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Original and Selected Papers.

NOTE ON THE ADMINISTRATION OF PHOSPHORUS.

BY DR. E. R. SQUIBB.

(Continued from page 135.)

The formula for pills is as follows: Solution of phosphorus, magnesia, powdered soap, of each one part; strong ether, 2 parts; weigh the magnesia, powdered soap, and strong ether, in this order, into a counter-balanced mortar, stir the mixture until the powders are thoroughly wetted with the ether; make up the weight again by a little strong ether to compensate for loss by stirring, and then weigh in the solution of phosphorus; rub the whole together until the ether has all evaporated, and then divide the mass into pills whose size shall be adopted to the dose of free phosphorus required. Dispense the pills in a vial into which a drop or two of ether has been dropped, to furnish an atmosphere of ether vapor for the better protection of the pills, and, if a powder be used, let it be magnesia. The pills should not be made in large quantity, nor be kept longer than a few weeks, as it is impossible to know how long the phosphorus will remain in a free state under the varying conditions to which such pills are subjected. If the ingredients of the formula be taken so that each part represents 100 grains, that is, 100 grains each of the solution, magnesia and powdered soap, and 200 grains of strong ether, and if the mass be then divided into 100 pills, each pill will contain 1-100 part of a grain of phosphorus, which would be the smallest usual dose. Such doses taken three times a day would require 33 days to use the 100 pills, and this is probably quite as

long as they should be kept. The more common dose is 1-50 of a grain, and then two pills would be taken at a dose and the prescription would last 17 days, and the pills would more surely remain in a proper condition. Such pills may, if it is desirable, be dipped in a warm solution of 1 part gelatine and 16 parts water and be dried in the usual way, and although this covers the odour of phosphorus it is doubtful whether the coating is of much use as a protection against change. The use of the ether in this formula is to drive out the air occluded in the powders and supply its place with a substance which will not oxidize the phosphorus, and if the formula be properly managed no white vapors are seen during the manipulation, nor in the vial in which the pills are kept whether the pills be coated or not. As an experiment a mass, made as above directed, was left exposed in the mortar for 48 hours without apparent change of colour, and without visible vapour, and the writer then took many doses of the pills made from it without eructations or other digestive disturbance, the dose being 1-33 of a grain of free phosphorus. This solution of phosphorus may also be given in capsules, and this method of giving it would be convenient and easy if it was practicable to get capsules any large proportion of which were perfect enough to hold liquids. As a fact, however, they are so imperfectly made, as now sold, that but a very small proportion of them can be used for liquids unless the plan of doubling the capsule be adopted by slipping one size, moistened with water, into the next larger size. In dispensing this solution in capsules, the capsules can be conveniently and accurately filled by means of a 60 minim pipette, or by a cubic centimeter pipette. The pipette is fitted at the lower end by a piece of india rubber tubing, and a piece of glass tubing drawn to a small orifice, with a pinch cock upon the rubber portion, the upper end of the pipette is furnished with a piece of india rubber tubing for suction. The whole being held upright on any convenient stand, the bottle is held so that the fine point dips into the solution. The pinch cock being held open the solution is sucked into the pipette, up to the top of the graduation, the pinch cock is then closed, then by means of the pinch cock one or more minims may be drawn into each capsule. As each capsule is filled, the edge of the cover is dipped into water before being put on; this seals the body and covers together so that no leakage ever occurs at that point. Another way in which the solution is accurately, conveniently and easily dispensed is in the form of a moist powder. If the solution be dropped upon any dry powder, and be rubbed up therewith, the air which the powder contains very rapidly oxidizes the phosphorus, as is shown by the copious white vapours given off, and by change in the colour of the powder; but if the air be first driven out of the powder the solution may be incorporated without light or vapor, or change of colour—the unmistakable signs of oxidation. This insterstitial air is best driven

out by ether, and the powders best adapted to the purpose are precipitated calcium carbonate, or precipitated calcium phosphate. Counterbalance a one ounce wide mouth bottle, fitted with a good cork, and weigh into it 140 grains each of calcium carbonate and strong ether, cork the bottle, shake it, and then add 50 grains of solution of phosphorus. Again cork the bottle, and having shaken well, empty the contents into a mortar, and shake out all that can be shaken from the bottle into the mortar, allow the bottle to stand uncorked that a portion of the ether may evaporate off, triturate the contents of the mortar until nearly all the ether has evaporated and a damp powder remains. At the first sign of white vapour, or before any vapour occurs, transfer the damp powder, by means of a spatula, back to the bottle; cork and then shake it well and then weigh it. The whole contents of the bottle should now weigh about 200 grains; that is 140 parts of calcium carbonate, 50 parts solution of phosphorus and ten parts of ether, and this contains $\frac{1}{2}$ grain of phosphorus, of this powder 10 grains is equal to 1-40 grain of phosphorus, 8 grains equal to 1-50, and so on. This powder may be put into capsules, or better, into cachets or wafers, these affording a good mode of administration to those who particularly dislike the odour and taste of cod liver oil. This powder appears to keep pretty well, that shown herewith having been made nearly a month. The portion made with calcium phosphate has, however, changed colour within the past two weeks. From being quite white it now has a brownish tinge, a sure indication of change. As the powders are not intended to be kept, but must be made for each prescription, this is a matter of small importance. About twenty minutes of time is required to make the powder properly, and the pharmacist will not be likely to succeed well the first trial; but, when successfully done, it will be found an excellent method of giving free phosphorus. Both powders, but especially the calcium carbonate, have a tendency to combine with and neutralize any small proportions of the various oxides of phosphorus that may form, and this is the reason for selecting the powders. Organic powders do not answer. There are many patients whose stomachs will not tolerate free phosphorus in any form, and a few who accept it for a few days only, and much harm is done by pushing it in such cases. If commenced in small doses, and never given on an empty stomach, but always after a meal, it then disagrees, either by producing eructation to an injurious extent, or by interfering seriously with digestion, it should be abandoned and substituted by phosphoric acid, and this is no doubt the better agent for phosphoric medication in a large class of cases.

There are many patients, also, who cannot tolerate cod-liver oil, in the smallest quantity, such, too, had better be treated by phosphoric acid, for it has been pretty clearly shown that the solution in vegetable oils, even when the oils are superheated beforehand,

as well as the solutions in alcohol, ether, chloroform, carbon disulphide, etc., or in mixtures of these with or without glycerine, are liable to such changes, as always to prevent accuracy in medication and often to produce toxic effects. Even the solution in cod-liver oil has not yet been tried long enough, nor with sufficient care and accuracy in its preparations or administration, to fully justify the statements made in regard to it, and it is the object of this paper to place this solution under known conditions favourable to accurate use and observation.

SOLVAY'S AMMONIA-SODA PROCESS.*

Soda made by the new ammonia-soda process appears at the Centennial Exhibition in only three different places—in Germany, in France, and in Belgium. The principle of its manufacture has often been described, but the following article, written by P. Hanrez, of Varangeville-Dombasle, where Solvay's largest works are located, will prove of interest as showing the present state of the industry:

The ammonia process, says Hanrez, had for many years attracted the attention of scientists and manufacturers, but all attempts to use it on a manufacturing scale had proved fruitless, and the opinion had become general that this process was not capable of any practical use. Although Solvay & Co. exhibited their products made by this process at the Paris Exposition in 1867, still the new industry did not receive much attention. It was therefore a great surprise to men in the trade to learn, at the Vienna Exposition, that the manufacture of soda by means of ammonia was no longer an experiment—that E. Solvay had succeeded in raising it to an important industry, which employed 100 workmen, and produced 90,000 cwt. annually. Solvay & Co.'s works in Belgium and France have grown a good deal since 1873; two works have been established in England, and others will soon be founded in different places in Europe and America. (Five have been started in Germany, which are not mentioned by Hanrez, nor is the one in Kasan mentioned.)

The outline of the process, as we have seen, is the bringing of bicarbonate of ammonia into a solution of common salt, and these by double decomposition produce bicarbonate of soda and sal ammoniac.

The bicarbonate of soda is decomposed by heat, carbonic acid being liberated, which is used again in the process, and mono-carbonate of soda is left. The sal ammoniac is distilled with caustic lime, and the ammonia thus liberated is used in again producing

* Deutsche Industrie Zeitung from Rev. Univ. in Drug. Circ.

bicarbonate of ammonia. The only waste product is chloride of calcium.

The reaction is exceedingly simple and easily performed in the laboratory, but its industrial use offers numerous difficulties. Its discovery, or at least the first thought of its industrial application, is due to H. G. Dyar and J. Hemming, who took out an English patent in 1838; they described the outlines and principles very circumstantially, but the apparatus employed very imperfectly. Delauney, who designated Schlosing as the inventor, took out his French patent after the above-named had taken out their English patent. His patent specifications are for the greater part a translation of those of the latter. Probably Delauney only represented the English inventor in France.

Since that time numerous patents have been granted in England and France, and many patentees claimed the discovery of the fundamental reaction itself Even the first patent taken out by E. Solvay, in 1861, alluded to this principle. The unsuccessful result of experiments explains why it remained so long unknown.

Muspratt, Schlosing, Rolland, Gossage, Deacon and others had busied themselves with this subject before Solvay; a company had been formed in Cheshire, and started works for using the patent of Dyar and Hemming. In 1855, Deacon was experimenting with his own method and that of Gossage in Widness; Bowker erected a factory at Leeds; and Muspratt, who had previously been the first to introduce the Leblanc soda process into England, made manufacturing experiments at a considerable expense in his works at Newton in Lancashire. In France, the *Societe des Salines* of Sommervilliers, near Nancy, patented Turck's process in 1854; and in 1855 Schlosing and Rolland started their works at Puteaux, which went down again in 1858. In Belgium the first earnest experiment was made in 1842, in the neighbourhood of Vilvorde.

The experimental undertakings were very praiseworthy, but they were all without success, and that too only on account of the practical difficulties which were met with in carrying out the process, and the imperfections of the apparatus employed. Many inventors in France believed incorrectly, as Schlosing's statements clearly prove, that only the laws of that time in regard to the use of salt in chemical works prevented their industry from becoming able to live. In 1863 Solvay took out a patent on his first apparatus. This he employed in an experimental factory near Brussels, and the results were sufficiently encouraging to induce him to start a factory at Couillet, near Charleroi. But before he could succeed in a regular manufacture, numerous difficulties had to be overcome, large capital invested, and the apparatus gradually modified in a considerable degree. At the Vienna Exposition of 1873, Solvay received the diploma of honour (*Ehrendiplom*), to a certain extent an official recognition.

The factory of Solvay & Co., in Couillet, produces now 100,000 cwt. of soda of a purity hitherto unknown in the market; the new one, erected on a salt deposit at Varangeville-Dombasle, in France, now produces 160,000 cwt., and will be able before the end of this year to produce 320,000 cwt., or 16,000 tons. When completed, it will probably be the most important soda works in the world. The two English works produce at present 160,000 cwt. annually, and are to be still further enlarged.

It is difficult at the present time to determine what effect the development of the Solvay process will have on the soda industry. As long as chlorine cannot be made from the chloride of calcium, which is at present the waste product of this process, there will still be room enough for the Leblanc process. It is nevertheless worthy of mention that Solvay took out an English patent in 1872 for the use of magnesia, instead of lime, for decomposing the sal ammoniac; thus chloride of magnesium is formed, which can be decomposed by simply heating it, and the magnesia thus recovered used over again and again.

