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Original and Selected Papers.

PEPSIN.*

BY CHARLES SYMES, PH.D.

There are few medicines, perhaps, which have received so extensive a trial, and yet respecting which such differences of opinion exist, as pepsin. It cannot be doubted that this arises chiefly from the fact that it has not been recognized by the Pharmacopœia, and hence no standard tests of quality exist in this country. Chemists purchase the kind they think best, influenced perhaps by the advertisements of manufacturers or the report of some experimenter who may have used very carefully prepared samples, and not the commercial article; or it might be they are guided by price, the best qualities being usually attributed to the highest priced articles of its kind, and this, indeed, should be a correct guide. But I have also heard of orders for pepsin in which the only condition stipulated for was its low price. It occasionally occurs that extremes meet, and my experience indicates that they are not so wide apart as would be supposed, even in this instance. It will not be surprising, however, under such circumstances, that pepsin might mean anything posses-

* From the Pharmaceutical Journal & Transactions.

sing more or less digestive power, an appearance varying from that of decorated liquorice to pulv. doveri, and an odor of almost nil to the strong smell of bacon. Variable as it might be, it has stood the test of time, and at last asserted its right to recognition and admission to at least the outer circle, viz: to the Appendix of the British Pharmacopœia.

For some time past I have been conducting a series of experiments on pepsin, first with the view of ascertaining the quality of commercial specimens by different makers; and secondly, of testing the various processes which have been proposed for its preparation as a medicinal or restorative agent. My results under the first head somewhat surprised me, and might do others who have not made this subject one of experimental inquiry; one or two examples will perhaps serve as illustrations. It will be seen that I have used a minimum quantity of acid, so as to test the full peptic power of the various samples—the amount of acid often recommended in a given quantity of fluid being much larger than can possibly exist in the human stomach. In each instance, the white portion of hard-boiled eggs chopped in small pieces was used, and after digestion the undissolved portions, before weighing, were brought to as nearly as possible the same condition of dryness as they were in previously; 100 grains were introduced into six vials—to five of these ten drachms of distilled water, ten minims dilute hydrochloric acid, and ten grains of pepsin of various kinds were added; in the sixth, four drachms of the distilled water were replaced by the same quantity of pepsin wine, each drachm of which should have represented two-and-a-half grains of Pepsina Porci; all were digested under precisely the same conditions at a temperature of 100° for 12 hours. The following gives the amount by weight of undissolved albumen in each vial:—

No.	1	left	undissolved,	1½ gr.
"	2	"	"	2½ "
"	3	"	"	24 "
"	4	"	"	28 "
"	5	"	"	41 "
"	6	"	"	56 "

Now, the medical man who is desirous of testing the value of pepsin as a remedial agent, in one or more cases where he considers it ought to be of service, if there is any good in it, will be perfectly satisfied of its efficacy should Nos. 1 or 2 be dispensed, more or less so if No. 3; but what if No. 5? or if he should have prescribed pepsin wine, as No. 6? It might be said that this latter is largely prescribed, and also taken by invalids without prescription, frequently with good results. I can only reply that, according to the above statement, it possesses about one-half the peptic power that it should do, and that as the stomach is a laboratory whose operations are

somewhat obscure even to the closest observer, in imitating its processes in a vial where we lack the vital agency, the activity of any samples operated on is almost sure to be underated. Nevertheless, experiments conducted carefully under the same conditions are valuable as affording comparative results; and certain is it that wine or any alcoholic fluid is a most unsatisfactory vehicle for pepsin, also, that, when taken with food, it unquestionably retards digestion. The above experiment was several times repeated, first with portions of precisely the same samples, and also with samples by the same makers, but obtained from different sources; the results varied slightly, but bore the same relation to each other. It was thought desirable not to obtain the samples from the manufacturers direct, informing them of the purpose for which they were required, but all were obtained from authentic sources. The pepsin Nos. 1 and 2 were both by the same manufacturer, and, as it will be seen, were of good quality, but it is somewhat anomalous that according to the dose given the former should have been about five times the strength of the latter, whereas it would appear that there is very little difference between them. The catalytic action seems to be more vigorous in the early part of the process of digestion than towards the end; therefore, had a larger amount of albumen been present in the vial No. 1, it is possible a larger amount might have been dissolved, and the residue have been but slightly greater than it actually was. Nevertheless, this could not have been sufficient to account for the great similarity in activity of the two specimens.

Of the process for its preparation as a medicinal agent, that of precipitating its solution by acetate of lead, and subsequent separation of the lead by hydrosulphuric acid, has probably been longest in use, but its activity appears to be more or less injured by the chemical treatment. The process of M. Brucke, consisting of solution in dilute in phosphoric acid, neutralization with lime-water, resolution in dilute hydrochloric acid, and final treatment with cholesterin, rectified spirit, and ether, yields a product possessing active peptic properties, but it is more suitable as a laboratory experiment than for the purpose of manufacture on a commercial scale. Tannin and alcohol have both been proposed as precipitants for pepsin, but I am not aware of any definite process in which these are used for its preparation on a large scale. Next in order is the somewhat primitive process of Dr. Beale. It is given in the *Pharmaceutical Journal*, N. S,, Vol. II., p. 684, and is as follows:

"The mucous membrane of a perfectly fresh pig's stomach was carefully dissected from the muscular coat, and placed on a flat board. It was then lightly cleansed with a sponge and a little water, and much of the mucus, remains of food, etc., carefully removed. With the back of a knife or ivory paper knife, the surface was scraped very hard in order that the glands might be squeezed, and their contents pressed out. The viscid mucus thus obtained

contains the pure gastric juice, with much epithelium from the glands and surface of the mucous membrane. It is to be spread out on a piece of glass, so as to form a very thin layer, which is to be dried at a temperature of 100° over hot water or *in vacuo* over sulphuric acid. Care must be taken that the temperature does not rise much above 100°, because the action of the solvent would be completely destroyed. When dry, the mucus is scraped from the glass, powdered in a mortar, and transferred to a well-stoppered bottle."

Several persons who have performed experiments with this (so called) pure digestive powder, including Dr. Beale himself, have spoken highly of its peptic qualities; and from their position we cannot doubt the accuracy of their experiments and statements. In my own hands, however, I cannot say the results were so satisfactory as I had anticipated. The process, too, if carried out strictly according to Dr. Beale's instructions, is a very wasteful one, more pepsin being lost than is obtained; if, on the other hand, it is attempted to obtain a larger quantity, the quality is reduced. The mucus which is directed to be sponged off, and which is usually considerable in quantity, possesses about one-third to one-half the activity of the mucus which is afterwards directed to be *scraped* off; then, after this scraping, a considerable amount of pepsin remains, which can be demonstrated by dissolving it out.

Lastly, we have the process of Mr. E. Scheffer, the most satisfactory as regards uniformity of excellence and economy in working of any I have tried. It has been detailed in this Journal so recently I need not therefore even recapitulate here. It can be made to answer strictly to the tests given; it keeps well; is soluble in an acidulated solution, and hence might be prescribed of almost any strength. Amongst other experiments one was performed in which a given quantity of the moist mucus scraped from fresh cleansed pigs' stomachs, was divided into equal portions, one of which was retained moist, another dried in a thin layer at a temperature not exceeding 100°; from a third portion the pure pepsin was separated by Mr. Scheffer's process, but adding sufficient sugar of milk to bring it to the exact weight of the portion simply dried.

Into each of four vials 100 grains of coagulated albumen, 10 drops dilute hydrochloric acid, and 10 drachms of water were placed; to the first 10 grains of the dried mucus, to the second 80 grains of the moist (it requires this quantity to produce 10 grains of the dry,) to the third 10 grains of the purified saccharated, to the fourth 10 grains of the same, and two drachms of the water were replaced by sherry wine. After twelve hours' digestion, at a temperature of 100°, the results were as follows:

No.	1	left	undissolved	31	grs.
"	2	"	"	22	"
"	3	"	"	12	"
"	4	"	"	52	"

From this we learn that the undried mucus is more active than the same substance after drying; that the pure pepsin diffused through sugar of milk is more active than the mucus from which it is obtained; and finally, we prove the truth of the statement before made, that wine partially destroys the activity of pepsin and is an unsuitable vehicle for its administration.

I propose, therefore, to substitute for pepsin wine an *elixir*, made by dissolving the purified moist pepsin in raspberry vinegar, so that one fluid drachm shall be capable of dissolving 100 grains of coagulated albumen. This keeps well, and is perfectly palatable.

ON THE MANUFACTURE OF CHLORAL HYDRATE IN GERMANY.*

BY GUSTAV DETSENYI.

The extraordinary reduction in the price of hydrate of chloral since 1869—from 90 thalers per kilo to 3 thalers—is easily explained when we consider the enormous increase in its production which the demand for it has created. Early in the year 1869, Dr. Liebreich of Berlin, introduced it as a medicine, and thus gave an impulse to the invention of simpler and cheaper methods of preparing it, and to-day its manufacture has reached such a state of perfection that we can scarcely imagine any improvement in it possible. Three years ago it was scarcely possible to prepare a few pounds of chemically pure chloral hydrate in as many weeks; now 500 pounds per day are made in a few German chemical works.

The principal part of the operation is passing chlorine gas into 96 per cent. alcohol. The chlorine is made from muriatic acid and black oxide of manganese. In Schering's establishment, in Berlin, a large crock of stoneware, four or five feet high, is half filled with the black oxide of manganese, and muriatic acid is allowed to flow in. A delivery tube of lead and glass conducts the chlorine thus generated to a Woulfe bottle, where it passes through water, and thence into a carboy containing 120 to 150 pounds of 96 per cent. alcohol. A second carboy is also connected with the first, in order to collect the hydrochloric acid formed.

The chlorine is passed uninterruptedly for twelve or fourteen

* From the Journal of Applied Chemistry.

days, uutil the alcohol is warmed to 60° or 70° C., and acquires a density of 41° Baume. This forms one-half of the operation, and requires cautious, conscientious and experienced workmen. Especial attention must be devoted to the luting and to refilling the chlorine generator. The apparatus is luted with a paste of bran flour and water, and the cover of the crock is loaded with heavy weights. Before renewing the charge of black oxide of manganese, the chloride of manganese solution is drawn off by a cock near the bottom, and the chlorine in the vessel allowed to escape by a delivery tube that goes up through the roof into the open air. In the Berlin establishment above mentioned there are forty of these apparatus at work, producing three carboys of chloral per day.

The second part of the operation consists in the purification of the chloral hydrate. For this purpose the chlorated alcohol before obtained is placed in a copper still lined with lead, and capable of holding from 300 to 400 pounds, and mixed with an equal weight of oil of vitriol, and then carefully heated over an open charcoal fire to the boiling point. A considerable quantity of muriatic acid is thus driven off, while the chloral vapors are condensed by an upright cooler. The boiling is continued until hydrochloric acid ceases to be given off, which usually requires seven or eight hours for 150 pounds of chloral. It is worthy of note that in this operation the contaminating alcoholate of chloral is entirely destroyed.

