to believe that, if not the best, it is certainly one of the best, most uniform and readily obtainable preparations

*Read before the British Pharmaceutical Conference and published in the Pharm. Jour. & Trans.

of taraxacum, and one that can be kept for almost an indefinite period without changing.

I will only now remark that if required in quantity, there would be little difficulty in meeting the demand; we once gave *carte blanche* to our collectors, the children of a parish some miles hence, and they sent in in three days 1258 lb. How much they would have sent it is difficult to say, as we were compelled from an accident to our press to countermand the order. At first we were at a loss as to the best means of effectively breaking up the stalk, the pestle and mortar process being ineffectual and tedious, but upon trial found a Kent's mincer, set in the direction for cutting coarse, answer admirably, feeding our press as readily and rapidly as could be desired; indeed so well does it bruise and divide succulent roots, leaves, stems, etc., that I can recommend our friends to give it a trial under similar circumstances.

THE BOTANICAL ORIGIN AND CHARACTERS OF THE OFFICINAL RHUBARBS.*

By the courtesy of Dr. J. Léon Soubeiran, we have been favored with the following extracts from a communication made by Professor Baillon, in the recent session of the French Society for the advancement of Science, held at Bordeaux.

The fine officinal rhubarbs which are known by the names of Russian and Chinese rhubarbs, appear to be the product of a single botanical species, growing in Thibet, about the 40th degree of latitude, in deserts, which have usually been looked upon as vast plateaux of sand, but which are really inaccessibe citadels, formed of superposed stages of perpendicular rocks, the craggy buttresses of which have been but seldom, and then with difficulty, scaled by Europeans. It was thence that about the year 1868 M. Dabry procured some stalks of the true officinal rhubarb. How he procured these plants is not known, but probably they were carried off by a Chinese workman from land devoted to the lamaseries, from which the common people are scared by terrible imprecations.

Boerhaave and Pallas, like the explorers of the Meikong in our own time, appear not to have known the true rhubarb except from the accounts of dealers who transported it from Thibet, either to Kiatcha, the principal mart for it in Russia, or to China. Linnæus, however, was pretty near the mark when he wrote that the Asiatic rhubarb grew "*ad murum Chinæ*," although the real locality is

*Pharm. Jour. and Trans.

doubtless further east. But it has long been known that the plant is furnished with palminerved or digitinerved leaves, which are deeply incised on the margin. This has induced authors to think that the finest quality of the Asiatic drug is produced by a species in the same group as *Rheum hybridum*, probably by *R. palmatum*. Guibourt also arrived at this opinion after having cultivated and studied in Paris all the species of *Rheum* which he could obtain. But M. G. Planchon has shown that the roots of *R. palmatum*, as they are found in Guibourt's collection, do not present the histological characters of the Chinese or Russian rhubarbs of commerce.

Hitherto but little attention has been paid to what is said respecting the rhubarb plant by the authors of the Chinese "Pun-tsaou," namely, that the leaves are "green during the first month, and that when well developed they are large as a fan, and resemble those of the *Ricinus communis;*" also, that the stem is very large, one to two feet long, covered with a black bark, soft, humid, and containing a yellow sap-wood. These characters are very perceptible in a plant sent by M. Dabry to M. Soubeiran, in the putrified mass of which some shoots were found still intact by M. L. Neumann. These shoots carefully cultivated have produced some plants, one of which has flowered with M. Giraudeau, in the valley of Montmorency, and another is cultivated in the Garden of the Faculty of Medicine at Paris. It has there produced leaves of about a metre and a half in length, and of which the limb, a little broader than long, is orbicular, deeply five-lobed, and incised, cordate at the base, pale green, glabrous above, densely covered underneath by a fine white down, which does not alter the green tint. In the inflorescence, the bracts of about two metres in length, ramified, foliate, and bare at the summit, are surmounted by numerous crymes of whitish flowers, remarkable for the depth of their concave receptacles and the green color of their disks. The aerial portion of the axis of this plant, for which the name of *Rheum officinale* is proposed, is a thick, short, ramified stem, whilst the subterranean portions are cylindrical, of small size,—therefore of little practical use,—and easily destroyed, from which cause it is rarely, and in but small quantity, imported into Europe. This is the reverse of what is found in the European rhubarbs, of which the fuller developed root is the part usually employed, together with a small portion of the stem. But in the Thibet rhubarb the part principally employed is the aerial stem or branches. Hence the peculiar characters of this drug as it is generally met with in commerce. It is characterized by its color, smell and taste—found in the living plant from Thibet—and by the numerous starred spots which are observed in sections of certain portions. The pretended black bark which is removed in cleaning this rhubarb is nothing but a mass of leaf bases and of ochreas which cling to the surface of the stem. As the stems of *Rheum* which have been planted in France comport themselves as

true sympods, on the surface of which there are not only leaves, but also axillary buds, it is not astonishing that these buds, separated from the mother-plant, readily develope adventitious roots, allowing of their easy reproduction. Thus the future is assured of a large number of stalks of this plant, handsome in an ornamental point of view, and susceptible of being successfully cultivated in France in the open air, where it has already supported a winter of 20°.

The radiated spots in rhubarb are really transverse sections, more or less oblique, of adventitious roots, which penetrate from the base of the root into the parenchymatous mass of the stem, where they appear as a pith of medullary rays, with triangular portions of parenchyma and wood interposed. This makes it practically possible always to distinguish the rhubarbs met with in commerce consisting of the cauline portions of the plant from those consisting of the root.

THE PRECIPITATION OF SILVER BY COPPER.*

BY ALFRED TRIBE, F.C.S.

When a piece of copper foil is metallically connected into a piece of silver, and placed into an aqueous solution of cupric nitrate (dilute to about 6 per cent.) containing air, the oxygen of the latter slowly combines with the copper of the nitrate, forming cuprous oxide, which deposits on the silver in a fine crystalline condition, whilst the nitric element combines with metallic copper, reproducing the nitrate. If the copper have its surface covered with crystalline silver, the decomposition of cupric nitrate by free oxygen is accelerated, so much so that, when this couple is moistened with the salt and exposed to air or oxygen, the tips of the silver crystals become at once coated with cuprous oxide; and when a limited quantity of air is used, nitrogen only remains in the free condition (Gladstone and Tribe, *Proc. Roy. Soc.*, vol. xx, p. 290).

In carrying on the above and other experiments, it was frequently necessarry to completely precipitate silver from the nitrate by copper, and it was observed that the metal so obtained, after being washed with water, invariably contained copper, sometimes in considerable quantity. Since the above mentioned couple is formed the instant silver in solution is brought into contact with copper, the idea suggested itself that the copper found in silver precipitated by that metal might be due to dissolved oxygen in the sil-

*Read before the British Association, Brighton Meeting, Section B. and Published in the *Chemical News*.

ver solutions; or to the absorption of that gas, by the liquid, from the air during or subsequent to the precipitation of the metal. The experiments made with the view of ascertaining the correctness of this supposition are tabulated below.

There was employed in each experiment an excess of copper, and in experiments C to I about the same volume of liquid. In A and B, pieces of copper of the same dimensions were placed in open basins and covered to about a quarter of an inch with ordinary silver nitrate, *i. e.*, impregnated with air. In C, D and E, bottles were filled with ordinary silver solution and stoppered during the precipitation. In F and G, carbonic anhydride was bubbled through the solutions prior to the immersion of the copper plate, and the precipitation conducted as in C, D and E. In H and I ordinary solutions were employed.

