Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for scanning. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of scanning are checked below.

L'Institut a numérisé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de numérisation sont indiqués ci-dessous.

- ☐ Coloured covers / Couverture de couleur
- ☐ Covers damaged / Couverture endommagée
- ☐ Covers restored and/or laminated / Couverture restaurée et/ou pelliculée
- ☐ Cover title missing / Le titre de couverture manque
- ☐ Coloured maps / Cartes géographiques en couleur
- ☐ Coloured ink (i.e. other than blue or black) / Encre de couleur (i.e. autre que bleue ou noire)
- ☐ Coloured plates and/or illustrations / Planches et/ou illustrations en couleur
- ☑ Bound with other material / Relié avec d'autres documents
- ☐ Only edition available / Seule édition disponible
- ☑ Tight binding may cause shadows or distortion along interior margin / La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure.

- ☐ Coloured pages / Pages de couleur
- ☐ Pages damaged / Pages endommagées
- ☐ Pages restored and/or laminated / Pages restaurées et/ou pelliculées
- ☑ Pages discoloured, stained or foxed/ Pages décolorées, tachetées ou piquées
- ☐ Pages detached / Pages détachées
- ☑ Showthrough / Transparence
- ☑ Quality of print varies / Qualité inégale de l'impression
- ☐ Includes supplementary materials / Comprend du matériel supplémentaire
- ☐ Blank leaves added during restorations may appear within the text. Whenever possible, these have been omitted from scanning / Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été numérisées.

☑ Additional comments / Commentaires supplémentaires: Continuous pagination.

CANADIAN

PHARMACEUTICAL JOURNAL

VOL. IX, No. 10. TORONTO, MAY, 1876. WHOLE No. XCV

Original and Selected Papers.

ON AN APPLICATION OF THE SYPHON TO THE PROCESS OF FILTRATION.

BY E. GREGORY.

I desire to present for the consideration of my brother pharmaceutists a simple form of apparatus which I have devised for the very common process of filtration. It is almost needless to point out the annoyances that attend upon the method usually followed, such as the constant attention necessary to keep the funnel filled up, and the clogging of the pores of the filtering paper by sediment, etc. The loss by evaporation from alcoholic preparations is also considerable. The simple form of apparatus which I propose will remove many of these inconveniences; and though it is far from perfect, it will, I think, be found very useful in many cases.

The materials necessary for its construction are, a common half-ounce glass male syringe, of the cheapest or corked variety; a piece of india-rubber tubing, eighth of an inch bore, of sufficient length, say about eighteen inches; and a piece of filtering paper about one inch and a half square. Withdraw the piston and cork from the syringe and lay it aside; then cap the barrel of the syringe at the open end from which the piston was taken, with the filtering paper, and tie it securely with fine twine; slip the rubber tubing over the nose of the syringe, and the apparatus is ready for use.

Now drop the syringe, capped end downwards, into the liquid to be filtered, exhaust the air by sucking at the end of the rubber tube, but very cautiously for fear of rupturing the filtering paper, and the liquid will rise through the paper into the tube. The current being once established will continue until the contents of the bottle are exhausted, always provided that the end of the rubber tube is kept below the capped end of the syringe. It is probable that the inexperienced operator will rupture the paper on the first time of trial, but a little patience will soon remove that difficulty. The advantages of this plan are obvious on a little consideration. No retort stand is needed, for there is no funnel to support. The saving in the breakage of funnels will be something in the course of a year. A piece of filtering paper one inch and a half square does the work which before was done with a piece six to nine inches square. The process goes on without attention, it being unnecessary to fill up a funnel every few minutes. The filtration being upwards there is no accumulation of sediment in the pores of the paper, and, as a consequence, filtration proceeds as rapidly at the end as at the beginning of the process. There is very little loss by evaporation, for the half-ounce syringe is so small that it will go into the half gallon stock-bottle, whilst the end of the rubber tubing will go into the neck of the shelf-bottle from which sales are made. The tube is easily cleaned by running a plentiful supply of water through it. The only disadvantage under which the process labors, so far as I have yet discovered (and it must be confessed this is somewhat serious), consists in the slowness with which it proceeds, consequent, no doubt, on the extremely limited extent of filtering surface exposed to the liquid, a disc of paper half an inch in diameter doing all the work. I append some examples of the time required. One pint of Vin. Ipecac. occupied twelve hours; the same quantity of Spts. Lavand. Co., two and a half hours; of Tinct. Benz. Co., five hours; of Ess. Vanilla, one and a half hours. This difficulty can most likely be overcome by using a larger syringe, but even as the matter stands, we have the very great advantages of the absence of all cumbersome and expensive funnels and stands, no attention is needed, and no loss is sustained from evaporation. Application of this principle for hot filtration and for very volatile liquids also occur to me, but for the present I will not describe them. In order to ensure success it seems necessary that the filtering medium should be ca-

pable of doing its work a little more rapidly than the syphon tube can carry off the filtrate. I propose to call this instrument the *Syphon Filter*. I do not know whether this process has ever been described before—if so, I am not aware of it.

[NOTE BY THE EDITOR.—In some of the older works on chemical manipulation mention is made of a syphon with a trumpet-shaped extremity, to be applied for upward filtration, but, as far as Mr. Gregory is concerned, we are sure the idea is original. The simple contrivance can be easily and quickly made, and may be applied in many cases, with advantage. The slowness of filtration is the chief drawback; but this difficulty might be done away with, to some extent, by lengthening the lower leg of the syphon so as to increase the pressure by the greater difference of hydrostatic level.]

ON THE ASSERTED PRESENCE OF TANNIN IN GENTIAN ROOT.*

BY JOHN M. MAISCH.

The root of Gentiana lutea, owing to its importance as a medicine, has been frequently subjected to chemical analysis during the last sixty years, and none of the investigators have been able to prove the presence of tannin in it. The long list commences in 1815, with Schrader ("Berl. Jahrb. f. Phar.," xvi), who is followed by Henry, and by Guillemin and Foecquemin in 1818 ("Jour. de Phar.," v); in 1821 by Henry and Caventou (*ibid.*, vii); in 1836 by Denis (*ibid.*, 1836, January); in 1837 by H. Trommsdorff ("Ann, d. Phar.," xxi), and by Claude Leconte ("Jour. de Phar.," xxiii); in 1838 by Dulk ("Archd. d. Phar.," xv); in 1847 by Baumert ("Ann. d. Chem. u. Phar.," lxii); in 1861 by H. Ludwig ("Archd. d. Phar.," clvii), and in 1862 by Kromayer (*ibid.*, clx). To these investigations must be added the recent ones by Hlasiwetz and Habermann ("Buchn. N. Repert.," 1874, p. 631; "Amer. Jour. Phar.," 1875, p. 207). It is true that many of these analyses were undertaken with the principal object of isolating the bitter principle or the gentianic (gentisic) acid; but it is hardly to be supposed that a principle like tannin, the presence of which is so readily proven, should have been overlooked. More particularly is this the case with analyses of Henry and Caventou, Leconte and Dulk, the two

*Read at the Pharmaceutical Meeeting, and published in the American Journal of Pharmacy.

former of which were undertaken for the purpose of ascertaining all the constituents, and that of Dulk verified the substantial correctness of the results of the former.

The results obtained by these chemists agree perfectly well with the physiological effects observed by numerous physicians, and which may be summed up with the words of Pereira : " Gentian is very properly regarded as a *pure* or *simple bitter ;* that is, as being bitter, but without possessing either astringency or much aroma." Moreover, none of the works on Materia Medica, in the English, French and German languages, which the writer had occasion to consult, mentions tannin or a similar compound in this root.

In the face of these numerous investigations, it must appear rather startling to learn that Mr. E. L. Patch, in a paper recently read before the Massachusetts College of Pharmacy, asserted that " he found tannin in the gentian, contrary to the usual statement of works on Materia Medica" (" Drug. Circ.," 1876, p. 48). This assertion seems to be mainly based on " the incompatibility of the tincture of chloride of iron and the compound tincture of gentian," although it is stated that Mr. Patch exhibited numerous preparations of gentian in connection with his paper. Unfortunately, the gentleman seems to have overlooked the fact, that the tincture mentioned contains also orange peel, and that the white parenchyma of the latter is colored of a deep black on the addition of solution of any ferric salt, which coloration, according to Fluckiger and Hanbury (" Pharmacographia," pages 105,113), is owing, " *probably*, to a kind of tannic matter." It will be observed that the authors mentioned are very guarded in their expression, notwithstanding the ink-black coloration produced by iron salts.

But what is the effect of ferric salts upon gentian ? The investigations mentioned above have thrown considerable light on this point. Henry already noticed the dark colour produced by ferric chloride with what he supposed to be the bitter principle, but which was subsequently proven to be merely the yellow coloring principle contained in the root. Baumert says that the concentrated alcoholic solution of pure gentianic (gentisic) acid produces with ferric chloride a red-brown precipitate, and Ludwig found that the aqueous solution of the extract contains a body which, under certain circumstances, imparts a dark-green fluorescence. In these observations we have the key for the behaviour of ferric salts with the preparations of gentian, which I shall endeavour to explain with the following experiments.

Well-dried and bruised gentian root was nearly exhausted by cold water, first by percolation and subsequently by expression after maceration. The first portion of the percolate gelatinized on standing a day or two, in consequence of the separation of pectin compounds. This aqueous infusion is not disturbed by gelatin solution, a pretty sure evidence of the total absence of tannin;

in the course of a few hours, a scant light-coloured precipitate made its appearance, which, after having been thoroughly washed with water is merely tinged light-brown by dilute ferric salts. The infusion, however, strikes with ferric chloride a dark reddish-brown colour, which in reflected light shows a deep greenish tint ; no precipitate takes place, as the liquid remains perfectly transparent in thin layers, although a concentrated infusion apparently becomes opaque on the addition of the iron salt, but after water is added shows not the slightest sign of a precipitate, even on standing. If the infusion has been previously diluted with water, the addition of ferric chloride will scarcely darken it.

Alcohol added to the cold infusion precipitates pectin compounds, albuminous and gummy matter, and the clear liquid behaves exactly as the infusion from which it had been made. The infusion preserved by alcohol was treated with a fragment of fresh hide for 24 hours; the behaviour of the liquid to ferric chloride showed no difference. The experiments detailed prove conclusively that the aqueous infusion of gentian does not contain any tannin.

Gentain root, previously nearly exhausted with water, was now macerated, and then displaced with strong alcohol. The tincture thus obtained is of a bright yellow colour, quite distinct from the yellowish-brown colour of the infusion of tincture prepared directly from unexhausted root. It gives, with ferric chloride, a deep brown-green colour, and also a precipitate, if sufficiently concentrated ; on diluting it with water, the mixture turns muddy from the separation of resin and fat, its colour becoming of a dirty green-brown ; if, instead of water, alcohol be added to the mixture, a perfect solution is obtained, having a brown colour with a greenish tint. The tincture prepared from the nearly exhausted root is, therefore, likewise, free from tannin.

In order to further elucidate the subject, a portion of the tincture was evaporated, and the residue washed with cold water to remove the remaining bitter principle, gentiopicrin. The clear, yellow filtrate evidently contains gentianic (gentisic) acid in solution, it yields, with ferric chloride, a deep brown colour, without any perceptible green tint. Dilution of the mixture with water revealed the absence of a precipitate.

The yellowish granular mass left, after washing the alcoholic extract with water, was washed with cold ether to remove adhering resin and fat ; on evaporation of the yellowish etherial solution, a yellow amorphous mass was left, which, dissolved in a little alcohol, yields, with ferric chloride, a dark brown-green precipitate, the mixture becoming muddy on the addition of water, but perfectly transparent by alcohol.

The portion left undissolved by ether, consisting of nearly pure gentianic (gentisic) acid, was recrystallized by hot alcohol ; but the quantity operated on being small, the acid was not obtained in an

absolutely pure state. Its alcoholic solution behaved nearly like the solution of the etherial washings, except that the precipitate of the latter with ferric chloride, and its solution in alcohol, was of a more decided green color.