The cooler is now taken away, the still provided with a thermometer, and the free chloral distilled off. At first the liquid boils at 95° to 96° F., and by the time the thermometer rises to 100° all the chloral has gone over, and the distillation may be stopped. The distillate is now rectified in a smaller copper retort or still, holding but 150 to 180 pounds, lined with lead, and provided with a delicate thermometer. Before distilling, the free hydrochloric acid still remaining in the chloral is neutralized with triturated chalk. The distilled chloral is caught in glass flasks, and three ounces of water added to every four pounds of chloral, and cooled rapidly by continuous shaking. If required to be crystallized, it is emptied into large flat porcelain dishes, and in half an hour forms the large flat crystals so much in demand in America. These are broken into smaller pieces and packed in stone jars for shipment. Sometimes it is dissolved in chloroform, from which it crystallizes in about a week. The crystals are freed from the mother liquor by a centrifugal machine, and dried in a closet heated by steam. The mother liquor which is thrown off can be used to dissolve a new portion instead of chloroform.

Having sketched the production of chloral on a large scale, we may now look after the by-products, which play such an important role.

Chloride of manganese is formed in immense quantities, and unfortunately finds but little use in the arts. Schering has collected

in two years about 5,000 carboys of this solution, and no small capital is invested in the containing vessels, so that at last it has become necessary to throw it away.

The second by-product is the hydrochloric acid from passing chlorine through the alcohol and from the first distillation. This, of course, is returned to the chlorine generator.

The etherial liquid which collects in the last carboy, under the hydrochloric acid, is also interesting. According to an analysis by Dr. Kræmer of Berlin, it is a mixture of chlorides of ethylene and ethylidene, both of which are employed in medicine. The chloride of ethylidene was also introduced by Dr. Liebreich as an anæsthetic. These liquids are separated by fractional distillation in the usual manner in copper retorts. The free hydrochloric acid contained in them must, of course, be neutralized with soda or potash, and the liquids dried over chloride of calcium. Although their boiling points differ by 23° C., it is scarcely possible to absolutely separate large quantities of them.

The next and last by-product is the sulphuric acid used in expelling the hydrochloric acid. This is sold at a low price for use in other manufactories where its impurities do no harm, as, for instance, in making soda water.

TASTELESS SALTS OF IRON.*

BY CHAS. G. POLK, M.D.

The recent attention that has been bestowed upon the quadruple salts of iron indicates that they will come into general use, and if able to retain popular favor, may be at some future day, embodied in the Pharmacopœia. As far as I know, the only literature on the subject is an article by R. Rother on the ferric phosphate with ammonio-citrate, the article by Mr. Creuse published in the last number of the *Druggists' Circular*,† and a brief sketch by myself in the February number of the *Journal of Pharmacy*, in which I republished Mr. Rother's formula from the *Pharmacist*. The most satisfactory article on the subject was submitted about one year ago to the editor of the American *Journal of American Sciences* by Dr. Alonson D. Hauverman, and its publication declined on account of its strict pharmaceutical character. During the summer of 1866 Dr. Hauverman and myself experimented with the different phosphates of iron, with the chloride, acetate, and iodides of iron with alkaline bases. The most valuable of these, the phosphate with citrate of ammonium, was considered by me in an

* From The Druggists' Circular.

† Cand. Pharm. Jour., No. LXIII, p. 428.

article published in the February number of the *Druggists' Circular*, and also in the *Journal of Pharmacy;* as well as the phosphate with potassic citrate and ammonio-citrate—the latter being Mr. Rother's formula. By reference to that journal it will be seen that I use considerably less phosphate of sodium than does Mr. Creuse.

Are there any merits in those proposed tasteless salts which entitle them to consideration in the presence of the already over-extended preparations of iron? I think there are. The soluble phosphate contains in combination tribasic phosphoric acid, and consequently possesses, in addition to its chalybeate, the energies of phosphoric acid. Pyrophosphate of iron, holding in combination the bibasic phosphoric acid, which seems to possess no remedial properties, is therapeutically inferior to the proposed preparation. In fact, my experience with it, which has been quite extensive, leads me to esteem it (the soluble phosphate) the most efficient of the ferric salts. A more permanent preparation than the syrup need not be desired. The taste is even preferable to the pyrophosphate. Like that salt, it is usually well tolerated, seldom produces nausea, headache, or nervous disturbances. In cases attended with enfeebled digestive powers, with marked sensitiveness, this is the best chalybeate I have ever used. More efficient than the pyrophosphate, even more readily combined with aromatic tinctures, it is especially adapted for the so-called ferrated elixirs. By making a rich aromatic tincture with fresh orange peel, cardamom, and caraway seed, dissolving the alkaloids in it by aid of citric acid, and adding the syrup of the ferric phosphate with sufficient sugar dissolved by aid of gentle heat to form a syrup, an elixir of the phosphate of iron, quinia, and strychnia can be obtained. The syrup of the ferric phosphate with potassic citrate is best made by decomposing sixteen fluid-ounces of the solution of the sulphate of iron by eighteen ounces of phosphate of sodium, washing the magma, evaporating to twenty ounces, and adding thirty-two ounces of sugar, and forming by heat thirty-two ounces of syrup. The peculiar olive-green distinguishes it from the apple-green of the pyrophosphate.

This syrup contains fifteen grains of phosphate of iron to each drachm. If therapeutically inferior to the ferrous salts, it has a wider range of application, and can be used in cases where they will not be tolerated.

Syrup of the Ferric Iodide.—It seems to me that every physician and pharmacist must hail the introduction of this new remedy with delight. As the inventor of this preparation, Dr. Hauverman's claim dates back to July, 1866, although I believe Mr. Creuse was the first to call the attention of the profession to its existence and merit, and has had it patented. It fills a void long sorely felt. The instability of the ferrous iodide, its liability to undergoing change at the slightest exposure, its tendency to disorder the

stomach, its disagreeable taste, are all remedied in the ferric iodide. While doubting its equal efficacy with the ferrous iodide, its many advantages entitle it to our favor, and must sooner or later place it on the officinal list. The constitutions of many nervous, frail, scrofulous persons, which cannot tolerate the ferrous iodide, owing to the tendency to iodism, to derange the stomach and induce nervous troubles, take the ferric iodide without the slightest inconvenience.

The principle of quadruple ferric preparations can be applied almost indefinitely, but such a list is unnecessary, and does not supply a want except in the two preparations here considered.

Philadelphia, Pa.

LACTOPHOSPHATE OF LIME.*

BY MM. MENIERES AND LANGELLE.

M. Menieres points out that lactophosphate of lime, when pure, is soluble in water and in alcohol, and presents the reactions of lactic acid and of phosphate of lime, whilst the lactophosphate of lime found in commerce is insoluble in water and alcohol, there being separation of lactic acid which remains in solution and precipitation of phosphate of lime. The syrups and medicinal wines prepared with these two products would therefore be very different.

From experiments made by M. Ménières he has concluded that commercial lactophosphate of lime is simply a mixture, and that a syrup of lactophosphate of lime cannot be prepared except with lactic acid and the biphosphate of lime. The following is the formula which he recommends for the preparation of this syrup :—

Lactate of Soda, very white and in plates	1 gram.
Soluble Acid Phosphate of Lime	4 grams.
Syrup of Sugar, very white	395 "

Dissolve the two salts together in a small quantity of distilled water, at a very low temperature, and then add the solution to the syrup cold. A very limpid product is so obtained, which may be flavored with a few drops of essence of lemon.

M. Langellé recommends the preparation of syrup of lactophosphate of lime in the following manner, but this process requires a much longer time for its execution :—

*From the *Repertoire de Pharmacie*, translated in the *Pharmaceutical Journal and Transactions*.

Phosphate of Lime, pure and dry, in powder	25 grams.
Pure Hydrochloric Acid	40 "
Concentrated Lactic Acid, *q. s.*, about	50 "
Powdered White Sugar	1500 "
Distilled Water and Pure Solution of Ammonia	*q. s.*

Gelatinous phosphate of lime is prepared first by suspending the dry phosphate, in a suitable vessel, in about five times its weight of distilled water, adding the hydrochloric acid and stirring the whole together with a glass spatula. In default of pure phosphate, 32 grams of bone-ash may be used. The solution is effected pretty quickly, and it is then immediately precipitated by a sufficient quantity of pure ammonia, using a slight excess of alkali and stirring briskly. The precipitate is afterwards thrown upon a paper filter and washed with distilled water until the precipitate produced in the washings by nitrate of silver is soluble in both ammonia and nitric acid. The gelatinous phosphate being now freed from chloride of ammonium—and if bone-ash has been used, from chloride of calcium—is fit for use. It should be allowed to drain upon the filter for about twenty-four hours; then it should be carefully collected by spreading out the filter on blotting paper, and heated very gently in a capsule until transformed into a liquid pulp. This pulp should be placed in a tared flask and about two-thirds of the lactic acid added at once and briskly agitated, in order to dissolve as much as the acid is capable of dissolving; afterwards a small quantity of the remaining acid added from time to time, shaking the flask after each addition. It is not desirable to seek to obtain a clear solution; this would risk the employment of an excess of lactic acid, which, in order to prevent the production of a syrup which would be too acid, it would be necessary afterwards to saturate with more gelatinous phosphate of lime. It is a good plan however to use a *very slight* excess of lactic acid, which gives to the syrup an agreeable flavor. When saturation is effected 800 grams of the liquid are completed either by the addition of distilled water, or of a mixture of distilled water and some aromatic distilled water, such, for instance, as orange-flower or peppermint water. This liquor is next filtered upon 1500 grams of sugar, broken in small fragments, and stirred with a spatula to assist the solution. Finally it is passed through muslin.

VERMILION.*

Of all the various light red paints vermilion ranks as the most brilliant. Although not so dazzling to the eye as carmine, or so vivid in its hue as iodine scarlet, still the natural richness and splendor of its tone makes it pre-eminently a favorite, being greatly preferred above all other reds. It is delicate in body and possesses the merit of grinding as fine as oil itself; it looks well, works smooth, wears good, and covers as much space as any other known color.

Vermilion being of a red shade, is classed as a color among the primaries. Field, in his excellent grammar on paints, says: "Red, being a primary and simple color, cannot be composed by a mixture of other colors; it is the most positive of colors, holding the middle station of the primaries, standing between yellow and blue, also in like immediate relation to white and black, or light and shade."

Owing to high price at which vermilion is sold, its use is mostly restricted to the finer grades of work; it is principally used as a finishing or covering for work whose base is composed of cheaper material. It is largely used for ornamentation, lettering, striping and shading.

Nearly all trades that use colors or dyes make use of vermilion. House, sign, fresco, carriage, car and other painters, also paper makers, ink manufacturers, dyers, shade makers, toy manufacturers, and others, all use vermilion to a greater or less extent. Drum makers use it for the hoops of drums, or account of the showy finish it gives to their work.

On account of its ostentatious quality the tea trade throughout the United States have generally adopted it as a paint for the purpose of decorating their stores inside and out, and by so doing have given a distinctive feature to their business which is readily recognized by the public. Carriage makers use it largely as a finish for the bodies of light carriages, and very fine work is turned out by using different shades, which are produced by adding a darker color in various proportions with it.

In fresco painting it occupies a prominent position. In using it for this purpose care should be taken not to put it on too freely; it should cover but a small space in proportion to the other colors used, or it will, on account of its brilliancy, be apt to produce too glaring an effect.