Experiment.	Per cent of $AgNO_3$ in Solution.	Duration in Hours.	Copper in Precipitated Metal.	Copper per 100 parts of Precipitated Metal.
A	1·4	24	0·0185	7·45
B	1·4	48	0·0377	15·23
C	3·5	24	0·0103	0·32
D	1·4	24	0·0096	0·77
E	0·7	24	0·0099	1·61
F	3·5	24	0·0025	0·08
G	1·4	24	0·0029	0·23
H	3·5	$\frac{1}{16}$	merest trace	—
I	3·5	1-16	" "	—

It appears from experiments A, B and D, that the quantity of copper is increased by exposing the couple covered with a solution of cupric nitrate to the air, and diminished by precipitating in closed vessels. The actual amounts of copper in C, D and E being nearly the same, indicate that its presence cannot be attributed to oxygen in the copper employed; and, moreover, is a result which would follow were it caused by dissolved oxygen in the silver solutions, since it is probable they each contained about the same quantity of the gas. Experiments F and G show that the effect of saturating the solutions with carbonic anhydride prior to precipitation is to diminish the amount of copper three to four times, which doubtless is due to the partial displacement of oxygen by the more soluble gas. In experiments C to G, there existed a trace of silver in solution after the twenty-four hours. H and I, being of short duration, an excess remained; and it is noticeable that, in every case where the silver was nearly exhausted, copper was found, whereas, where there was an excess in solution, the merest trace only of copper existed in the precipitated metal.

It appears from the foregoing experiments that free oxygen is

intimately connected with the presence of copper in silver precipitated by that metal; but, whether copper exists therein as cuprous oxide or as basic nitrate, would depend upon at what stage of the operation the oxygen plays its part. If the two actions, *i. e.*, decomposition of silver nitrate by copper, and cupric nitrate by oxygen, be simultaneous, basic nitrate should be found. If, however, the decomposition of cupric nitrate be not effected until the silver nitrate is so exhausted as to be incapable of action on the produced cuprous oxide, that substance should be found. One experiment made on this point with a weak solution of silver nitrate, seemed to show that basic nitrate of copper did not exist.

A NEW FILTER.*

BY R. ROTHER.

For most pharmaceutical purposes the ordinary plaited filter meets all indications. But for analytical operations the plaited filter cannot be successfully applied. The numerous folds, while favoring the rapid transmission of liquids, expose too much surface for the convenient collection of precipitates, and at the same time greatly and seriously interfere with their washing. The plain filter is the only practical form for analytical uses, but as it exposes only half as much surface as the plaited filter, the passage of the liquid will naturally be slower; but a very fatal objection to the plain filter is the superfluous fold which in two thicknesses lies under one-half the extended surface of the filter. The interposition of these two extra layers compels the liquid to pass through three thicknesses of paper on the half side of the extended filter, whilst the other half side presents only a single thickness. It is evident that the two hidden layers are a very appreciable impediment to the current, aside from the more important fact that the liquid will traverse this side less rapidly than the other, and thus occasion an imperfect washing of the precipitate, or at least prolong the operation beyond reasonable limits. The writer, recognizing the force of this objectionable feature, resorted to a very simple modification of the plain filter, which, whilst saving 50 per cent. of the paper, removed all the deleterious defects of the old form. This new feature practically presents but a single thickness of paper to penetrate, at the same time preserving an even surface, equal in all other advantages to the plain filter. The strength and general security of the new filter has been thoroughly tested, and has not failed in a single instance.

*Pharmacist and Chemical Record, Oct., 1872.

The filtrations are more rapid than with the usual form, and in the absence of the superfluous half-sheet admits of a more rapid drying, which is an additional gain of the new filter. The most gelatinous, as well as the most compact and heavy precipitates were collected with it from strongly corrosive liquids with the greatest ease. Its particular advantages for analytical operations are unsurpassed.

To make the new filter, cut the circular disc of filtering paper in two through the line of its diameter, take either half disc and fold it across the line of the radius, then turn down the double edge of the cut side and fold it over several times—finally, run a hard, smooth surface along the seam thus produced, to compress it, and spread the finished filter into an appropriate funnel, first moistening it with water before the liquid to be filtered is poured in.

In this connection the writer would suggest a substance of great utility in a majority of analytical operations. It is the so-called "iron cuts." This material is in regular pieces an eighth of an inch long, with very oblique bases, and is apparently cut from a very fine species of flattened wire similar to that from which card teeth are made. It was originally sold as an improvement on iron filings for pharmaceutical purposes. The writer, however, has employed it with great success for its mechanical effects in analytical manipulations, for which purpose it is far superior to sand or iron filings. Its cleanliness and compact nature especially recommend it. It completely replaces the sand bath in every particular. Among its numerous advantages, it does not adhere to apparatus, which is an exceeding annoyance with sand or iron filings. Funnels holding filters with precipitates to be dried can be partially immersed in this material, and the drying speedily effected. It is a valuable adjunct to the water bath for utilizing heat.

Thus, any convenient vessel can be partially filled with it, and then water poured on so as either to reach slightly above the surface or fall below it. Heat is then applied, and upon this support evaporating dishes can be placed, containing liquids, or filters with precipitates. In this case a special advantage is secured by using an evaporating dish containing the material dry, for the purpose of drying precipitates and other substances, which must not be heated above 212°F. The funnel is then partially submerged in the cuts contained in the evaporating capsule, which is in its turn heated by the mixture of cuts and water in the other vessel. By this procedure immense effects are obtained.

ARTIFICIAL BUTTER.

In an extract from the "Revue Hebdomadaire de Chimie," given in the *Chemical News*, it appears that Monsieur Mége-Mouriez, some years ago, was requested by the Victualling Department of the French Navy to try to find a wholesome substitute for butter, which would not become rancid by keeping. Experiments made with cows submitted to a very severe and scanty diet, led to the discovery that these animals continued to give milk, although in very much smaller quantity, and that this milk always contained butter; the author surmised that this butter was due to the absorption of the fat contained in the animal tissues, which was converted into butter under the influence of the milk-secreting glands. This led to experiments on the splitting up of animal fats, and, further, to the following process of making butter artificially. Best fresh beef-suet is first mechanically cut up, by means of circular saws fitted to a cylinder, and is next placed in a vessel containing water, carbonate of potassa, and fresh sheep's stomachs previously cut up into small fragments; the temperature of this mixture having been raised to 45°, the joint influence of the pepsine of the stomachs and heat causes the fat to be separated from the cellular tissue; the fatty matter floating on the top is decanted, and after cooling submitted to very powerful hydraulic pressure; the stearine is used in candle-making, and the semi-fluid olemargarine is used for making the artificial butter in the following manner:—Fifty kilos. of the fat are poured along with 25 litres of milk and 20 litres of water into a churn, while there is added 100 grms. of the soluble matter obtained, by soaking for some hours in milk, from cows' udders and milk glands; a small quantity of annatto is also added, and the operation of churning then proceeded with. The butter thus obtained is well washed with cold water, and, if required to be kept for a long time, melted by a gentle heat, to eliminate all the water. According to reports of sanitary committees, as well as the authorities of the Victualling Department of the French Navy, this artificial butter is really an excellent substitute for genuine butter.—*Jour. Soc. Arts.*

CASTOR-OIL IN SOAP LINIMENT.*

BY L. E. SAYRE.

I think none of my pharmaceutical brethren will deny but that the process for the preparation of our linimentum saponis can be improved upon. It is almost useless to point out the imperfection, for

*From the American Journal of Pharmacy, Dec. 1872.

all who are familiar with it have experienced the common difficulty attending its preservation during the winter season.

Castile soap contains too large a percentage of insoluble constituents (chiefly palmate and stearate—the old margarate of soda) to be a good article; and yet it is the only commercial soap at all adapted to the purpose, the others being mostly made from solid fats.

I therefore suggest, to obviate the annoyance we are called upon to endure by the Pharmacopœia of 1860 (until we see what the revision of 1870 may bring forth), the substitution of castor-oil soap, which is easily prepared by boiling castor-oil with solution of caustic soda until a thick mass is formed which can be drawn into threads, then a strong solution of salt is added, when the soap separates as a coherent cake, which may be laded out into paper-box lids, &c., to dry.