If it is remembered that gentianic (gentisic) acid is slightly soluble in water, not freely in ether, but readily in alcohol, the dark coloration imparted to various simple preparations of gentian by ferric salts is easily explained, likewise the dark-coloured precipitate occurring by the same agent with fluid extract of gentian ; and if it is remembered that alcohol takes up from gentian root also resin and fat, which are precipitated on the addition of water, the occurrence of a permanent precipitate in the presence of iron apparently remaining on diluting the alcoholic liquid with water, will likewise become obvious.

In proximate analysis it is of the utmost importance not to place any reliance upon any single reaction, much less when the test is applied in such complex mixtures as infusions and tinctures must necessarily be. While it is true that tannins produce, with iron, salts, blueish-black or greenish-black colorations or precipitates, according to the state of concentration, it must be borne in mind that there are numerous other compounds which produce somewhat similar reactions, without being in the least related to the interesting group of tannins.

VASELINE.*

BY JOHN MOSS,

Fellow of the Chemical Secieties of London and Berlin.

Two days ago I had no thought of reading a paper at this meeting. It was my intention then, merely to place specimens of Vaseline and Cosmoline on the table, and make a few general remarks upon them. It appeared to me afterwards, however, that the subject was worthy of further development, and I determined on a few experiments which should tend to throw light on the nature of one of these bodies—Vaseline. The experiments and the conclusions deduced from them are embodied in this paper.

Vaseline was first brought directly before my notice at Edinburgh, some seven months ago, by Professor Otis, of New York. This gentleman informed me that vaseline was largely used in the United States as a basis for ointments, and by himself for lubricat-

* Read at an Evening Meeting of the Pharmaceutical Society of Great Britain, and published in the Pharm. Jour. and Trans.

ing surgical instruments, and so facilitating their introduction into the passages. I had previously made acquaintance with the literature of cosmoline and vaseline through the medium of the American journals, but these bodies were presented in an aspect so little complimentary that no attention was paid to them at the time, and the papers (by Dr. A. W. Miller) were not again referred to until yesterday. The remarks of Miller suggested, to my mind, his conviction that vaseline and cosmoline were merely artificial mixtures of paraffin wax with bodies of an allied nature, or with common lard; indeed he went so far as to submit a formula which should produce an equivalent to cosmoline if not that body itself. The formula was only a partial success. His remarks on Cosmoline were copied into the *Pharmaceutical Journal*,† but with this exception I have met with no notice of either of these bodies in any of the chief publications devoted to pharmacy in this country, in France, or in Germany. This may be accounted for by the uncertainty and doubt which attached to them, and as far as one of them at least was concerned, by the character of the advertisements which proclaimed its virtues. They were offered to the profession under names, and to some extent in a manner, which strongly suggested a relation to nostrums. In justice to the manufacturer of vaseline it should be stated that on enquiry he makes no secret of the origin and mode of preparation of his specialty,‡ or of what he conceives to be its nature. He states that it is the residue of the distillation of petroleum, purified by filtration through animal charcoal, and calls it "petroleum jelly." He further says distinctly that it contains no paraffin. Having regard to its source and the process by which it is obtained, it is difficult to agree with him on this point. In expressing my conviction that it does contain paraffin, if it consists not entirely of a mixture of paraffins, I distinctly disclaim all intention of impugning his sincerity. I merely understand him to mean that vaseline is not a made-up article, not an artificial mixture of what is commonly known as paraffin, i.e., paraffin wax, with other substances. It is unfortunate that the commodity was not introduced by a complete chemical examination into its nature and properties, so that the profession might be assured of its not being a nostrum, a *sine qua non* to any proposed remedy being generally prescribed. If a mixture of paraffins possesses in every respect advantages over other bodies such as lard, simple cerate, etc., for the purposes for which these are employed, there can be no reason, if the price suits, why it should not be used; but it should be known to be a mixture of paraffins, and not be introduced with a certain amount of mystery, unintentional though it be, under a seemingly fancy name.

† January 17, 1874, p. 581.

‡ Letters patent have been taken out for the manufacture and sale of vaseline.

Vaseline is a pale yellow, translucent, slightly fluorescent semi-solid, melting at 37° C. (uncorrected for temperature and pressure, but sufficiently accurate for most pharmaceutical purposes). Specific gravity 840 at 55° C. It is inodorous, non-volatile at ordinary temperatures, but distils with slight decomposition under pressure. It is insoluble in water, slightly soluble in alcohol, freely in ether, and miscible in all proportions when melted with fixed or volatile oils. It mixes in all proportions with glycerine of the ordinary strength, but the mixture is destroyed by addition of water. Hydrochloric acid and liquor potassæ are without action upon it.

I at first thought that vaseline might be a mixture of paraffin and glycerine. A quantity was accordingly boiled with water for some time, the aqueous liquid filtered from the seeming oily portion, and evaporated to dryness, when it became apparent that not only was the body free from glycerine, but also from all but very minute traces of anything soluble in water. Before evaporating, the liquid was found to be without action on red and blue litmus.

Paraffin is a name originally given to the solid members of the $C_nH_{2n\times 2}$ series on account of their chemical indifference, but in compliance with a suggestion by Henry Watts it is now applied as a generic term to all the members of that series, whether solid, liquid, or gaseous. Paraffins are *saturated hydro-carbons* and hence are incapable of uniting with other bodies. The properties of vaseline on which greatest stress is laid, are its indifference to reagents and its unchangeableness on exposure to the air. Ointments which are liable to change, such as those of iodide of potassium and of sulphur, when prepared with vaseline as the basis and kept in loosely covered pots, are not altered at the end of ten weeks. Vaseline does not become rancid on exposure to the air under circumstances highly favourable to the development of rancidity. A sheet of paper was smeared with vaseline ten weeks ago, and suspended in a laboratory where experiments are constantly being made, near a door always on the swing; it is as devoid of odour now as some which first saw the light yesterday since its arrival from America in a hermetically closed tin canister. Here then is one feature in which vaseline resembles paraffin.

Byasson,* whose name is known to pharmacists in connection with recent researches on jaborandi, succeeded four years ago in separating from American petroleum a number of solid paraffins, of which the melting points ranged between 30° and 68° C. Such paraffins pass over in the last distillations, or they remain behind in the retort, according to the temperature employed. Vaseline may be distilled, and it is obtained from the residue of the distillation of American petroleum. Here is a second feature of resemblance to paraffin.

* Comptes Rendus, lxiii., 609.

Paraffin does not form a soap when boiled with caustic lye. A rough experiment was made by boiling 100 grains of vaseline with 7 fluid ounces of potash (1·15) for half an hour. A little vaseline was lost by spirting, but that recovered weighed 97 grains, after washing and drying. No soap was found in the lye. Vaseline, therefore, does not saponify, Here, again, it resembles paraffin.

Solid paraffins, when distilled under pressure, undergo decomposition into less complex hydrocarbons, and as the operation is repeated these tend more and more to remain liquid when cooled to the ordinary temperature. By the kindness of Professor Attfield I am enabled to show you the effect of distillation under pressure on Vaseline. The success of the experiment is due to the skill of his assistant, Mr. Alfred Senier. The vaseline was introduced into a piece of ordinary combustion tubing about a foot long, closed at one end and bent at an obtuse angle. The open end of the tube was then closed in the blowpipe flame, and the distillation effected by heating the limb containing the vaseline. The vapours are condensed in the other limb of the apparatus, and though the whole has been standing at the ordinary temperature for about thirty hours, both the portion which distilled over and that which remained behind are still liquid. The distillation was not repeated. Here is a very strong feature of resemblance to paraffin.

The above experiments all point in the same direction, and show that the term *Vaseline* must be regarded as a distinctive name for a mixture of paraffins obtained by a known process, and recommended as a substitute for lard and other similar substances for pharmaceutical purposes. It seems to me to supply what has been a desideratum ever since the first unguent was used—a bland, inodorous, unchangeable, agreeable basis. The manufacturer puts forward other claims for it, and urges that as a simple application it possesses curative properties of its own, and taken internally is good for coughs, colds, sore throat, etc. He informs me that it is largely used in the United States as a pomade; it will take any perfume. Dr. Guernsey, of New York, editor of the *Medical Union*, testifies to its value in various forms of eczema, tetter, and ulcerated surfaces, with or without discharge. He says, "In nasal, laryngeal and bronchial catarrh it ranks among the very best of our remedies, often giving relief when all else have failed. It is in my estimation one of the most valuable remedies in our armament of drugs." It is highly probable that at a reasonable price vaseline will receive many applications in pharmacy.

SPONTANEOUS GENERATION.*

The question whether living bodies ever have been or ever can be generated from dead matter has been for years a subject of discussion exciting the deepest interest, and is fraught with considerations of the most serious nature. Hitherto the chief champions of the opposing theories have been Dr. Charlton Bastian, who vigorously maintains the formation of bacteria in fluids from which the atmosphere and its germs have been perfectly excluded, and on the other side M. Pasteur, whose experiments have been singularly able and ingenious, and who draws them from the conclusion that the hypothesis of spontaneous generation is a chimera. It is not our purpose at the present time to give a summary of the labours of these learned investigators: we propose now very briefly to present a view of the experiments which have determined Professor Tyndall to give his support in a most unqualified manner to the views of M. Pasteur. It is interesting to note in passing that the philosopher who not long since discerned in matter the promise and potency of every form and quality of life now comes forward to declare that, so far as he can judge from the evidence furnished by a long series of experiments, performed with the utmost ingenuity and carefulness, there is an impassable gulf between matter and life, which separates eternally these divisions of creation—that in the lowest form to which we can trace living organisms there is still abundant evidence that propogation is dependent on previous living beings, and that these do not spring from an exterior or a dead source.

The method pursued by Professor Tyndall was to construct a number of small chambers with glass sides and front and wooden frameworks. Along the bottom were apertures for a row of test tubes, and above an arrangement for the admission of the liquids to be experimented on into the test tubes. These chambers were allowed to stand a few days, until a concentrated beam of light passing through them showed by perfect darkness that the motes in the air had all settled on the sides and bottom, where they were retained by a coating of glycerine. The test tubes were then filled, boiled from below, and abandoned to the action of the moteless air.

The question to be resolved was—Can air thus retaining all its gaseous mixtures, but self-cleansed from mechanically suspended matter, produce putrefaction? To this question, both the animal and vegetable worlds returned a decided negative. Among vegetables, experiments were made with hay, turnips, tea, coffee, hops, repeated in various ways with both acid and alkaline infusions. Among animal substances, there were many experiments with urine; while beef, mutton, hare, rabbit, kidney, liver, fowl, pheasant,

*From the Chemist and Druggist.

grouse, haddock, sole, salmon, cod, turbot, mullet, herring, whiting, eel, oyster, were all subjected to experiment.

The result was that infusions of these substances exposed to the common air of the Royal Institution laboratory, maintained at a temperature of from 60° to 70° Fahr., all fell into putrefaction in the course of from two to four days. No matter where the infusions were placed, they were infallibly smitten in the end. The number of the tubes containing the infusions was multiplied till it reached six hundred, but not one of them escaped infection.

In no single instance, on the other hand, did the air, which had been proved moteless by the searching beam, show itself to possess the least power of producing bacterial life or the associated phenomena of putrefaction. The power of developing such life in atmospheric air and the power of scattering light are thus proved to be indissolubly united.

The sole condition necessary to cause these long dormant infusions to swarm with active life is the access of the floating matter of the air. After they have remained for four months as pellucid as distilled water, the opening of the back door of the protecting case, and the consequent admission of the mote-laden air, sufficed in three days to render the infusions putrid and full of life.

