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Original and Selected Papers.

IMPROVED FORMULA FOR CHARTA SINAPIS.*

BY A. W. GERRARD.

The formula, given in the "Additions to the Pharmacopœia," for the preparation of mustard paper is unsatisfactory and expensive. The proportion of solution of gutta-percha necessary to render the ounce of mustard ordered sufficiently fluid for coating is ten drachms. This would contain more than a drachm of gutta-percha, which, when it is applied to the paper and the chloroform has evaporated, gives the surface of the mustard a glossy, varnished appearance. In fact, the gutta-percha acts as a varnish, much retarding the absorption of moisture and the development of the essential oil upon which the activity of the paper depends. Another objection to gutta-percha is its insufficient adhesive power, for the coating cracks and peels from the paper after but slight handling.

With the object of remedying these objections, I made a trial of solution of india-rubber in benzol as a menstruum; for I judged from its physical properties much less of this than of gutta-percha would be required to keep the particles of mustard cohesive, and at the same time the action would be retarded only to a minimum degree. I found it well answered my intention. After several experiments to determine the most suitable proportions, I have adopted the following:—

Take of

Caoutchouc	1 part.
Benzol	49 parts.
Black mustard, in powder, a sufficiency.	

*From the Pharmaceutical Journal and Transactions.

Dissolve the caoutchouc in the benzol; then stir in the mustard till of a proper consistence for spreading on paper.

In this, as also in the B. P. form, the presence of the fixed oil in the mustard gives the back of the paper a greasy appearance. Moreover, its removal, which might be effected either by pressure or by percolation with benzol, would be an advantage, not only as removing the cause of this greasiness, but it would render the mustard more active.

Papers spread with a mixture made according to the form I have here given have a dull, smooth surface, and the mustard adheres well together, although it contains only one-fourth as much india-rubber as the British Pharmacopœia formula does gutta-percha. The above preparation readily absorbs water and develops its activity. A piece applied to the arm gave evidence of its presence in less than two minutes, whilst a piece of the B. P. preparation required seven minutes, its full effect being comparatively slight. An estimate of the cost of the two forms shows that a Charta Sinapis prepared as suggested above could be made for one-eighth the expense of the B. P. preparation.

ORANGE-COLORED GLASS AS A MEANS OF PROTECTING VOLATILE OILS.*

BY WILLIAM PROCTER, JUN.

The query, What is the actual value of orange-colored window-glass as a means of preventing the chemical action of light on volatile oils? appears to have been suggested by the use made of such glass by photographers, to prevent the decomposition of chloride and iodide of silver in the working of their processes, so as to avoid the need of being in a dark room. It is still a mooted point how far such glass will prevent the passage of actinic rays, and philosophers even disagree as to where in the spectrum, or beyond it, lies the greatest chemical influence. The question as presented above is, however, a practical one, intended to decide whether oils in colorless glass bottles, if kept in cases glazed with orange-colored glass, will be as exempt from actinic action as though placed in a dark closet, and if so, whether orange-colored glass is the proper material to construct glassware for this and other purposes where actinic action is to be avoided? About six months ago a closet was prepared with glass doors of orange color, and the regular set of dispensing bottles of half-pint capacity arranged in it on shelves, to

*Paper read before the American Pharmaceutical Association at Richmond, Va., September, 1873.

the number of about thirty distinct oils. The bottles had previously been kept on open shelving; and before being placed in the closet each bottle was emptied, thoroughly cleansed of resinous and other deposit, washed with alcohol and dried, when the clear oils were returned. At the same time two small vials were filled with oil of peppermint and two with oil of lemon, both oils being of the best quality. One of each was kept in the oil closet, and the other set in a closet near the window of colorless glass. The writer was too much occupied with other matters to make corresponding experiments in and out of the closet with all the oils, and hence no result was arrived at of a character satisfactory in resolving the query *pro* or *con*. None of the oils in the closet exhibited deposition of resin, crystalline matter, or other deposit worthy of note. So far as could be remembered, their color was but little changed; but as, in all respects except the light, they were subjected to the previous conditions surrounding them, being frequently opened for dispensing, it will be interesting to ascertain if their modified condition as regards light really retards atmospheric oxidation. The oil of peppermint kept in the closet appeared of the same color (nearly colorless) as that kept in the light, but its odor was less marked to a perceptible degree. The oil of lemon, in both conditions, had a flocculent sediment, but was otherwise so nearly alike as to appear the same when applied to the nose, yet the oil in the vial exposed to light was evidently lighter in color by bleaching.

A vial of (expressed) oil of orange-peel, after two months' retention in the closet, was found to have undergone the usual deterioration.

CROTON-CHLORAL HYDRATE.*

In a previous number we published a paper on the subject, taken from English sources. The following, contributed to the *American Practitioner* by Mr. C. Lewis Diehl, of Louisville, is a fair statement of the labors of the German chemists on the same topic:—

This interesting substance was accidentally discovered by G. Kramer and A. Pinner, in 1870, when endeavoring to utilize the so-called "forerunnings" (*Vorlauf*), obtained as a waste product in the rectification of crude spirit for alcohol. These forerunnings were found to contain, besides alcohol and small quantities of an organic alkaline salt of acetic acid and of sharp, odorous liquid, a considerable proportion of aldehyde, which they expected to utilize in the manufacture of chloral. This expectation seemed justified

*Druggists' Circular.

by the theories of the formation of chloral generally accepted, according to which the first reaction of chlorine upon alcohol is to produce aldehyde, which by the further action of chlorine is converted into chloral; the difference in the various theories being mainly confined to the manner in which the aldehyde is so converted. Pure aldehyde was therefore acted upon by dry chlorine, and when the reaction was completed and the product was purified, it proved to be entirely distinct from ordinary chloral, and was determined to be *croton-chlorol*.