My attention was directed toward this soap, some time ago, by an article published in the "American Journal of Pharmacy," 1871, p. 165, copied from the "London Pharmaceutical Journal," in which Mr. F. M. Rimington very highly recommends its introduction into the list of pharmaceutical preparations as a pure medicinal soap, and using it as a medium or adjunct for administering other active remedies. Its physical properties, he says, are in its favor. It has a clean, yellowish-white color, free from smell, and soon becomes hard and pulverulent. To this I may add, it is quite soluble in cold alcohol, its spirituous solution remaining unchanged even at a very low temperature.

To test its merits, a preparation of soap liniment was made by substituting the Castile by it, and when subjected to low temperature (32° F.), it remained perfectly transparent, while the officinal preparation became quite thick.

Evidently a soap richest in oleic acid and containing the least percentage of stearic and palmitic acids is the best for making liquid saponaceous preparations. Castor-oil, it seems to me, furnishes us one coming nearest to this qualification of any we possess.

NOTE.—In his thesis, "Saponification of Castor-oil," Mr. Charles H. Clark advocated the substitution of a soda soap of this oil for Castile soap in soap liniment. Samples of the soap, and of soap liniment and soap plaster made with it, have been in the possession of the Philadelphia College of Pharmacy for the last ten months.—EDITOR AMER. JOURN. PHARM.

ON THE RELATIVE POWER OF VARIOUS SUBSTANCES IN PREVENTING PUTREFACTION, AND THE DEVELOPMENT OF PROTOPLASMIC AND FUNGUS LIFE.*

BY DR. F. CRACE CALVERT, F. C. S.

To carry out this series of experiments, small test-tubes were thoroughly cleansed, and heated to a dull redness. Into each was placed twenty-six grammes of a solution of albumen, containing one part of white of egg to four parts of pure distilled water, prepared as described in my paper on protoplasmic life. To this was added 1,000th or ·026 gramme, of each of the substances, the action of which I desired to study.

The reasons why I employed one part in a thousand are two-fold. First, the employment of larger proportions would, in some instances, have coagulated the albumen ; secondly, it would have increased the difficulty of observing the relative powers of the most efficacious antiseptics in preventing the development of the germs of putrefaction or decay.

A drop was taken from each of the tubes and examined under a microscope, having a magnifying power of 800 diameters. This operation was repeated daily with the contents of each tube for thirty-nine days, and from time to time for eighty days. During this time the tubes were kept in a room, the temperature of which did not vary more than 3°—namely, from 12·5° C. to 15·5° C.

In order the better to show the influence of the antiseptics used, I examined two specimens of the same solution the same time, one of which was kept in the laboratory, the other in the open air.

A marked difference was observed in the result, the one kept outside becoming impregnated with animal life in less than half the time required by the other, while as many vibrios were developed in six days in the tube kept outside, as were developed in thirty days in the tube in the laboratory.

A summary of the results of experiments is given in the following table, in which the substances are grouped, according to their chemical nature :—

*Abstract of Paper read before the British Association, and published in the Chemist and Druggist.

	Days required for the Development of		
	Fungi.	Vibrio.	Putrid Odours in Albumen kept at 80°.
1. STANDARD SOLUTIONS.			
Albumen kept in laboratory for comparison....	18	12	16
Albumen exposed outside laboratory.....	None.	5	—
2. ACIDS.			
Sulphurous Acid.....	21	11	45
Sulphuric Acid.....	9	9	16
Nitric Acid.....	10	10	16
Arsenious Acid.....	18	22	None.
Acetic Acid.....	9	30	None.
Prussic Acid.....	None.	9	35
3. ALKALIES.			
Caustic Soda.....	18	24	72
Do. Potash.....	16	26	85
Do. Ammonia.....	20	24	26
Do. Lime.....	None.	13	14
4. CHLORINE COMPOUNDS.			
Solution of Chlorine.....	22	7	16
Chloride of Sodium.....	19	14	16
Do. Calcium.....	18	7	11
Do. Aluminium.....	21	10	16
Do. Zinc.....	53	None.	38
Bichloride of Mercury.....	81	None.	None.
Chloride of Lime.....	16	9	9
Chlorate of Potash.....	19	17	38
5. SULPHUR COMPOUNDS.			
Sulphate of Lime.....	19	9	14
Protosulphate of Iron.....	15	1	16
Bisulphite of Lime.....	18	11	16
Hyposulphite of Soda.....	18	11	11
6. PHOSPHATES.			
Phosphate of Soda	17	13	16
Do. Lime.....	22	7	16
7.			
Permanganate of Potash.....	22	9	11
8. TAR SERIES.			
Carbolic Acid.....	None.	None.	None.
Cresylic Acid.....	None.	None.	None.
9. SULPHOCARBOLATES.			
Sulphocarbolate of Potash.....	17	18	35
Do. Soda	19	18	26
Do. Zinc.....	17	None.	None.
10.			
Sulphate of Quinine.....	None.	25	None.
Picric Acid.....	19	17	26
Pepper.....	None.	8	16
Turpentine.....	42	14	35
11.			
Charcoal.....	21	9	None.

In comparing the results stated in the above table, the substances can be classed under four distinct heads, viz. :—Those which prevent

the development of protoplasmic and fungus life ; those which prevent the production of vibrio life, but do not prevent the appearance of fungus life ; those which permit the production of vibrio life, but prevent the appearance of fungus life ; and those which do not prevent the appearance of either protoplasmic or fungus life.

The first class contains only two substances, carbolic and cresylic acids.

In the second class, also, there are only two compounds, chloride of zinc and bichloride of mercury.

In the third class there are five substances, lime, sulphate of quinine, pepper, turpentine, and prussic acid.

In the fourth class is included the remaining twenty-five substances.

The acids, while not preventing the production of vibrio life, have a marked tendency to promote the growth of fungus life. This is especially noticeable in the case of sulphuric and acetic acids.

Alkalies, on the contrary, are not favourable to the production of fungus life, but promote the development of vibrios.

The chlorides of zinc and mercury, while completely preventing the development of animalcules, do not entirely prevent fungus life ; but I would call special attention to the interesting and unexpected results obtained in the cases of chlorine and bleaching powder. When used in the proportion above stated they do not prevent the production of vibrio life. In order to do so they must be employed in excess, and I have ascertained, by a distinct series of experiments that large quantities of bleaching-powder are necessary. I found that part of the carbon was converted into carbonic acid, and that part of the nitrogen was liberated.

If, however, the bleaching-powder be not in excess the animal matter will still readily enter into putrefaction. The assumption on which its employment as a disinfectant has been based, namely, that the affinity of the chlorine for hydrogen is so great as to destroy the germs is erroneous.

The next class to which I would call attention is the tar series, where neither the carbolic nor the cresylic acid fluids gave any signs of vibrionic or fungus life during the whole eighty days in the course of which the experiments were conducted.

The results obtained with sulphate of quinine, pepper, and turpentine deserve notice. None of them prevent the development of vibrio life, but sulphate of quinine and pepper entirely prevent the appearance of fungi. This fact, together with the remarkable efficacy of sulphate of quinine in intermittent fever, would lead to the supposition that this form of disease is due to the introduction into the system of fungus-germs, and this is rendered the more probable if we bear in mind that these fevers are prevalent only in low, marshy situations, where vegetable decay abounds, and never ap-

pear to any extent in dry climates, even in the midst of dense populations, where ventilation is bad and putrefaction is rife.

The results obtained in the case of charcoal show that it possesses no antiseptic properties, but that it prevents the emanation of putrid gases owing to its extraordinary porosity, which condenses the gases, thus bringing them into contact with the oxygen of the atmosphere, which is simultaneously condensed.

The above results have been confirmed by a second series.

A series of experiments was also undertaken, substituting gelatine for albumen, and was continued for forty-seven days.

Vibrios appeared in two days in the standard gelatine solution, and bacteria after four or five; and during the whole time of the experiment life was far more abundant than in the albumen solution. A distinct putrid smell was emitted after twenty-six days.