An analysis of soda made by the Solvay process gave the following results:

Carbonate of soda	99·4385
Chloride of sodium	0·21
Silica and carbon	0·04
Oxide of iron	0·0015
Alumina	trace
Carbonate of lime	trace
Water	0·31
	100·00

The industrial production of almost chemically pure soda will render it possible to make essential improvements in different industries, such as glass making. The insignificant quantity of iron deserves especial attention.

PHARMACAL NOTES.*

BY L. C. HOGAN.

SYRUP OF RHUBARB.

The Pharmacopœia directs this syrup to be prepared by adding fluid extract of rhubarb to simple syrup. This method of procedure often gives unsatisfactory results, the resinous matter in the fluid

*From the Pharmacist.

extract precipitating, thus giving the finished syrup a very inelegant appearance, for these days of "elegant pharmacy." Mr. Rother has found that the resinous matter of the rhubarb is completely soluble in ammonia, and recommends that the syrup be prepared from the root, with an ammoniacal menstruum. (*Pharmacist*, December, 1872.) With the following modification of the officinal formula, I have succeeded in obtaining a syrup of rich colour, and remaining permanently bright and clear:

Take of Fluid extract of rhubarb ....3 fluid ounces.
Water .....A sufficient quantity.
" of ammonia..... " "
Sugar .....24 troy ounces.

Mix the fluid extract with sufficient water to make one pint; let stand till resinous matter has all preciptated, then add enough ammonia water to dissolve the precipitate. Add the sugar, and dissolve with a gentle heat.

AROMATIC SYRUP OF RHUBARB.

This syrup has been the subject of complaint from some, giving very unsatisfactory results. By following the process of the pharmacopœia, with the addition of two fluid drachms of ammonia water, 18 per cent., to the menstruum, I have always obtained a syrup of fine aroma, rich colour, and beautifully bright and clear.

SYRUP OF EXTRACT LICORICE.

The following formula I have found to yield excellent results:

Take of Extract licorice (P. & S.), in small pieces... 2 troy ounces.
Glycerin ..... 4 fluid "
Sugar .....24 troy "
Water .....12 fluid "

Mix the water and glycerin; dissolve the extract licorice in the mixture; filter; add sugar, and dissolve by agitation.

COLORATION OF ESSENTIAL OILS.

Frequently we obtain essential oils having a dark colour; more particularly is this the case with oil of wintergreen, this oil often being of so dark a colour as to render it objectionable.

To remove the colour entire, or in part, add a few grains of tartaric acid, and shake. The decoloration is instantaneous.

PLANT FERTILIZER.

Take of Ammonium sulphate .....4 troy ounces.
Potassium nitrate .....2 " "
White sugar .....1 " "

Powder, mix, and dissolve in one quart of water. One table-spoonful of this mixture added to one gallon of water, and sprinkled on the plants once or twice a week, enriches the soil and imparts health add vigour to the plant.

Ladies often ask me: "Why, how do you keep your plants looking so fresh and hardy?" This is my secret.

BAY RUM.

We are often called upon by barbers for a cheap bay rum—something that can be sold for about two dollars per gallon. The following formula I have found to meet all requirements, and make a very fine article:

Take of Oil of bay .....4 fluid drachms.
Jamaica rum.....8 " ounces.
Water .....4½ pints.
Alcohol fort .....3 "

Mix the water and alcohol, add the oil of bay, shake well, and add rum. This can be made clear and bright by filtering through magnesia and charcoal.

CARBOLATE OF IODINE.

We are frequently called upon to dispense carbolate of iodine inhalent. The following is the formula of Dr. Percy Boulton, its originator, and who introduced it to the notice of the profession:

Take of Tincture iodine comp .....1 fluid drachm.
Acid carbolic.....6 minims.
Glycerin.....1 fluid ounce.
Water.....5 fluid ounces.

Mix. The solution soon loses its iodine colour, becoming clear and colourless.

A FINE DENTIFRICE.

Take of Precipitated chalk .....24 parts.
Pulverized pumice stone ..... 8 "
" sugar of milk ..... 4 "
Essence of white rose ..... 1½ "

Mix thoroughly.

VELPEAU'S DIARRHŒA MIXTURE.

Take of Tincture of opium .....
" rhubarb ..... } Of each 1 fluid ounce.
Paregoric elixir .....
Essence of peppermint ..... 10 fluid drachms.
Tincture of capsicum ..... 6 " "

Mix.

Take of Linseed oil ..... 2 pints.
Resin ..... 1 pound.
Sulphur ..... 1 "
Oil of turpentine..... 1 pint.
Ammonia (liquor) .....50 drops.

PRESENCE OF COPPER IN ACETIC ACID.

In making a solution of acetate of ammonia, I noticed that an

over-saturation with the alkali produced a slight blue colouration of the solution. This aroused my suspicion regarding the purity of the acetic acid employed. The presence of copper was confirmed by further testing, and on making a quantitative examination the copper was precipitated out of solution by sulphydric acid, which when calculated gave ·397 of metallic or 1·534 per cent. acetate of copper.

SANTONATE OF SODA.*

BY M. LEPAGE.

The author having failed to get satisfactory results with either of two published processes for preparing santonate of soda, proposed the following mode of operating, which he finds to give a satisfactory result:—

Take—

Powdered Santonin	100	grams.
Alcohol (90°)	500	"
Distilled Water	500	"
Unslacked Lime	80	"
Carbonate of Soda	90	"

Dissolve the santonin in the alcohol and water at the temperature of a water-bath; then add the lime, previously slacked and suspended in a very small quantity of water, and stir frequently. The liquid immediately takes a magnificent rose colour, but after about ten or fifteen minutes it loses its colour and presents the appearance of a clear soup. This is due to the formation of santonate of lime, which is but slightly soluble in the alcohol and water. Allow the mixture to remain in the water bath some minutes longer, to ensure the complete combination of the calcium oxide and santonin; then pour in the carbonate of soda dissolved in double its weight of pure water, agitate briskly, allow the liquor to deposit, and filter. Distil the filtrate in a water-bath to recover the alcohol; concentrate the residue in a dish placed in hot water until of the consistence of a syrup, weighing 200 or 220 grams. After about twelve hours, when it has solidified, powder it and suspend it in 800 grams of 90° alcohol; agitate frequently to facilitate solution, and after some hours of contact decant the clear liquid. Wash the portion remaining undissolved (excess of carbonate of soda) with 200 grams of fresh alcohol and add this to the other alcohol, filter, distil to recover about three-fifths of the alcohol, and terminate the

* Abstract of a paper in the *Journal de Pharmacie* [4], vol. xxiv. p. 311., in *Pharm. Jour. & Trans.*

operation by concentrating the residue in a water-bath until reduced to about 400 grams. Let this stand, and at the end of twenty-four to thirty-six hours it will form a crystalline mass of small prismatic needles, which after drying will weigh 150 to 160 grams. The mother-liquor, by further concentration will still yield 20 to 25 grams of the salt.

The santonate of soda thus obtained is perfectly white, and contains, according to the author's analysis, 51 per cent. of santonic acid. It dissolves completely in three parts of water at the ordinary temperature and in four parts of alcohol at 90° C. The aqueous solution possesses a marked bitter taste and presents an alkaline reaction with litmus paper. No turbidity or precipitation should be caused by oxalate of ammonia, chloride of barium, or carbonate of soda. Acids added in slight excess precipitate the santonic acid.

Syrup of Santonate of Soda.

The author recommends the following formula for a vermifuge syrup, which from its taste resembling sugar syrup could be administered without difficulty to children:—

Powdered Santonate of Soda . .	5 grams.
Simple Syrup	900 "
Syrup of Orange Flower	100 "

Suspend the santonate in 250 grams of the simple syrup and heat it over a spirit lamp until dissolved; add the remainder of the syrup, then the syrup of orange flower; and mix carefully. A tablespoonfull, or 20 grams of this syrup, will contain 10 centigrams of santonate, or the equivalent of 5 centigrams of santonin. For adults the dose might be doubled, or a syrup made containing 20 centigrams to the tablespoonful.

THE VARIATION IN STRENGTH OF THE OPIUM PREPARATIONS.*

BY D. B. DOTT.

In the following communication, the subject of which is one of those suggested for investigation by the Conference, I give the results of an examination of a number of the official opium preparations. It was not thought necessary to test samples of all these preparations, but only of the tincture, extract, and liquid extract; the morphia-strength of which will probably afford a sufficiently accurate idea of the quality of the opium preparations at present supplied to the public. All the samples examined were procured from druggists of good standing in London, Dublin, and Edinburgh.

In the first place I give the assays of a variety of opiums, with

* Read at a meeting of the British Pharmaceutical Conference and published in the Pharm. Jour. & Trans.

the amount of extract obtained from each. The percentage of extract was not found directly but by substracting the percentages of water and insoluble residue from 100, the difference being the percentage of dry extract. The proportion of the morphia in the extract is calculated from the result of the opium assay.

It will be seen from this table that the richest extract obtained would contain 34·4 per cent of morphia, while the poorest would contain 13·7 per cent. Whence it is manifest that two chemists, starting with opiums perfectly answering the Pharmacopœia tests, and strictly following the officinal process, might succeed in preparing extracts, one of which would be more than twice the strength of the other.

	Description of Opium used.	Morphia per cent.	Water per cent.	Aqueous extract per cent.	Residue insoluble in water per cent.	Morphia in extract per cent.
1.	Turkey	10·75	19·6	47·80	32·60	22·4
2.	"	12·30	20·0	51 15	28.85	24·0
3.	"	10·20	26·0	48.05	25·95	21·2
4.	"	7·57	21·2	54·90	23·70	13·7
5.	"	9·60	22·0	47·05	30·85	20·4
6.	"	11·69	18·4	56·15	25·45	20·8
7.	"	12·30	19·2	54·90	25·90	22·4
8.	"	12·30	20·4	45·40	34·20	27·0
9.	"	6·76	27·2	37·00	35·80	18·2
10.	"	9·80	21·2	40·00	38·80	24·5
11.	"	8·85	22·8	47·50	29·70	18·6
12.	"	6·93	31·2	20·10	47·90	34·4
13.	Persian	6·00	14·0	59·20	26·80	10·4
14.	"	8·50	12·0	60·60	27.40	14·0
15.	"	2·10	16·0	58·10	25·90	3·6
16.	" in sticks	traces	15·6	83·90	10·50	traces
17.	Malwa	7·30	15·2	60·70	24·10	12·0
18.	"	5·80	13·6	61·10	25·20	9·5
19.	Egyptian	7·00	14·8	56·90	29·30	12·3

In the next table I give the estimation of several samples of *Extractum Opii.*

	Water per cent.	Morphia per cent.		Morphia per cent.
No. 1	19·2	19·4	No. 7	22.8
No. 2	21·2	19 7	No. 8	19·3
No. 3	26·8	16·2	No. 9	20.5
No. 4	18·4	19·6	No. 10	15·4
No. 5	23.2	19·7	No. 11	20·4
No. 6	22·0	18·2		

The difference between the maximum 22·8 and the minimum 15·4, is equal to a variation in the morphia-strength of about 3 to 4½. The average percentage is 19·7.

I next give a list of the samples of Extractum Opii Liquidum examined, with their specific gravities and the amount of morphia in the fluid ounce.