Show-card writers use it very freely, its warmth and light being peculiarly adapted to show off their work in attractive style. It is also used to a great extent as a combination with other colors, and, owing to its positive character, forms the principal basis of all the endless variety of hues which its admixture with different colors

*From the Oil, Paint & Drug Reporter.

creates; it sets off best with white, and is used most largely in combination with it.

Vermilion or (properly speaking) quicksilver vermilion is manufactured from the red sulphuret of mercury, commonly known as cinnabar; there are several processes for making it, but the principal one is to grind the cinnabar to a fine powder, and then sublime it in a glass vessel with a worm-like top, over a strong fire, when a vapor will ascend and form an incrustation in the top of the vessel, which, when scraped off and reduced to a fine powder, is vermilion. In grinding, the smaller the quantity ground, and the smoother and harder the stone used, and the greater the weight brought to bear, the finer the color will turn out.

Cinnabar is the native ore from which mercury is usually extracted; if pure, it consists of one atom of mercury and one of sulphur, or by proportion 86.2 of the first to 13.8 of the second.

On account of the impurities found in the native cinnabar, manufacturers find it cheaper to prepare it artificially when vermilion is to be made from it. The process of preparing it is simple. Take 12 ounces of sulphur, and put it into an iron pot and melt it, then put 4 lbs. of mercury into a thick linen cloth bag, and press it into the liquid sulphur, taking care to stir them well with a wooden spatula during the process, until they are thoroughly combined. When they arrive at this stage the mass may be taken from the fire and cooled, when you have a substance the same as natural cinnabar.

Vermilion is frequently debased by mixing red lead with it. It is easy to detect this adulteration by placing a small quantity of it on a red-hot iron; if pure, it will evaporate entirely; if impure, there will be an earthly residue.

Vermilion is largely manufactured in Austria, Germany, England, China, and this country.

All foreign makes are largely imported in the United States, the quantity received at New York alone, from January 1st to March 1st, 1873 (two months), being 11,391 lbs., on which a duty of 25 per cent. ad valorem was paid.

Of the various makes of vermilion the Chinese is considered the best, bringing the highest price, retailing at from $1 50 to $1.75 per lb. The process they follow in making it is not known to the manufacturers of the outside world, the natives having jealously guarded the secret for centuries. It is supposed that the process they use is similiar to the one given in this article, the finer grade of color which they produce being accounted for by the punctilious care and labor which the Chinese proverbially as a nation are noted for expending on all their manufactures.

The vermilion interest in the United States is at present principally confined to three leading houses, who manufacture largely and sell all they can make.

They claim that their color is in every way equal to the best foreign, and say that the difference cannot be detected, except by an expert. Their product has been exported to some extent, principally to South America, but not in sufficient quantity to class it as a staple export The main bulk manufactured is consumed here in this country.

The decided success which the parties manufacturing this color have met with, combined with the rapidly increasing demand, has stimulated others to look into the matter, and the result of the investigation has been so satisfactory that a leading Philadelphia house has engaged the services of a chemist now residing in Germany, to come over to this country and superintend its manufacture, which they propose to commence on a large scale this coming May.

We have confidence that their enterprise will meet with deserved reward, and in no way interfere with the interest of their competitors.

We think that there is room for all, and that each succeeding year will witness an increasing demand and a more extended market, and predict that at no distant future the vermillion interest will occupy a prominent position among the great manufactures of the United States.

ON PAREIRA BRAVA.*

BY DANIEL HANBURY.

(*Concluded from page* 46.)

The root of *Chondodendron* cannot be confounded with the stem, which is woody and fibrous and of a different structure. Geoffroy's description of the former is correct so far as it goes. I may add that the numerous specimens I have seen present but little variation. All are portions of a tortuous, branching root, wrinkled longitudinally and having transverse fissures, constrictions, or ridges. The root is externally of a blackish-brown, and light yellowish-brown within. In Mr. Francis's drug there are young roots having the remnants of green aerial stems rising from their upper part. In Mr. Peckolt's specimen the aerial stems are fully preserved, as thick as the finger and many feet in length. The root seems to be gorged with juices so that under the penknife it cuts more like a very hard fat or wax than as a fibrous wood. In transverse section it does not display zones of the same regular and beautiful definition that

*From the Pharmaceutical Journal and Transactions.

one sees in ordinary Pareira Brava. In the root of Chondodendron there is a large well-marked central column composed of wedges diverging from a common axis, around which are arranged a few concentric rings intersected by wedge-shaped rays which are often irregular, scattered, and indistinct. The axis is not often eccentric.

In *Cissampelos Pareira* the root and stem are nearly alike in structure, and in transverse section show no concentric rings. Those received from Jamaica, which were the largest that could be collected, were rarely so much as an inch in diameter, and in many localities it is difficult to obtain the stem or root thicker than a goose quill.

The Pareira Brava of English commerce is mostly of larger size than the root of *Chondodendron*, and is a much more woody substance. Its internal structure, which is familiar to most druggists, is very remarkable, consisting of a series of layers which are often developed exclusively in one direction. Nothing is known of the botanical origin of this drug, beyond the fact that the structure of the wood is that of the order *Menispermaceæ*.

Of late years even this sort has become rare, and its place has been taken by a drug completely devoid of medicinal power. This latter consists of cylindrical woody truncheons which have an internal structure not very diverse from *Pareira Brava*, though generally less eccentric, with always a distinct central pith. The wood is tasteless, and often seems to have been injured by damp. It should be rigidly excluded from pharmaceutical use.

Several other sorts of Pareira Brava are known—at least in South America. One, of which there is a parcel now in the London market, is remarkable for its large size, and for being internally of a fine yellow. As it is also very bitter, it probably contains berberine.

Another sort is derived from *Abuta rufescens* Aublet, a well-marked plant growing in Guiana and North Brazil. Specimens of a thick woody root, marked *Abutua grande* or *Pareira Brava grande* and attributed to this species have been sent to me by Mr. Correa de Mello; they exhibit numerous concentric layers traversed by very distinct, dark medullary rays, the inter-radial spaces being white, and rich in starch. It is apparently a well-marked sort, and one I have not seen in commerce.†

In conclusion I strongly advocate returning to the use of the root of *Chondodendron*, which is the drug on which the reputation of Pareira Brava was originally founded.

† When Aublet was in Guiana, 1762-64, the stems of *Abuta rufescens* were shipped to France as *Pareira Brava blanc*. He says there is a variety of the same with the woody parts reddish, which is known in Cayenne as *Pareira Brava rouge*. He also describes and figures a plant he calls *Abuta amara* or *Pareira Brava jaune*, which has the wood yellowish and very bitter. This last is, I think, identical with the yellow wood of which, as I have said, there is a quantity now on sale as "*Pareira Brava*."—See *Hist. des Plantes de la Guiæne Francoise*, i. (1775), 618-21, tab. 250-51.

In Brazil this root is regarded as the legitimate sort, and is still held in the highest esteem.

Though it has not been clearly recognized by European writers, it is not altegether unknown. Guibourt * seems to have been acquainted with it and even correctly surmised its botanical origin. It is the root figured by Gobel and Kunze, † and there is an old specimen of it in the Pharmaceutical Society's Museum marked *Pareira Brava*. I myself met with it in the market in 1862. Lastly Dr. Squibb has pointed out ‡ that some small lots of Pareira Brava imported into New York in 1871 consisted in large part of a drug entirely different from any previously seen, and that he at first supposed it an adulteration; but that subsequent examination had shown him that the drug in question agreed well with the older descriptions of Pareira Brava, and especially with Pomet's figure, so that he was convinced it was true *Pareira Root*. From Dr. Squibb's description I feel sure that the drug before him was the same as that to which I have called attention in the present paper.

There can be no doubt that it would become plentiful if the demand should arise, and that it would advantageously replace the worthless kind now found in the drug trade.

ON THE NEW SYRUP OF THE IODIDE AND TINCTURE OF THE CHLORIDE OF IRON.‖

BY JOSEPH P. REMINGTON.

The so-called tasteless iron combinations, which have recently been brought to notice by J. L. A. Creuse, of New York, have attracted much attention of late, and an entire revolution in the manner of making a most useful class of preparations has been threatened.

The advantages claimed for the innovations are numerous: freedom from *nauseous* taste (they cannot certainly be called tasteless) ready solubility in water, non-liability to change in dispensing, little or no destructive action on the teeth, miscibility without decomposition with bark and other desirable tonic preparations.

Setting aside for the present the theories which may be brought forward to prove their composition (the rationale of new compounds often being mere collections of symbols twisted into a shape that will explain on *paper* a reaction), the first thoughts that occur to a practical pharmacist in connection with them, are:—

* *Hist. des Drog.*, ed. 4, iii. (1850) 671.
† *Pharm. Waarenkunde*, ii. (1830-34) tab. 13. fig. 1, b-c.
‡ *American Journal of Pharmacy*, March 1, 1872, 107.
‖ From the American Journal of Pharmacy, September.

Can they thoroughly replace the old and disagreeable remedies that have been prescribed for years past?

Can desirable processes be devised, whereby every pharmacist may make in his own store the new preparations?

Is the claim for stability sustained by experience?

It is the intention of the writer to attempt to answer these questions.

First, in regard to replacing the old remedies. Iodide of iron has been used constantly since 1824, and it is regarded as one of the very best alterative and tonic preparations; yet the objections to its use are numerous, and were it not for its intrinsic merit it would have slept long ago in an unhonored grave; it is always unpleasant to take, even when freshly prepared, and becomes more so as it gets older.

In practice, but few pharmacists prepare their own syrup; reliance is placed on the general market, and the results, of course, are variable. A syrup one week or two years old may be purchased, possessing various degrees of color and acridity (agreeing better, however, in the latter quality), and neither the patient nor physician are probably aware of the cause, and practitioners are frequently debarred from prescribing for delicate persons and children on account of the disturbance to the digestive organs.

The new syrup of the iodide of iron does, in the writer's opinion, remove the objection to the old preparation. It has fallen to my lot to make about twelve gallons of the improved syrup at various times, which has been dispensed, and has been used by physicians in their practice for the usual diseases where the old syrup was indicated.

It seems to answer well in scrofulous and syphilitic diseases, in obstinate skin affections, and as an internal remedy where morbid secretions of the glands exist, but particularly for delicate females and children of scrofulous habit requiring an alterative tonic. Its taste is pleasant, the teeth are not discolored, and the digestive functions were not disturbed by its use in any of the cases that were reported. A formula for the preparation is subjoined, which is based on the researches of Creuse in this direction.

New Syrup of the Iodide of Iron.

Take of—

Re-sublimed iodine,	378·9 grains.
Iron wire (card teeth),	90 "
Distilled water,	2 fluid ounces.
Citric acid (dry),	408 grains.
Potassium Carbonate (pure),	475 " or q.s.