With bleaching-powder it took twenty days for life to appear, instead of seven as in the case of albumen; while at no time during the twenty-seven days which remained was life abundant. No putrid odor was emitted, but a mouldy one could be detected on the thirtieth day.

With chlorine solution vibrio life was observed only after forty days; no putrid or mouldy smell was given off at any time.

The protosulphate of iron gave, with this solution, results quite different from those with albumen, in which, it will be remembered, vibrios appeared in seven days, and fungi after fifteen; whilst with gelatine neither protoplasmic nor fungus life appeared during the time the experiments were continued.

Another substance, arsenious acid, also presented a marked difference in its action in the two solutions; for although with albumen twenty-two days elapsed before vibrios were present, and eighteen before fungi, with gelatine animal life appeared after two days, and at no time did any fungi exist. The effects of the other substances with gelatine were so similar to those with albumen, that it is unnecessary to state them here.

ON THE RELATIVE POWER OF VARIOUS SUBSTANCES IN ARRESTING PUTREFACTION AND THE DEVELOPMENT OF PROTOLASMIC AND FUNGUS-LIFE.

This series of experiments was undertaken as being complementary to those described in my last paper, and consisted in adding to a solution of albumen, swarming with microscopic life, 1,000th part of the substances already enumerated in that paper; and examining the results produced immediately after the addition of the substances, and after one, six, and sixteen days; but in this abstract only the results obtained in the first and last cases will be noticed.

The solutions were placed in test tubes similar to those described in my last paper.

The experiments were begun on the 20th September, 1871, the solutions being kept at a temperature of 15° to 18° C.

In the standard solution the amount of life and putrescence increased during the whole of the time.

The first class includes those substances which completely destroyed the locomotive power of the vibrios immediateiy, and completely prevented their regaining it during the time the experiments were conducted :—Cresylic acid.

The second class eontains those compounds which nearly destroyed the locomotive power of all the vibrios present when added, and afterwards only one or two could be seen swimming about in each field :—Carbolic acid, sulphate of quinine, chloride of zinc, and sulphuric acid.

The third class are those which acted injuriously on the vibrois on their addition, leaving only a small number retaining the power of swimming, but which allowed the vibrios gradually to increase in number, the field, nevertheless, containing less life after sixteen days than the standard albumen solution :—Picric acid and sulpho-carbolate of zinc.

The fourth class includes those substances which acted injuriously at first, but permitted the vibrios to regain their former locomotive power, so that the fluid after sixteen days contained as much vibrio-life as the standard putrid albumen :—Chloride of aluminium, sulphurous acid, and prussic acid.

The fifth class contains those compounds which acted injuriously at first, destroying the locomotive power of most of the vibrios, but which afterwards permitted the vibrios to increase more rapidly than in the standard albumen solution :—Bleaching powder, bichloride of mercury, chlorine-solution, caustic soda, acetic and nitric acids, sulphate of iron, and the sulpho-carbolates of potash and soda.

The sixth class contains those compounds which exercised no action on the animalcules, either at first or after sixteen days :—Arsenious acid, common salt, chloride of calcium, chlorate of potash, sulphate of lime, bisulphite of lime, hyposulphite of soda, phosphate of lime, turpentine and pepper.

The seventh class includes those substances which favor the production of animalcules and promote putrefaction :—Lime, charcoal, permanganate of potash, phosphate of soda, and ammonia.

TINCTURE OF ORANGE-PEEL.*

BY A. F. HASELDEN, F.L.S.

Tincture of orange-peel has often furnished a topic for conversation, but I do not remember seeing any communication upon it published in our Journal, hence one reason why I have thought it worthy of being brought to your notice this evening; secondly, whilst the Pharmacopœia directs the dried peel to be used, there are pharmacists who consider that the fresh peel, or peel cut in England, and not allowed to dry, is to be preferred in point of flavour. Again, there are others who admit the superiority of the fresh peel when the tincture is unmixed, but consider it a matter of secondary importance, in the eyes of their patrons, when mixed with other ingredients, as in tincture of quinine, or when added to other things in prescriptions, the supposed delicate flavour of the fresh peel is inappreciable. Again, there are pharmacists who look upon the peel cut, dried abroad, and imported into this country for the purpose of tincture, equal to that cut and dried here, although the Pharmacopæia describes orange-peel as "The dried outer part of the rind of the bitter orange, Citrus Bigaradia, Risso, 'Histoire Naturelle des Orangers,' plate 30." "From the ripe fruit imported from the South of Europe I can hardly imagine it would exclude the same, because it was cut and dried abroad.

"*Characters.*—Thin, of a dark orange-colour, nearly free from the white inner part of the rind, having an aromatic bitter taste and fragrant odour." As regards colour, the foreign-cut peel I have generally met with is darker than the English cut, but not so thin. Upon the table are five samples of tincture, four of which were prepared by maceration (B. P. proportions). Maceration was chosen as being less liable to the little accidents which sometimes attend percolation, and they could all be prepared at the same time, without requiring four percolators of the same size, and one was prepared by percolation.

To those who hitherto have not paid attention to the subject, it may be interesting to know that the fresh peel cut here, not being as thin as I wished it, upon being recut by myself, lost just one-fourth of its weight, that is, I removed one-fourth of the white inner part of the rind; secondly, this, upon drying, lost two-thirds of its weight, *i. e.*, eight ounces out of twelve, and even then was not as dry as the commercial article. This, dried by myself, cost 5*s.* per lb., the commercial dry English peel costs from 2*s.* 2*d.* to 3*s.*, and the foreign from 9*d.* to 1*s.* Of these five examples, the one by percolation was made with foreign imported dry peel; of the others,

* Read at the Evening Meeting of the Pharmaceutical Society of Great Britain, November 6, 1872. Published in the Phar. Journal and Transactions, Nov. 1872.

one with foreign, one with the English commercial dry peel, one with the peel recut and dried by myself, and one with the fresh peel recut; of this last six ounces were required as an equivalent of two ounces dry. In preparing the tincture with fresh peel, I made one oversight. I tell you this because non-success is sometimes as useful as success. The oversight was this: although I calculated the quantity of the fresh peel required as an equivalent for the prescribed quantity of dry peel, I omitted to calculate the amount of moisture, and that I should require less water to make the spirit proof. However, I do not think that that circumstance has at all interfered with the flavour of the article produced. The specific gravity of each has been taken, and there is considerable variation, running thus:—·944, ·938, ·936, ·926, and ·922. This I shall be happy to explain presently, as in my opinion it does not effect the odour or flavour which is the point which I should be glad if you could decide this evening; and that I may in no way bias your opinion, I refrain at present from giving my own. I feel that it may be difficult to taste or smell one after the other without being in some measure confused, but we expect as much sometimes in our examinations; at any rate, any great difference either in colour, fragrance or flavour, I may naturally expect to be readily detected.

In reply to a question asked by one of the members present, Mr. Haselden said that in making the tincture from the fresh peel, he really obtained two ounces in the pint more than he ought to have had, the moisture in the peel having produced that result; whereas, in the tincture made with the dried peel he lost about two ounces in the pint. That accounted in some measure for the difference in the specific gravities. The tincture made with the fresh peel was .944; that made with the fresh peel dried by himself was .936; whereas that made from the dried peel was only .926 from the English cut peel, and only .922 from the foreign cut peel. The specific gravity of that made from the dried foreign cut peel by percolation was .938, exactly the same specific gravity as that which Mr. Stoddart mentioned in his paper at the Pharmaceutical Conference. He (Mr. Haselden) could only account for its going up to .938 from the fact that in percolation, when they displaced by water, they got some of the water mixed up with the spirit, whereby the specific gravity was altered.