No.	Spec. Grav.	Grs. Morphia in fl. oz.			No.	Spec. Grav.	Grs. Morphia in fl. oz.		
		I.	II.	mean			I.	II.	mean
1	·987	3·82	4·08	3·95	9	0·985	4·68	4·34	4·51
2	·992	4·02	3·95	3·98	10	1·000	4·17	4·01	4·09
3	·986	2.66	2·87	2·76	11	0·989	3·63	3·75	3·76
4	·993	3·04	3·89	3·46	12		3·71		
5	·996	3·73	3·12	3·42	13		2·28		
6	·9 ·5	2·26	2 ·06	2·16	14		0 61		
7	·992	1·78	1·63	1·66	15		2·22		
8	·996	4·33	4·34	4·33					

It will be observed that in these fifteen samples the grains of morphia in the fluid ounce varied from 0·6 to 4·5, the average being 3·12. Only one estimation of the last four was made as these were examined some months ago, without any intention of publishing the results. In one or two cases it would have been advisable to repeat the determination of the morphia, but the quantity of each sample admitted of only two estimations being made.

In the following table I give the assays of eighteen samples of the Tinctura Opii, with the specific gravities.

No.	Spec. Grav.	Grs Morphia in fl. oz.			No.	Spec. Grav.	Grs. Morphia in fl. oz.		
		I.	II.	mean			I.	II.	mean
1	0·922	3·30	3·50	3 40	10	·960	3·50	3·57	3 53
2	0 938	2·80	2·70	2·75	11	·953	3 04		
3	0·955	2·10	2·10	2 10	12	·936	3·90		
4	0 940	2·90	3·70	3·30	13		3 71		
5	0·956	2·05	2·10	2·07	14		4·37		
6	0·937	2·08	2·23	2 15	15		2·02		
7	0·929	3·12	3·28	3·20	16		0·83		
8	0·957	3·62	3·45	3·53	17		1·91		
9	0·962	1·40	1·59	1·49	18		0·55		

In this, the most important of the opium preparations, the variation in morphia strength extends from 4·37 to 0·55 grs. in the fluid ounce; the average being 2 66.

The method employed in all the above noted assays, is a modification of that recommended in the British Pharmacopœia. I find

that the precipitate of crude morphia obtained in that process is equal on an average to $\frac{7}{10}$ths of its weight of the pure base. It is a process, which, I have every reason to believe, gives at least as accurate results as those obtainable by any of the recognized methods.

I think the most obvious conclusion to be arrived at from the foregoing experiments, and from those of other observers, is that the opium preparations are not remedies to be relied on. When one considers that a physician who prescribes for his patient one drachm of laudanum, intending that the latter should receive thereby $\frac{1}{8}$ of a grain of morphia, may in reality be only giving him $\frac{1}{10}$ of a grain; it is manifest that this indicates a condition of things demanding amendment. It has been proposed by Dr. Squibb (reported in the "Year-Book for 1870") to prepare a strong tincture, assay it, and then dilute to the proper strength, or at least to prepare the tincture, etc., from assayed opium. I am afraid, however, that there would be great, if not insuperable, difficulty, in getting this system brought into general use. The trouble involved in following such a plan would deter the majority of pharmacists from adopting it. For my own part, I believe the ultimate solution of the difficulty will be the abolition of all galenical preparations of opium from the Pharmacopœia. Indeed, unless opium possesses therapeutical properties which are not possessed by its alkaloids, there can be no reason for retaining it. That is a question, of course, to be decided by medical men. Still, I venture to think that our knowledge of the physiological effects of opium and its constituents is sufficiently complete to enable us to affirm that all the objects for which opium is prescribed can be attained equally well by the use of its alkaloids. Among these only three can be said to have any practical importance, viz., morphia, codeia and narceine, which are all hypnotics, and seem to differ from one another mainly in the amount required to produce the desired effect. The other bases are either inert in ordinary doses, or exist in such minute quantities that the porportion of them in a large dose of laudanum could only produce a physiological effect in the imagination of a homœopathist.

I believe that the chief work of pharmaceutical chemistry for a long time to come will consist in the perfecting of processes for the isolation of the active principles of the vegetable remedies, so that in due time all the mediæval tinctures and decoctions of the Pharmacopœia will become obsolete, and be superseded by preparations of definite and invariable strength. It is my sincere hope, that this paper, meagre and imperfect though it is, may in some small measure be the means of hastening such a desirable consummation.

EXTRACT OF MALT.*

Extract of malt has become a popular dietetic remedy, and is particularly esteemed as a demulcent and nutritive food for children. Its syrupy appearance, however, offers many inducements to fraud. The simplest and cheapest adulterant is glucose (syrup), which is in general use by brewers to increase the amount of extractive matter in beer. But there is no ready method known to detect this admixture. And as a complete analysis is in most cases impracticable, the consumer must generally rely upon the honesty of the manufacturer.

Hager reports having received a sample of malt extract, which in external appearances resembled the genuine completely, although it had a peculiar faint foreign taste.† From its behaviour towards reagents, in which it greatly differed from the genuine, it was judged to be a mixture of glucose, glycerine, and about thirty per cent. extract of malt. To confirm these results, comparative reactions were made with three samples of extract of malt, one of which had been evaporated in an open vessel, and had a darker color than the others. The main difference between extract of malt and glucose (syrup) is probably the amount of soluble modifications of portein-bodies in the former. It might be conjectured that the adulteration with glucose would produce a greater amount of reduction in alkaline copper solution. But the results obtained do not permit any such conclusion to be drawn; one gramme of the three last named extracts reducing respectively 43, 44.5, and 46 c.c. of the copper solution, while the submitted sample (X) reduced 48.5 c.c.

The presence of glycerine in moderate quantity, say up to 10 per cent., cannot be called an adulteration, as it is no doubt added for the purpose of preserving the extract; but then the glycerine must be employed in a pure state. The above mentioned sample of extract (X), however, contained 26 per cent. of glycerine (extracted by ether-alcohol), which could not have been very pure, owing to the considerable quantity of calcium chloride present.

Hager considers the examination of the following points sufficient to decide on the genuineness and qualities of a malt extract.

1. The extract must have its own peculiar sweet taste and the refreshing odor of fresh bread.

2. The watery solution must be nearly clear. On dissolving 5 gms. of the extract in 45 gms. of distilled water, under stirring and without heat, a slightly cloudy solution is obtained, which may be filtered without difficulty. The insoluble matters were found to be different under different circumstances, and consisted of amorphous

*From New Remedies.

†In the course of the paper, this sample is distinguished by X.

coagulum, ferment-bodies, and columnar, four or six-sided (sometimes also star-shaped) crystals.

3. 10 c. c. of the filtered solution, prepared as just stated, are placed into a test-tube, 1.5 cm. (= 5-16 inch) wide, and mixed with 10 cc. of an aqueous cold saturated solution of picric acid. In the case of good extracts, a strong cloudiness appears at once, which gradually increases, and after ten minutes has become so intense as to prevent the passage of daylight through the liquid. The adulterated sample (X) showed only a slight cloudiness with picric acid, nor did it after ten minutes become so intense as to be impervious to light.

If it is desired to determine the quantity of the protein compounds in solution, 10 gms. of the extract are digested for half an hour at a gentle heat in 100 gms. of cold saturated aqueous solution of picric acid, and the whole set aside to allow the precipitate to deposit. The latter is collected in a tarred filter, washed and dried in the water-bath. Its weight, divided by 2, is approximately equal to the quantity of the proteides.

4. Another portion of the filtered 10 per cent. solution is mixed with tincture of galls in excess, and well shaken. A copious whitish precipitate, remaining suspended in the liquid, and making it impervious to light, must make its appearance. Sample X gave only a slight cloudiness.

The same relationship which exists between pepsin and febrin, or other animal proteïn-compounds, holds good between the diastase of extract of malt and vegetable-starches. The latter, which form a main constituent of our vegetable diet, are converted by diastase into dextrin. Extract of malt, therefore, owing to its proteïdes and to diastase, is an excellent adjunct in the nutrition of infants.

Various other remedies have been combined with the extract of malt, to modify its action, or it is used as a pleasant disguise for disagreeable medicines. But since those agents which are capable of arresting or preventing fermentation would exert the same influence upon the diastase, and consequently would prevent the latter from acting upon starch, they should not be given in combination with malt extract, or at least only in very small quantities. Tannic acid, salts of quinine, salts of iron, (ferric) with organic acids, and potassium iodide should be given in comparatively large quantities of the extract. Hager mentions the following compounds or preparations as in use in Germany.*

Extractum malti chininatum (or *quinatum*), *Malt extract with quinia*, was formerly prepared by adding 1 part of quinia sulphate to 250 parts of the extract; but the bitterness of the mixture caused it to be frequently rejected by children. At present the usual method

*A number of preparations, besides those enumerated above, are in use in the United States.

is to add 1 part of quinia tannate to 100 parts of the extract. A trial with a perfectly neutral extract, prepared by J. D. Riedel, yielded a solution, which had not deposited any sediment after eight days, and which exerted but a very slightly diminished action upon starch. Hager proposed to call this *Extractum malti tannochinatum.*

Extractum malti ferratum, Ferrated malt extract. A formula for this preparation is given by the German Pharmacopœia. It is best prepared by dissolving 2 parts of soluble ferric pyrophosphate in five parts of pure glycerine, and adding it to 93 parts of the extract. The taste of the resulting product is, however, slightly modified, and Hager recommends to use saccharate of iron 3 parts, glycerine 7 parts, and extract 90 parts.—This would be *Extractum malti saccharoferratum.*

Extractum malti iodatum, Iodized Malt Extract, is a solution of 1 part of potassium iodide in 10,000 parts [rather dilute! Ed. N. R.] of extract.

Extractum malti pepsinatum, Malt extract with pepsin, is said to be more nutritious than the simple extract, and to be especially valuable in dyspeptic complaints. For this purpose a saccharated pepsin of 50 per cent. is recommended. Two parts of this are rubbed with 5 parts of glycerine, and added to 93 parts of the extract. It is best to prepare this mixture only when wanted.

Extractum malti lupulinatum, Extract of malt with hops, is a preparation made by J. D. Riedel, of Berlin. Although originally intended to be added to weak malt liquors or beers for the purpose of giving "body," it may be used medicinally. It has an agreeable aromatic taste, and is probably a solution of alcoholic extract of hops in extract of malt.

ACTION OF IMPURE RAIN-WATER ON LEAD PIPES.*

BY PAUL SCHWEITZER, PH. D., OF THE UNIVERSITY OF MISSOURI.

The Laboratory of the University is supplied with rain-water, which collects in a tank in the upper part of the Scientific Building, and is carried to the working tables of the students by lead pipes, which are furnished with brass stop-cocks. In using this water for ordinary analytical work—as, for instance, saturating it with sulphydric acid—it was soon found to be unfit for such purposes, on account of the quantity of metals it had dissolved, after standing in the pipes for only a short time. It is a well-known fact that pure water attacks lead much faster than water containing a certain

* Read before the American Chemical Society, June, 1876, and published in the American Chemist.

quantity of mineral salts, and this seems to be also the case with rain-water, which contains invariably ammonia, nitrous and nitric acids; some sulphuric acid was also found in this water, derived from the smoke and cinders which fall on the roof of the building from the coal fires that heat the rooms. The following quantities of metals were found in one U. S. gallon of 231 cubic inches of the filtered water, that had stood in the pipes for one month:

1·079	grains	metallic	zinc.
0·537	"	"	iron.
2·503	"	"	lead.
0·082	"	"	copper.
0·049	"	"	arsenic.
4·250	grains.		

Arsenic, copper, and probably iron, are derived from the lead pipe, manufactured from an inferior quality of lead and zinc from the lining of the tank. In supplying private houses or institutions with water through a system of pipes, care should be taken to find out whether the water to be supplied be pure or not; in the former case, and when rain-water is the source of supply, as it is in many sections of our State, lead pipes should be discarded, and tin-lined lead pipes substituted for them.