Weigh accurately 252·6 grains of the iodine, and place in a beaker or flask of at least four fluid ounce capacity, then add to it the card teeth and half a fluid-ounce of distilled water, cover the beaker with

a watch glass, and agitate occasionally until the liquid has acquired a green color and lost the smell of iodine (care should be taken about this point; all the iodine should be in the state of a ferrous salt), filter the liquid from undissolved iron, rinse the iron with a small quantity of the distilled water, pour on the filter, and finally rinse the filter; now add to the filtrate the remaining 126·3 grains iodine, and allow it to dissolve; it forms a rich ruby red solution. Place 406 grains of the citric acid in a small evaporating dish, add one and a half fluid ounces of distilled water, and apply heat until the acid dissolves and the liquid boils; without removing from the fire add, by small portions, sufficient potassium carbonate to neutralize, avoiding an excess; if a slight excess should happen to be present, correct it by adding the two grains citric acid reserved; now pour as much of this solution of potassium citrate while hot into the red solution as will change the color to a bright green, and make up the measure to twenty-six fluid-ounces with simple syrup. The finished syrup contains about five grains of the salt in each fluid drachm, and the dose will be from one-half to one teaspoonful.

The new tincture of the chloride of iron can replace the old with advantage, in most cases where the tonic effects are alone desired without any styptic action.

New Tincture of the Chloride of Iron.

Liq. ferri chloridi, U.S.P.,	1 fluid ounce.
Citric acid,	544 grains.
Sodium carbonate,	1000 " or q. s.
Water (distilled),	1 fluid ounce.
Alcohol,	a sufficient quantity.

Dissolve the citric acid in the distilled water, and heat to the boiling point, gradually adding the sodium carbonate until the acid is saturated (the quantity varies with the amount of moisture present in either), mix with the iron solution, which will now acquire a beautiful green color, and make up the measure to four fluid-ounces with alcohol.

One of the strongest points in favor of this series of preparations is that they can be made to offer a great variety of desirable combinations. The finished green solution of iodide of iron may be evaporated at a low heat, and, as suggested, a salt formed which can readily be made into pills of three grains each, and, of course, requiring no insoluble coating to protect them; it may be dissolved in water in almost any quantity, forming a simple solution, or in syrup to form a syrup of the iodide of iron of any required strength. It may be administered in combination with compound tincture of cinchona and compound tincture of gentian, or it may really, *when added*, put some virtue in the numerous tonic elixirs that are being prescribed so largely throughout the country.

A formula is appended for an elixir which has acquired some sale in this city. The writer does not wish to be considered as endorsing it, however.

Elixir of Gentian with Chloride of Iron.

Tincture of chloride of iron (new)	6 fluid-drachms.
Tincture of cardamom,	½ fluid-ounce.
Fluid extract of gentian,	3 fluid-drachms.
Alcohol,	2 fluid-ounces.
Oil of cinnamon (true)	1 drop.
" coriander (fresh)	1 drop.
" anise,	1 drop.
" orange,	3 drops.
Simple syrup,	3 fluid-ounces.

Water, sufficient to make 16 fluid-ounces.

Dissolve the oils in the alcohol, and having mixed the other ingredients together, incorporate all thoroughly, adding sufficient water to make one pint and filter. Dose: A dessertspoonful. This preparation contains five minims tincture of the chloride of iron in each dose; enough gentian is present to flavor the elixir somewhat, and give it part of a name; and not enough to injure the greatest disideratum—a pleasant taste.

PANCREATIC JUICE AS A THERAPEUTICAL AGENT.*

The increasing employment of the pancreatic juice in pharmacy renders any process for its preparation valuable, specially when such process is within the reach of practitioners in even the most remote country districts. Dr. Merkel, of Nuremberg, has given the following directions for preparing the pancreatic fluid: The pancreas of a bullock is finely minced and rubbed up with 250 grammes (about 8 ounces) of glycerine. When used as a nutritive enema, one-third of this is thoroughly mixed with from 120 to 150 grammes (a gramme is 15.5 grs.) of finely minced meat, and immediately injected into the rectum. This is said to be readily digested by the intestines. If the mixture is allowed to stand too long before using, the meat swells up and renders the injection difficult.

For feeding by the mouth in the treatment of the wasting diseases, both of children and of adults, we would suggest that a very satisfactory pancreatic fluid can be prepared as follows: The pancreas of either the bullock or pig may be used.

A pound of fresh pancreas is finely minced, and an equal quantity of glycerine added at about 120° Fahrenheit. The mixture is

*Medical Archives.

put in a vessel, when the pancreas can be crushed and intimately mixed with the glycerine, and kept at this temperature in a water-bath for twenty-four hours, being occasionally stirred. The glycerine is then carefully drained off, as completely as possible, and the pancreatic magma is carefully washed with about six or eight ounces of water, so as to extract the remainder of the glycerine. This is also carefully drawn off and filtered, and evaporated to one half, and then mixed with the glycerine.

This makes a perfect and very agreeable emulsion, with cod-liver oil or any other form of fat. Cod-liver oil mixed with this, in the proportion of one part to ten, gives a fine and palatable emulsion, very easy of digestion.

Cod-liver oil, it is said, may also be successful emulsified, by adding to it crushed bits of pancreas, and keeping it at a temperature of 140° Fahrenheit for six hours; thus emulsified, it rapidly passes into the circulation from the stomach.

It is well known that nearly all the cases of wasting disease die from pure inanition and complete defection and incapacity of appropriation and nutrition. Very many of these cases will recover if we can but present material to the assimilating organs readily prepared for absorption. By this means, new impulses of force are acquired, by the entrances of those materials into the chemico-vital action common to organic bodies.

By mixing one or two teaspoonfuls of this glycerine extract with a half pint of milk, thickened with a mixture of three parts wheat flour, and one part pure malt flour, we have a pure and perfectly assimilable diet for all such cases, on which they thrive remarkably.

The cod-liver oil emulsified by this pancreatic extract forms the basis of a most successful treatment in all wasting diseases, under which eighty per cent. will recover.

NOTE ON THE REPUTED VALUE OF POLYGONUM AVICULARE, L. FOR STONE.*

BY JOHN R. JACKSON, A.L.S.

Members of the order Polygonaceæ are far from being rare, either to the British, Continental, or American botanist; least of all, perhaps, is the knot-grass (*Polygonum Aviculare*), which generally flourishes best where its presence is not wanted, and defies eradication. With such quantities of this weed at our very doors, it seems somewhat ludicrous to import it from ever so short a distance, let

*From the Pharmaceutical Journal and Transactions.

alone from Russia, but such is the case that amongst the numerous contributions of vegetable products, "good, bad, and indifferent," which are constantly being received at Kew, a bundle of knot-grass recently arrived from Berdiansk, with a wonderful account of its extraordinary power of curing stone and gravel diseases. Our correspondent says his attention was attracted to it by a case which fell under his own observation—that of a man who suffered so excessively, that he was told by the doctors he must undergo an operation; in the meantime, a quantity of the *Polygonum* was given him by a person who happened to hear of the case, the sufferer drank two tumblers full of the decoction, and, in about fifteen minutes, he felt an intense pain in the bladder and surrounding regions, as if the parts were being torn to pieces, this was immediately succeeded by an irresistible desire to pass water, which was done with great pain, but nothing could check the force of the bladder in ejecting the water, which brought away with it a great quantity of gravel and bits of stone, some of the pieces passed were very large, but the instant they came out they opened into flakes and broke up into thin plates. The man is stated to have quite recovered, and the person who gave him the *Polygonum* is said to have been distributing it in all such cases that have come under his notice for the last thirty years, and always with success.

The following is given as a suitable way of taking the medicine: Take a good, liberal handful and boil gently in six tumblers of water, till it is reduced to about four tumblers. The dose is one or two tumblers to be taken in the morning on an empty stomach. In bad cases it is given several times throughout the day, but diet must be strictly kept. As a purifier of the blood, one tumbler of a weaker decoction is recommended to be taken every morning.

The discovery of such an apparently valuable medicinal agent by anyone not sufficiently acquainted with plants to recognize it must have been a source of much gratification. Emetic, carthartic, and diuretic properties have been ascribed to many of the Polygoneæ, and even to *P. aviculare* itself. At one time it was stated that the plant was an excellent febrifuge, and it was used in Algeria, and other parts of Africa, as a substitute for quinine. In 1845, a French doctor reported upon it has being an excellent remedy for chronic diarrhœa, the means of applying it being in form of a strong decoction.

At the present time the only really valuable medicinal product of the *Polygoneæ* is rhubarb.

HOMŒOPATHIC PILULES.

With a view of throwing some light upon the question whether the beneficial results sometimes reported as following the use of homœopathic medicines were due to imagination or to the action of a powerful drug, some experiments have been made with the variety of preparations known as pilules, and these are described in the April and July numbers of the *Practitioner*. Pilules are different from globules; they are about as large as No. 5 shot, and obviously might contain a powerful dose of any energetic substance. The dilution chosen was that known as the second. Each pilule, the average weight of which was 0·6 grain, should accordingly contain 0·00006 grain of the drug. This quantity, in the drugs chosen, is fairly within the reach of analysis.

Sulphate of Copper Pilules.—First sample, no copper could be detected in 100 pilules; second sample, no copper could be detected in 200 pilules. The quantity of sulphate of copper in the above pilules should have been 0·006 and 0·012 grain respectively. If even as little as 0·0001 grain of the sulphate had been present it would have been detected. These samples therefore contain much less of the drug than they should have done (120 times less in the second sample), and in all probability no copper at all was present.

Corrosive Sublimate Pilules.—It was just possible to detect mercury in 200 of the pilules. The amount was, however, less than corresponds to 0·0005 grain of corrosive sublimate, whereas 0·012 grain of this salt should have been present.

Nux Vomica Pilules.—No strychnine could be detected, even when 300 pilules were employed. Three hundred pilules should have contained about 1-10000 grain of strychnia. Now, so small a quantity as 1-70000 grain of strychnia is well known to give distinct reactions to chemical tests, but no reaction could be obtained in the present case.

Aconitum Napellus Pilules.—First sample: no aconite could be detected in 100 of the pilules (weight 80·85 grains). Second sample: same result (weight of the 100 pilules, 96·40 grains). Comparative experiments showed that had these pilules contained as small a quantity even as 1-8000 of a grain of aconite, it would have been detected with certainty. This corresponds to about the 160th part of a grain of the extract of aconite; the quantity which should have been present is from four fifths to nearly 1 grain, or more than 100 times more.

Belladonna Pilules.—First sample: no atropine could be detected in 100 pilules (weight 80·39 grains). Second sample: same result (weight of 100 pilules, 81·00 grains). Comparative experiments showed that by means of chemical tests alone, as little as 1-6000 of a grain of atropine would have been detected with cer-

tainty. This corresponds to about 1-30 of a grain of the extract of belladonna, whereas as much as four-fifths of a grain, or 24 times as much, should have been present.—*Pharm. Jour & Trans.*

CIVET AND AMBERGRIS.

The following extract is taken from a paper on Perfumes, read by Mr. James Paton, before the North British Branch of the Pharmaceutical Society, and reproduced in the *Pharmaceutical Journal and Transactions:*

"Civet must have been in the days of Shakespeare a very fashionable perfume, judging from the frequency of his allusions to that substance; and coming down even to the time of Cowper, we find the substance singled out for mention, though perhaps not what Exhibition juries term 'honorable mention.'

> 'I cannot talk with civet in the room,
> A fine puss gentleman, that's all perfume.'