Mr. Bland said they were apt to overlook the fact that tincture of orange peel was desirable on account of two distinct properties. One was its fine aromatic perfume, and the other its bitter, which caused it to be regarded as a slight tonic. If they wanted a fine aromatic flavor, he was satisfied that fresh peel must be used, and not only that, but rectified spirit. A single drachm of the tincture made with rectified spirit from fresh peel would give as much of the aromatic flavor as a couple of ounces of tincture made with

proof spirit from the dried peel. If they wantd a light bitter, then dried peel and proof spirit were the things to use.

Mr. Brown said he had had some considerable experience in making tincture of orange peel for flavoring purposes, and he entirely differed from the statement just made—that rectified spirit with fresh peel made a better flavor than dilute spirit. He should assuredly prefer dilute spirit as taking more of the flavor from the peel than the rectified spirit, and as being more manageable afterwards. He endorsed what Mr. Sandford had said, that the peel must be fresh, and must be cut most carefully so as to remove the white without injuring the vessels containing the essential oil. It required a considerable length of maceration, much longer than most other tinctures. Generally speaking, he had not found that a satisfactory result had been obtained in less than a month or six weeks.

FRAGRANT BISULPHIDE OF CARBON.

It will be a matter of interest to some of our readers, says the British *Journal of Photography*, to know that the usually offensive liquid, bisulphide of carbon, can be obtained free from unpleasant smell, and this is an article of commerce. The value of the liquid as a solvent for resin and other purposes is very well known, but its extremely unpleasant odor has hitherto greatly limited its use, notwithstanding the fact that it is very much cheaper than ether, and can be emyloyed for many of the purposes to which ether is at present solely applied.

We do not know by what process the commercially purified bisulphide is prepared; but, on a small scale, the following plan succeeds very well: Shake up about one per cent. by weight of corrosive sublimate with the liquid bisulphide, and allow the bodies to stand for several days with repeated agitation. Some sulphur compounds appear to be removed in great part or decomposed by this treatment, for the mercury salt is rendered nearly black, owing to the formation of sulphide of mercury. This treatment so far reduces the unpleasant odor, in distillation, a comparatively sweet liquid is obtained; but a much better product is prepared if the bisulphide, after the treatment with the corrosive sublimate, be mixed with one-third of its volume of almond oil, and then distilled after the mixture has rested some time. Of course the bisulphide only distils over, since the oil is not volatile, but the former is now found to possess a rather agreeable etheral odor. It is probable that the oil acts in somewhat the same way that fat or oil does in retaining the perfume of flowers.

Editorial.

MEETING OF THE COUNCIL.

Members of the Council are reminded of the regular semi-annual meeting to be held on Wednesday, Feb. 5th. These meetings occur so seldom, and involve so small an expenditure of time that attendance is no very arduous matter. Every member who has at heart the welfare of pharmacy, or who respects his position as the chosen representative of his fellow laborers, should consider it a duty to be in his place when required.

The legitimate business of the meeting is the granting of certificates to those who have been successful in passing the examination; but, in addition to this, there are several weighty matters which claim attention. Foremost amongst these may be mentioned the subject of pharmaceutical education.

At the meeting held last August several educational schemes were discussed, and one of these was, finally, adopted. It is to be hoped that members will come prepared to render a favorable account of their labors in this direction. The season for lectures, or classes, has now fully commenced, and we trust to hear that members have been successful in organizing them in the towns in which they reside, and in other places within the bounds of the sections represented. If this has not already been done by all, there is still an excellent opportunity between the termination of the holiday season and the time of meeting. Let every member come "bearing his sheaves with him."

We would suggest that the meeting be held at 10 o'clock in the morning instead of 2 in the afternoon, as heretofore. It is quite impossible that everything can be done decently and in order during the space of half a day; and members are generally anxious to return to their homes in the evening.

REGISTERED DELINQUENTS.

Amongst those whose names were embraced in the first registration under the Pharmacy Act, and who still continue to carry on

the business of pharmaceutical chemists, there are still some who have, either through inadvertence or design, omitted to renew their annual registration fee. From the frequent reminders these persons have received through this journal it seems impossible that this neglect can be attributed to carelessness; however, in order that no doubt might exist on this point, and that the College could not be charged with rashness, or a too prompt exercise of the powers with which it is invested, the council resolved, at their sitting in August, that the registrar be directed to address to all delinquents, a notice reminding them of their obligations. In obedience to this resolution the following circular has been forwarded:

"Toronto, December 13, 1872.

"DEAR SIR,—In accordance with a resolution passed at the Aug. Meeting of the Council, I beg to call your attention to the fact that you have omitted to register as a Chemist and Druggist for the current year, and to hope that the omission, in your case, has arisen from oversight rather than from any want of sympathy with the obtaining the Pharmacy Act of 1871.

"The small annual payment demanded by the Act will not, it is thought, be considered oppressive or annoying, when expended, as the proceedings of the Council show, in furnishing a Journal free to members, in offering prizes to successful students, in assisting local educational associations throughout the Province, and in aiding students who desire to take advantage of the educational facilities offered in Toronto. The Council having obtained the legislative enactment without any dissenting voice from the members of the profession, and believing it to be for the public welfare as well as that of the members themselves, feel justified in their determination to have its provisions carried out, as well in justice to those who have registered as for the public interest, and would call on every member to aid them in this determination.

"In pursuance of this, I am instructed by the Council to take proceedings against parties infringing the Act after one month's notice has been given.

"I am, Sir, *your obedient servant*,

"HENRY J. ROSE, Registrar."

It is not necessary for us to refer to the obligations of pharmacists in regard to the payment of this really small fee. If the inducements to contribute were no other than those named in the above circular there would be ample grounds to justify a demand, which, should be a pleasure rather than a duty to comply with. The College has, however, other, and more solid grounds on which to

found its claims to support. Although scarcely two years have passed since its incorporation, it has been instrumental in doing a perceptible amount of good, if in no other way than that of restricting the trade in drugs to qualified persons. Many applications have been sent in for certificates which, on investigation, have had to be refused, and many persons, knowing the state of the law, have desisted from a traffic which they found to be illegal. The number of so-called druggists, as well as those nondescript storekeepers who, though setting up no pretensions as druggists, nevertheless managed to dispose of a considerable quantity of drugs, has been kept within much lower limits than would, otherwise, have been the case. We need not point out the bearing of this fact on the individual interests of those who are qualified, as well of the trade generally.

If there still remain some persons who pay no heed to these considerations it would be useless to urge upon them the payment of the fee, merely as a point of honor. If such a plea would be regarded we might say that the Pharmacy Act was passed by the Legislature, at the especial request of the general fraternity of druggists, who were as well aware of the conditions therein imposed, as of the benefits to be derived, and who are now bound in honor to support what they themselves brought into existence.

If all obligations are disregarded, and warning proves of no avail, there remains only that course which is so plainly indicated by the law. It is, however, to be hoped that matters will not come to this extremity, and that the Registrar's report, at the coming meeting of the Council, will be of a more satisfactory nature.

THE COMING EXAMINATION.

The half-yearly examination will take place on the first Monday or Tuesday in February, and we hope to hear of a large number of our young aspirants for certificates being in attendance. The honor to be attained, although compulsatory to those who wish to commence business, is none the less to be desired by all. Every young man who has served his probationary course should obtain a certificate as to his qualifications whether he intends to enter into business on his own account or not. There can be no time more favor-

able than the present, and we earnestly advise those who have completed their studies to enter the lists at once, ere they take upon themselves the more active duties of assistants.

UNIVERSAL PHARMACOPŒIA.