A NEW EXCIPIENT FOR SOME OF THE OFFICIAL AND OTHER PILL MASSES.*

BY G. WELBORN.

One of the subjects for investigation in the list compiled by the British Pharmaceutical Conference relates to the unsatisfactory condition which some of the pill masses of the Pharmacopœia acquire by long keeping.

It has doubtless been observed by every pharmacist who has had an extended experience in the preparation and dispensing of the official pill masses, that, as far as regards the keeping qualities of several of the masses in question, there is still much to be desired.

Deterioration is marked by widely different phases, and is dependent upon a variety of causes. In some instances, the masses are hygroscopic and become soft or sticky, *e.g.*, "pil. saponis comp.," "pil. scillæ comp.," and "pil. ipecac. c. scillâ." Others become dry through evaporation,—as "pil. colocynth. comp.," or, extremely

*Read at a meeting of the British Pharmaceutical Conference.

hard and vitreous, as "pil. asafœtidæ comp.," or granular, as in "pil. aloes et ferri."

Having noticed the various altered conditions developed by age in the above mentioned preparations, it becomes of some importance to consider whether those changes can be prevented by the use of some more suitable excipient.

With the view of obtaining such a substance, glycerine was selected as a basis, since it has been found to prevent the damaging effects caused by evaporation. It cannot, however, be used by itself for this purpose, as it is open to the objection of causing pills thus prepared to "fall," and, in some cases, to run into a mass.

This tendency may be obviated by the addition of tragacanth mucilage in the following proportions:—

Gum tragacanth, in powder .	½ oz.
Glycerine	
Water, of each	2¼ ozs.
Oil of Pimento	gtt. v.

Mix.

The above product will keep good for several years in an ordinary covered pot.

The weight of "tragacanth excipient" required for the following official pill masses and the Pharmacopœia quantities, is approximately as follows:—

	Tragacanth excipient.		Conf. of Roses.
Pil. aloes et ferri	2½ oz	may be substituted for	4 oz.
Pil. aloes et myrrhæ	1 oz	"	2½ oz.
			Treacle.
Pil. rhei comp.	2 oz	"	4 oz.

3j of Howard's sulphate of quinine, and *gr.* xx of the tragacanth excipient make a nice mass; while only gr. vij of it are required to form a tough, plastic mass with 3j of compound ipecacuanha powder.

When this excipient is used there is but rarely the slightest tendency to adhesion between the mass and the pill mortar,—consequently there is no loss of materials.

Another point of some importance is, that the use of pill-powder in the operation of pill making is usually unnecessary.

The advantages as an excipient possessed by the substance just described, may be summarized as follows:—the small quantity necessary to effect the desired purpose; the facility with which it mixes with dry powders; its cleanliness; and its efficacy as a preservative.

THE PROPERTIES OF XANTHIUM SPINOSUM AND ITS USE IN HYDROPHOBIA.*

The following is abstracted from a letter sent by Dr. Grzymala, of Kaivoc-Ozero, Podolia, to Professor Gubler, editor of the *Journal de Thérapeutique*:—"Opposed to specifics, both in medicine and therapeutics, I have faith only in physiological action, although, as regards many substances, this is very little known. I am convinced that the physiological action of a diaphoretic, *xanthium spinosum*, should furnish the explanation of its effects against hydrophobia, for it is of the treatment of this dreadful malady that I wish to speak. This plant infallibly neutralizes the effects of the *rabies virus*, if the single condition be observed that it is administered at once, that is, before the disease declares itself. I have used *xanthium* for several years with the best success, and have not met with a single case of failure, although I have had occasion to administer it at least *ten times as often* to men as to animals bitten by rabid dogs and wolves. In this country rabies is very common, and for more than twenty years that I have employed this remedy an average of ten cases per annum justifies the proportion mentioned.

"*Xanthium* is sudorific, sialogogue, and feebly diuretic, less pronounced in its action than jaborandi. All the physiological effects are not produced on the same subject: some perspire, others are salivated, and others pass more than the normal quantity of urine. The temperature is slightly elevated, and the circulation is usually accelerated. Sometimes it produces headache, or nausea, and even vomiting. In general the appetite is augmented, and the digestive functions are not deranged. The dose for an adult is 60 centigrammes of the dry powdered leaves, repeated three times a day, and continued for three weeks. Children below twelve require half this quantity. It is unnecessary to say that I never cauterise. About twelve years ago one of my dogs, becoming rabid, bit a cow, a pig, a dog, a cat, and a tame crane. The first three were treated with *xanthium* for twenty-one days, and were not further affected; the crane and the cat were left to themselves and died of hydrophobia, the one at the end of three and the other at the end of eleven days after being bitten. During the Crimean war a family of twelve persons were bitten by a rabid wolf. Six of these persons entered the hospital of Olschauka. All were cured, whilst the remaining six, treated by the *actual cautery* and the daily administration of *cantharides*, with *tonquin bean* and *genista tinctoria*, died raging in the course of twelve to sixty days. Two years ago six hounds in my possession were bitten by a rabid dog (this animal succumbed at the end of two days, with all the symptoms of hydrophobia). Three of the bitten hounds were isolated and left without treatment; they

*Chemist & Druggist.

died at the end of fifteen days, with all the signs of rabies. Three others, left at liberty but placed under treatment for three weeks (thirty grains per day in three doses), I still have with me, and they have never been unwell. I feared to have failed with one of them, for he disappeared the twelfth or thirteenth day of the treatment. He was recovered three months afterwards, his disappearance showing that twelve days' treatment sufficed."

Dr. Grzymala adduces other instances of the favourable action of *xanthium* in hydrophobia, equally striking with those given, and concludes as follows :—" These are real and positive facts, which I am able to substantiate. I have not drawn on the imagination for them ; they are personal to me, and, I repeat, I have more than a hundred others, which I am prepared to submit to you if desired. I forward them in the hope that they may be inserted in your very estimable *Journal de Thérapeutique*. I am certain that the experiments you may make with the leaves sent, on their physiological and therapeutic action, will correspond to those described, and I shall thus have co-operated, although feebly, in that path of therapeutics which you and your distinguished collaborators have so splendidly opened."

MODE OF ACQUIRING A PHARMACEUTICAL EDUCATION.

The following extracts are taken from the opening address delivered by Mr. Barnard S. Proctor to the students of the School of Pharmacy, Bloomsbury Square, London. The commencement of Mr. Proctor's pharmaceutical career dates back some score or more years, and though a self-taught man he not only passed with great credit the examinations of the Pharmaceutical Society, but has since made his mark in the pharmaceutical world, as well by his work entitled " Lectures on Pharmacy," as by numerous contributions which have from time to time appeared in the journals, and with many of which our readers are familiar.

" Speaking now of the pursuit of pharmaceutical studies as the one thing which it is more particularly my province to dilate upon, I will say a few words first upon the mode of learning, and then upon the kind of learning, which is desirable.

You may have heard of a learned pig which could point to the number 18 when asked, How much is twice 9? That is the very lowest species of learning. It had learned, but it did not know. And from this upwards we have all grades, to the highest of which the human mind is capable. Learning, knowing, understanding, and that combination of intellectual faculties by which new truths are evolved from old ones.

It is quite necessary for anyone who would excel that he should exercise all these powers.

Let me for a moment further illustrate the difference between learning and knowing. You have all learnt the multiplication table, and could say it from beginning to end, and if I were to ask you how much is five times seven, or eleven times twelve, you could give me the answer without consideration, in which case you may be said not only to have learned it, but to know it. Probably also you have all learned a verse which commences

Thirty days hath September;

but I rarely find anyone who can tell the number of days belonging to each month without a moment's consideration, and often only by the aid of repeating the verse and noting anew that the months containing 30 days are September, April, June and November. In this case they have *learned*, but do not *know*, how many days there are in August.

All facts having a direct and practical bearing upon your daily routine work should be known as you know your multiplication table. With regard to facts which meet with application only once a month, it may suffice if you know them as you know how many days there are in August. Learn them, and if possible retain such a clue as will bring the knowledge to your mind by a moment's consideration. Information which is only wanted at long intervals is sufficiently in your possession if you retain the outline and know where to refer for the details. If you were all men of remarkable genius it might be unnecessary thus to discriminate between the more and less important items of knowledge. In all cases where you desire to retain a useful outline of a subject take care that you understand it thoroughly at the time you read it, as in that case the impression left will be much clearer and more permanent.

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"True knowledge is of slow growth."

"He who would woo wisdom must work and weary not."

More students fail through making haste to get on than from slowness of perception. It is not the want of finish but the want of beginning and of going on where the weakness lies. If there are little hollow corners in your foundation the superstructure is sure to be shaky, but it is almost difficult to build a ricketty reputation on a good foundation. Students' materia medica cabinets were not known during my apprenticeship, but I made the shop my cabinet, and put on the backs of the bottles and drawers labels indicating the botanical names and natural orders of vegetables, and the formulæ and equivalents of chemicals, so that my daily dealing with drugs, and my dusting of bottles and shelves, became a perpetual reminder of what I learned by reading. He who does not let his thoughts

run idle while his hands are at routine work can afford to give his mind a holiday when his body is at liberty.

Now here I am disposed to run counter to a common item of so-called good advice. I have repeatedly heard the classical scholar advise that we should pursue Latin for the pleasure it affords; and the botanist dilate upon the enhanced pleasure of a walk in the country if your vasculum be strapped to your shoulder and your "Flora" under your arm. I do not consider this is at all the right light in which to view the matter. It is like telling a child that its medicine is not nasty, and the natural reply is, "Yes it is nasty, and I won't take it." But I am speaking to men, not to infants, and I would say if you can enjoy your Latin and your botany by all means do so, and thank heaven that your path is made pleasant to you. But if these subjects be uncongenial, study them conscientiously, a little more than you think can be reasonably expected of you, and then thank heaven yet more fervently that you can do your duty, be it a pleasure or a pain. If botany be not to you both a pleasure and a relaxation, do not spoil a holiday for the sake of a little half-hearted study. When you do study let it be with earnestness and industry, and when you take holiday let your pleasure be pure and hearty, let it be a bumper full to the brim. And if you must have a "Flora" with you let it not be Babington's or Bentham's, but your sister Flora. If you take your study into your recreation you will become impatient of such a spoil-sport, and jump to a wrong conclusion for want of patience to get at the right one. Now I have no objection to jumping; I have seen a great philosopher jump, though he was one of the most cautious men the world ever knew, as regards jumping to a conclusion. When I was a boy Faraday challenged me to a jumping match, and with a hop, step, and a jump, he cleared the length of a grass plot in my father's garden, while I could only accomplish two-thirds the distance. I do not think he was studying all the while. No, he was taking a holiday and having a game with the children. It is only small men who must be always studying, and who are afraid of their reputation suffering by the enjoyment of light-hearted pleasures.

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While I earnestly commend diligence and persistence in the prosecution of your studies I must also add this further injunction, that you be not students in pharmacy only. Do not give your whole soul to this one study, for your duties as pharmacists will not be worse performed, but better, for the cultivation of refined tastes and the following of intellectual pursuits. Keep a little corner of your soul free from the bricks and mortar of pharmacy—there the daisies will blossom and your hobby may be turned out to grass.

Three months' training cannot make a sedentary man into an athlete, neither can three months' grinding make a tyro into a philosopher.

The growth of physical power comes by daily work, battle against resistance, alternated with food and rest. By no other means can you develop bone and sinew, muscle and nerve, in a healthy and vigorous condition.

The growth of moral and intellectual power takes place upon precisely similar principles. It is the daily battle with difficulties, little difficulties, the daily learning of little facts, the daily exercise of observation and judgment; it is the daily struggle and the nightly rest that makes the moral and intellectual powers grow strong and healthy.