These experiments, Professor Tyndall argues, are convincing. Suppose, he says, these germs in the atmosphere, instead of being beyond the reach of our microscope, were augmented in magnitude until they came within range of the unaided senses. Let it be assumed that we do not know whether they are germs, particles of dead organic dust, or particles of mineral matter. Suppose a vessel (say a flower-pot) to be at hand filled with nutritious earth, with which we mix our unknown particles; and that in forty-eight hours subsequently buds and blades of well-defined cresses and grasses appear above the soil. Suppose the experiment, when repeated over and over again, to yield the same unvarying result. What would be our conclusion? Should we regard those living plants as the products of dead dust, of mineral particles; or should we regard them as the offspring of living seeds? The reply is unavoidable. We should undoubtedly consider the experiment with the flower-pot as clearing up our pre-existing ignorance; we should regard the fact of their producing cresses and grasses as proof positive that the particles sown in the earth of the pot were the seeds of the plants which have grown from them. It would be simply monstrous to conclude that they had been "spontaneously generated."

This reasoning applies word for word to the development of bacteria from that flowing matter which the electric beam reveals in the air, and in the absence of which no bacterial life has been generated.

Another very striking experiment was recorded. Six years ago it was found that to render the laboratory air free from floating mat-

ter it was only necessary to permit a platinum-wire heated to whiteness to act upon it for a sufficient time. Shades containing pear juice, damson juice, hay and turnip juice, and water of yeast, were freed from their floating matter in this way. The infusions were subsequently boiled, and permitted to remain in contact with the calcined air. They are quite clear to the present hour; while the same infusions exposed to common air became mouldy and rotten long ago.

Professor Tyndall has also repeated Dr. Bastian's own experiments with solutions in hermetically-sealed tubes. The latter asserts that by boiling infusions of some animal matter in a flask, whose neck is sealed during the ebullition, and setting aside in a warm place, the previously heated fluid within the hermetically-sealed flasks will, after a variable time, swarm more or less plentifully with bacteria and allied organisms. Professor Tyndall had prepared 139 flasks, containing infusions of every conceivable kind of animal matter, and not one of this cloud of witnesses offered the least countenance to the assertion that the liquid within flasks boiled and hermetically-sealed swarm subsequently more or less plentifully with bacteria and allied organisms.

Professor Tyndall goes on to show that in his opinion the experiments made by Dr. Bastian and others who have supported his views must be defective in some particulars, and he explains how easily such errors may creep into the most apparently exact observations. He also proceeds to discuss the relation of this investigation to the very important subject of the origin of contagious disease.

Since the delivery of this lecture at the Royal Institution there have appeared in the pages of the *British Medical Journal* several letters from Dr. Bastian, Dr. Lionel Beale, and others on the one side, and from Professor Tyndall and M. Pasteur on the other. To the insinuation of error in his experiments Dr. Bastian replies with considerable warmth, and intimates that Professor Tyndall's failure to obtain certain results should not be accepted as proof of the inaccuracy of experiments made by himself and by many most eminent men of science, but is rather to be sought for in the insufficient care with which his (Professor Tyndall's) experiments were conducted. Especially he points out that Professor Tyndall, in reproducing his own experiments, had disregarded certain conditions of temperature which he had laid down. Professor Tyndall clears himself of the charge of inattention by showing how minutely he had attended to every particular in the investigation; and referring to Dr. Bastian's insinuations of the lack of knowledge of the subject which he (Professor Tyndall) had displayed, "With a discipline of twenty-six years in experimental inquiries of no easy kind, I thought it not beyond me to follow the directions thus given (by Dr. Bastian) to the members of the Pathological Society, young and old."

It is not necessary for us to follow the further windings of the discussion. Our object has been only to give an idea of the latest aspect of biological science, and to indicate the probable tendency of future investigation.

NOTE ON MYRRH AND ITS ALLIED GUM RESINS.*

BY W. DYMOCK.

The gum resins I include under this head are, true African myrrh, Arabian myrrh, common African bdellium, scented African bdellium, Indian bdellium, and opaque bdellium. These drugs are brought to Bombay from Africa, Arabia, and different parts of India, for selection and dispatch to suitable markets in Europe, China, and other countries.

The merchants who deal in myrrh and the gums which come from the north-east of Africa and southern Arabia have their chief houses in Bombay, and employ partners or agents at Aden and Makulla; the Aden agents also attend the great annual fair at Berbera on the opposite coast, and exchange English and Indian goods for myrrh, bdellium and other African produce. The bags or bales which contain the myrrh, when opened in Bombay, are found to be made up of 1st, a large proportion of roundish masses of fine myrrh; 2nd, a considerable proportion of small semi-transparent pieces of myrrh of irregular shape; 3rd, numerous pieces of dark coloured myrrh, mixed with bark and other refuse; 4th, a small proportion of an opaque gum resin (*Bdellium opaque* of Guibourt?); occasionally pieces of resin (juniper?) are also met with. In Bombay the contents of the package are sorted; the best myrrh goes to Europe, the darker pieces form a second quality, and the refuse is exported to China, where it is probably used as incense. True myrrh is known in the local market, as karam. The opaque bdellium is called meena harma, and is used for the extraction of the Guinea worm; it is of a yellowish white colour, resembling ammoniacum, with hardly any odour, and a bitter taste.

From Berbera also comes bdellium. In the bales of this drug two distinct kinds are met with, viz., ordinary bdellium and a perfumed kind in small quantities. The latter occurs in irregularly shaped pieces, more or less flat, some of them having fragments of thick bark adherent, but not the birch like bark which adheres to common bdellium. The colour of the gum is dark reddish brown; but opaque yellowish white streaks are frequently met with in the semi-transparent reddish mass which forms the bulk of the drug.

*From the Pharm. Jour. & Trans.

The odour, on fresh fracture, is powerful and pleasant, not unlike a lemon lollipop. The Arabic name is habak hadee; I know of no Indian name. It seems to be considered a kind of bysabole (or bdellium).

From Makulla and Aden another kind of myrrh is received, the Arabian myrrh of the 'Pharmacographia.' The trade name of this drug in Bombay is meetiga; it is mostly sold in India as true myrrh, for which it might easily be mistaken by any one not specially acquainted with drugs. I am assured by the dealers that no true myrrh is ever received from Arabia.

Indian bdellium, as far as I have been able to ascertain, comes chiefly from the Deccan. In general form and appearance it somewhat resembles the African drug, the pieces often having portions of papery bark attached to them; but the colour is different, being greenish, and the odour though similar, is more faint. Its value is one third less than that of African bdellium.

"CHIA," A NEW DIETETIC AND MEDICINAL PRODUCT.*

Dr. J. T. Rothrock, the well-known botanist, furnishes the following article to the *Botanical Bulletin:*

During the past summer my attention was called, whilst in Southern California, to a mealy preparation in popular use among the Indians, Mexicans, and prospectors. On inquiry, I found it was called "Chia." Further examination proved that it was furnished by the seeds of *Salvia columbariæ*, Benth. The seeds are collected, roasted, and ground, in the native way, between two stones. This puts it in the condition in which I first saw it. It is used as a food by mixing it with water and enough sugar to suit the taste. It soon develops into a copious mucilaginous mass, several times the original bulk. The taste is somewhat suggestive of linseed meal. One soon acquires a fondness for it, and eats it rather in the way of a luxury than with any reference to the fact that it is exceedingly nutritious besides. It is in great demand among the knowing ones who have a desert to cross, or who expect to encounter a scarcity of water, and what there is, of bad quality. By preparing it so thin that it can be used as a drink, it seems to assuage the thirst, to improve the taste of the water, and, in addition, to lessen the quantity of water taken, which in hot countries is often so excessive as to cause serious illness. As a remedy it is invaluable, from its demulcent properties, in cases of gastro-intestinal disorders. It also holds a place among domestic remedies, for the same purpose

*Phila. Med. and Surg. Reporter.

that flaxseed occasionally does with us, *i.e.*, a grain of the seed is placed in the eye (where it gives no pain) to form a muscilage by means of which a foreign body may be removed from the organ. I have found it of great service as a poultice. As a matter of archæological interest, it may be noted that quantities of this seed were found buried in graves several hundred years old. This proves that the use of the seed reaches back into the remote past. Indeed, I find several allusions to the name Chia in the second volume of Bancroft's great work on the "Native Races of the Pacific States," pp. 232, 280, 347, 360. *Chianpinoli* appears to have been made by the so-called Aztec races from corn which was roasted and ground as the Chia. From this, however, I conclude that the term Chia was then a generic name appplied to meal derived from several sources. At present the name is almost restricted to the product of *Salvia columbariæ*. Chia was, among the Nahua races of Ancient Mexico, as regularly cultivated as corn, and often used in connection with it.

THE BORAX DEPOSITS OF CALIFORNIA.

Mr. Arthur Robottom, of Birminham, England, contributes to the *Chemist and Druggist* a most interesting account of his discovery of borax in California, and also describes his attempts at the utilization of the deposit. Mr. Robottom has been connected for over a quarter of a century with the tincal trade of Thibet; he has also had large experience with the boracic acid of Tuscany, and was the first to introduce borate of lime from Chili and Peru. Speaking of the discovery of tincal in Nevada, he says:

"Some 16 years ago tincal was found at the bottom of Cleer Lake in Northern California. I got a person to go and report upon it, and he found the supply would be limited. Parties in Nevada, at Fish Lake and Teels Marsh, began making borax from the borate of soda that exists in those districts. Borax at this time (7 years ago) was selling in San Francisco at 28 cents per lb., and every one in Nevada that had any land with only a small deposit of crude borate of soda upon it began making borax, thinking that this price would continue. I had correspondents in Nevada, and was kept well advised of what was doing.

"About three years ago Mr. Wood made another attempt to put up the price of borax to 75*l.* per ton. I then decided to go to the West Indies, Mexico, Nevada, California, Chili, Peru, &c. My object in going to Nevada was to examine the borate of soda deposits. After doing this I went on to San Francisco, and my name appeared in the papers as a borax expert. Many people hardly knew what borax was. I gave and received all the informa-

tion possible. In San Francisco I was waited upon by a Mr. Riddell, a gentleman connected with one of the banks, and a Mr. Dodge. Both these gentlemen held land in the Slate Range, and they asked me to go down and see if borax existed there as in Nevada. I dressed up as a poor miner and got down to Los Angelos, mixed up with miners, teamsters, scallywags, banditti, and others, and led a rough life. My expedition involved considerable trouble, and I had to walk many miles, and live with the friends referred to above, sleeping frequently on the sand, under waggons, in stables, &c., for small shanties only exist about every 12 miles, and there are no other houses, for the country produces nothing but sage-brush for miles. No grass, no trees, a perfect wild, howling wilderness, and in some parts no water for miles. This refers to the road that runs from Los Angelos to Cerro Gordo. You have to strike off this road a distance of 42 miles, and you get to the borax lake. On my first visit there was no house or shanty all the way; now there is one small place, where they keep corn for the mules, named after me, called Robottom's Springs.

"At the lake I met two men, an old Californian miner and a bear hunter, with whom I stopped some time. I found borax to my heart's content. Before going down I had made arrangements to have some of the land transferred to me, and a deed was drawn up to this effect in San Francisco. After taking a good survey of the place I thought I should be worth at least a million or more, for I at once saw that borax could at some future period be got from this lake and put on board a sailing vessel, either in the port of Wilmington, Los Angelos, or at San Francisco, cheaper than from any other known deposit. The crude borate of soda on the surface in some places is 3 feet thick. Then at other parts there is a foot of blue mud just under the crude borate of soda, filled with very peculiar crystals; then below this there is a solid mass of pure borax combined with sulphate of soda. This is the most extraordinary deposit in the whole world, for there are lumps of pure borax from 1 to 4 lbs. each. (I brought a lot home with me). The sulphate of soda, with the borax, was put into warm water, which dissolved the former, and the pure borax remained. I had about a ton of this deposit sent up to San Francisco and on to England, and I have since had a good many shipments.