"It does not appear that the fine puss is here put in with any special purpose, but it occurs quite appropriately when we know that civet is yielded by several species of animals of the cat tribe, chiefly by *Viverra civetta*, or the civet, which occurs in the hottest regions of North Africa and Abyssinia, and *Viverra zibetha*, or the zibeth, a native of the Phillipine Islands. Besides these animals there are various allied species of *Viverra* and *Viverrula*, which occur throughout India, all possessed of a civet pouch. The civet apparatus is present in both the male and the female, and consists of two glands or sacs, placed in the neighborhood of the genital organs, the inner surface of the sacs being pierced with a number of apertures communicating with the glandular follicles which secrete the material. Civets used to be kept in confinement in Dutch towns for the purpose of growing the scent; and at the present day the animal is reared in some parts of Africa in a semi-domesticated condition, and has its civet apparatus cleaned out with a long wooden spoon twice or thrice a week. Civet has in its natural condition anything but a pleasant odor, but in a highly dilute condition it combines most effectively with other odors and imparts to them both permanence and pleasing floral fragrance.

The source of ambergris was for a very long time a profound mystery, and the guesses hazarded about its origin were about as numerous as they were ridiculous. It was found sometimes floating on the surface of the open ocean, and most frequently cast up upon shores so far apart that it can scarcely be said ambergris belongs to one part of the sea more than another. From the coasts of Greenland, Iceland, both sides of America, the islands of the

Indian seas, China and Japan, it has been brought. It was supposed at one time to be a balm which grew on sea cliffs just as fungi do on trees; then the dried saliva of whales, the excrement of birds, condensed froth of the sea, etc., etc. It is really formed, whether as a morbid secretion or not is not quite evident, in the alimentary canal of the sperm whale, from specimens of which it has frequently been extracted. Though it is usually obtained in pieces of from 2 oz. to 1 lb. it has been found in enormous masses. In 1691 a piece was found on the beach in county Sligo weighing 62 pounds, which sold in London for above £100. In 1095 the East India Company had a mass weighing 160 lbs., and it is said that pieces of as much even as 860 lbs have been found, which is rather too much for the whale to contain, or for us to swallow comfortably. Ambergris has a mild, sweet odor, not of much value by itself, but it mixes effectively with other perfumes, giving them ethereal odor and some amount of permanence. It is in great favor among oriental nations, where musk, ambergris, sandalwood and rose may be said to be the basis of the system of perfumery."

HYOSCYAMINE.*

Dr. G. Merck has made some interesting observations on the substances commonly known as hyoscyamine, which make the analogy between the alkaloid of henbane and those of hemlock, tobacco, etc., much eloser than it has been hitherto.

In most chemical works hyoscyamine is described as being crystalline, but recent observations agree in supporting the opinion that it is amorphous. It is only Thorey who reports that he has obtained it in the form of crystals. Merck obtained it only as a colored soft amorphous mass; but he found that when this was submitted to careful distillation in an atmosphere of hydrogen a colorless distillation was obtained, which he considered to be the true base, and in this respect to stand together with conia and nicotine.

Thus prepared, hyoscyamine is described by Merck as a colorless, rather oily liquid, in appearance and smell very like conia.

It is readily soluble in alcohol and ether, tolerably so in water. It is only partially soluble in benzol or chloroform. In contact with air it rapidly becomes brown, thickens, and at the same time gives out an intensely disagreeable smell. In this condition it is no longer completely soluble in ether.

The liquid has a strong alkaline reaction, and it completely neutralizes acids. The salts are very soluble, and only with difficulty obtainable in crystals.

**Neues Jahrbueh fur Pharmacie*, October, 1872, p. 203, in *Pharm. Jour. & Trans.*

ANTAGONISM BETWEEN OPIUM AND BELLADONNA.

During his residence in China, Dr. Johnston *(Hospital Reports*, Shanghai, March, 1872) has had great experience of opium-poisoning and the ill effects of opium-eating. During the last seven years he has treated upwards of three hundred cases of opium-poisoning. He first employed atropia in 1869. He employs it hypodermically in the severer cases, where the patient is profoundly comatose. In milder cases, emetics, the stomach-pump, cold douche, and constant exercise are generally sufficient. It is in the worst cases that atropia displays its wonderful effects; for instance, where the pupils are firmly contracted to a pin's point and immovable, the conjunctiva and the cornea insensible to touch; the face pale; the lips, eyelids, and nails livid; the pulse weak and irregular; the breathing slow and stertorous, and the extremities cold. In such cases, he usually injects hypodermically half a grain of atropia. Within ten or twenty minutes the pupils begin slowly to dilate; and, after an hour or more, the face becomes flushed; the breathing soft, without stertor; and the pulse stronger. Within two hours the full effects of the drug (atropia) are manifest, viz., "widely dilated pupils, flushed face, hot skin, tranquil slow breathing, diminished frequency and increased strength of pulse, followed by calm and tranquil sleep, from which the patient is easily wakened after three or four hours." If within two hours the first dose fail to dilate the pupils, flush the face, and render the breathing slow, steady, and tranquil, he repeats the injection. In cases where the coma is not profound, he first employs a quarter of a grain of atropia, repeating the dose if the first be insufficient. He says: "I have observed very sudden and very unfavorable changes set in rapidly, even in the mildest cases of opium-poisoning. This has happened so frequently, that I have come to the conclusion that whenever there is contraction of the pupil and great drowsiness, after the evacuation of the contents of the stomach, it is always advisable to adminster a small dose of atropia. I may remark that in no instance have I seen any bad effects following the subcutaneous injection of atropia."—*London Medical Record.*

TOILET SOAPS BY THE COLD PROCESS.

There are two methods by which toilet-soaps may be prepared; these are known as the hot and cold processes. The fine English soaps are chiefly made by boiling, but in America most of the fancy soaps are made by the cold method. When made by boiling, a weak caustic lye is used, and the soap is boiled until it is almost perfectly free from alkali. The soap, which is then in solution, is

separated from the water by "salting out;" the glycerine, of course, remains in the water and is lost. The old process is briefly as follows: The fat is melted in a well-cleaned iron or copper kettle at a low temperature, then filtered through fine linen or muslin into another kettle, and cooled to 104 Fahr., or lower; a very strong lye, usually about 36° B, is added, 80 pounds of fat requiring about 40 pounds of lye. It is then stirred with a wooden paddle until a ring made by stirring may be recognized. At this time the coloring matter and perfumery are added. It is next run into frames lined with muslin, closed and left for twelve hours, by which time saponification will have taken place, the temperature rising to over 175° Fahr. It is now ready to be taken from the frame, cut, dried, and sold. Soaps made by this process are softer and pleasanter, because they contain the glycerine; but they are unfortunately more or less alkaline, no matter how much care is bestowed upon their preparation. A Frenchman named Mialhe claims to have invented a method of neutralizing the free alkali, and thus combining the advantages of both methods, and making a perfectly neutral glycerine soap. This is accomplished by taking the ordinary soap prepared by the cold process, shaving it up fine, and spreading it out on grates in suitable chambers, where it is exposed to the action of carbonic acid gas until all the free soda is converted into the bicarbonate of soda. Thus a perfectly neutral soap is obtained, which contains all the glycerine present in the grease, and a certain quantity of bicarbonate of soda.—*Industrial Monthly.*

ADULTERATION OF COPAIBA WITH CASTOR OIL.

Several specimens of copaiba balsam adulterated with castor oil have within the past year, come under the notice of Prof. E. S. Wayne. The sophisticated article appeared to have a greater consistency than the genuine copaiba—a somewhat lighter color. To the taste and smell no great difference between it and the genuine could be observed; its superior density alone was what caused suspicion as to its purity, and led to an examination of it and the detection of the above-named adulterant. In the experiments made to detect the adulterant, it was found that petroleum benzine was a quick and perfect means of so doing. It was fouud that the pure copaiba was perfectly soluble to a clear solution in it, and that castor oil was not. It formed a milky mixture upon being shaken together, which quickly separated into a denser and lighter liquid, the lower containing all the oil. The suspected article was mixed in a test-tube with three times its volume of benzine, and shaken; a milky mixture was formed, which quickly separated into two portions

—the upper containing in solution all the copaiba; the lower the castor oil. The latter, upon further examination, was found to be, as mentioned, castor oil. Hence, castor oil, as an adulterant of copaiba, is one of the most readily detected of the many substances that can be used for the purpose; and an article that will not freely and entirely dissolve in petroleum benzine must be rejected as impure. From further experiments with other substances, such as Venice turpentine, true and artificial and other fixed oils, the test unfortunately has no value.

Note: the amount of castor oil found was not the volume separated in the lower stratum, but about 50 per cent of that. As from experiment from a measured volume in a test-tube, the lower portion separated was double the volume of oil used, when the quantities used were those named in the experiment above.—*Cincinnati Lancet in Am. Jour. Pharm.*

SEPARATION OF THE MERCURY IN THERMOMETER TUBES.

When thermometers are overturned or shaken by accident it frequently happens that a portion of the mercury in the instrument is separated from the main column and hangs in the upper part of the tube. It is generally easy to unite this portion of the mercury with that in the bulb by holding the thermometer vertically two or three inches above a piece of card, and letting it fall vertically upon the card, or, while firmly holding it in the right hand, strike with the arm smartly against the palm of the left hand, or, further, the thermometer may be fastened to a piece of string and swung around, as with a sling, but with caution, and not too rapidly. In many cases the detached particle of mercury is so small that its weight is not sufficient to overcome the adhesion to the side of the glass tube; the following plan of procedure is then recommended;

The instrument is inclined at an angle of twenty to forty degrees, so that the bulb stands higher than the tube, and a blow with a flat piece of wood is given in the direction of the thermometer stem. The mercury in the stem is thus jerked forward, and, uniting with the detached portion, fills the entire tube. If the thermometer be now slowly and cautiously brought into such a position that the mercury begins to flow back toward the bulb, the united column may generally be returned to its proper place. In the place where the separation has occurred a small air bubble is generally found, but by following the above directions this difficulty may be almost always overcome.—*Jour. of App. Chem.*

Editorial.

MEMBERS IN ARREARS.

It is well known that a notable proportion of the chemists and druggists of this Province have, either through inadvertence or design, neglected to remit to the Registrar their annual registration fee. A large number of these delinquencies relate to renewals, the first registration having been paid; but there are also a few instances in which parties have set at naught the authority of the Act, and paid no attention to the frequent reminders which they have from time to time received. For the credit of the pharmaceutical interests of Ontario, we are pleased to state that offenders of this class are quite exceptional, and that the large arrearages on the Registrar's books are almost altogether to be attributed to remissness, rather than to downright opposition to the law.

Acting on this supposition, the course pursued towards these delinquents has been one of forbearance, and although armed with adequate powers, the Council have, so far, refrained from any coercive measures. There is, however, a limit to the indulgence of the most lenient, and this point has now been reached. It is also evident that such a policy can no longer be pursued without laying the Council open to the charge of unfairness, and of neglecting the protection of those who comply with the law, and contribute to the support of a means whereby the law should be enforced.