I have no fear of error in your judgment of what it is desirable you should become in the course of the next ten or twenty years. If I had a power to give you I would give you strength of will. The picture drawn by hope is bright and fair. What is wanted for its realization is the determination that every day shall record some definite progress, however small.

Learning commences in the cradle, it goes on always and for ever. Going to school and leaving school, passing an examination and entering business, are not to be regarded as aims or ends, but only stages in an endless journey.

The necessity for a compulsory curriculum is a question which has often been debated by leading men in our society: the necessity for it only exists inasmuch as you fail to be a law unto yourselves. Voluntary work is both better and less irksome than that performed under compulsion, but it must be work of that quality with which a taskmaster could find no fault. Be your own taskmasters, and practise upon yourselves that rigorous discipline to which you would like to subject me.

If you would do so we should hear no more of cram, or of students who crowd their efforts into a three months' course of study, and convert their brains into deposits for dry rubbish.

And when you have passed your examination remember you have not done any great thing; do not grow conceited on the strength of so small an achievement. All that passing indicates is that you are not too ignorant, or too stupid, to be entrusted with the practice of your trade. Do not think that, having learned enough to merit this first mark of confidence, you may then rest from active exertion. Rest is only given us to restore our power. Prolonged rest is neither useful nor agreeable. Activity is life, stagnation is death—death such as no Christian should acknowledge. The glory of the Christian faith is going on in all good works, and knowing no end. It is the mark of unworthy aims and narrow views to look forward to an achievement which is an end to work and progress.

Editorial.

THE ADMINISTRATION OF PHOSPHORUS.

Despite the diligence and ingenuity of experimenters, the speculation of pharmaceutical authors, and the deliberations and discussions of conferences and associations, the administration of phosphorus still remains a vexed and undecided question. It is possible that we are nearer the solution than we were a few years ago; certainly we are better informed in regard to the subject, and it may not be amiss for us to try to systematize and put into shape that which has been learned.

The solvents of phosphorus may be divided into three classes; oleaginous, resinous or balsamic, and those of an alcoholic, etherial, or terebinthinate character. The first solution proposed for internal administration belonged to the first of these divisions, and almond oil was selected as being best suited to the purpose. The Prussian Pharmacopœia contained a formula for *oleum phosphoratum*. This preparation was made by heating together phosphorus and almond oil, in a water-bath. About four grains of phosporus to the ounce were dissolved. This solution was found to be unsatisfactory, and prone to change, the phosphorus becoming quickly oxidized. The framers of the addendum to the British Pharmacopœia, sought to obviate this by previously heating the oil to 300° F., in order to expel air and moisture. This plan is of questionable advantage, as the oil is by heating rendered much more liable to become rancid, though the phosphorated oil, thus prepared, is not so easily affected by light. Other oils have been substituted, as cod-liver, neats-foot, and theobroma. The former appears to be better than almond oil, and the latter is well spoken of as far as concerns its keeping qualities, but is unsuited for administration, except by pill, when the addition of a little Canada balsam is found to render the mass more plastic and workable. According to a paper in our last number, the cod-liver oil solution may be rendered more permanent by passing into the oil a stream of carbonic acid gas, so as to displace any contained air. This mode emanates from high authority, but has still to undergo the ordeal of trial.

Passing on to the second-class of solvents there may be enumerated absolute alcohol, chloroform, ether, bisulphide of carbon, and oil of turpentine; all these are open to various objections, more particularly on account of the exceeding volatility of the liquids, and the consequent difficulty of maintaining the exact phosphorus strength. Oil of turpentine, though not very volatile, has certain curious relations towards phosphorus—it has indeed been used as an antidote in phosphorus poisoning—so that grave doubts are entertained as to its eligibility as a solvent. However, despite this, some physicians have reported very favourably in regard to its employment. Absolute alcohol dissolves but a small proportion—about two grains to the ounce—but the phosphorus is at once precipitated if the solution be added to water. This objection also holds good in respect to phosphorated ether, and is a decided bar to its employment in medicine. Solution in carbon bisulphide is very dangerous to handle, and requires the greatest possible care in storage, but may be usefully employed for making pills after the manner prescribed in this journal (vol. ix., p. 441). In this case the solution is prepared extemporaneously. The above solvents are not very popular, nor in such general use as those of an oily nature.

Phosphoretted resin has not stood the test of time, nor come up to the anticipations which were formed regarding it. It has been found to change rapidly, especially under the action of light; it is in a form in which it cannot readily be employed without being pulverized, and thus exposed to the air; and its preparation is difficult and quite dangerous. Phosphorated balsam of tolu, which forms the basis of the official phosphorus pill, has been proved to be insoluble, and is liable to pass unchanged through the intestinal canal. The addition of one grain of Castile soap, and a drop or two of spirit, to three grains of the mass, remedies this defect. It is urged that the pharmacopœial pill mass is too weak, so that, when large doses of phosphorus are ordered, the patient has to take a large number of pills. In cases of this kind the pill before mentioned, containing bisulphide of carbon, may be used, a drop or two of oil of cloves being added in order to prevent or retard the inflammation of the phosphous. For varnishing these pills a solution of sandarach or resin in ether may be used; if desirable, they may be afterwards coated with mucilage and French chalk.

Besides being given in solution, or in compounds of which

solutions form a part, phosphorus may also be given suspended in various vehicles. Mucilage of acacia has been lately recommended for this purpose. A cup is partly filled with mucilage B.P., and the phosphorus is added. The cup is placed in a water bath, containing cold water, and heat is applied. The phosphorus melts, and on stirring, forms an emulsion with the mucilage. The cup is removed from the bath, and the powder necessary to form pills is rapidly stirred in. Caution must be exercised so as to keep the mass as much as possible together and clear of the sides of the cup. When the mass is cold it may be manipulated in the usual way. This method is intended to prepare pills for immediate use, but it is said that by varnishing them they may be preserved for months. The emulsion of phosphorus may be combined in a mixture, but will not keep more than a few days.

A formula for phosphorus powders will be found in an article in the present number of the journal.

POISONING BY ANILIN COLOURING IN WINE.

Some five years ago, we called attention to the adulteration of red wines with colours derived from anilin, and expressed the opinion that the practice of employing this factitious colouring was attended with no small danger, as the amount of colouring was large, and the quantity of wine consumed at one sitting might be very considerable. This paper had the effect of calling attention to the subject, and, since then, many tests for these colours have been given, some of which are very ingenious, but, we think not more convenient or reliable than that we proposed: viz:—agitation of the wine with an equal bulk of fusel oil or chloroform, which in case of adulteration, becomes coloured. Another method for fuchsine, originating with Mr. C. Husson, may be noted: A small quantity of the suspected wine is mixed with a few drops of ammonia, and a thread of white Berlin wool is immersed in the mixture and then withdrawn. The thread is held in the hand and a few drops of vinegar or acetic acid allowed to trickle down it. If fuchsine is present the thread is dyed red, but, if the wine be pure, the dirty green colour of the wool disappears and the thread becomes white.

During the last year or two the use of this artificial colouring has been carried to an alarming extent in France. The Syndicate of Wine Merchants of Paris have memorialized the Government, and protested against the use of fuchsine, whether arsenical or not, and, as a result of the agitation, orders have been issued for the analysis of all red wines carried into Paris. Dr. Bergeret, of St. Etienne Hospital, at Lyons, reports the occurrence of a number of cases of poisoning by artifically coloured wines, and from other sources we learn that the adulteration is quite general. Although the wine in which we first detected fuchsine was a spurious article of port, manufactured in Canada, it is possible that by this time, some of our imported French wines may partake of the same character, and, in any case, will be none the worse for being tested.

Editorial Summary.

Solution of Citrate of Iron and Quinine.—To prepare this salt in scales requires the expenditure of considerable time, and the inexperienced operator frequently fails in obtaining a solution which will scale at all: a drying closet is also needed, and, altogether, the process is not one which recommends itself to the retail pharmacist. There is, however, in the market, very little citrate of iron and quinine which is up to the pharmacopœial standard, and in order to meet the difficulty it is proposed to substitute for the scales a solution of definite strength, which, it is urged, would be of greater convenience in dispensing, and could be very easily prepared. Mr. J. F. Brown brought this subject before the British Pharmaceutical Conference and said that he had for over two years been in the habit of using such a solution. Many of the members present had also used a solution, as being more easily dispensed than the scales, but they had prepared it by simply dissolving the salt. There is some difficulty in preserving the solution of iron from becoming mouldy. Various expedients were spoken of, and there was considerable difference of opinion in regard to this matter. Amongst some plans proposed we may mention the addition of chloroform, in the same proportion as in *Aqua Chloroformi*, as advocated by Mr. Brown. This is an effectual preservative, but it was questioned whether the addition was admissible. Sugar had been found to answer, as also glycerin. With the latter the reddish brown colour of the mixture changed to a more pronounced green than did the syrups. With a

few grains of citric acid and one-eight the volume of alcohol, the solution was effectually protected, as also by the addition of 12 or 15 per cent. of alcohol without citric acid. It was was also stated that a solution of one part of citrate to two of water, kept very well. Mr. Brown took as his guide Mr. Umney's statement that the pharmacopœial product is about four and a half ounces, and on this regulated the strength of his solution. In preparing the citrate he found it better that the precipitated quinine should not be suffered to dry after washing, nor should it be added to the solution of iron until the latter has cooled. The ammonia is best added by diluting it to about the same bulk as the citrate solution, and mixing both liquids, with brisk shaking, in a large bottle. In testing the product by the P. B. process he had failed in getting the required quantity—16 per cent.—of quinine, but this was probably owing to inexperienced manipulation. Professor Redwood explained that by the pharmacopœial test it was intended that the precipitated quinine should be dried and weighed before being washed. Though the process might not give the exact amount of quinine present it would show the comparative value of the salt and in this way was of great practical value.

Active Principles of Gelsemium Sempervirens.—Some years ago this plant was examined by Dr. Wormley (see this journal April, 1876), and found to contain gelsemin, and an acid substance to which the name of gelseminic acid was given. Professor Sonnenschien has lately been making experiments in the same direction, and, in a paper read before the Berlin Chemical Society, (*Berichte d. Deutschen Chem. Gesselschaft* in *Pharm. Jour. & Trans.* Sept. 1876,) gives the results. He finds the so-called gelseminic acid to be identical with æsculin, obtained from the bark of the horse chestnut. The two substances agree in external characters; in the blue fluorescence of an aqueous solution; the dichroism of an alkaline solution, and the reaction with nitric acid and ammonia, and, finally, in chemical composition, as shown by analysis. The alkaloidal substance named gelsemine (not in any way to be confounded with the complex substance termed gelsemine by the Eclectics) was also isolated and its properties examined. It is sparingly soluble in water, more readily in alcohol, and very freely in ether and chloroform. Its reaction is strongly alkaline, and it completely neutralizes acids, but its salts do not appear to be crystallizable. If to a solution in strong sulphuric acid ceroso-ceric oxide be added, there is produced a bright cherry color, especially at the points of contact. This is considered by the author a characteristic test of the presence of the alkaloid. Ultimate analysis gave to this substance the formula $C_{11}H_{19}NO_2$.