"The most curious thing in the lake is a reef of carbonate of soda, and near to the reef there are a lot of pyramids of the same product, about 4 feet high and 1 to 2 feet thick. In the centre of the lake there is a ridge of common salt. Between the common salt and the borate of soda there are a few hundred acres of shallow water, very warm, filled with crystals, pink, rather green, and light brown. The water has the appearance of a peacock's tail in some places, and in others it has a pink appearance. I brought some of the water home, and it has, this last week, been handed over to G.

Gore, F.R.S. Boilers and vats have been erected on the land. The crude borate of soda is first put into cow-hide baskets, then put in a dump cart, taken to the boilers and boiled for a certain time. The solution is then run into vats, it crystallises and makes the best borax I ever saw. This, on the market, is called 'concentrated' borax. In that district it never rains; the climate is fearfully hot; the last time I was there it was never under 106°, and sometimes up to 115°, in the shade. Therefore, when the crystal borax is exposed to the sun it becomes almost anhydrous, and much stronger than English refined borax.

"After collecting a lot of specimens, I returned to San Francisco, abandoned the idea of going to Chili, got the deeds for land all in order, and made my way to New York. On getting to England I made several ineffectual attempts to induce makers to work this discovery. At length a company was formed, called 'The Slate Range Borax Company, Limited.' I got Riddell, in San Francisco, to commence borax making in real good earnest, and the bulk of his borax has come from this lake, and now upwards of 120 tons per month are being turned out of this district alone. This is principally from the crude borate of soda after being once crystallised. It is no use working at the native borax or the under surface till the borate of soda is cleared away.

"Now, as regards the supply of borax, I can plainly see that the deposit at Slate Range is tremendous, and when it can be sent to San Francisco or Los Angelos by rail the price must and will come much lower. The next important thing is to find a market for it, for a more useful product is not known. For the last three months I have been trying to find out new uses for it, and the result is marvellous. The next difficulty is to get the shopkeepers to sell it. The chemists and druggists say we give too much for the money, and the grocers say it is an article sold by druggists and not by grocers. If we give a small quantity and allow the druggist to sell dear the demand is limited. At present we sell a dozen penny packets for 8*d*."

THE DIVISION OF POISONS.*

BY WALTER E. BIBBY, PH. C.

As a large number of the medicines prescribed by the physicians of the present day are very poisonous, it devolves upon the pharmacist to exercise the greatest care and caution in compounding prescriptions containing such poisonous substances as strychnia, hydrarg. chlor. cor., arsenious acid, narcotic extracts, etc. It often

* From the American Journal of Pharmacy.

occurs that physicians prescribe these remedies in minute doses for children, aged persons and delicate females ; it is, therefore, exceedingly important that they should not receive a fraction over the quantity prescribed.

The greatest care and attention should be given to this class of prescriptions, so that, when a third is prescribed, a half grain may not be given, which, in all probability, would result very seriously or produce a condition of affairs entirely different from that anticipated by the physician ; moreover, the uncertainty attending the weighing of fractions of grains by ordinary scales, renders it necessary for the pharmacist to first weigh one grain and then divide this into the quantity prescribed, in other words, virtually guess at the quantity.

To remedy this, and at the same time, secure to physicians and pharmacists absolute certainty, I would recommend that trituration of the poisons in common use be made of such a strength that each grain of the trituration shall represent a certain quantity of the poison, and the tituration be made only with sugar of milk. The reasons for using this substance are various. In the first place, sugar of milk is a harmless, hard, gritty, odorless and almost tasteless substance. It is less liable to attract moisture from the atmosphere than any other substance ; in fact, it possesses all the qualities desired for making a perfect trituration. The proportion I would suggest are one grain of the poisonous substance to seven grains of sugar of milk, making in all, eight grains,—the whole to be thoroughly triturated. The process of trituration is too well known to pharmacists to require elucidation in this article, and they are also well aware how important it is to carry out this process in an exact and careful manner.

Now, when a physician writes for a quarter of a grain of arsenious acid, all that is necessary is to weigh two grains of the trituration, and you have the quarter of the grain desired. This method I hold to be the safest in weighing poisons—a method by which very small fractions of grains may be obtained,—and where children, the aged or very delicate are interested, to be one of precision. The physician can also prescribe with a feeling of certainty when using those poisonous substances in this trituration, and he may have the assurance that, when he prescribes the one quarter of a grain, he obtains that amount,—for the reason, that two grains of any substance will turn the beam of an ordinary scale more readily than a quarter of a grain. I have seen scales in some of our first-class stores on which the half of a grain could not be weighed with any degree of certainty, but on which two or four grains could be weighed with accuracy.

Likewise, the pharmacist can be more expeditious in dispensing his order, thereby rendering the sick a prompt, safe and reliable prescription, and one exactly in accordance with the physician's wants.

SAFFRON.*

Either as a medicine, condiment, perfume, or dye, saffron has from a remote period been highly prized by mankind, and has played an important part in the history of commerce. It consists of the dried stigmas of the *Crocus sativus*, a native of Greece and Asia Minor, naturalized in many parts of Europe, and cultivated in Persia and Cashmere. It is a small plant with a fleshy bulb like corm and grassy leaves, much resembling the common spring crocus of the gardens, but blossoming in the autumn. It has an elegant purple flower, with a large orange-red stigma, the three pendulous divisions of which are protruded beyond the perianth Homer selects it for one of the four flowers that adorned the couch of Jove and Juno, which has led to the supposition that the exhilirating qualities of its blossoms were known to the poet:

> Thick new-born violets a soft carpet spread,
> And clustering lotos swelled the rising bed,
> And sudden hyacinths the turf bestrew,
> And flow'ry crocus made the mountains glow.—*Iliad.*

The Latins named it Crocus, from a beautiful youth who was said to have been devoured by the impatience of his love for Smilax, but who was transformed by Hercules into a flower which still bears his name. By chemists, on account of its golden color, it is called *Aurum philosophorum;* by others *Sanguis Herculis*, *Aurum vegetabile*, and for its supposed extraordinary virtues in many diseases it was honored with the title of *Rex vegetabilium* and *Panacea vegetabilis*. The English word saffron is derived from *Zahafran*, the Arabian name for this plant, which is nearly the same in the French, Dutch and German languages.

The best saffron, Pliny tells us, grew in Cilicia, on a mountain called Corycus; the next in quality upon Mount Olympus in Lycia; and the inferior kinds were gathered at Phlegia, in Macedonia. The Sicilian was likewise held in repute at Rome, where, after being steeped in wine, it was used as a perfume and sprinkled about the theatres. The same author mentions that the crocus was never employed in garlands, but that a chaplet of saffron, when worn upon the head, allayed the fumes of wine and prevented inebriety; it was mixed in potations by excessive wine bibbers to enable them to drink more freely without intoxication. The Romans also used saffron in all inflammations, particularly those of the eyes, and it was considered a remedy for ulcerations of the stomach, breast or liver, and was likewise given in coughs and in pleurisy. In India at the present day it is used in medicine as a coloring substance, and in domestic cookery. The Vytians prescribe this article in nervous affections attended with vertigo, and where there appears to

*From the Chemist and Druggist.

be an approach to apoplexy by accumulation of blood in the head. They also believe it to possess considerable virtue in melancholia, hysteria, depressions, and Kistmah Dashum (typhus fever), in which last they suppose it to act as a cordial and restorative. To women, soon after the pains of childbirth are over, an infusion of saffron is frequently administered by the Tamil midwives to prevent fever, to support the animal spirits, and gently to assist in carrying off the lochia. It is, besides, used by the Indian practitioners as an external application in ophthalmia when mixed with a small quantity of pounded Myrobolun Chelmlic and lime juice, and applied around the eye, but close to it. The Arabians class it amongst their Mosebetal (Hypnotica), Mokewyat (Cardiaca), and Muffettehat (Deobstruentia). Used as a dye, a rich yellow-red color is obtained, which, when dried and pure, is of a scarlet hue. Although the use of saffron is diminishing in Europe, all sorts of virtues are attributed to it in the East. With the Rajput warrior, to put on the saffron robe is the sign of "no quarter."

It is now imported into India both from Persia and Cashmere, but into the northwestern provinces from the latter only. Dr. Falconer formed the opinion that saffron could be successfully cultivated in the Himalayas, at heights varying from 6,000 to 6,500 feet above the sea, and that if it were once brought into the market the demand for it would be almost unlimited. Saffron was an article of traffic in the Red Sea in the first century: it was cultivated at Derbend and Ispahan, in Persia, and in Transoxania, in the tenth century, whence it is not improbable the plant was carried to China, for, according to the Chinese, it came thither from the country of the Mahommedans. There is evidence to show that saffron was a cultivated production of Spain as early as A.D. 961; yet it is not so mentioned, but only as an eastern drug, by St. Isidore, Archbishop of Seville in the seventh century. As to France, Italy, and Germany, it is commonly said that the saffron crocus was introduced into these countries by the Crusaders. Porchairs, a French nobleman, is stated to have brought some bulbs to Avignon towards the end of the fourteenth century, and to have commenced the cultivation in the Comtat Venaissin, where it existed down to recent times. About the same time the growing of saffron is said to have been introduced by the same person into the district of Gatmais, south of Paris. During the Middle Ages the saffron cultivated at San Gemignano, in Tuscany, was an important article of exportation from Genoa. That of Aquila, in the kingdom of Naples, was also famous, and was still distinguished in price lists at the beginning of the present century. The growing of saffron in Sicily, which was noticed by Columella, is carried on at the present day, but the quantity produced is insufficient even for home consumption. In Germany and Switzerland, where a more rigorous climate must have increased the difficulties of cultivation, the production of saffron was an object of industry in many localities.

The saffron crocus was most probably introduced into this country by the Romans, from their known attachment to this medicine, and the culture of it was discontinued on their leaving. The earliest accounts we have of its being cultivated in England mention that it was grown near a Roman road running through Essex. It is commonly said that saffron was again brought to England in the time of Edward III., and that Sir Thomas Smith introduced it into the neighborhood of Walden. We find that the corporation of Walden bears three saffron plants in their arms. Their charter was granted in the third year of Edward VI., when it is most probable their arms were also given; and from this circumstance it may be presumed that the town, now called Saffron Walden, was then famous for the cultivation of this plant. Tusser, who resided in Essex in the reigns of Mary and Elizabeth, notices it in his "Five Hundred Points of Good Husbandry," as if it were planted by farmers in general as a part of their produce to be furnished to their landlords.

During the Middle Ages, when saffron was an important article in husbandry, the severest enactments were not only made, but were actually carried into effect, against those who were guilty of sophisticating saffron, or even of possessing the article in an adulterated state. Thus, at Pisa, in A.D. 1305, the *funducarii*, or keepers of the public warehouses, were required by oath and heavy penalties to denounce the owners of any falsified saffron consigned to their custody. The Pepperers of London, about the same period, were also held responsible to check dishonest tampering with saffron.

In the year 1550 Henry II., King of France, issued an edict for the express purpose of preventing such frauds, the following extract from which will show some of the methods employed to impose on the public in the sale of this article. "For some time past," says the edict, "a certain quantity of the said saffron has been found altered, disguised, and sophisticated by being mixed with oil, honey, and other mixtures, in order that the said saffron, which is sold by weight, may be rendered heavier; and some add to it other herbs similar in colour and substance to beef over-boiled and reduced to threads, which saffron thus mixed and adulterated cannot be long kept, and is highly prejudicial to the human body; which, beside the said injury, may prevent the above said foreign merchants from purchasing it, to the great diminution of our revenues, and to the great detriment of foreign nations, against which we ought to provide." The authorities in Germany were far more severe. A *Safranschau* (saffron-inspection) was established at Nuremburg in 1441, in which year 13 lbs. of saffron was publicly burnt at the Schonen Brunnen, in that city, In 1444, Jobst Findeker was burnt, together with adulterated saffron. And in 1456, Hans Kolbele, Lienhart Frey, and a woman, implicated in falsifying saffron, were burned alive. The *Safranschau* was still in vigour as late as 1591;

but new regulations for the inspection of saffron were passed in 1613.