Through our English exchanges we learn that an Universal Pharmacopœia is in course of preparation, and will shortly be issued. This intelligence came rather suddenly, and was quite unexpected, as very few pharmacists, speaking the English tongue, appear to have had the slightest idea of any active efforts being made in this direction. From a paragraph which first appeared in the *Chemist and Druggist*, we learn that the following gentlemen are concerned in this important undertaking:—Dr. Phœbus, (Giessen), Signor Cantani, (Naples), Herr Flückiger, (Berne), M. Planchon, (Paris), Herr Schneider, (Vienna), M. Trapp, (St. Petersburg), M. Almén, (Upsala), M. Bruno Hirsch, (Grunberg), M. Theo. Husemann, (Gottingen), M. Oberdorffer, (Hamburg), M. Rieckher, (Marbach), and Dr. Thudichum, (London). The gentleman first named holds the presidency of this Council, or committee, and from the high standing enjoyed by each individual member, we may be assured that the forthcoming work will be of great scientific value.

At an evening meeting of the Pharmaceutical Society of Great Britian, held Nov. 6th, Dr. Attfield, after referring to the desireability of the undertaking, requested Dr. Thudichum to give some particulars of the nature and progress of the work. In reply, Dr. Thudichum said that the present effort originated with Dr. Phœbus, who, in 1867, had communicated the design to him. After alluding to the reasons which had actuated them to attempt the work, the speaker ennumerated the efforts which, during the last two hundred years, had been made by various persons. None of these have been successful, and it may be presumed that their failure has arisen, principally, from a want of co-operation. The first attempt was made by Nic. Lemery, who wrote a Pharmacopée Universelle, and published it in the year 1697. There was further, Triller's Dispensatorium Pharmaceut. Universale, published in 1764; then Spielmann's, in 1783; then Reuss, in 1786; Mayr, in 1798; Swediaur, in 1803; Roebur, in 1803; Brugnatelli, an Italian pharmacist, in 1807;

and then Von Mons, in 1821-2. In these most remarkable works, the authors confined themselves to the collection of various formulæ from different countries. They did not make any selection, or indicate remedies which might be more or less worthy of recommendation. Only the latter one amongst the works he had mentioned had made such an attempt, and that only in the slightest degree. Jourdan's Pharmacopée Universelle, published in 1828, began to make a selection. All these works had a remarkable success, most of them passing through several editions, or were published in various countries in translations. Some of them reached four editions. In 1835, Geiger commenced the Pharmacopœia Universalis, at Heidelberg, but dying before its completion, it was finished by Mohr. The authors of this work made a selection of articles, and described the value of them by means of three classes of type. The most valuable medicines were printed in large type, the less valuable in smaller type, and the useless medicines in still smaller type. The same principle was adopted in the Baden pharmacopœia, the articles which were selected by the Commission of Baden being distinguished by particular signs, so that the Baden pharmacists had a sort of universal pharmacopœia to refer to. The next important treatise that appeared was the Codex Medicamentarius Hamburgensis, in the year 1835, which stated that from international reasons, which had particular value at that great trading place, it offered a rich selection of remedies to its readers; and therefore this Hamburg pharmacopœia might in some measure replace a general pharmacopœia. In 1846, the idea of a general pharmacopœia was taken up in Italy, but it came to nothing. In 1847, the pharmacopœia for the kingdom of Wurtemburg appeared, and this was distinguished by a great selection of remedies, many of which it had taken from the Codex Hamburgensis. It distinguished the value of remedies by differently sized letters in the printing, but it had not had any influence upon pharmacists out of the country. In 1864, there appeared a General Pharmacopœia by an author of the name of Strum, who merely collected, and entirely resigned all criticism. They had, then, in this country in 1867, the most excellent British Pharmacopœia, which effected a great simplification in this kingdom. In Germany a similar desire for this simplification of the various codexes led to the appointment of a Commission, which elaborated a Pharmacopœia Germaniæ in 1865; second edition, 1867. This pharmacopœia was no doubt a considerable progress upon what had formerly existed; and he believed it was now introduced as the Imperial Pharmacopœia in Austria. The Danish Pharmacopœia of 1868, and the Swedish of 1869, and the Norwegian of 1870, had agreed to give the same composition for all articles having the same name, which was a very great progress. In the years 1865-7-9 the question of this universal pharmacopœia was mooted at the Interna-

tional Pharmaceutical Congress; but he thought it would be very difficult for a reunion, as it were, of men who were not delegated by any other powers behind them, who might come together again or not, to do so serious a work as that of the general pharmacopœia. Now the Pharmacopée Française of the year 1866 also recognised in its preface that a universal pharmacopœia, or, at least, a European pharmacopœia, was a very desirable thing. The pharmacopœia itself was stated to be intended to help to prepare such a transition, such a union or harmony, and to have adapted itself in many details to the pharmacopœias of other countries. There was also another attempt at a universal pharmacopœia in Hager's "Pharmacopœiæ Recentiores Anglica, Gallica, Germaniæ, Helvetica, Russiæ, inter se collatæ." He (Dr. Thudichum) had on the table a proof page of the proposed new pharmacopœia, in which several classes of type had been used; the important medicines being in large tpye, then the second class in smaller, and lastly, a small print for the common drugs. The value of the remedies was thus distinguished by the size of the print. That was the great principle introduced by Geiger and Mohr, and it was of the utmost consequence that it should be upheld. It would be easy for any pharmacopœia anywhere to exist in its integrity by upholding a certain kind of print for its own individual medicines, and yet embodying the whole of the remedies from the other pharmacopœias by giving them a different type. Therefore, there was not the slightest difficulty for each country having a full and complete pharmacopœia, and, as it were, mixed up with it in a logical and alphabetical way, a universal pharmacopœia, so that the pharmacists and physicians would only have one book to refer to. The Society now at work for this object considered the first condition to be conciseness, and they hoped not to exceed fifty sheets of printing. He had no doubt that although the proposed work would not teach in words, it would teach by simple classification of the remedies. There were some medicines which were of cardinal importance to the healthful existence of man, and they were as old as history. In old historical works whenever they found mention of remedies, aloes was in the account, and there were digitalis and similar drugs. Although certain worthless remedies were to be discarded, they would still be found in the new pharmacopœia, and the fact of their having to be rejected would be indicated. He hoped that it would be understood that in anything he had said, he did not in any way commit the Pharmaconomic Society. In some cases there were three or four alternatives presented to them, and it would depend greatly upon the opinions they could obtain from such bodies as the Pharmaceutical Society of Great Britain, which way their decisions in matters of detail were given. If, therefore, he had stated any principle which they should subsequently find changed, he hoped they would not think it inconsistent as these matters of detail were now under consideration.

EXTENSIVE DEPOSIT OF SULPHATE OF SODA.—It is reported that a large bed of this salt has been discovered in the Caucasian range. The site of the deposit is destitute of vegetation, and extends over half a mile. Trial borings showed a depth of about three feet of marl and clay, underlying which the salt gave an average of five feet in thickness. The quantity is estimated at fifteen and a half millions cubic feet.

LOCK-JAW FROM WOUND BY BROKEN GLASS.—A correspondent of the *Druggists' Circular* reports the case of a young man—a clerk in a drug store in Connecticut—who, noticing a stain on the paper enclosing a bottle of castor oil, which he had been putting up, thought that the cork was not properly put in. In trying to adjust it, the bottle was broken, and a piece of the glass entered the first finger of the young man's hand. A surgeon was called in, who dressed the wound, which soon began to heal. Nine days after this occurrence symptoms of tetanus set in, which, a week afterwards, terminated fatally. We mention this case that it may serve as a warning to careless persons. Accidents of a similar kind are of frequent occurrence, and often result in permanent injury to the hand, if nothing worse. The palm of the hand should never be used to thrust in a cork, nor is there any occasion for using the force which is often displayed.

The rooms in the College of Technology which have been allotted to the College of Pharmacy, are being fitted up with glass cases, &c, for books, apparatus, and specimens. These improvements have been pushed forward so that they may be taken advantage of at the coming examination, when candidates will be required to show their proficiency in practical dispensing by actual manipulations.

Editorial Summary.