Taking these considerations into account, a premonitory circular, giving notice that unless immediate payment of arrears is made, legal proceedings will be promptly instituted, has been sent to all delinquents. This has already been effectual in materially reducing the list, and we are inclined to think that, at the rate at which payments are now made, there will be no occasion to resort to extreme measures.

We cannot but say that it is to be regretted that even this circular should have been rendered necessary. Leaving monetary considerations altogether out of the question, it would have been vastly more satisfactory, and much more creditable to the cause to which we are espoused, if the trifling amount of the registration fee

—in itself by no means commensurate with the advantages conferred—had been cheerfully paid. Other associations of a kindred character are supported purely out of love for the cause with which they are connected, and the liberal contributions which they receive give back no equivalent save the satisfaction conferred on the donors by the knowledge that they are helping on a worthy undertaking. With the Ontario society the case is very different. The Pharmacy Act extends its protection to all who comply with its regulations; the trade in a limited number of articles is altogether restricted to those registered; and the legitimate business of the pharmacist is, indirectly, assured to him. In addition to this, registration confers the right to deal in liquors for medicinal purposes—an advantage from which no inconsiderable revenue is derived. Again, every member of the College receives a copy of a periodical, the value of which it does not become us to define. Besides this, the College performs the functions of an examining board, and thus prevents unqualified persons from usurping a position which they might, otherwise, take with impunity. Lastly, and by no means least, there is the honor of belonging to an association which has for its aim the elevation of the class which it represents, and the advancement of the calling with which we are connected.

We trust that, for the future, these facts will receive the consideration to which they are entitled, and that the difficulties which have arisen have only been those attendant on a new undertaking, and, consequently will not recur.

UNQUALIFIED PARTNERS.

We have frequently been called upon to offer explanations respecting the registration of partners, and also to decide as to the legality or illegality of a partnership wherein only one of the parties might be qualified to conduct the business of a pharmaceutical chemist. We thought that both these points had been satisfactorily settled, but it would appear there is still some misapprehension in regard to the matter. For this uncertainty of opinion the provisional council, appointed at the organization of the College, is, in great part, chargeable. It will be remembered that, at the first meeting of this body, a resolution regarding the registration of partnerships was

passed, became incorporated with the by-laws, and was thus extensively circulated. The tenor of this enactment was, that incompetent persons might connect themselves in partnership with those possessing the necessary qualifications, and, by payment of the usual fee, be entitled, for the time, to all the rights and privileges of pharmaceutical chemists. It was, of course, soon found out that, in passing such a by-law, the council had overstepped its powers; and an official notification to this effect was shortly afterwards received from the Attorney-General.

The nullification of this resolution leaves the law sufficiently explicit and devoid of complications; and as we have so often reviewed the several clauses of the Pharmacy Act which relate to this matter, we do not deem it necessary on this occasion to go into details, but merely state the substance of the existing regulations. This is, in brief: that each individual member of a firm (1) must be registered; (2) must show evidence of qualification, either by certificate or examination, before registration can be effected; (3) must pay the regular registration fee.

We have received a communication from Mr. Holloway, proprietor of the medicines bearing that name, complaining that certain parties composing the so-called New York Chemical Company, represent that they have a business connection with Mr. Holloway, while that gentleman avers that he has nothing whatever to do with such a firm, or any of the members composing it. These comprise Messrs. Mellis, Martin and Haydock, and our correspondent states that almost every mail from South America, the United States and Canada, brings accounts of the misrepresentations which these parties have made. In justice to Mr. Holloway we insert this notice to the trade.

Editorial Summary.

Citrate of Iron and Quinine.—C. Murrey (*Pharm. Jour. & Trans.*) alludes to the early introduction of this salt into medical practice, and to its valuable character prior to its becoming official in the Pharmacopœia. In the absence of any authorized formula, manufacturers followed their own ideas in regard to the variety and proportion of the oxide of iron present, and analyses of samples of the commercial salts of the present day show anything but uniform results. It is not, however, to this already threadbare subject that the author desires to direct attention, but rather to certain inaccuracies in the characters of the salt as described in the the *British Pharmacopœia*. In this authority it is stated that "fifty grains, dissolved in a fluid ounce of water, and treated with a small excess of ammonia, give a white precipitate which, when collected on a filter and dried, weighs eight grains. In order to test the correctness of this statement three points had to be determined: (1.) The amount of scaled salt that can be produced from a given quantity of sulphate of quinine. (2.) The percentage of anhydrous in ordinary commercial sulphate; and (3) whether the whole of the quinine added is removed as a precipitate by ammonia. In regard to the first point, the experience of the author proves that from one hundred parts of sulphate of quinine, four hundred and forty-five of scaled salt can be produced; if it were possible to work without the accidental loss of some scales, four hundred and fifty parts might be obtained, and this quantity is assumed as the proper product (including loss). In regard to the second point, it was found that commercial sulphate seldom represents the theoretical amount of alkaloid (73.31 per cent.) but contains, more generally, from 70 to 71 per cent. of anhydrous quinia. In order to determine the third point resort was had to experiment when it was found that ammonia failed to precipitate the whole of the quinia, 14.40 grains only being obtained instead of 15.54. "These facts show that instead of the iron and quinine salt containing an equivalent of 25 per cent. of sulphate of quinine, as is generally stated, it will really contain but the equivalent of 22.2 per cent., and that as commercial quinine contains, on the average, but 70 per cent. anhydrous quinine, the perfected scales will contain therefore 15.54 per cent. of quinine as a maximum, only a portion of which is removed as a precipitate by slight excess of ammonia. The accuracy of this deduction is corroberated by the analytical experiments previously detailed, by which 15.2 per cent. of quinine was separated from scales carefully made for experiment." The author suggests that the "characters

and tests" given in the Pharmacopœia be modified thus: "100 grains dissolved in two fluid ounces of water and treated with a slight excess of ammonia give a white precipitate, which, when washed, collected on a filter and dried at 240°, weighs at least 14 grains (14·2). The filtrate if washed with chloroform (or ether) and decanted, evaporated to dryness, and dissolved in a small quantity of dilute sulphuric acid will give by ammonia a further precipitate, which, when dried, will weigh about one grain (·8 gr.)"

Benzoinated Lard.—The *Medical News* cites an instance of the use of Ung. Zinci oxid. prepared with lard benzoinated by being mixed with the tincture of benzoin, and by which an effect was produced the reverse of that contemplated, the application proving highly irritating instead of soothing. This result is attributed to the extra quantity of benzoin present in the lard, as prepared according to the New U. S. directions, in which formula the tincture is used instead of the resin. It seems probable that the supposition of our contemporay is correct, and if such is found to be the case the employment of the tincture should be abandoned, at least, for those preparations in which stimulating effect is not desirable. Since writing the above note the American *Journal of Pharmacy* for September has come to hand, and in it we notice a paper, by H. M. Wilder in which the same subject is alluded to. It was remarked by the author, that the greater portion of the resin separated on the evaporation of the alcohol, and that by remelting the ointment, the precipitate might be removed by straining; the resulting preparation being free from irritating properties. Taking advantage of this fact and applying it to the official directions, the formula might be modified so as to read "and, when the alcohol has entirely evaporated, strain, and stir occasionally while cooling.

Administration of Phosphorus.—Considerable attention is, at present, being directed to the employment of phosphorus for the relief of neuralgic affections. Various old methods for the solution of the phosphorus have been revived, and some new methods have been proposed. A late issue of this journal contained a number of these formulæ, and we have now to make an addition of a preparation recommended by Dr. J. A. Thompson, (*Practitioner*). One grain of phosphorus is dissolved in 3 drachms of absolute alcohol. This is termed the tincture of phosphorus, and the preparation may be depended on as retaining its power for, at least, six weeks. For administration, a good form is, Tincture of phosphorus, three drachms; rectified spirit, two drachms; essence of peppermint, half a drachm;

water to six ounces. This may be divided into twelve doses, one of which may be taken every four hours. The stability of the latter mixture cannot be depended on for longer than one day.

Erasmus Wilson's Lotion for the Hair.—Mr. Greenish contributes to the *Pharm. Jour. & Trans.* the following recipe which was originally obtained from Mr. Wilson:

Liq. ammon. fort.....	one ounce.
Ol. amygd. dulc.....	one ounce.
Aq. mellis	two ounces.
Sp. rosmarini	four ounces.

This prescription has sometimes been presented in Canada, and in default of *Aqua mellis*—a compound about which a great deal of uncertainty exists—we have substituted Cologne water, as representing as nearly as possible the ancient preparation indicated. The *Sp. rosmarini* is made in the proportion of two drachms of oil of rosemary to one gallon of rectified spirit.

Adulteration of Lycopodium.—B. Lillard, (*Pharmacist and Chemical Record*) points out an adulteration of lycopodium with dextrin. It was found that a mixture of equal parts, if slightly colored, possesses the general characteristics of the pure article, and would ordinarily pass unnoticed, except that if exposed in a damp place, it is apt to attract moisture, and adhere loosely. Dextrin, even when mixed in small proportions, is very easily detected, by rubbing in a mortar, with a little water, when its peculiar odor is at once developed and recognized. The author has since examined a number of samples, from different places, but has been unable to detect any dextrin in any of them.

New Tests for Fuchsine in Syrups, &c.—A delicate test showing one ten-thousandth part of one per cent of magenta is that of treating the article to be tested with subacetate of lead, filtering, and shaking with purified fusel oil. The fuchsine, if present, gives a characteristic color to this liquid. Another method is that proposed by Puscher in which a woolen or silken thread is put into the suspected liquid. The coloration by fruit juice can readily be removed by water, while that from fuchsine is permanent.

Etherial Tincture of Iodoform.—In a paper by MM. Odin & Leymarie, (*Repert de Pharm. in Druggists' Circular.*) the following conclusions in regard to the tincture of iodoform are arrived at, (1) that the iodoform should be in crystals ; (2) to make the solution, by agitation, in a *red* glass flask; (3) to use the following proportions, by weight: iodoform, one part; ether (60 Baume) four parts.

To keep away Flies.—A correspondent of the *Druggist's Circular* proposes a simple means for keeping flies from the slab of the soda water fountain. This is effected by washing the slab with a solution of sal soda, and it is stated that so long as the surface is covered by the alkaline salt no trouble will be experienced.

Disguising the taste of Tinct. Ferri Perchlor.—Dr. Snow, (*British Medical Journal*) recommends the addition of glycerine to mixtures containing tincture of perchloride of iron, as disguising, altogether, the disagreeable, metallic, astringent taste of the medicine. The proportion to be used is half an ounce to an ordinary eight ounce mixture. It is said that glycerine answers this purpose much better than the syrups, or spirit of chloroform, ordinarily used.

Adhesive Plaster.—It is said that adhesive plaster, rendered brittle by age, may be restored by brushing over the surface a little oil of turpentine, and leaving it to dry for a day. It appears probable that this treatment would render the plaster more stimulating than it should be, as traces of the turpentine would remain for some time.

Absence of the Cinchona Alkaloids in Eucalyptus Globulus.—Mr. Broughton, Quinologist connected with the Indian government, having examined the bark and leaves of *eucalyptus globulus*, concludes that neither quinine, quinidine, cinchonine, or cinchonidine is contained in the plant, in any proportion.