The true saffron crocus is that which grows and blossoms in the autumn, of a purplish colour and a pleasant scent. At the proper season the owner of the fields collects a number of hands, who commence gathering the flowers early in the morning, and throw them by handfuls into baskets; the pistil shrinks when the sun becomes powerful, therefore the gathering is discontinued about eleven o'clock; and the flowers are carried to a building, where the stigma and a portion of the style are carefully picked out, and the rest of the flower is thrown away. A mass of these stigmata, some inches in thickness, is placed in sheets of paper over a hair-sieve; other sheets of paper and weights are placed on the top, and the whole is roasted over a small kiln. This produces a cake of saffron, but that which is not so prepared, but merely dried in the sun, is the finest, and is called hay saffron. The gathering takes place in fine bright weather, and used not to be stopped even on the Sabbath day, the infraction of the day of rest being permitted in this occupation. It is grown in Essex and Cambridgeshire. Saffron is also brought from Sicily, France, and Spain: the English is, however, the best. In France the flowers are collected at the end of September or in the beginning of October. The stigmas are quickly taken out, and immediately dried on sieves over a gentle fire, to which they are exposed for only half an hour. According to one of the chief authorities it requires 7,000 to 8,000 flowers to yield 500 grammes (17½ ounces) of fresh saffron, which by drying is reduced to 100 grammes. Notwithstanding the high prices of saffron, its cultivation is by no means always profitable, from the many difficulties by which it is attended. Besides occasional injury from weather, the bulbs are often damaged by parasitic fungi. The most considerable quantity is now produced in Lower Arragon, Murcia, and La Mancha, in Spain, and brought into commerce as Alicante and Valencia saffron. The quantity of saffron exported from Spain in 1864 was valued at 190,062*l.*; in 1865, 135,316*l.*; in 1866, 47,083*l.* The drug was chiefly exported to France French saffron, which enjoys a better reputation for purity than the Spanish, is cultivated in the arrondissement of Pithiviers-on-Gatmais, in the department of the Loiret, which district annually furnishes a quantity valued at 1,500,000 (60,000*l.*) to 1,800,000 francs. The cultivation is carried on by small peasant-proprietors.

In Austria, Maissau, northeast of Kreuss-on-the-Danube, still produces excellent saffron, though only to a very small extent: the district was formerly celebrated for the drug. Saffron is produced in considerable quantity in Ghayn, an elevated mountain region separating Western Afghanistan from Persia. A very little is collected at Pampur, in Kashmir, under heavy imposts of the Maharaja. It is also cultivated in some districts of China. Finally, the culti-

vation has been introduced into the United States, and a little saffron is collected by the German inhabitants of Lancaster county, Pennsylvania. But in almost all countries the cultivation of saffron is on the decline, and in very many districts it has altogether ceased. It seems scarcely credible that Lord Bacon should attribute any sprightliness possessed by the English people to the liberal use of saffron in their sweetmeats and broths; and the old proverb alluding to one of a merry temper, "Dormivit in sacco croci," "He hath slept in a bag of saffron," seems likely to become obselete.

ATTAR OF ROSES.

According to a writer in the *Chemist and Druggist*, the chief locality for attar of roses, and that by which European commerce is almost exclusively supplied, is a small tract of country on the southern side of the Balkan Mountains, in the Turkish province of Rocundia. The principal seat of trade is the town of Kizanlik, in the fine valley of the Tunja. The other important districts are those of Philippopoli, Eski, Zaghra, Yeni Zaghra, and Tchirpan, which, with Kizanlik, were estimated in 1859 to include 140 villages, having 2,500 stills. The Rose is cultivated by Bulgarian and Turkish peasants in gardens and open fields, in which it is planted in rows as hedges, three to four feet high. The best localities are those occupying southern or south-eastern slopes. Plantations in high mountainous situations generally yield less, and the oil is of a quality that easily congeals. The flowers attain perfection in April and May, and are gathered before sunrise. Those not wanted for immediate use are spread out in cellars, but are always used for distilling the same day. The apparatus is a copper of the simplest description, connected with a straight tin tube, cooled by being passed through a tub fed by a stream of water. The charge for a still is 25 to 50 lbs. of roses, from which the calyces are not removed. The first runnings are returned to the still; the second portion, which is removed in glass flasks, is kept at a temperature not lower than 60° F. for a day or two, by which time much of the oil, light and fluid, will have risen to the surface. From this it is skimmed off by means of a small tin funnel having a fine orifice, and provided with a long handle. There are usually several stills together. The harvest during five years, 1867-71, was reckoned to average somewhat below 400,000 meticals, or 4,226 lbs. avoirdupois; that of 1873, which was good, was estimated at 500,000 meticals, value about 70,000*l*. The rose grown is the *Rosa damascena*, a tall shrub with semi-double light-red (rarely white) flowers of moderate size, prodoced several on a branch, though not in clusters. Formerly attar of rose came into commerce by way of

Austria; it is now shipped from Constantinople. From the interior it is transported in flattened round tin bottles, called *kunkumas*, holding from 1 to 10 lbs., which are sewn up in white woollen cloth. These sometimes reach this country, but more commonly the attar is transferred at Constantinople to small white glass bottles, ornamented with gilding, imported from Germany.

The particular variety grown in England for medicinal use is known in the English gardens as the cabbage rose, but other varieties are cultivated for similar purposes on the Continent. The rose cultivated at Pateaux, near Paris, for druggists' use, is called the *Rose de Pateaux*, whilst the *Rosa pallida* of the older English writers on drugs was called the damask rose, but that name is now applied at Mitcham to *Rosa Gallica*, which has very deep-coloured flowers. The cabbage rose is cultivated in England to a very small extent, rose-water which is made from its flowers being procurable of a better quality and at a lower cost in other countries, especially in the south of France. At Mitcham, whence the London druggists have long been supplied, there were very recently from eight to ten acres planted with this rose, but a supply is also derived from the market gardens of Putney, Hammersmith and Fulham. The attar of roses is of no medicinal importance, but serves occasionally as a scent for ointments. Rose water is sometimes made with it, but it is not so good as that distilled from the flowers. Attar is much used in perfumery, but still more in the scenting of snuff.

CHROMIUM GLUE AND ITS APPLICATIONS.

This consists of a tolerably concentrated solution of gelatine, to which has been added for every five parts of gelatine one part of chromate of lime in solution. This mixture has the property, on exposure to light, of becoming insoluble in water, a result due to the partial reduction of the chromic acid to a lower degree of oxidation; this property has already been utilized to a considerable extent in several of the recent processes for photo-lithography and photo-engraving.

Schwarz proposes this combination as a cement for glass vessels which have been broken.

The surfaces of the vessel to be cemented are coated as uniformly as possible with the freshly prepared glue, and are then pressed firmly together and held in this position by means of thread.

The vessel in then exposed to the light for several hours, at the expiration of which time the operation is complete.

Boiling water does not cause the article thus repaired to separate, having no effect upon the new combination, and the joint is hardly perceptible. Valuable vases or other articles, instead of being

disfigured by the ordinary mastic cement, should be mended by this process.

It has been suggested that microscopic slides may be finished with this material, with advantage over the ordinary asphaltum varnish.

Chromium glue may be also utilized in the manufacture of water-proof cloth and paper impermeable to moisture. The fabric to be treated should be stretched upon a frame and immersed two or three times in the preparation, and exposed to the sun. Damp-proof paper may be prepared by simply brushing over the surface with a thin solution prepared as above.

A singular application of this combination of glue and chromium was made during the Franco-German war in 1870. At that time the well known pea-sausage, one of the most important articles of food in the army, was prepared daily in thousands of skins. The preparation of the interior portion caused little difficulty, but so many skins were not easily supplied. As the supply fell short a substitute was sought in parchment paper—prepared by dipping, for a short time, blotting paper in sulphuric acid, then washing and drying it. This paper was used for the fabrication of sausage skins by doubling the sheet into the form of a cylinder and pasting the edges. But no glue or gum can resist the effect of boiling water in which the sausage has to be cooked, and so the artistic sausage skin fell asunder. Dr. Jacobsen suggested the use of chromium glue as a cement; the gelatine intended for the sausage skins was mixed with a minute portion of bichromate of potassium, and the parts cemented exposed for a short time to the sun. The experiment succeeded perfectly, for the artificial skin endured boiling water exceedingly well.

The number of sausage skins prepared in this way by the chemical operation of light amounted to many hundred thousands. —*Laboratory.*

Estimation of Vanillin in Vanilla.—F. Tieman and W. Haarmann exhaust finely cut vanilla with ether, the solution is somewhat concentrated by evaporation, and then repeatedly agitated with two portions of a mixture consisting of equal volumes of water and concentrated solution of sodium bisulphite. The mixed aqueous solutions, containing the vanillin, are treated with some sulphuric acid, the liberated sulphurous acid is expelled by a moderate heat, and the vanillin extracted by agitation with ether. On the evaporation of the ether, and drying over sulphuric acid, pure vanillin is left behind. The authors obtained, by this method, from Mexican vanilla 1·69, from Bourbon vanilla 1·91 and 2·48, and from Java vanilla 2·75 per cent. of vanillin, which, in the two last named varieties, is associated with an oil of a disagreeable odor, whereby its flavor is modified.—*Am. Jour. Pharm. No.* 47, *from Ber. Chem. Ges. in Am. Jour. Pharm.*

Editorial.

ADULTERATION OF SAFFRON.

The simile "As dear as saffron," has lost much of its force, and really suggests no such high figures as in the days of our forefathers. Yet still the *Aurum philosophorum* commands a price sufficiently great to make adulteration a very remunerative operation to those whose consciences will allow them to pursue so nefarious an occupation. The sophistication of saffron has been carried on for many hundreds of years, and much ingenuity has been displayed in the preparation of substances to resemble the drug. These frauds have not always been perpetrated with impunity. During the fifteenth and sixteenth centuries the German authorities carried out their adulteration laws with a degree of severity which was certainly calculated to lessen the evil. Their mode of punishment was peculiar, and effectually prevented the convicted parties from further slips from the path of rectitude. The unfortunate dealer, and those who had taken part in the falsification, were, with the adulterated saffron, together secured upon a heap of faggots and publicly burnt. Of this, and other matters relating to the early history of saffron, there will be found an interesting account in another part of this journal.

Our present purpose is to call attention to an adulteration which, though old, is now so largely practised as to call forth a cautionary circular from a French firm doing a large saffron trade. The admixture is that of calendula flowers, dyed with Campeachy wood, and known to the trade as "feminelle"—a term probably derived from *fuminella*, the name of a Brazilian plant which was formerly used for the same purpose. Saffron containing from thirty to forty per cent. of these marigold flowers has been met with. The adulteration may be readily detected by rubbing upon a piece of white paper one of the supposed stigmas. The genuine flowers leave a rich yellow streak; the *feminelle*, a violet or reddish mark. When immersed in distilled water the true saffron retains most of its colour, but, after some hours, the calendula loses most of its artificial tint. A mixture of honey and barytes, coloured with one of the anilin reds, is also used to increase the weight of saffron. By shak-

ing the drug with distilled water the barytes may at once be detected, as it rapidly sinks to the bottom of the vessel. Chalk is sometimes employed instead of barytes, but may be separated by the same means.

At one of our examinations of pharmaceutical students, a sample of so-called American saffron was submitted for recognition, and we were somewhat surprised to find that most of the candidates took it to be the genuine article, and, on being told that this was not the case, said that this was the only saffron with which they were acquainted, or had ever seen used. We are well aware that American saffron is very largely used instead of that derived from the crocus, but had no idea that the substitution had reached that degree which this circumstance would lead us to infer. The saffflower, *carthamus tinctorius*, from which American saffron is obtained, is in no way botanically related to the *crocus sativus*, and, except in the matter of colour, we very much question whether the drugs they furnish have any relationship, either therapeutical or otherwise. We certainly think that this wholesale substitution should be strongly discountenanced, for though people now-a-days are sceptical in regard to the medicinal properties of saffron, the remedy has much ancient testimony in its favour, and still retains a place in our pharmacopœia.