RELATION BETWEEN THERAPEUTICAL VALUE AND CHEMICAL PROPERTIES OF MEDICINAL SUBSTANCES.—In a paper by M. Papillon, *(Revue des Deux Mondes)* on the recent progress of therapeutical science, allusion is made to the fact that, generally speaking, the salts of heavy metals are more active than those of light metals; as in the cases of lead, and mercury, compared with soda and magnesia. Following out this idea M. Rabuteau has made an attempt to formulate the general relation between physiological energy of mineral compounds and their chemical nature. The energy of soluble metallic salts is in direct ratio of the atomic weight of the metal contained in the salt. The atomic weights of metals being in inverse ratio of their specific heat, M. Rabeteau's law may be given in this form:—"The metals are more active in proportion as their specific heat is smaller. The law is the same for the metalloids of the oxygen group; but it is reversed in the case of those which are congeners of chlorine, and for those of the class of arsenic. The practical value of these results is obvious; as a medical man can tell the respective activities of various salts, and thus determine the dose proper to be given, from consulting a table of atomic weights. A physiologist, wishing to ascertain the action of a metallic compound, could predict its relative intensity, and regulate his experiments accordingly. Some years ago, when salts of the new metal thallium were being examined in their influence on animals, surprise was excited by their strong toxical qualities, seeing they otherwise resembled so closely the salts of sodium or potassium; but the atomic weight of thallium is very high, and its poisonous properties are quite in accord with M. Rabuteau's law. The perfecting of the medical art is thus connected most intimately with the progress of knowledge as to the real action of toxical and medicinal substances. The study of such effects is one of much delicacy, and it is necessary that those who engage in it should acquire a practical acquaintance with the principles and instruments of physics, of chemistry, and of physiology.

PRESERVATIAN OF HYDROCYANIC ACID.—M. Petit, *(Bulletin de la Soc. Chem.)* states the results of experiments on the comparative keeping properties of dilute hydrocyanic acid when of the strength of one-tenth and one-thousandth. The stronger acid was rapidly decomposed, while that which contained one-thousandth of the pure acid was quite unchanged after the expiration of six months. It was also found that dilution with water had the effect of arresting and preventing the further decomposition of acid which had already become affected.

PRESENCE OF SILVER IN COMMERCIAL SUBNITRATE OF BISMUTH.—Mr. Charles Ekin, F.C.S., *(Pharm. Jour. and Trans.)* examined fifteen samples of the commercial salt, and found seven of these to contain distinct traces of silver. Eight of the samples contained subchloride in varying proportions—from a mere trace to 6.5 per cent., while one specimen consisted altogether of subchloride. Four of the samples were pure. The method adopted for detecting these impurities consisted in dissolving the salt in nitric acid, collecting on a filter any insoluble residue, washing with dilute nitric acid, and then with water, finally, treating with ammonia. The presence of silver was sufficiently proved by the residue on the filter being blackened by exposure to light, and by its dissolving when treated with the ammonia, and giving, in its ammonaical solution, a lemon-colored precipitate with iodide of potassium. The chloride of silver was precipitated from the nitric solution, and estimated in the usual way.

STARCH AND ALBUMIN.—Mr. R. Rother, *(Pharmacist and Chem. Record)* in operating upon a percolate obtained by exhausting licorice root, remarked that although the solution contained both starch and albumin, the latter substance was not coagulated, although exposed to a temperature of 212°. He was led to attribute this result to the presence of the starch, and further experiments, in which the two substances were alone operated upon, confirmed the supposition. He therefore concludes that starch

holds albumin perfectly in aqueous solution, at a boiling temperature, and that a strong acid can only separate it from such a solution.

PHYSIOLOGICAL ACTION OF PERCHLORIDE OF IRON.—M. Rabuteau *(Compt. Read. in Jour. of Chem. Soc.)* considers that ferric salts, when taken into the stomach, are reduced into ferrous, and, as such, are absorbed. When ferric chloride has been injected into a varicose vein to coagulate the blood, the coagulum which it first produces afterwards disappears, because the ferric salts is reduced to a ferrous salt, which, instead of producing coagulation, actually prevents such a result.

Correspondence.

THE JEWEL OF FAIR PLAY.

There is, perhaps, no firm in the patent medicine trade who have more zealously guarded every approach to the infringement of their trade mark than Perry Davis & Co., the proprietors of the "Pain Killer." No poor "culler of simples" at a cross roads store could put up in any form a remedy on which the word "pain" was printed, than forthwith he was summoned by the agents of the genuine Perry Davis to answer to the charge of infringement of "trade mark." This same firm, so zealous of their own rights, have lately invaded their neighbor's field. "Savage's Ursina" is a trade mark, and its form of putting up is also a trade mark. This point Perry Davis & Co. have always insisted on, yet their firm has lately put upon the market as close an imitation as the law will of Ursina, calling it *Bearine*. This firm has, doubtless, had experience how close an imitation may be and yet escape the legal penalties, and now they take advantage of this reputation of Ursina to put up an imitation. After this, country druggists may be permitted to use the word "pain" on their labels with impunity.

JUSTICE.

Practical Formulæ.

To Cut and Bore India-Rubber Corks.—W. F. Donkin.—Dip the knife or cork-borer in solution of caustic potash or soda. The strength is of very little consequence, but it should not be weaker than the ordinary reagent solution. Alcohol is generally recommended, and it works well until it evaporates, which is generally long before the cork is cut or bored through, and more has to be applied; water acts just as well as alcohol, and lasts longer. When, however, a tolerably sharpened knife is moistened with soda-lye, it goes through India-rubber quite as easily as through common cork; and the same may be said of a cork-borer of whatever size. I have frequently bored inch holes in large caoutchouc stoppers, perfectly smooth and cylindrical, by this method. In order to finish the hole without the usual contraction of its diameter, the stopper should be held firmly against a flat surface of common cork till the borer passes into the latter.—*Chem. News, Lond., Aug.* 30, 1872. *in Am. Jour. Pharm.*

Cement to resist moisture and heat. Dissolve caseine in cold saturated solution of borax, and with this solution paste strips of hog's or bullock's bladder (softened in water) on the craks of glass, and dry at a gentle heat, if the vessel is to be heated coat the bladder on the outside, before it has become quite dry, with a paste of solution of silicate of soda and quick-lime or plaster-of Paris.—*Sci. Amer., Oct,* 19, 1872. *in Am. Jour. Pharm.*

Artificial Ivory.—William M. Welling's patent for the manufacture of artificial ivory, has lately been extended by the Commissioner of Patents for seven years. The article is composed of 10 ounces of white shellac, 4½ ounces of acetate of lead, 8 ounces of ivory dust, and 5 ounces of camphor. The ingredients are reduced to powder, heated, and mixed; then pressed in heated moulds into sheets or other desired forms.—*American Chemist.*

Furniture Polish.—Scrape one pound of beeswax into shavings in a pan; add half a gallon spirits turpentine, and one pint linseed oil. Let it remain twelve hours, then stir it well with a stick, into a liquid; while stirring, add one quarter pound shellac varnish and one ounce alkanet root. Put this mixture into a gallon jar, and stand it before the fire, or in an oven, for a week (to keep it just warm), shake it up three or four times a day. Then strain it through a hair sieve and bottle it. Pour about a teaspoonful on a wad of

baize, go lightly over the face and other parts of mahogany furniture, then rub briskly with a similar wad dry, and in three minutes it will produce a dark brilliant polish unequalled. Another preparation may be made as follows: Make a mixture of three parts linseed oil and one part spirits of turpentine. It not only covers the disfigured surface, but restores wood to its original color, and leaves a lustre upon the surface. Put on with a woollen cloth, and when dry rub with woollen.

Shaving Cream.—

Naples Soap, 4 oz.
Castile Soap (powd.), 2 oz.
Honey, 1 oz.
Ess. Ambergris.
Ol. Cassia.
Ol. Myristica, aa, 5 drops.