Paper Wick for Spirit Lamps.—It is stated that a piece of filtering or blotting paper, tightly rolled together, makes a good wick for spirit lamps requiring a wick. By rolling the paper around a cylinder, a wick suitable for burners of that form might be produced.

Answers to Correspondents.

DRUGGIST, *Prescott*—TANNATE OF BISMUTH.—This salt is best prepared from the crystallized nitrate, made by dissolving metallic bismuth, or its carbonate, in dilute nitric acid, evaporating and crystallizing. Forty-four parts of this crystallized product are dissolved in water and treated with a solution of caustic soda, in excess; oxide of bismuth is precipitated; this must be well washed, collected on a filter, removed to a mortar, and triturated with twenty-nine parts of tannic acid. The magma should now be diluted with water, washed, and collected on a filter. The product, when dry, will be of a yellow color, and nearly tasteless.

A. J. JOHNSTON, *Peterborough*.—We have communicated the substance of your letter to the business editor of the JOURNAL, and asked him to send you the missing numbers, which, we trust, you have, ere this, received. As for your complaint that some members who, having passed examination, are kept for months without their certificates, we have nothing to say, but only to hope that these matters will in future be more carefully attended to. We are always pleased to receive any communication from our readers, and try to do all in our power to serve them; but, at the same time it would be well for correspondents to remember that the Registrarship of the College, the business management of the JOURNAL, and the editing thereof, are each conducted by separate persons. Complaints should, therefore, be sent to the proper persons, so that the blame be laid upon the right shoulders, and the remedy be more promptly applied.

FAIR PLAY.—You labor under a misapprehension as to the scope of the Pharmacy Act. If you will take the trouble to look over the Act, (see first pages of the "Sale of Poisons' Book,") you will find that the term "poison" is not to be interpreted as meaning any substance of a poisonous nature; but when mentioned in the Act is restricted in meaning to certain drugs which are enumerated in a schedule. You complain of country storekeepers, engaged in a general trade, selling such articles as senna, salts, castor oil, and camphor. They have a legal right to do so, and it would be an impossible piece of legislation to attempt to deprive them of this right. Our law makers would not for a moment entertain the idea of legalizing a monopoly of the sale of drugs, except so far as the safety of the public is concerned. This is the only consideration which, in the passing of the Act, had a favorable influence, and we think, if you give the matter a little thought, you will admit that it would be as unfair to restrict to druggists, exclusively, the sale of harmless drugs, as to permit none but brushmakers to sell hair brushes; or grocers to sell spices.

Practical Formulæ

Pills of Protoxide of Iron.—M. Kirchmann (*Archiv. der Pharm.*) prepares pills of protoxide of iron by mixing an equivalent of calcined magnesia with one of crystallized protosulphate of iron, and adding a small quantity of concentrated glycerine. For sixty pills he employs—

Crystallized ferrous sulphate	120 grams.
Calcined magnesia	20 "
Glycerine	15 drops.

These pills have a good consistence, and can be covered with sugar. If they be placed in water the sulphate of magnesia is dissolved, and the oxide of iron deposited.—*Pharm. Jour.*

Turpentine Pills.—M. Lachambre (*Journ. des Connaissances Médicales*), gives the following formula for preparing turpentine pills, which he says are promptly digested without fatiguing the stomach or causing disagreeable eructations :—

Oil of turpentine	8 grams.
White wax	20 "
Essence of lemon	2 drops.
Powdered sugar	9 grams.

Melt the wax in the turpentine and essence of lemon, pour into a mortar, and when cool add the sugar and form a mass. Divide into pills of twenty-five centigrams each, which should be covered with starch and kept in well-stoppered bottles. Each pill will contain five centigrams of turpentine.—*Ibid.*

Rubber Cement.—As rubber plates and rings are now-a-days used almost exclusively for making connections between steam and other pipes and apparatus, much annoyance is often experienced by the impossibility or imperfection of an air-tight connection. This is obviated entirely by employing a cement which fastens alike well to the rubber and to the metal or wood. Such a cement is prepared by a solution of shellac in ammonia. This is best made by soaking pulverized gum shellac in ten times its weight of strong ammonia, when a slimy mass is obtained, which in three or four weeks will become liquid without the use of hot water. This softens the rubber and becomes, after volatilization of the ammonia, hard and impregnable to gases and fluids.—*Jour. of App. Chem.*

A Strong Adhesive Paste.—According to Fr. Sieburger, an excellent paste may be prepared as follows: Four parts, by weight, of glue are soaked for several hours in 15 parts of water, and then slowly warmed until a perfectly clear solution is formed. This

solution is then diluted with 65 parts boiling water and thoroughly stirred. In the meantime, 30 parts of starch are stirred into 200 parts of cold water, so as to form a thin, milky liquid, free from lumps. Into this is poured the solution of glue, stirring continually and heating. When cold, 10 drops of carbolic acid are added. The paste made in this way is said to possess extraordinary adhesive power, joining leather, paper, pasteboard, &c. By keeping it in closed vessels, so that the water cannot evaporate, it may be preserved for years.—*Jour. of App. Chem.*

Liquor Picis Alkalinus.—The following preparation is that of the late Dr. H. D. Bulkley, of New York, who proposed it to fill the place of a secret French preparation of tar :—

R.	Picis liquidæ,	ʒij.;
	Potassæ causticæ,	ʒj.;
	Aquæ,	ʒv. m. ft. sol.

This mixes with water in all proportions, and discolors the skin to a very moderate extent. It dries rapidly and leaves very little stickiness. He has used it in all degrees of strength, and regards it as one of the best methods of employing tar. The potash heightens the anti-pruritic effect of the tar. The solution he has employed with advantage in eczema, both in its chronic stage with thickenings, and in the more acute forms, where exudation has about or nearly ceased and the itching is intense. In chronic cases with infiltration, it may be used in full strength. Good success has followed its use in lupus erythematosus and psoriasis.—*Phila. Med. & Surg. Reporter.*

Balsam of Mecca (Balm of Gilead)—(Factitious).—The article sold under this name is generally composed of the following :

Take of Gum Benzoin, 2 parts.
Storax liquid, 1½ parts.
Balsam of Tolu, 1 part.
Balsam of Fir, 12 parts.

Place them in a glass flask or bottle, and subject to the heat of a water bath for several hours until liquified, allow to cool and decant the clear portion ; to which add sufficient quantity of the oils of lemon, cassia, rosemary, nutmeg and vanilla, to give it a strong aromatic odor. Another formula is the following :

Take of Gum Benzoin, 4 parts.
Balsam of Fir, 16 parts.

Mix and heat, when the gum benzoin is dissolved in the balsam, strain through cloth, and when cold add the oil of lemon, rosemary and cassia—of each two drachms.—*Pharmacist.*

Varieties.

NEW MODE OF ADMINISTERING COD-LIVER OIL.—Numerous attempts have been made to render cod-liver oil less disagreeable, either by gelatinising or solidifying it, but only with partial success. The system of capsules seems to answer best ; but the great objection is the number of these which must be swallowed. Now it would seem that Messrs. Carre and Lemoine have contrived to incorporate the oil with *bread*. Each pound of bread contains a little more than two ounces of the oil or five tablespoonfuls, and three ounces of milk. Small loaves are also made which contain only two tablespoonfuls, and which altogether weigh only five ounces. These loaves are beautifully white, look extremely well, and have hardly any taste. Both children and adults eat them very willingly. In M. Bouchut's ward, at the Children's Hospital in Paris, 34 small loaves are brought every morning, and are looked forward to with much anxiety by the children for breakfast. They have been largely used among private patients, and no one complains of any disagreeable tasts. Five or six tablespoonfuls of oil may thus be given per diem, incorporated with the bread taken with the usual food.—*Canadian Medical Times*.

IMITATION OF MARBLE.—Imitations of marble are in great demand for ornamentation, and many different compounds are used for the purpose. M. Pichler, a gilder in Vienna, from his own experience, recommends the following composition as being simple and satisfactory: Into one pound of best joiner's glue, boiled rather thick, half a pound of rosin (colophony) is to be slowly stirred. (Instead of the rosin, the same quantity of Venetian turpentine may be used.) Into this plastic mass is worked a mixture of powdered chalk and of any mineral color of the desired shade, and, after the addition of a little olive oil, it is ready for moulding. It is sometimes convenient to have the material in the shape of thin sheets, to be cut as required ; and, in this case, the mass is rolled out upon a slightly-heated plate. M. Pichler asserts that this composition hardens rapidly, and can be easily polished. When kept for a length of time, it should be wrapped in a moist sheet, and exposed to a gentle heat before using. The variegated marble-like veins can also be produced by kneading together differently-colored portions of this mass.—*Boston Journal of Chemistry*.

A NEW SUBSTITUTE FOR QUINIA.—Among the specimens of drugs exhibited in the International Exhibition in Vienna is the *Echisess scholaris*, a plant of the natural order *Apocyneæ*. It is especially abundant at Luzon, in the province of Batangar, in the Philippine Islands ; and its bark has long been used by the natives, under the name of *dita*, as a remedy in all kinds of fever. Herr Gruppe, an apothecary in Manilla, has found in it an uncrytallizable very hygroscopic bitter substance, to which he has given the name of *ditain*. The principal Spanish physician in Manilla, Dr. Miguel Zina, has given it to numerous hospital patients under his care, and has found that ditain is not only a perfect substitute for quinia, but also that its use is not followed by the disagreeable results which often attend the use of quinia. It is given in the same doses and in the same way as quinia. In many cases, also, its activity as a tonic was well marked. The ditain is prepared from the bark in the same way as quinia from cinchona: 100 *grammes* of ditain, 0.85 *gramme* of sulphate of lime, and 10 *grammes* of a

perfectly inactive matter. A single tree yields a large quantity of bark without injuring its growth. It is calculated that the price of ditain in Europe would be about 160 *frances* per kilo (3s. 6d. to 4s. per ounce).—*Brit. Med. Jour.*

ESTIMATION OF ALCOHOL IN FUSEL OIL.—Dr. G. L. Ulex, of Hamburg, recommends to distil from 100 c. c. of the suspected fusel oil 5 c. c., and to agitate the distillate with an equal volume of saturated solution of table salt. If, on standing, one-half or more is separated as an oily liquid, it is a reliable proof that the fusel oil contained less than 15 per cent. of proof spirit. If, however, a smaller quantity or no fusel oil is separated, an addition of proof spirit has taken place. A given quantity of fusel oil is then agitated with an equal volume of saturated solution of table salt, in which propylic and butylic alcohols are far less soluble than in water. After complete separation the salt solution is distilled, to recover the alcohol and estimate its amount.—*Pharmac. Zeitung*, 1873, No. 48. in *Am. Jour. Pharm.*

VEGETABLE GLUE.—This name is applied to a mucilage of gum arabic, the adhesive properties of which have been considerably increased by adding to 250 grams (made of 2 parts of gum to 5 of water) 2 grams of crystallized sulphate of aluminum, previously dissolved in 20 grams of water. Alum has a similar effect, but in a less satisfactory degree.—*Pharm. Cent. Halle*, 1873, No. 24. in *Am. Jour. Pharm.*

Bocke has announced that chloroform is an excellent solvent from which to crystallize quinine in beautiful, needle-like crystals.