REMARKABLE CASE OF POISONING BY STRYCHNIA.

It is well known that similar quantities of strychnia produce on different individuals effects varying widely in degree. In some cases there is a striking tolerance of the drug, while, in others, there is a susceptibility equally strongly marked. Instances of recovery from poisoning by quantities as great as seven grains have been recorded; on the other hand, half a grain has sometimes proved fatal. For legal purposes it is necessary to determine—at least approximately—the smallest amount capable of producing death in man, and authorities in medical jurisprudence have generally stated this to be half a grain.

Taking this fact into consideration, the case of poisoning which occurred recently at Brampton is quite remarkable, if not altogether without parallel. The circumstance appears to have escaped the

notice of our medical contemporaries, but its importance demands recognition, as tending to correct if not altogether revolutionize some of our ideas regarding the toxicology of strychnia.

A lady, suffering from general debility, applied for advice at the office of a physician of Brantford. She was told that her lungs were weak, and was directed to take cod liver oil, together with a mixture which the doctor would send to her residence during the course of the afternoon. The medicine was prepared by the doctor himself, and is said to have been composed as follows: Citrate of iron and quinine, 80 grains; solution of strychnia, B.P., 40 minims; water to 2 ounces. The mixture was dispensed *secundum artem*, and particular attention appears to have been given to correct measurement, as we are told, in evidence, by the doctor, that the two-ounce phial was full, as the contents pressed out when the cork was put in its place. About five o'clock, p.m., the medicine was sent to the patient, and, in the presence of her mother, she at once proceeded to measure out a teaspoonful—the dose directed. Shortly after taking this she complained of a strange feeling, which she described as being as if she were "all puckered up." Convulsions ensued, the doctor was called, and he at once accounted for the attack by stating that he "had given her what was equal to about forty drops of nux vomica in a mixture." The violence of the spasms was controlled by chloroform, and another medical man was sent for. However, despite all endeavours, the unfortunate patient continued in convulsions until half-past seven, when she expired on the floor where she had lain when first seized.

The evidence at the inquest unquestionably goes to prove that death was to be attributed to the effects of strychnia. There was no direct evidence that more than the quantity intended had been taken; but, at the inquest, the remaining liquid was compared with that in another bottle from which three teaspoonfuls had been taken and found to be of about similar bulk. This fact may or may not be accepted as indicating the quantity taken, as there is no knowing whether or not a portion of the original contents was squirted out when the doctor was forcing in the cork; or any portion was spilled when the patient was pouring out the medicine; or that any part had disappeared subsequently. One point appears plain, viz: that the patient was very particular in apportioning the medicine, as she had been cautioned as to its dangerous character, and, feeling ner-

vous after taking the dose, she appealed to the servant for her opinion as to whether she thought more than a teaspoonful had been measured.

In either case, the amount of strychnia taken would not be less than 1-48th of a grain, or more than 1-16th. The two-ounce mixture is said to have contained 40 minims of solution of strychnia, or ¼rd of a grain of the alkaloid; each dose of one teaspoonful would therefore equal 2½ minims, or 1-48th of a grain. The smallest dose stated in the Pharmacopœia is double this, or 5 minims; the largest, 10 minims—equal respectively to 1-24th and 1-12th of a grain of strychnia. If, in less than three hours, 1-48th, or at most 1-16th of a grain proves fatal, it is time our Pharmacopœia, as well as all others, were altered.

The question "Shall we dispense our own medicines?" was lately discussed by a medical contemporary. We almost regret that in this case the physician concluded to do so, though we cannot complain that the medicine was not very effective. Had it been otherwise, and a druggist had prepared the mixture, we are sure that the mere suspicion of doubt which surrounds this otherwise very plain case, would have been removed. The public, and especially the medical profession, would, very properly, have had the remainder of the mixture analysed, and also the *Liquor Strychniæ* from which it was prepared. This done, the present shadow of uncertainty would have been dispelled and a new fact in medical jurisprudence established. It is also possible that other results would have followed.

The verdict of the jury is quite as remarkable as the case itself: "That the said ———————— on the 24th day of March, 1876, came to her death through inadvertently taking an overdose of medicine containing strychnia, in excess of the quantity prescribed by her physician, from which cause she died."

"'Is this law?'
"'Ay, marry is't; crowner's-'quest law.'"

WHAT THEY SAID OF GLAUBER.

The character of the illustrious discoverer of the *Sal Catharticus Glauberi* was not altogether without blemish, and some people

were spiteful enough to say so in print. Not the least of these defamers was Dr. Robert Godfrey, who, in 1674, wrote a book, of which a large portion is devoted to abuse of Johannes Rudolphus Glauberus. Of this book Mr. Joseph Ince gives a most interesting notice in the *Chemist and Druggist*, which, as may be expected, is not at all calculated to enhance the reputation of the departed alchemist. Although the author of this book was a doctor he appears to have held views not the most favourable to the profession. This is, in some measure, to be accounted for by certain recollections of early wrongs, which, rancouring in the mind, gave rise to much bitterness of feeling and expression. Thus, we are told that "his most dear father was killed *secundum artem*, through the deceit of the physician and apothecary, by taking 'a preventive purge;' and the author himself in his younger days had his vitals much weakened by poisonous and debilitating methods." No wonder, then, that he waxed sharp against the originator of the *sal mirabili*, whom he regarded as a knave, fool, and madman. The reviewer tells us that Glauber is said to have sold receipts for gaining wealth when he was as poor as the exchequer of a bubble bank, cloaking his deceit in whining religious phrases, and being altogether unsatisfactory. Many other frauds were perpetrated, and the sufferers thus relieve themselves. "One saith: 'Alas for me, who have spent so much money on Glauber, and have not received, indeed, one pin's worth of profit or gainful retribution from his arts.' A second: 'But all things in great quantity being bought for the process in labouring, and all things being effected according as I was commanded, I received nothing again from thence but an utter loss of my expenses.' A third: 'Behold what incredible naughtiness is in Glauber; he cannot perform the concentration of which he boasted.'" It is also asserted that "a quick-witted and confident unlearned junior chymist ventured on Glauber's Mineral Work, and experienced condign dissatisfaction." Last of all comes Oliver Cromwell, who, with his own hand, inscribed in a copy of Glauber's works: "Id sayde Glauber was an arrant knave. I doo bethinke me he speaketh of wonders whiche cannotte be accomplished, nevertheless itt ys lawfull for man too the endeavoer."

In thus bringing to light the statements of Glauber's detractors, Mr. Ince has done little harm to the reputation of the alchemist of Amsterdam, but still he thinks it necessary to counteract any ten-

dency in that direction by quoting from Dr. Paris a most deserved tribute, in which some of Glauber's discoveries—as the use of muriatic acid in scurvy; the production of pyroacetic acid; its identity with vinegar; and also the invention of the apparatus wrongfully attributed to Woulfe, are spoken of. We could enumerate many other of Glauber's labours which have been a great benefit to science and the world generally, but would only say with Brande, "There is no author, contemporary with Glauber, who has written so much to the purpose, and in whom we find such abundant anticipations of modern scientific improvements."

PHARMACEUTICAL ASSOCIATION OF THE PROVINCE OF QUEBEC.

The annual examinations in connection with this body were held on Tuesday and Wednesday, April 18th and 19th, at the rooms of the Association, Lagauchetiere street, Montreal. The Board of Examiners was composed of the following gentlemen: Messrs. N. Mercer, H. F. Jackson, A. Manson, J. D. L. Ambrosse, and H. R. Gray. Fourteen candidates came up for the examination for "Certified Clerk," of whom the following eight passed. The names are given in the order of merit:

R. W. Williams.	G. W. Cook.
J. R. Wright.	D. W. Kirkland.
F. Morris.	G. H. Bourdon.
J. LaRoche.	H. Lamoureux.

For the degree of "Licentiate in Pharmacy" two gentlemen entered, and one of these, Mr. F. C. Saunders, was successful in passing. Six of the applicants for the minor examination, and one for the major, were referred back for further study.

Editorial Summary.

COMPOSITION AND ACTION OF CROTON CHLORAL.—A late number of the *British Medical Journal* contains an abstract of a paper by Dr. Oscar Liebreich, which originally appeared in the *Deutche Medicinische Wochenschrift* and from which we gather the following statements regarding croton chloral: From the experiments of Kramer and Pinner it appears that croton chloral contains two more atoms of hydrogen than was supposed, and is, in fact *butyl-chloral.* Its physiological action is very constant. In animals, including man, anæsthesia commences at the head, while reflex action can still be excited on the limbs. Doses of butyl-chloral merely sufficient to affect the head do not essentially affect the pulse and respiration. This fact suggests the applicability of this agent in neuralgia and also for head operations. In sufficiently large doses to produce fatal results the respiration ceases before the pulse. Chloral causes death by interfering with the cardiac ganglia; butyl-chloral, by its action on the respiratory centre: and as in cases of chloral poisoning, the heart may be stimulated by strychnia, so may artificial respiration be similarly applied in poisoning by butyl-chloral. The duration of the stages in butyl-chloral narcosis is about two-thirds less than that produced by chloral, and is also less than that by morphia. One of the most useful properties of the former is that of diminishing sensibility before producing narcosis. It may be given with advantage in painful affections of the teeth, and in neuralgia. Fifteen grains produced complete relief, lasting generally for two hours. Dr. Liebreitch has experimented on the mode of administering butyl-chloral, and finds the alcoholic solution ineligible. The following form is employed: butyl-chloral hydrate, 5 to 10 parts; glycerin, 20 parts; distilled water, 130 parts. The mixture requires to be shaken when used, and should be taken after meals, and followed by a copious draught of water. The dose is half an ounce, followed in five minutes by a second, and, in ten minutes by a third. It is well to begin with a small dose, so as to avoid producing hypnotism—that is when the anæsthetic effect only is desired. From 15 to 45 grains of butyl-chloral, taken at bedtime, will be required to produce sleep.

STAINING OF WOOD SECTIONS.—Mr. M. H. Stiles furnishes to the *Pharm. Jour. and Trans.* an extract from an original paper published in the *Monthly Microscopical Journal* for March last, and in which the following process for staining wood sections is strongly recommended:—"Sections of wood usually require bleaching before

staining. A weak solution of chloride of lime—¼ oz. to a pint—forms an excellent bleaching liquid; after removal from this the sections are soaked in a solution of hyposulphite of sodium—ʒj to ʒiv—for an hour, and then washed with water for several hours, changing frequently; previous to being stained they must be placed in rectified spirit for a short time. Aniline red and aniline blue are the colours employed. The red staining fluid consists of a spirituous solution of magenta (rosaniline acetate), ½ grain to the ounce; the blue dye is prepared by dissolving ½ grain of pure soluble blue in one drachm of distilled water, then adding ten minims of dilute nitric acid and sufficient spirit to measure two ounces. The time required to stain different tissues varies; from 20 to 40 minutes' immersion in the dye is usually sufficient, but in all cases the sections should be frequently examined to avoid over-staining. After removing the dye, wash the sections several times with spirit, drain them, and then soak them in oil of cajuput; in an hour pour off the oil, drain, and add turpentine, changing the latter before mounting. Wood sections presenting varieties of tissue can be stained in two colours by first treating with magenta, washing with spirit, then soaking in the blue dye for a few minutes, again washing with spirit and afterwards with oil of cajuput and turpentine as previously directed. In a tranverse section of a stem double-stained in this manner, the vessels, wood cells, and liber tissue will be more or less red; the pith, medullary rays, and cellular tissue of the bark blue or violet. The use of oil of cajuput for this purpose is believed to be entirely new."