A NEW BASIS FOR CANTHARIDES PLASTER.—A paper on this subject was read by Mr. A. W. Gerrard at the late meeting of the British Pharmaceutical Conference. The author thought that the present basis of the plaster lacked adhesiveness and flexibility. In winter, especially, it was found to become crumbly, and to separate from the surface on which it was spread. These results were attributed to the use of mutton suet. The author made many experiments, but finally fixed on the following formula as giving a more satisfactory and workable plaster;—Cantharides, in fine powder, 5 ounces; Canada balsam, 8 ounces; yellow wax, 5 ounces; and lard, 1½ ounces. During the winter months the proportion of lard might be doubled. Compared with the B. P. plaster the blistering effect was found to be in favor of the new basis. The treatment of the powdered flies by caustic soda, and afterwards with hydrochloric acid, for the purpose of liberating cantharidine, as recommended by a German authority, was tried, but found to result in no advantage. In the discussion which followed the reading of this paper the new plasters did not appear to meet with much favor; most of the members thought that, with proper manipulation, the B. P. basis might be made to yield a good plaster, and that, at all events, it would not be proper to make it more adhesive

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GALLIUM.—In a paper in *Comptes Rendus*—for a translation of which we are indebted to our contributor "Monad"—M. Lecoq de Boisbaudran gives additional particulars regarding the new element. In the liquid state the metal is of a beautiful silver-white colour, but, in crystallizing, it assumes a very distinct bluish tint, and its brilliancy diminishes considerably. Isolated octahedral crystals may be obtained by carefully cooling the melted metal. Former experiments gave the fusing point at between 29° to 30° C., but from recent trials of samples of purified gallium, perfectly free from potassium, the point was found to be 10.16° C., (about 86° F.) At 30.06° C., crystals were formed slowly. The calculations of Mendeleef for a hypothetical body, which seems to correspond with gallium, give a specific gravity of 5.9, and M. Boisbaudran's experiments show the actual specific gravity to be near this point, or 5.935. The process for the extraction of gallium is given in detail by the author, but it will not be appropriate or necessary for us to follow him, as the subject is not of sufficient general interest to our readers.

TOUGHENED GLASS CHIMNEYS.—A correspondent of the Toronto *Mail* cautions the public against the use of the La Bastie chimney, and confirms the statements of others in regard to the

danger arising from this modern form of Prince Rupert's drop. A chimney, placed upon a lighted lamp, suddenly exploded; the fragments of glass were projected a distance of twelve feet, in fact, struck the walls of the room, and a considerable part of the chimney was literally blown to powder. Many accidents similar to this have been reported, and we think the warning should be heeded, for very serious consequences might follow such explosions. An English druggist, while measuring cold water from the shop filter, at a temperature about equal to that of the air, and using for the purpose a two ounce graduated measure of toughened glass, was surprised to find the graduate fly into minute crystalline fragments, which were strewn in every direction about the floor. As he remarks, had the measure been used for strong acids or corrosive substances, the result might have been serious.

NEW EXCIPIENT FOR PILL MASS.—Several communications have been sent to the *Pharm. Jour. and Trans.*, in regard to a paper read before the British Pharmaceutical Conference, and which is reproduced in another part of this journal. In most of these exception is taken to the claims of the author as to the originality of the invention of a glycerine and tragacanth excipient. Mr. A. P. Baker directs attention to a paper published some six years ago, in which two formulæ are given; one containing two drachms of tragacanth and six of glycerine; and another, of softer consistence, containing one ounce of glycerin. Another correspondent says that he has for many years been using a similar compound—one drachm of tragacanth to the ounce, mixed by the aid of heat; and this he claims is superior to Mr. Welborn's excipient, in which oil of pimento is a very questionable constituent.

PREPARATION OF SULPHIDE OF IRON.—The ordinary process for preparing sulphide of iron, by means of subjecting a mixture of iron and sulphur to heat in a crucible, furnishes a very impure product. The sulphide made by bringing into contact roll brimstone and white-hot metal gives an unexceptionable product, but the process is wasteful of sulphur; considerable time is required to turn out large quantities of the compound. M. C. Mehu, of Paris, (*Zeitsch. Oest. Apoth. Ver.*) proposes a new method which is said to give as good a product as the process last named, and to be much more economical. One part of iron, in fine filings, is intimately mixed with two parts of finely powdered pyrites and placed in a Hessian crucible. The mixture is brought to a red heat and maintained at this temperature for thirty minutes, when it may be allowed to cool. Com-

bination is effected without fusion, and the resulting grey mass may be at once powdered for use.

IMPROVED FORM OF SINAPISM.—The old fashioned mustard plaster, a very inelegant but efficacious application, has in some measure given place to the more cleanly papers of Rigollot. This form of sinapism has been still further improved upon by M. Vincent, an apothecary of Saintes, who puts into a small tube—similar to a one drachm homœopathic phial—a quantity of essence of mustard. The tube is sealed and around it is wrapped a piece of paper in form and texture suitable for a plaster. When required for use a few drops of the essence are poured on the paper, which is then similar to Rigollot paper, but has the advantage of being fresh and therefore of far greater reliability and promptitude.

PASTE FOR LABELS ON TIN.—An exchange suggests the use of a solution of chloride of calcium as an addition to glue used for labels on metal or glass. This hint might result in a very useful recipe, and we commend it to our young readers, who might experiment on the subject and let us have the results. The principal trouble with glue and gum is that they become too dry, contract, and separate from metallic surfaces. This may be prevented by the addition of honey, as suggested by the writer, a number of years ago. Chloride of calcium, which is very deliquescent, would probably have the same effect, and might possess advantages worth finding out,

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ANTAGONISM OF RHUS AND GELSEMIUM.—Some time ago we published a summary of a paper which appeared in the *Louisville Medical Times*, to the effect that fluid extract of gelsemium, applied locally, afforded complete relief in cases of rhus poisoning. In a communication to *New Remedies*, Dr. L. Johnson says, that being severely poisoned by the plant he employed the fluid extract, but though a thorough trial was made he derived not the slightest benefit from the treatment.

SOLUBILITY OF THE TANNATES OF MORPHIA AND QUINIA IN GLYCERIN.—Mr. D. W. C. Wade, a correspondent of the *Druggists' Circular*, says that the tannates of these alkaloids are readily soluble in glycerin, and that the solution may be diluted with water without precipitation taking place. The editor of the above journal thinks

that the fact admits of useful application, and doubtless will be appreciated by those who have had difficulties in preparing mixtures containing tannin and quinine, but whether a druggist would be justified in making such an addition, without the prescriber's consent, must remain an open question.

TOXIC ACTION OF GLYCERIN.—M. M. Dujardin Beaumetz and Audige, (*Bulletin Gen. de Therapeutique*) find that when large quantities of glycerin are injected under the skin of dogs, a effect comparable to alcoholism is produced. The authors are led to believe that the toxic effects of alcohol and glycerin are similar if not identical, and that there may be some danger in using the latter agent in immoderate quantity.

ADULTERATION OF SULPHATE OF QUININE.—Some lots of quinine, found in the French market, and bearing the name of M M. Armet de Lisle et Cie—but of course not coming from that highly respectable house—were found to be adulterated with acicular crystals of nitrate of potash, amounting to seventy per cent. This salt may be easily detected by heating a small portion in the flame of a lamp, or throwing it on burning charcoal, when, if nitre be present, deflagration will take place. Pure quinine burns quietly with a smoky flame.

JUGLANDINE.—A new alkaloid, appropriately named *juglandine*, has been discovered in walnut leaves and described by M. Tauret, of France. The alkaloid crystallizes in long needles which are unstable in the air. It is soluble in alcohol. The author hopes to pursue his researches when he has obtained a sufficient supply of the new substance.

DRUGGISTS' ASSISTANTS' ASSOCIATION CONCERT.

When with some considerable flourish of trumpets our young friends made the announcement that they intended giving a grand concert, under the patronage of the Lieutenant Governor and several distinguished members of the Cabinet, some of the older and more cautious druggists thought that for a young association, appearing in public for the first time, a style less pretentious, and in-

volving less expenditure, would have been in better keeping. However, in due time, the concert came off, and, we are pleased to say, was in every respect an unqualified success. The Music Hall was well filled by a highly respectable and appreciative andience, and as the excellent programme was boing carried through smoothly and without jog, it was evident that the impression left by the Druggists' Assistants' Concert would be by no means unfavourable to those interested in it.

Dr. Agnew was called to the chair. He said that anything like a speech would be decidedly out of place, but he had no doubt that many present would like to know something of the aims and objects of the Association. These, he explained, related principally to pharmaceutical education, and the present effort was directed to the raising of funds for the establishment of classes to be held during the winter, and the purchase of a library of scientific works. One of the objects of the society was the formation of an Alumni Association in connection with the Ontario College of Pharmacy. The speaker expressed his deep interest in these objects, and said that the education of druggists was not only of interest to physicians but to the public in general. In this respect the druggist was only second to the doctor, nay, he would say that a special education was quite as necessary to one as the other. The College of Pharmacy had been instrumental in accomplishing a great deal of good, and he was glad to see that the younger members of the College had united for action, and that their efforts were being appreciated and encouraged as was fully shown by the large audience assembled that evening. He wouid not further take up time, but would give place to those whom every one was doubtless anxious to hear.

The concert was opened by a piano duet, "Marche aux Flambeaux," which was rendered very effectively by Messrs. Horsey and Cousens. The "Monks of Old," by Mr. Blogg, was well received and called forth an *encore*. A song by Miss Hillary, "I love my love," was exquisitely given and an *encore* was again insisted on, which was kindly responded to. "The Wanderer's Night Song," a duet by Miss Reid and Mrs. Cuthbert, called forth the loudest plaudits of the audience, as also the next song, "Speak to Me," by Mr. Murray Scott. Both songs were encored. We have seldom heard "Auld Robin Gray" sang more sweetly and with more expression than by Mrs. Grassick, who was loudly called for a second time, when she gave the pretty Irish song, "I sent my love a letter," in her most pleasing style, which is saying a great deal. After an intermission of a few minutes, a piano solo, "Highland Gems," was skilfully executed by Miss Heales, when Miss Reid sang, "Sing, Pretty Warbler," which was peculiarly adapted to display to the best advantage the sweet voice of the vocalist. It was warmly applauded, as also the "M'appari" of Mr. G. Bilton. "Per Valli per Boschi," by Mrs. Grassick and Miss Hillary, was beautifully rendered, and

was apparently thoroughly appreciated. "The Return," by Mrs. Cuthbert, was very well sung and warmly applauded, and the "Scots wha hae" of Mr. Murray Scott, which was given by special request, was received in a truly national manner. The closing piece of the evening was the "Magic-wove Scarf," a trio, by Miss Hillary and Messrs. Bilton and Scott, in which these accomplished vocalists did themselves every credit. The accompanyists, Mrs. Rowland, Messrs. Theodore Martens and Tasker, performed their part in a manner which appeared to be as satisfactory to the singers as to the audience. Before the singing of the National Anthem, Mr. W. C. Cousens thanked the audience for the hearty encouragement they had shown the association by their attendance, and the chairman for the able manner in which he had fulfilled the duties of his position, and also the ladies and gentlemen who had so kindly volunteered their services, and had so well succeeded in making the first concert of the Association a decided success.

Books and Pamphlets.

Chemistry: *General Medical and Pharmaceutical*, including the Chemistry of the U. S. Pharmacopœia. A Manual on the General Principles of the Science, and their applications in Medicine and Pharmacy. By John Attfield, Ph. D., F. C. S., Professor of Practical Chemistry to the Pharmaceutical Society of Great Britain, etc. etc. Seventh edition: Philadelphia, Henry C. Lea. 1876. p.p. 668.