Registrar's Notices.

LIST OF CHEMISTS WHO HAVE RENEWED THEIR REGISTRATION DURING THE PAST MONTH.

Barker, W. T., Trenton.
Blume, M., Toronto.
Brodie, W. F., Forest.
Buck, A. C., Caledonia.
Clemesha, J., Bailieboro'.
Colcleugh, Jas., Mount Forest.
Doan, D. W., Aurora.
Eastman, T. F., Arkona.
Elwell, G. T. O., Ottawa.
Fraleigh, S., St. Mary's.
Gray, H. R., Montreal.
Harvard, A., Toronto.
Jackson, G. E. Egmondville.
Johnson, W. J., Farmersville.
Lushington, Jas. L., Amherstburg.
Lyman, B. H., Toronto.
Mason, C. S., Brantford.
McKenny, Thos., Thornbury.
Rock, Thos., Hamilton.
Steward, W. R., Toronto.
Striker, G., Picton.
Taylor, R. N., Hamilton.
Watson, T. T., Barrie.
Wilson, J., Simcoe.
Woods, J., Barrie.
Woolhouse, J. B., Lindsay.

NEW REGISTRATIONS.

Beauchamp, P., Toronto.
Johnson, Jas, Morven.
Richards, J. E., Aylmer.
McGinnes, W. R., Arnprior.

ASSOCIATE.

Bogart, P., Campbellford.

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

Drugs, Medicines, &c.—*Contd.*	$ c.	$ c.
Sang Dracon	0 60	0 70
Scammony, powdered	6 00	6 50
" Virg. "	14 50	—
Shellac, Orange	0 65	0 70
Gum, Shellac, liver	0 60	0 65
Storax	0 40	0 45
Tragacanth, flake	1 10	1 40
" common	0 53	0 65
Galls	0 28	0 32
Gelatine, Cox's 6d	1 15	1 20
Glycerine, common	0 25	0 30
Vienna	0 25	0 30
Prices	0 60	0 75
Honey, Canada, best	0 15	0 17
Lower Canada	0 14	0 16
Iron, Carb. Precip	0 20	0 25
" Sacchar	0 40	0 55
Citrate Ammon	1 50	1 50
" & Quinine, oz	0 53	0 58
" & Strychine	0 17	0 25
Sulphate, pure	0 08	0 10
Iodine, good	10 00	10 50
Resublimed	10 75	11 00
Jalapin	1 25	1 50
Kreosote	2 40	2 50
Leaves, Buchu	0 22	0 30
Foxglove	0 25	0 30
Henbane	0 35	0 40
Senna, Alex	0 27	0 60
" E. I.	0 14	0 20
" Tinnevilly	0 20	0 30
Uva Ursi	0 15	0 17
Lime, Carbolate.....brl	5 50	—
Chloride	0 06	0 07
Sulphate	0 08	0 12½
Lead, Acetate	0 14	0 15
Leptandrin.....oz.	0 60	—
Liq. Bismuth	0 50	0 75
Lye, Concentrated	1 75	2 00
Liquorice, Solazzi	0 50	0 55
Cassano	0 23	0 40
Other brands	0 14	0 25
Liquorice, Refined	0 35	0 45
Magnesia, Carb. 1 oz.	0 20	0 25
" 4 oz.	0 17	0 20
Calcined	0 65	0 75
Citrate.....gran.	0 63	0 75
Mercury	1 50	1 60
Bichlor	1 30	1 40
Chloride	1 45	1 55
C. Chalk	0 65	—
Nit. Oxyd	1 60	1 70
Morphia Acet	4 45	4 60
Mur.	4 45	4 60
Sulph	4 60	4 75
Musk, pure grain.....oz	23 00	—
Canton	0 90	1 20
Oil, Amonds, sweet	0 42	0 50
" bitter	14 00	15 00
Aniseed	4 00	4 25
Bergamot, super	6 25	6 50
Caraway	3 20	3 50
Cassia	2 80	2 90
Castor, E. I	0 14	0 15
Crystal	0 22	0 25
Italian	0 26	0 28
Citronella	1 25	1 35
Cloves, Ang	2 20	2 40
Cod Liver	1 5	1 50
Croton	1 75	2 00
Juniper Wood	0 80	1 00
Berries	6 00	7 00
Lavand, Ang.....oz.	0 90	1 00
Exotic	1 40	1 60
Lemon, super	5 00	5 50
ord	3 20	3 40
Orange	4 00	4 25
Origanum	0 65	0 75
Peppermint Ang	13 00	14 40
" Amer	3 80	4 00
Rose, Virgin	8 50	8 75
" good	6 80	7 00
Sassafras	0 90	1 00
Wintergreen	6 00	6 50
Wormwood, pure	4 00	6 50
Ointment, blue	0 90	1 00
Opium, Turkey	8 50	8 75
pulv	10 50	10 75

DRUGS, MEDICINES, &c.—*Cont'd*	$ c.	$ c
Orange Peel, opt.	0 30	0 36
" good	0 12½	0 20
Pill, Blue, Mass	1 00	1 00
Potash, Bi.chrom	0 23	0 27
Bi-tart	0 33	0 35
Carbonate	0 14	0 20
Chlorate	0 55	0 60
Nitrate	10 50	11 00
Potassium, Bromide	11 5	1 40
Cyanide	0 75	0 80
Iodide	7 75	8 00
Sulphuret	0 25	0 35
Pepsin, Boudault's.....oz	1 40	—
Houghton's..... doz.	8 00	9 00
Morson's.....oz.	0 85	1 10
Phosphorus	0 95	1 00
Podophyllin	0 50	0 60
Quinine, Pelletier's	—	2 45
Howard's	2 50	—
" 100 oz. case.	2 45	—
" 25 oz. tin..	2 45	—
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 17	0 20
Ipecac, "	1 50	1 60
Jalap, Vera Cruz	1 00	1 25
" Tampico	0 70	1 00
Liquorice, select	0 12	0 13
" powdered	0 15	0 20
Mandrake "	0 20	0 25
Orris, "	0 20	0 25
Rhubarb, Turkey	2 50	2 75
" E. I	1 10	1 20
" " pulv	1 20	1 30
" " 2nd	0 90	1 00
" French	0 75	—
Sarsap., Hond	0 40	0 45
" Jam	0 88	0 90
Squills	0 10	0 15½
Senega	0 90	0 95
Spigelia	0 25	0 30
Sal., Epsom	2 25	3 00
Rochelle	0 32	0 35
Soda	0 02½	0 03
Seed, Anise	0 13	0 16
Canary	0 05	0 06
Cardamon	2 25	2 50
Fenugreek, g'd	0 09	0 10
Hemp	0 06½	—
Mustard, white	0 14	0 16
Saffron, American	1 15	1 50
Spanish	12 00	13 00
Santonine	8 25	9 00
Sago	0 08	0 09
Silver, Nitrate.....Cash	14 85	16 50
Soap Castile, mottled	0 11	0 14
Soda Ash	0 04	0 05
Bicarb. Newcastle	—	6 50
" Howard's	0 14	0 16
Caustic	0 06½	0 06½
Spirits Ammon., arom	0 35	0 35
Strychnine, Crystals	2 60	2 70
Sulphur. Precip	0 10	0 12½
Sublimed	0 03½	0 05
Roll	0 03	0 04½
Vinegar, Wine, pure	0 55	0 60
Verdigris	0 35	0 40
Wax, White, pure	0 75	0 80
Zinc. Chloride.....oz	0 10	0 15
Sulphate, pure	0 10	0 15
" common	0 06	0 10
DYESTUFFS.		
Annatto	0 35 @	0 60
Aniline, Magenta, cryst	2 50	2 80
liquid	2 00	—
Argols, ground	0 15	0 25
Blue Vitrol, pure	0 10	0 10
Camwood	0 06	0 09
Copperas, Green	0 01½	0 02½
Cudbear	0 16	0 25
Fustic, Cuban	0 02½	0 04
Indigo, Bengal	2 40	2 50
Madras	0 90	0 95
Extract	0 30	0 35

DYESTUFFS—*Continued.*		
Japonica	0 07½	0 07⅞
Lacdye, powdered	0 33	0 38
Logwood	0 02	0 03
Logwood, Camp	0 02	0 3½
Extract	0 10	0 14
" 1 lb. bxs	0 13	—
" ½ lb. "	0 14	—
Madder, best Dutch	0 14	0 15
2nd quality	0 12	0 14
Quercitron	0 03	0 05
Sumac	0 06	0 08
Tin, Muriate	0 10½	0 12½
Redwood	0 05	0 06
SPICES.		
Allspice	0 11½@	0 12
Cassia	0 39	0 40
Cloves	0 30	0 32
Cayenne	0 30	0 35
Ginger, E. I	0 16	0 17
Jam	0 20	0 30
Mace	1 75	1 75
Mustard, com	0 20	0 25
Nutmegs	1 15	1 20
Pepper, Black	0 22½	0 23
White	0 48	0 50
PAINTS, DRY.		
Black, Lamp, com	0 07 @	0 08
" refined	0 25	0 30
Blue, Celestial	0 08	0 12
Prussian	0 65	0 75
Brown, Vandyke	0 10	0 12½
Chalk, White	0 01	0 01½
Green, Brunswick	0 07	0 10
Chrome	0 16	0 25
Paris	0 30	0 35
Magnesia	0 20	0 25
Litharge	0 07	0 09
Pink, Rose	0 12½	0 15
Red Lead	0 07½	0 08
Venetian	0 02½	0 03½
Sienna, B. & G	0 07	0 08
Umber	0 07	0 10
Vermillion, English	1 50	1 60
American	0 25	0 35
Whiting	0 85	0 90
White Lead, dry, gen	0 08½	0 09
" " No. 1	0 07	0 08
" " No. 2	0 05	0 07
Yellow Chrome	0 12½	0 35
" Ochre	0 02½	0 03½
Zinc White, Star	0 10	0 12
COLORS, IN OIL.		
Blue Paint	0 12 @	0 15
Fire Proof Paint	0 06	0 08
Green, Paris	0 30	0 37½
Red, Venetian	0 07	0 10
Patent Dryers, 1 lb tins	0 11	0 12
Putty	0 03¾	0 04½
Yellow Ochre	0 08	0 12
White Lead, gen. 25 lb. tins	2 50	—
" No. 1	2 25	—
" No. 2	2 00	—
" No. 3	1 75	—
" com	1 30	—
White Zinc, Snow	2 75	3 25
NAVAL STORES.		
Black Pitch	5 00 @	5 25
Rosin, Strained	4 50	—
Clear, pale	7 80	—
Spirits Turpentine	0 58	0 60
Tar Wood	5 50	5 75
OILS.		
Cod	0 63 @	0 65
Lard, extra	0 90	—
No. 1	0 80	0 85
No. 2	0 75	0 90
Linseed, Raw	0 76	0 80
Boiled	0 81	0 85
Olive, Common	1 10	1 20
Salad	1 80	2 30
" Pints, cases	4 20	4 40
" Quarts	3 25	3 50
Seal Oil, Pale	0 75	0 80
Straw	0 68	0 75
Sesame Salad	1 30	1 35
Sperm, genuine	2 20	2 40
Whale refined	0 90	0 95