Decomposition of White Precipitate by Iodine.—In a paper read by Professor Fluckiger before the Berlin Chemical Society (Berichte viii, p. 1619 in *Pharm. Jour. and Trans.*), attention is directed to a curious decomposition, previously pointed out by Schwarzenbach. If three molecules of white precipitate be mixed with four of iodine, and the mixture allowed to stand quietly, it soon puffs up and decomposition of the precipitate results, with formation of yellow iodide of mercury and of iodide of nitrogen, which, in turn, also breaks up. If a few grains only are operated upon the experiment may be performed without danger. An interesting modification may be made by mixing in a small flask 2·26 parts of precipitate, 1·52 parts of iodine, and 6·5 parts of water. Decomposition takes place at once, and manifests itself by incessant crackling, which lasts for hours. This is caused by bubbles of nitrogen which may be collected by fitting to the flask a delivery tube. The remaining products are sal ammoniac, mercuric chloride and mercuric iodide. With alcohol, instead of water, the action is much more energetic.

COMPOSITION OF VASELINE.—Since the original publication of the paper on Vaseline, by Mr. Moss (see this journal, p. 348), the author has continued his examination, chiefly with a view of confirming the conclusions first arrived at, viz : that vaseline is a mixture of paraffins. An ultimate organic analysis was made, giving the following result : Hydrocarbons (paraffins ?), 97·54 per cent. ; moisture, 0·5 ; and ash 0·05 per cent. One ounce of vaseline boiled successively with absolute alcohol lost only 66 grains of a substance melting at 29°.5 C. Vaseline itself melts at 37° C. Under the microscope it was found to contain numerous minute crystals, and it is probable that if exposed to a low temperature the whole mass would become crystalline. The manufacturers make statements to the contrary, probably to remove any suspicion of irritation which might be produced by the edges of the crystals when in contact with a sensitive surface. The name *Gelatum Petroleum* has been suggested for this substance, but Mr. Moss takes exception to the Latinity as well as the defective sense of the term, and proposes the designation *Saxoleum inspissatum purificatum* as being more appropriate.

RAPID FILTRATION THROUGH PAPER.—Manufacturers of filtering paper have long taken advantage of the fact that paper which has been dampened and then frozen is thereby rendered much more open in texture. Pharmacists might also profit by this, as rapid filtration is often desirable, and a few sheets of extra porous paper would often be found useful. We need scarcely say that the duration and severity of our winters are usually such as afford opportunity for experiments of this kind, and no difficulty will be realized in preparing a small stock of paper for use during the few months of summer. Careful bookkeepers, who prize a good article of blotting-paper, might also turn this suggestion to their purpose. Another fact not generally known may be stated. We give it on the authority of Dr. Fleitmann *(Jour. de Pharm. et de Chim.)* He says that filtration is much more rapid through thick than thin filtering paper, and through double paper almost twice as rapid as through that which is single. This observation, however, only holds good in regard to filters in close contact with the sides of the funnel or supporting surface. In the case of folded filters, or plain ones placed in a fluted or ribbed funnel, the process will, of course, proceed most rapidly through that medium which affords the least resistance.

COTOIN, A CONSTITUENT OF COTO BARK.—M. J. Jobst (*Neues Repert.*, in *Pharm. Jour. and Trans.*, March 25th), has succeeded

in isolating from coto bark a crystallizable principle in appearance resembling gallic acid ; possessing, in a high degree, the biting taste of the bark ; difficultly soluble in cold water, more soluble in hot water ; readily soluble in ether, chloroform, alcohol, and carbon bisulphide ; benzine and petroleum naphtha dissolve it less easily. From an alcoholic solution it may be recovered in large sulphur-yellow poisons. The author assigns to this substance the following composition ; $C_{21}H_{20}O_6$. The aqueous solution is neutral, but reduces, in the cold salts, of silver and gold. Basic acetate of lead produces a very yellow precipitate ; the neutral acetate does not produce any change.

MEDICATED ICE.—Dr. E. Martin *(Lancet)* recommends medicated ice as a topical application. This form of medication is particularly adapted to certain scarlatinal affections of the throat, in young children, who cannot, and who generally dread and will not permit the use of the brush or spray. In most cases, however, they will greedily suck bits of ice. The ice may take any form, but a cylindrical one is said to be convenient. A large test tube immersed in a mixture of pounded ice and salt will be found to make a good mould. A momentary dip in hot water releases the cylinder of ice. Three formulæ are recommended : (1) Sulphurous acid, half a drachm ; water, seven and a half drachms. (2) Chlorate of potassium, a scruple ; water, an ounce. (3) Solution of chlorinated soda, half a drachm ; water, one ounce.

PRECIPITATION OF QUINIA FROM THE SULPHATE.—Mr. J. W. Lloyd (*Am. Jour. Pharm.*) notes a fact not generally known to those who have had no experience in precipitating the alkaloid from any of the salts of quinia. The solution of the salt should be kept at as low a temperature as possible—say 50° F.—and the water used for washing should also be of this temperature. The quinia, thus precipitated, is in the form of a friable powder. If the temperature is much higher the alkaloid agglutinates into a resinous mass. In the preparation of citrate of iron and quinia it is also recommended that the quina be added to the cold citrate solution ; not at the temperature of 120° F., as stated in the U. S. P. directions. It is said that solution may be thus more readily effected.

PRESENCE OF AMMONIA IN PHOSPHORIC ACID PREPARED BY IODINE.—Professor Babcock, editor of the *Laboratory*, has examined a number of samples of phosporic acid prepared by the use of iodine

and bromine, and, as was expected, found them to contain traces of ammonia, corresponding to but little more than one grain of phosphate of ammonium in a fluid ounce of the U. S. P. dilute acid. The author states that this impurity cannot be avoided, but the amount of ammonia is so small that it may be practically disregarded. The *American Journal of Pharmacy* for March contains a paper on this subject, and the conclusions arrived at by Mr. H. Trimble, the author, are similar to those given above.

ACTIVE PRINCIPLE OF VERATRUM VIRIDE.—Mr. Charles Bullock (*Am. Jour. Pharm.*, April), gives in detail the results of a series of experiments made in order to determine whether veratrum viride contains any alkaloid other than jervia. The conclusion arrived at is that jervia is the only alkaloid present, and that the so-called veratroidia is a mixture of jervia with a light colored resin. The larger the amount of this resin the greater will be the proportion of jervia taken up by ether. The different physiological effects of jervia and veratroidia are also attributed to the presence of the resin.

EPSOM SALT TURNED TO A NEW USE.—It is stated by Dr. Frank that one of the principal uses of sulphate of magnesia is that of being employed to give a body and weight to cotton fabrics. The fabric is soaked in a saturated solution of the salt and then dried. This plan is, principally, practised in England, and the poorer cottons only are subjected to such treatment. Owing to impurities in the sulphate, the fibre of the cotton is, to some extent, injured. Some goods were examined which lost over fifty per cent. in weight by washing, most of this being Epsom salt.

COMPOSITION OF PERSIAN OPIUM.—Mr. W. D. Howard, (*Pharm. Jour. and Trans.*), examined a sample of opium, sent to England as being perfectly pure, and found its composition to be as follows: Morphine, (crystallized from alcohol), 10·40 per cent.; codeine, (anhydrous), 0·29; narcotine, 2·50; thebaine, 0·57; cryptopine, 0·09; papaverine, trace. The opium was of light brown colour, and had been collected without the excessive use of oil.

EXPLOSIVE MIXTURE OF CHROMIC ACID AND GLYCERIN.—A prescription requiring about 8 grains of glycerin to be mixed with 62

grains of glycerin was recently attempted to be dispensed in a pharmacy at Paris. Upon shaking the bottle in order to make the mixture—the chromic acid having been previously dissolved in a little water—a violent explosion took place, fortunately without serious consequences.

CORALLINE TEST-PAPER.—Dr. Waller proposes a new test-paper, made by soaking white paper in solution of coralline. Alkaline liquids develop a beautiful red color, and the test is said to be very sensitive. Acid also produces a change of color, but the yellow color produced is not very characteristic.

FEMALE STUDENTS.—There are at present 171 female students attending the St. Petersburg medical schools; of these 102 are of noble birth. At the Philadelphia College of Pharmacy there are also two female students.

CACHETS DE PAIN.—Mr. H. P. Lechler, *(Am. Journal Pharmacy*, condemns these wafer discs as being very tedious and troublesome to make, and still more difficult to administer successfully. He thinks the cachets will soon only be referred to as things of the past.

Varieties.

ARTIFICIAL LIME-JUICE.—A very satisfactory preparation, very much like the veritable, can be made as follows:

R. Acid citric	ʒ x.
Potass. carb	grs. xlv.
Sachh. alb	℥ i jss.
Aqua	Oj.

Dissolve, add the peel of a lemon, infuse for twenty-four hours, and strain through a hair sieve. This preparation will retain its composition and flavor if kept in a cool place. For lime-juice cordial, digest fresh and dried lemon-peel, of each ℥ i j., and fresh orange-peel ℥ i., in a gallon of proof spirit for a week, strain and press, and add water q. s. to reduce it to desired strength, and lump-sugar 3 lbs. to the gallon. The addition of a little orange-flower or rose-water improves the flavor.

Dangers of Absorption of Phenic Acid.—The carelessness with which non-professional journals take up certain popular receipts is not always without its dangers, and especially since these often come into the hands of children. For instance, there appeared lately in one of the public prints an article upon the poison of vipers, which recommended that carbolic acid should immediately be introduced within the wound, the acid to be mixed with alcohol *in the proportion of two to one.* Observe the off-hand manner in which a toxic agent is spoken of, as if it were the most inoffensive thing in the world. In order to try the experiment, a cat was selected upon whose skin, denuded of hair alone, a saturated solution of carbolic acid in alcohol, mixed with an equal quantity of water, was rubbed. This produced no effect; but when the same solution was rubbed into a scratch upon the nose two or three times, the animal immediately fell into convulsions, and very shortly succumbed. Prussic acid could not have acted more promptly. The moral of this experiment is obvious.—*L'Abeille Medicale, No.* 3, 1875; *from Medical Times.*

Chloride of Lead as a Deodorizer and Disinfectant.—Dr. R. H. Goolden calls attention (*Lancet*, Dec. 11, 1875), to the value of chloride of lead, which he says is the most powerful and economical deodorizer and disinfectant. To prepare it for use he directs to take half a drachm of nitrate of lead, dissolve it in a pint or more of boiling water, then dissolve two drachms of common salt in a bucket of water, and pour the two solutions together; allow the sediment to subside. The clear supernatant fluid will be a saturated solution of chloride of lead. A cloth dipped in this solution and hung up in a room will sweeten a fetid atmosphere instantaneously, or the solution thrown down a sink, water-closet, or drain, or over a heap of dung or other refuse, will produce a like result. Even the tarnishing of gold and silver plate may be prevented by a rag dipped in the solution being hung up in a room or window where it is exposed. He relates some striking instances of the instantaneous and efficient action of this preparation.—*Med. News and Library.*

To Destroy Household Pests.—For the destruction of indoor pests, hot alum-water is said to be unfailing as an insecticide. It will destroy red and black ants, cockroaches, spiders, bugs, and all the crawling pests which infest our houses. Two pounds of alum dissolved into three or four quarts of boiling water; let it stand on the fire till the alum disappears; apply it with a brush, while nearly boiling hot, to every joint and crevice in closets, bedsteads, pantry-shelves and the like. Brush the crevices in the floor of the skirting or boards, if you suspect that they harbor vermin. If, in whitewashing a ceiling, plenty of alum is added to the lime, it will also serve to keep insects at a distance. Cockroaches will flee the paint which has been washed in alum water.