Simple Bleaching Process for Oils.—Mix 100 kilograms of the oil with 2 kilos. of a mixture of equal parts of 96 per cent. alcohol and sulphuric acid. Where the acid alone is used some of the oil is converted into resin, which does not take place in this case, for the sulpho-ether mixes very gradually with it. The green cloud that soon forms afterward turns black, and after standing 24 to 48 hours forms a slight black deposit on the bottom of the vessel. Poppy and rapeseed oil become as clear as water, but linseed oil, when viewed in thick strata, shows a yellowish color. To remove traces of sulphuric acid the decanted oil is mixed with a few liters of hot water and violently shaken. then left standing.—*Journal of App. Chem.*

Disinfection of Sponges.—Leriche impregnates them with a solution of four parts permanganate of potassa in 100 p. of water; they are afterwards put into a solution of sulphurous acid (25 to 100. water), and finally washed with water. By this treatment sponges acquire their original condition, even their marine odor although they may have been soaked in pus and infectious matter. In the course of time they bleach without altering their tissue, even if subjected for four months to this process of depuration.—*Rép. de. Pharm.*

Process for Silvering.—This process may be used for all sorts of substances such as silk and other goods, and other things as well as inorganic substances. Two solutions are prepared, the first consisting of 2 pts. quick lime, 5 pts. grape sugar, 2 pts. racemic, (or gallic) acid, 600 pts. water; the second of argentic nitrate 20 pts. in 20 pts. ammonia and 650 pts. water. These solutions are to be mixed at the time of using. For textile and fibrous material the articles should be carefully washed an hen immersed in gallic

acid, and then in a solution (1 : 50) of argentic nitrate, and finally in the mixture, and then washed in a boiling solution of an alkaline tartrate. Other substances need scarcely any other preparation than thorough cleansing, except perhaps iron which needs to be dipped previously in a solution of cupric sulphate.—*Le Technologiste, in Am. Chemist.*

Varieties.

On a Saccharine Matter from the leaves of the Linden.—Boussingault, says that the leaves of a linden tree in Liebfrauenberg were covered from July 21 to Aug. 1, 1869, with an extremely sweet, viscous material, a sort of honey-dew, such as the author has seen upon the black alder, maple, rose, plum-tree, and, in rare cases, upon the oak. It contained from 48·86 to 55·44 per cent of cane sugar, 24·75 to 28·59 of inverted sugar, and 19·81 to 22·55 of dextrine, by the saccharimeter. The author estimates that on the 22nd July, the tree carried from 2 to 3 kilograms of this manna upon its leaves. Harting maintains that the honey-dew in question is the excrement of *Aphis tiliæ*. He collected it from these insects in 1858, and an analysis by Professor Gunning, showed it to be mainly composed of cane sugar.

Boussingault replies that the material observed by him could not have had this origin, since the aphides did not appear until some days after the exudation. Moreover, this substance contained fruit sugar and dextrine, as well as cane sugar; and it is a well-known fact that the leaves of healthy lindens contain cane sugar.—*Comptes Rendus in Am. Chemist.*

On Crystallized Aconitine.—Duquesnel.—(The aconitine of the French Codex is made by the process of Hottot from *Aconitum napellus* and is amorphous. It is stronger than Morison's, made from *Aconitum ferox*, and this is stronger than the German. Since there are in the French market three aconitines and three digitalines, each of different strengths, the Academie de Medecine has appointed a commission to examine the aconitine of Duquesnel, and the digitaline of Nativelle, which are crystallized, and to determine their formulas.) The process of Duquesnel is as follows: The aconite root, pulverized, is exhausted by concentrated alcohol containing 1 per cent. of tartaric acid. The alcohol is distilled off below 60°, the extract is dissolved in water to free it from fatty and resinous matters, the aqueous solution is agitated with either to remove coloring matters, and the alkaloid is set free by adding an alkaline bicarbonate till effervescence ceases. The aconitine is removed by agitation with ether and crystallizes out on evaporation if some petroleum naphtha be added. It forms colorless rhombic tables, having the formula $C_{27}H_{40}NO$, and permanent in the air, even at 100°. In its own extractive liquors, however, it disappears almost or quite entirely in a short time. It is nearly insoluble in water, soluble in alcohol, ether, benzole, and especially

chloroform; insoluble in glycerin and petroleum oils, heavy and light. When precipitated, it is a light, amorphous powder. It rotates the plane of polarization to the left, reacts feebly alkaline, and forms well crystallized salts, the nitrate being especially fine. Phosphoric acid, tannin, potassium iodide mercuro-iodide are the most delicate reagents for it; but certainty of its presence is gained only by physiological tests. The paper continues with the pharmaceutical preparations and their uniformity.—*Moniteur Scientifique, in Am. Chemist.*

Testing Hydrochloric Acid.—A very delicate test for sulphurous and arsenious acid in hydrochloric acid, given in the German pharmacopœia, is worth mentioning. In a test tube are placed a few small pieces of pure zinc, to which is added hydrochloric acid previously diluted with two parts of water, so that about one-tenth of the tube is filled. In the upper part of the latter is introduced some cotton moistened with solution of subacetate of lead, and the mouth of the tube is covered with some filtering paper dipped in solution of nitrate of silver. In case sulphurous and arsenious acid are present, the cotton as well as the filtering paper become blackened after the evolution of hydrogen gas has lasted about half an hour. The test is so delicate that $\frac{1}{10}$ milligramme of arsenious acid (1-480 grain) can be detected in 1,000 grammes (two pounds) of acidum hydrochloric by the silver paper becoming distinctly colored.—*Chemist and Druggist.*

Thapsia Resin.—A study of the plant producing the Thapsia resin, lately so much employed in France, has induced M. Cauvet to recognize in it the silphiou (hitherto supposed to be assafœtida) of the Greeks, or Laserpitium of the Romans. The resin is an admirable counter-irritant, more effective than cantharides or croton oil, and it deserves the attention of our enterprising English pharmacists, to whom a novelty is a thing of value. The plant, *Thapsia garganica*, grows abundantly on the sandy shores of Algiers, and the resin is commonly used as a vesicant and external stimulant by the Arabs, who call it Bon Nata, or the father of good. —*Phila. Med. and Surg. Reporter.*

Detection of Water and Alcohol in Ether.—Prof. R. Bœttger agitates equal volumes of bisulphide of carbon and ether, which yield a clear mixture if the ether is anhydrous; a minute quantity of water renders it turbid and milky. A small piece of hydrate of potassium immersed in ether is covered, after 24 hours, with a yellowish film, and the liquid acquires a yellowish color if alcohol be present.—*Ibid.*, 154, from *Jahresb. d. Frankf. phys. Ver. 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	₵ 62		1 10
Vanilla	28 00		28 00
Bismuth, Alb	3 60		4 00
Carb.	3 65		4 00
Camphor, Crude	0 38		0 40
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
" Saccbar	0 40		0 55
Citrate Ammon	1 50		1 50
" & Quinine, oz	0 55		0 60
" & Strychine "	0 17		0 25
Sulphate, pure	0 08		0 10
Iodine, good	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 0
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. cz.	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	—
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 00	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 30	0 35

DYESTUFFS—*Continued.*		
Japonica	0 06½	0 06½
Lacdye, powdered	0 33	0 38
Logwood	0 02	0 03
Logwood, Camp	0 02	0 3½
Extract	0 10	0 14
" 1 lb. bxs	0 14	—
" ½ lb. "	0 15	—
Madder, best Dutch	0 15	0 17
2nd quality	0 14	0 16
Quercitron	0 03	0 05
Sumac	0 06	0 08
Tin, Muriate	0 10½	0 12½
Redwood	0 05	0 06
SPICES.		
Allspice	0 11½@	0 12
Cassia	0 39	0 40
Cloves	0 21	0 22
Cayenne	0 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 06	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 03¾	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 50	—
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 95	—
No. 1	0 90	0 95
No. 2	0 85	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, Palc	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