We have already reviewed several editions of this well known and deservedly popular work, and it will now be altogether unnecessary to do more than call attention to those features which distinguish the seventh edition from those which have preceded it. The first two editions had especial reference to the chemistry of the British Pharmacopœia. In the third was embodied that of the U. S. P., and the work was adapted to the requirements of American students. This was followed in 1873 by a fifth edition on the same design. In 1875, a sixth edition was issued. In this, which formed the basis of the edition under review, there was contained such alterations and additions as seemed necessary in order to bring the work up to the latest developments of chemical and pharmaceutical science. It was however, especially designed for English readers. The seventh edition has been prepared for this side of the Atlantic, and will be found more useful for Canadian students than that which preceded it, as a knowledge of both pharmacopœias is to a certain degree

requisite. It has also the advantage of noticing some forty substances which are official in the Indian but not in the B. P., so that it now includes the chemistry of the medicinal substances of Great Britian, the United States and India. The engravings introduced in the sixth edition have been reproduced in that under the review. We have so often commended Attfield's Chemistry that it appears useless for us to attempt to add anything to what we have stated. We may, however, say that most of the medical and pharmaceutical colleges have adopted it as a text-book, and we certainly think that it is undoubtedly the best that has ever been published.

The Aromatic Group in the Chemistry of Plants. By Alfred B. Preston, Professor of Organic Chemistry in the University of Michigan. Read before the Ann Arbor Scientific Association, and reprinted from the Proceedings for 1875-6. 8vo, p.p. 23.

Proceedings of Colleges and Societies.

DRUGGISTS' ASSISTANTS' ASSOCIATION OF ONTARIO.

The regular monthly meeting was held November 9th, Mr. W. C. Cousens in the chair. The minutes of former meeting were read and confirmed, and after the transaction of the ordinary routine business, and the election of new members, the subject of the coming concert was brought up and discussed. It was concluded that it should be held on Thursday, November 23rd, and it was stated that the Music Hall could be obtained at that time.

Three papers for the evening were announced. The first by Mr. Blundell.

ON CINCHONA BARK AND ITS ALKALOIDS.

The writer gave an account of the various varieties of bark, and a description of the plants from which they were obtained, together with much interesting information relating to the *habitat* of the cinchonas and the influence of cultivation on the yield of alkaloids. The plantations of India, Java, and St. Helen's were referred to, and also the recent attempts to manufacture the crude alkaloids at the place of growth. The cinchona alkaloids were then taken up separately, and their modes of preparation and characteristics given in detail. The writer found that in dissolving sulphate of quinine in strong acid, as often ordered in prescriptions, the solution of the quinine is much retarded, and that it is always better to dilute the acid before adding the sulphate. The official quinine preparations

were discussed, and some suggestions given in regard to their manufacture. As an excipient for quinine in pills, mucilage of acacia was recommended, or better still, pulv. tragacanth with the addition of a few drops of simple syrup. It was also stated that port wine was generally found much more acceptable to the patient than the sherry ordered in the *Vin. Quiniæ*, B. P. The latter was probably selected on account of its containing a greater proportion of acid, but there was seldom any difficulty in making a reasonably strong solution in port.

Some discussion followed the reading of this paper, when another paper by Mr. F. H. Holgate was announced,

ON INFUSIONS AND DECOCTIONS.

After giving the general characteristics of these preparations, and stating the modes of manufacture, advantages and disadvantages, the writer made some remarks on the use of concentrated infusions. These compounds are generally prepared by percolating the drug with cold water, or dilute alcohol, as the case may be, and then bringing the extract to a definite bulk, so that by dilution with seven, or fifteen parts of water, the desired infusion may be readily prepared. In some cases this plan answers well, but it is not so well suited to others. This conclusion is also applicable to the preparation of infusions from the ordinary fluid extracts. The writer then went on to describe some experiments on the preservation of infusions by salicylic acid. The infusion selected was that of cinchona.

"Three lots were placed in a cool place; No. 1 containing the simple infusion; No. 2 containing 8 grains salicylic acid to one pint; No. 3, 12 grains acid to one pint. In about two days No. 1 began to decompose; Nos. 2 and 3 remaining perfectly sweet for several weeks. I concluded that 8 grains would be quite sufficient to a pint. As the acid is not a strong one, the difference in the taste is very slight, and in a mixture would be quite disguised by the other ingredients. I used no other substance to make a solution of the acid before adding it to the infusion—borax or boracic acid being generally used; I merely added the bark and acid to the boiling water, and macerated together; the result has been very satisfactory. Upon the whole, I would recommend the infusions of quassia, chiretta, calumba, and orange, and the compound infusion of gentian to be kept in the concentrated form, and Inf. cinchonæ to be prepared in the ordinary way, but preserved by salicylic acid; any other infusion to be prepared in the way prescribed by the B.P."

In reply to a query propounded at last meeting, Mr. Fraser read a short paper

ON SYLPHION CYRENIACUM.

This plant was described as belonging to the Umbelliferæ, and to be identical with the *Laser cyreniacum* or *Asa dulcis*, but not connected with the assafœtidas, as was supposed by some. It grows

in Cyrene, and was much esteemed by the ancients, by whom miraculous powers were ascribed to it, such as the restoration of sight, and youth. It was also used as an antidote to poison, and for the cure of venomous wounds. Its reputation became so great that the princes of Cyrene caused it to be struck on their coins, and its value was estimated by its weight in gold. The various difficulties realized by authorities in referring this ancient plant to its true botanical place were referred to by the writer, but it was found that none of the plants, save that described, either grew in Cyrene, or answered to the fac-simile on the coins.

Meeting adjourned.

Varieties.

PLANT ANÆSTHESIA.—The *Scientific American* states that the curious discovery has recently been made that anæsthesia may take place not only in animals but in plants, and, in brief, in all forms of life. It has been demonstrated that etherization acts finally on all the tissues of animals and on the central nervous system. Hence, if plants have tissues, the anæsthetic should equally act on them. This substantially appears to be the case; and everp vital act, whether occurring in animal or vegetable, may be anæsthetized. In plants, M. Claude Bernard, to whom is due the credit of the discovery, has found that germination ceases under the influence of ether. He introduced water cresses, which germinate from day to day, into two precisely similar tubes. In one tube he placed a little ether. The plant therein was found not to have germinated, as the other had; but after being removed from the anæsthetic the first went on and germinated in a natural manner. The plant had literally been put to sleep.—*Phila. Med. & Surg. Rep.*

EXPERIMENTS WITH STRYCHNIA.—Professor Wanklyn, following up his experiments on the action of silicated carbon on organic matter, reports in the *Chemical News*, of July 21, a very remarkable experiment. He dissolved some strychnine in water in the proportion of 8.841 grains to the gallon. Without the alkaloid the water tested by the ammonia process yielded 0.05 milligrammes of albuminoid ammonia per litre. With the strychnine in solution it yielded 5.20 milligrammes to the litre. Ten litres were passed through a filter which had previously been used with solutions of quinine and morphia. The first five litres were thrown away. On testing what had passed through afterward by the ammonia process the liquid yielded some free ammonia and 0.04 milligramme of albuminoid ammonia, showing that the filtrate was devoid of strychnine. Before filtration the liquid was distinctly bitter; afterward it had no bitter taste. Mr. Wanklyn says he was confident enough of the exactness of his results to risk his life on them, so he drank 300 centigrammes of the liquid, a quantity which before filtration would have contained 40 milligrammes of strychnine, without tasting any bitterness, or experiencing any injurious effects.

COLOURS FOR CONFECTIONARY AND FOOD.—The police of Paris have directed that the following substances be employed for colouring articles of food for confectionary:—Blue—indigo and its derivatives, Prussian blue. Red—cochineal, carmine, Brazil wood, lake, orchil. Yellow—saffron, Avignon yellow berry, quercitron, fustic, turmeric. Green—mixture of carmine Prussian blue and logwood (Campeachy wood). Violet—mixture of carmine and Prussian blue. The use of the following pigments is prohibited:—Oxide of copper, blue copper salts, red lead, vermillion, chrome yellow, gamboge, white lead, Schweinfurt and Scheele's green (Paris green). For colouring drinks they recommend—Curacoa, logwood; for absinthe, soluble indigo, blue with saffron; for blue liquids, soluble indigo blue, Prussian blue and ultramarine. We notice that, singularly enough, aniline colours are omitted from the list of prohibited colours.—*Jour. of App. Science.*

POISONED ARROWS.—A detailed description of the poisoned arrows of the Papunas, such as those with which Commodore Goodenough, of the British Navy, was recently killed in the South Pacific, has been received from private sources by Dr. J. D. Hooker, President of the Royal Society. It seems that the points consist of needle-like bits of human bone, which are plunged into a human corpse, and poisoned by being allowed to remain there a number of days. A very slight scratch by arrows thus treated is absolutely fatal, poisoning the blood of the victim, who dies with symptoms resembling those of lockjaw, although no ill effects are usually experienced from the wound until a number of days after its infliction. To distinguish them from ordinary shafts, these poisoned arrows are handsomely carved and elaborately painted.—*New Remedies.*

FRAUDULENT ADMIXTURE TO RUBBER.—Some rubber-goods of the market, such as tubing, sheet, rings, etc., have been ascertained, lately, to contain as much as 60 per cent. of ash. Such goods contain an admixture of barium sulphate, and, although they are very cheap, they are not durable. In a few weeks they become hard, covered with cracks, and lose all elasticity; it is, therefore, advisable to ascertain the amount of ash before largely investing in such rubber-goods. This complaint comes from Europe, and we are not, at present, able to say whether it is applicable to American goods.—*New Remedies.*

GERMAN AMBER.—The extent of the amber fields in Germany may be seen from the fact that twenty-two dredges, two tug-boats, one hundred barges, and one thousand laborers are engaged in the industry. The area of the amber field is extensive, and the Government derive from it a yearly rent of 72,200 thalers.

ARTIFICIAL IVORY.—The patent taken out by B. S. Cohen, of London, thus describes the method of the manufacture of this article. Ivory-dust is boiled with water to a jelly, and to this is added some shellac dissolved in alcohol, and some oxide of zinc, For every pound of ivory, 1 oz. each of shellac and zinc oxide is taken. The pulpy mass is poured into forms, allowed to become dry in the air, and then subjected to hydraulic pressure. The finished material may be cut, sawed and turned as well as natural ivory or bone.