Reactions of Saccharine Matters—By M. Vidau.—A mixture of equal parts of commercial hydrochloric acid and of a fatty oil, but especially of oil of sesame, is a very delicate test for sugar, glucose, levulose, honey, &c. The oil and acid are shaken together for some minutes, and the mixture is heated until the acid liquid begins to boil, then the acid is allowed to subside and its colour is observed. When oil of sesame is used, the subsequent addition of one-tenth of a milligram of inverted sugar suffices to produce a characteristic rose colour. The reantion is distinct with a liquid containing one 20,000th of inverted sugar, and detects a milligram of that substance when dissolved in a cubic centimeter of normal urine.—*J. Pharm. Chim.*, (44), *xxii.*, 33. *Amer. Jour. Pharm.*

DRUGS, MEDICINES, &c.	$ c.		$ c.
Acid, Acetic, fort	0 13	@	0 14
Benzoic, pure	0 22		0 27
Citric	1 05		1 15
Muriatic	0 03½		0 05
Nitric	0 10		0 13
Oxalic	0 16		0 20
Sulphuric	0 03		0 05
Tartaric, pulv	0 49		0 50
Ammon, carb. casks	0 21		0 22
" jars	0 22		0 23
Liquor, 880	0 24		0 28
Muriate	0 14		0 15
Nitrate	0 45		0 60
Æther, Acetic	0 45		0 50
Nitrous	0 40		0 42
Sulphuric	0 50		0 50
Antim. Crude, pulv	0 15		0 17
Tart "	0 50		0 55
Alcohol, 95 per ct.....Cash	2 19		0 00
Arrowroot, Jamaica	0 18		0 22
Bermuda	0 50		0 65
Alum	0 02¾		0 03½
Balsam, Canada	0 33		0 38
Copaiba	1 15		1 20
Peru	2 90		3 20
Tolu	2 90		3 25
Bark, Bayberry, pulv	0 18		0 20
Canella	0 17		0 20
Peruvian, yel. pulv	0 35		0 50
" red "	1 60		1 70
Slippery Elm, g. b	0 18		0 20
" flour, packets	0 28		0 32
Sassafras	0 15		0 18
Berries, Cubebs, ground	0 20		0 25
Juniper	0 06		0 10
Beans, Tonquin	0 62		1 10
Vanilla	14 00		23 00
Bismuth, Alb	2 50		2 75
Carb.	2 65		2 90
Camphor, Crude	0 33		0 35
Refined	0 35		0 40
Cantharides	1 85		1 90
Powdered	2 00		2 10
Charcoal, Animal	0 04		0 06
Wood, powdered	0 10		0 15
Chiretta	0 23		0 30
Chloroform	0 60		1 55
Cochineal, S. G	0 58		0 70
Black	0 75		0 90
Colocynth, pulv	0 60		0 65
Collodion	0 70		0 80
Elaterium oz	3 20		4 00
Ergot	1 75		2 00
Extract Belladonna	1 80		1 90
Colocynth, Co	1 25		1 75
Gentian	0 50		0 60
Hemlock, Ang	0 00		0 95
Henbane, "	3 00		3 20
Jalap	5 00		5 50
Mandrake	1 75		2 00
Nux Vomic oz	0 40		0 50
Opium oz	1 40		
Rhubarb	5 00		5 50
Sarsap. Hon. Co	1 00		1 20
" Jam. Co	3 50		4 00
Taraxacum, Ang	0 70		0 80
Flowers, Arnica	0 17		0 25
Chamomile	0 8		0 32
Gum, Aloes, Barb. extra	0 70		0 80
" " good	0 40		0 50
" Cape	0 16		0 20
" " powdered	0 20		0 30
Socot	0 50		1 35
" " pulv	1 00		0 00
Arabic, White	0 38		0 60
" powdered	0 60		0 75
" sorts	0 19		0 24
" " powdered	0 42		0 50
" com. Gedda	0 13		0 16
Assafœtida	0 25		0 30
British or Dextrine	0 13		0 15
Benzoin	0 35		0 75
Catechu	0 12		0 15
" powdered	0 25		0 30
Euphorb, pulv	0 40		0 45
Gamboge	1 00		1 20
Guaiacum	0 35		1 00
Myrrh	0 50		0 80

DRUGS, MEDICINES, &c.—*Contd.*	$ c.		$ c.
Sang Dracon	0 60		
Scammony, powdered	5 50		6 00
" Virg. "	14 50		—
Shellac, Orange	0 63		0 68
Gum, Shellac, liver	0 52		0 55
Storax	0 40		0 45
Tragacanth, flake	1 10		1 75
" common	0 53		0 65
Galls	0 22		0 30
Gelatine, Cox's 6d	1 15		1 20
Glycerine, common	0 18		0 23
Vienna	0 25		0 28
Prices	0 60		0 75
Honey, Canada, best	0 16		0 17
Lower Canada	0 14		0 16
Iron, Carb. Precip	0 16		0 20
" Sacchar	0 40		0 55
Citrate Ammon	1 10		1 20
" & Quinine, oz	0 40		0 85
" & Strychine	0 17		0 20
Sulphate, pure	0 08		0 10
Iodine, good	3 20		3 50
Resublimed	3 90		4 20
Jalapin	1 25		1 50
Kreosote	2 40		2 50
Leaves, Buchu	0 22		0 32
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 05		0 06
Sulphate	0 08		0 12½
Lead, Acetate	0 14		0 16
Leptandrin oz	0 60		—
Liq. Bismuth	0 50		0 60
Lye, Concentrated	1 30		1 50
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 19		0 20
Calcined	0 65		0 75
Citrate gran	0 60		0 75
Mercury	1 05		1 15
Bichlor	1 25		1 40
Chloride	1 40		1 50
C. Chalk	0 55		0 60
Nit. Oxyd	1 60		1 75
Morphia Acet	2 90		3 00
Mur.	2 90		3 00
Sulph	3 20		3 40
Musk, pure grain oz	25 20		.....
Canton	10 60		1 20
Oil, Almonds, sweet	0 45		0 47
" bitter	14 00		15 00
Aniseed	4 25		4 50
Bergamot, super	5 50		5 00
Caraway	3 20		3 50
Cassia	2 00		2 25
Castor, E. I	0 12½		0 14
Crystal	0 22		0 25
Italian	0 26		0 28
Citronella	1 95		1 15
Cloves, Ang	3 75		3 80
Cod Liver	1 50		1 60
Croton	1 40		1 50
Juniper Wood	0 80		1 00
Berries	2 75		3 00
Lavand, Ang oz	0 00		1 00
Exotic	1 25		1 50
Lemon, super	3 50		3 75
ord	3 20		3 40
Orange	3 00		3 25
Origanum	0 65		0 75
Peppermint Ang	15 00		16 00
" Amer	4 00		5 00
Rose, Virgin	8 50		8 75
" good	7 00		7 75
Sassafras	0 75		0 90
Wintergreen	4 40		4 60
Wormwood, pure	4 00		6 00
Ointment, blue	1 05		1 15
Opium, Turkey	6 00		6 25
pulv	8 50		9 00

DRUGS, MEDICINES, &c.—*Cont'd*	$ c.	$ c
Orange Peel, opt.	0 35	0 36
" good	0 15	0 20
Pill, Blue, Mass	1 10	1 20
Potash, Bi-chrom	0 16	0 18
Bi-tart	0 33	0 35
Carbonate	0 14	0 20
Chlorate	0 30	0 35
Nitrate	8 00	9 00
Potassium, Bromide	75	0 80
Cyanide	0 60	0 70
Iodide	2 90	3 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
Phosphorous	1 10	1 20
Podophyllin	0 50	0 60
Quinine, Pelletier's	—	2 45
Howard's	2 20	—
" 100 oz. case.	2 17	—
" 25 oz. tin..	2 15	—
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	90	1 15
" Tampico	0 70	1 00
Liquorice, select	0 12	0 13
" powdered	0 15	0 20
Mandrake "	0 20	0 25
Orris, "	0 20	0 25
Rhubarb, Turkey	2 10	2 25
" E. I	0 75	0 90
" " pulv	1 60	1 10
" " 2nd	0 60	0 70
" French	0 75	—
Sarsap., Hond	0 60	0 65
" Jam	0 95	1 00
Squills	0 10	0 15½
Senega	1 00	1 10
Spigelia	0 25	0 30
Sal., Epsom	2 60	2 50
Rochelle	0 30	0 32
Soda	0 01¾	0 02½
Seed, Anise	0 13	0 16
Canary	0 15	0 16
Cardamon	2 00	2 10
Fenugreek, g'd	0 08	0 09
Hemp	0 06½	—
Mustard, white	0 14	0 16
Saffron, American	0 65	0 75
Spanish	10 00	11 00
Santonine	20 25	10 50
Sago	0 08	0 09
Silver, Nitrate Cash	14 85	16 50
Soap, Castile, mottled	0 11	0 14
Soda, Ash	0 03¾	0 05
Bicarb. Newcastle	4 50	4 75
" Howard's	0 14	0 16
Caustic	0 05½	0 05¾
Spirits Ammon., arom	0 35	0 35
Strychnine, Crystals	2 00	2 20
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 70	0 80
Zinc. Chloride oz	0 10	0 15
Sulphate, pure	0 10	0 15
" common	0 06	0 10
DYESTUFFS.		
Annatto	0 35 @	0 60
Aniline, Magenta, cryst	2 65	2 80
" liquid	2 00	—
Argols, ground	0 15	0 25
Blue Vitrol, pure	0 09	0 10
Camwood	0 07	0 08
Copperas, Green	0 01½	0 02
Cudbear	0 16	0 25
Fustic, Cuban	0 03	0 04
Indigo, Bengal	2 40	2 50
Madras	0 75	0 80
Extract	0 26	0 30

DYESTUFFS—*Continued.*		
Japonica	0 07	0 08
Lacdye, powdered	0 33	0 38
Logwood	0 01⅞	0 03
Logwood, Camp	0 02⅝	0 03
Extract	0 12¼	0 13
" 1 lb. bxs	0 15	—
" ½ lb. "	0 14	—
Madder, best Dutch	0 10½	0 11
2nd quality	0 10	0 11
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 26	0 28
Cloves	0 55	0 60
Cayenne	0 20	0 25
Ginger, E. I	0 19	0 20
Jam	0 30	0 30
Mace	1 40	1 60
Mustard, com	0 20	0 25
Nutmegs	1 15	1 25
Pepper, Black	0 18	0 20
White	0 27	0 29
PAINTS, DRY.		
Black, Lamp, com	0 09 @	0 10
" refined	0 25	0 30
Blue, Celestial	0 08	0 12
Prussian	0 65	0 75
Brown, Vandyke	0 10	0 12½
Chalk, White	0 01	0 01½
Green, Brunswick	0 07	0 10
Chrome	0 16	0 25
Paris	0 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 25	1 30
American	0 25	0 35
Whiting	0 1	0 1¼
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 10	0 12
Putty	0 03¾	0 04½
Yellow Ochre	0 08	0 12
White Lead, gen. 25 lb. tins	2 45	—
" No. 1	2 20	—
" No, 2	1 95	—
" No. 3	1 70	—
" com	1 30	—
White Zinc, Snow	2 75	3 25
NAVAL STORES.		
Black Pitch	3 90 @	4 25
Rosin, Strained	3 30	4 25
Clear, pale	5 75	7 25
Spirits Turpentine	0 50	0 53
Tar Wood	3 90	4 25
OILS.		
Cod	0 65 @	0 70
Lard, extra	1 10	1 20
No. 1	105	1 10
No. 2	0 90	0 95
Linseed, Raw	0 55	0 58
Boiled	0 59	0 62
Olive, Common	1 10	1 15
Salad	1 80	2 30
" Pints, cases	4 20	4 40
" Quarts	3 25	3 50
Seal Oil, Pale	0 72½	0 75
Straw	0 62½	0 65
Sesame Salad	1 30	1 35
Sperm, genuine	2 55	
Whale refined		