DRUGS, MEDICINES, &c.	$ c.		$ c.
Acid, Acetic, fort	0 13	@	0 14
Benzoic, pure	0 22		0 27
Citric	0 90		1 00
Muriatic	0 03½		0 05
Nitric	0 10		0 13
Oxalic	0 15		0 17
Sulphuric	0 03		0 05
Tartaric, pulv	0 44		0 47
Ammon, carb. casks	0 18		0 20
" jars	0 18		0 20
Liquor, 880	0 20		0 22
Muriate	0 14		0 15
Nitrate	0 45		0 60
Æther, Acetic	0 45		0 50
Nitrous	0 40		0 42
Sulphuric	0 45		0 50
Antim. Crude, pulv	0 15		0 17
Tart "	0 50		0 55
Alcohol, 95 per ct. Cash	2 13		0 00
Arrowroot, Jamaica	0 18		0 22
Bermuda	0 50		0 65
Alum	0 02¾		0 03½
Balsam, Canada	0 33		0 38
Copaiba	0 65		0 70
Peru	2 90		3 20
Tolu	3 20		3 40
Bark, Bayberry, pulv	0 18		0 20
Canella	0 17		0 20
Peruvian, yel. pulv	0 35		0 50
" red "	1 60		1 70
Slippery Elm, g. b	0 18		0 20
" flour, packets	0 28		0 32
Sassafras	0 15		0 18
Berries, Cubebs, ground	0 20		0 25
Juniper	0 06		0 10
Beans, Tonquin	1 00		1 20
Vanilla	18 00		24 00
Bismuth, Alb	2 25		2 50
Carb.	2 40		2 65
Camphor, Crude	0 33		0 35
Refined	0 35		0 40
Cantharides	1 65		1 75
Powdered	1 80		1 90
Charcoal, Animal	0 04		0 06
Wood, powdered	0 10		0 15
Chiretta	0 23		0 30
Chloroform	0 90		1 55
Cochineal, S. G	0 75		0 85
Black	85		0 90
Colocynth, pulv	0 60		0 65
Collodion	0 70		0 80
Elaterium oz	3 20		4 00
Ergot	1 20		1 30
Extract Belladonna	1 65		1 80
Colocynth, Co	1 25		1 75
Gentian	0 50		0 60
Hemlock, Ang	0 60		0 95
Henbane, "	2 50		2 60
Jalap	4 50		5 00
Mandrake	1 75		2 00
Nux Vomic oz	0 40		0 50
Opium oz	1 25		
Rhubarb	5 00		5 50
Sarsap. Hon. Co	1 00		1 20
" Jam. Co	3 50		4 00
Taraxacum, Ang	0 70		0 80
Flowers, Arnica	0 17		0 25
Chamomile	0 30		0 35
Gum, Aloes, Barb. extra	0 70		0 80
" " good	0 40		0 50
" Cape	0 16		0 20
" " powdered	0 20		0 30
Socot	0 50		0 75
" " pulv	1 00		0 00
Arabic, White	0 31		0 58
" powdered	0 60		0 75
" sorts	0 19		0 24
" " powdered	0 42		0 50
" com. Gedda	0 13		0 16
Assafœtida	0 15		0 20
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 40		0 45
Gamboge	1 00		1 20
Guaiacum	0 35		1 00
Myrrh	0 50		0 80

DRUGS, MEDICINES, &c.—*Contd.*	$ c.	$ c.
Sang Dracon	0 60	6 00
Scammony, powdered	5 50	—
" Virg. "	14 50	0 55
Shellac, Orange	0 50	0 40
Gum, Shellac, liver	0 38	0 45
Storax	0 40	1 75
Tragacanth, flake	1 10	0 65
" common	0 53	0 30
Galls	0 22	1 20
Gelatine, Cox's 6d	1 15	0 25
Glycerine, common	0 23	0 28
Vienna	0 25	0 75
Prices	0 60	0 17
Honey, Canada, best	0 16	0 12
Lower Canada	0 10	0 20
Iron, Carb. Precip	0 16	0 55
" Sacchar	0 40	1 20
Citrate Ammon	1 10	0 85
" & Quinine, oz	0 40	0 20
" & Strychine	0 17	0 10
Sulphate, pure	0 08	3 75
Iodine, good	3 50	4 80
Resublimed	3 90	1 50
Jalapin	1 25	2 60
Kreosote	2 50	0 32
Leaves, Buchu	0 22	0 30
Foxglove	0 25	0 40
Henbane	0 35	0 60
Senna, Alex	0 27	0 20
" E. I.	0 14	0 30
" Tinnevilly	0 20	0 17
Uva Ursi	0 15	—
Lime, Carbolate brl	5 50	0 06
Chloride	0 05	0 12½
Sulphate	0 08	0 14
Lead, Acetate	0 13	—
Leptandrin oz.	0 60	0 55
Liq. Bismuth	0 45	1 50
Lye, Concentrated	1 30	0 55
Liquorice, Solazzi	0 50	0 40
Cassano	0 23	0 25
Other brands	0 14	0 45
Liquorice, Refined	0 35	0 25
Magnesia, Carb 1 oz.	0 20	0 20
" 4 oz.	0 19	0 65
Calcined	0 60	0 75
Citrate gran.	0 60	0 85
Mercury	0 80	1 00
Bichlor	0 90	1 10
Chloride	1 05	0 55
C. Chalk	0 50	1 25
Nit. Oxyd	1 15	3 40
Morphia Acet	3 30	3 40
Mur.	3 30	3 60
Sulph	3 50	.....
Musk, pure grain oz	25 00	0 70
Canton	0 60	0 60
Oil, Almonds, sweet	0 55	15 00
" bitter	14 00	3 50
Aniseed	3 25	6 00
Bergamot, super	5 50	3 50
Caraway	3 20	2 00
Cassia	1 75	0 12
Castor, E. I	0 11	0 25
Crystal	0 22	0 26
Italian	0 24	1 10
Citronella	1 00	3 80
Cloves, Ang	3 75	2 10
Cod Liver, Imp. Gal	2 00	1 50
Croton	1 40	1 00
Juniper Wood	0 80	3 00
Berries	2 75	1 00
Lavand, Ang oz.	0 00	1 10
Exotic	1 25	3 75
Lemon, super	3 50	0 00
ord	0 00	2 60
Orange	2 40	0 75
Origanum	0 65	16 00
Peppermint Ang	15 00	5 00
" Amer	4 00	8 75
Rose, Virgin	8 50	6 75
" good	6 60	0 90
Sassafras	0 75	4 00
Wintergreen	3 60	6 00
Wormwood, pure	5 00	0 90
Ointment, blue	0 80	7 75
Opium, Turkey	7 60	10 00
pulv	9 75	

	$ c.	$ c
Drugs, Medicines, &c.—*Cont'd*		
Orange Peel, opt.	0 35	0 36
" good	0 15	0 20
Pill, Blue, Mass	0 90	1 00
Potash, Bi-chrom	0 16	0 18
Bi-tart	0 30	0 32
Carbonate	0 13	0 15
Chlorate	0 27	0 30
Nitrate	8 00	9 00
Potassium, Bromide	70	0 80
Cyanide	0 55	0 60
Iodide	2 75	2 90
Sulphuret	0 25	0 35
Pepsin, Boudault's oz	1 25	—
Houghton's doz.	8 00	9 00
Morson's oz.	0 85	1 10
Phosphorus	1 10	1 20
Podophyllin	0 50	0 60
Quinine, Pelletier's	—	2 45
Howard's	3 30	—
" 100 oz. case.	3 25	—
" 25 oz. tin..	3 25	—
Root, Colombo	0 13	0 20
Curcuma, grd	0 12½	0 17
Dandelion	0 17	0 20
Elecampane	0 16	0 17
Gentian	0 08	0 10
" pulv	0 15	0 20
Hellebore, pulv	0 00	0 00
Ipecac, "	1 30	1 40
Jalap, Vera Cruz	90	1 15
" Tampico	0 70	1 00
Liquorice, select	0 12	0 13
" powdered	0 15	0 20
Mandrake "	0 20	0 25
Orris, "	0 20	0 25
Rhubarb, Turkey	2 10	2 25
" E. I	1 00	1 10
" " pulv	1 10	1 20
" " 2nd	0 60	0 70
" French	0 75	—
Sarsap., Hond	0 38	0 50
" Jam	0 95	1 00
Squills	0 10	0 15½
Senega	0 80	0 90
Spigelia	0 30	0 32
Sal, Epsom	2 00	2 50
Rochelle	0 30	0 32
Soda	0 01½	0 02
Seed, Anise	0 13	0 16
Canary	0 07½	0 08
Cardamon	1 75	1 85
Fenugreek, g'd	0 08	0 09
Hemp	0 06½	—
Mustard, white	0 16	0 17
" American	0 50	0 60
Saffron, Spanish	10 00	11 00
Santonine	15 00	15 50
Sago	0 08	0 09
Silver, Nitrate Cash	14 50	16 00
Soap, Castile, mottled	0 11	0 14
Soda, Ash	0 03¾	0 05
Bicarb. Newcastle	4 00	4 25
" Howard's	0 14	0 16
Caustic	0 03¾	0 04
Spirits Ammon., arom	0 35	0 35
Strychnine, Crystals	2 00	2 20
Sulphur, Precip	0 12	0 13
Sublimed	0 03½	0 05
Roll	0 03	0 04½
Vinegar, Wine, pure	0 55	0 60
Verdigris	0 35	0 40
Wax, White pure	0 70	0 80
Zinc, Chloride oz	0 10	0 15
Sulphate, pure	0 10	0 15
" common	0 06	0 10
Dyestuffs.		
Annatto	0 35 @	0 60
Aniline, Magenta, cryst	2 00	2 60
" liquid	2 00	—
Argols, ground	0 15	0 25
Blue Vitrol, pure	0 07½	0 09
Camwood	0 07	0 08
Copperas, Green	0 01½	0 02
Cudbear	0 16	0 25
Fustic, Cuban	0 03	0 04
Indigo, Bengal	2 40	2 50
Madras	0 75	0 80
Extract	0 26	0 30

Dyestuffs—*Continued.*		
Japonica	0 06½	0 07
Lacdye, powdered	0 33	0 38
Logwood	0 02½	0 03
Logwood, Camp	0 02¾	0 03
Extract	0 12	0 13
" 1 lb. bxs	0 15	—
" ½ lb. "	0 16	—
Madder, best Dutch	0 09	0 10
2nd quality	0 08	0 09
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 25	0 28
Cloves	0 50	0 55
Cayenne	0 17	0 20
Ginger, E. I	0 14	0 15
Jam	0 25	0 30
Mace	1 10	1 10
Mustard, com	0 20	0 25
Nutmegs	1 00	1 05
Pepper, Black	0 15	0 16
White	0 26	0 28
Paints, Dry.		
Black, Lamp, com	0 09 @	0 10
" refined	0 25	0 30
Blue, Celestial	0 08	0 12
Prussian	0 65	0 75
Brown, Vandyke	0 10	0 12½
Chalk, White	0 01	0 01½
Green, Brunswick	0 07	0 10
Chrome	0 16	0 25
Paris	0 26	0 28
Magnesia	0 20	0 25
Litharge	0 07	0 09
Pink, Rose	0 12½	0 15
Red Lead	0 07¼	0 08
Venetian	0 02½	0 03½
Sienna, B. & G	0 07	0 08
Umber	0 07	0 10
Vermillion, English	0 90	1 00
American	0 25	0 35
Whiting	0 85	1 00
White Lead, dry, gen	0 08½	0 09
" " No. 1	0 07	0 08
" " No. 2	0 05	0 07
Yellow Chrome	0 09	0 15
" Ochre	0 02½	0 03½
Zinc White, Star	0 09	0 11
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 10	0 12
Putty	0 03¾	0 04½
Yellow Ochre	0 08	0 12
White Lead, gen. 25 lb. tins	2 35	—
" No. 1	2 10	—
" No. 2	1 85	—
" No. 3	1 60	—
" com	1 30	—
White Zinc, Snow	2 75	3 25
Naval Stores.		
Black Pitch	3 00 @	3 25
Rosin, Strained	3 25	3 50
Clear, pale	4 50	5 00
Spirits Turpentine Imp. Gall	0 60	0 62
Tar Wood	5 50	6 00
Oils.		
Cod Imp. Gall	0 84 @	0 86
Lard, extra	1 25	1 27
No. 1	1 14	1 16
No. 2	1 02	1 05
Linseed, Raw per 7½ lbs	0 60	0 61
Boiled	0 64	0 65
Olive, Common Imp. Gall	1 26	1 30
Salad "	2 01	2 10
" Pints, cases	4 00	4 20
" Quarts	3 25	3 50
Seal Oil, Pale Imp. Gall	0 84	0 86
Straw "	0 80	0 82
Sesame Salad "	1 56	1 60
Sperm, genuine "	2 55	2 75
Whale refined	2 55	2 75