Preparation.—One hundred grammes of pure aldehyde (boiling point 69.8° to 71.6° F.) is placed into a capacious flask, to which a reversed condenser is fitted, and perfectly dry chlorine is passed through the contents for four days. In the beginning the flask is kept cool by a refrigeratory mixture; but as the reaction, which is exceedingly violent at first, slackens, the cooling mixture is substituted by a water-bath, and this is very gradually heated, and toward the end of the process brought to the boiling-point. The product—consisting of a clear supernatant liquid and a dark-colored heavy oil, which congeals upon cooling—is transferred to a flask and subjected to distillation. The distillate, which passes between 194° and 464° F., is then subjected to fractional distillation, when a product is obtainable which distils completely between 325.4° and 329° F., and is found to be pure croton-chloral.*

Properties.—Croton-chloral is a liquid possessing a peculiar odor, which reminds faintly of common chloral. It forms with water a hydrate, which is crystalline, and with alcohol an alcoholate, which is amorphous. Its composition is $C_8 H_3 Cl_3 O_2$.

Croton-chloral hydrate is produced when croton-chloral is dissolved in warm water. Upon cooling it crystallizes in white, silky, glistening leaflets, which are sparingly soluble in cold water, but freely soluble in hot water and in alcohol; and from its alcoholic solution it crystallizes unchanged. It melts at 170.6° F., and is readily vaporized with aqueous vapor; its vapor being exceedingly irritating upon mucous membrane, and especially upon the eyes.

Action of alkalies.—By the action of alkalies upon croton-chloral or its hydrate it is not, as might be expected, split into allyl-chloroform and formic acid, but forms instead dichlorallylen ($C_6 H_2 Cl_2$) and formic acid.

Dichlorallylen is a pleasantly odorous oily liquid, which boils at 172.4° F.; but is quite unstable, losing its pleasant odor, acquiring that of phosgene, and eliminating chlorine.

Relation to common chloral.—Croton-chloral bears the same relation to crotonic aldehyde and to crotonic acid that common

*My authorities omit to indicate the use of sulphuric acid to dehydrate and purify the croton-chloral hydrate formed primarily, such being undoubtedly the heavy oily layer which solidifies on cooling.

chloral does to acetic aldehyde and to acetic acid. In this connection it is of interest that crotonic acid of the composition usually assigned it ($C_8 H_5 O_3$) does not exist naturally in croton-oil; and that consequently the artificial derivatives, based upon an acid of the composition $C_8 H_5 O_3$ are wrongly named after crotonic acid. An acid of composition $C_8 H_5 O_3$ has been obtained by Geuther and Frohlich from both artificial and natural cyanide of allyl (vol. oil of mustard) by the action of potassa, and is by them called *tetracylic acid*. Hence it is suggested that croton-chloral is more properly named *tetracyl-chloral*.

Croton-chloral hydrate possibly a constituent of commercial chloral hydrate.—It will be noted from the above that physically the croton-chloral hydrate differs from the ordinary chloral hydrate by its sparing solubility in cold water and in the exceedingly irritant character of its vapor. Chloral hydrate, to the contrary, is freely soluble in water, and its odor when pure is not irritating. Nevertheless, nearly all commercial chloral hydrate has a more or less irritating odor, and it is inferred that this is owing to the presence of croton-chloral, formed either from aldehyde contained as impurity in the alcohol or from aldehyde generated by the action of chlorine. No experiments have, however, been made in this direction to prove the correctness of the inference.

The formation of croton-chloral from aldehyde is readily explained by the observation already made by Kèkulè, that acetic aldehyde is readily transformed into crotonic aldehyde by the presence of even minute quantities of muriatic acid. Under these circumstances two equivalents of acetic aldehyde, $C_4 H_4 O_2$ unite with the loss of two equivalents of water, and form one equivalent of crotonic aldehyde $= C_8 H_6 O_2$.

Properties and pharmaceutic exhibition of commercial croton-chloral hydrate.—I have before me a sample of croton-chloral hydrate purchased in New York; the original source is unknown. It is a white, powdery substance, of a pearly lustre, apparently crystalline, and when triturated in a mortar has the appearance and feels to the touch like pulverized valerianate of zinc. Its odor reminds of ordinary chloral hydrate and iodoform; does not seem to be more pungent than that of ordinary commercial chloral hydrate, and not as much so as some samples I have noticed. Its taste is bitter and aromatic, reminding of the odor of iodoform. It is more soluble in cold water than I should have expected from the characteristic, "sparingly soluble," given it by its discoverers. Thirty minims distilled water disolve one grain readily. If another grain is added to this solution, heat is required to dissolve it, and upon cooling and standing a short time a copious crop of well-defined crystals is obtained. Subsequent experiments proved it to be soluble in between twenty-two and a half and twenty-five parts of water at a temperature of 60° F. In alcohol it was found to be freely soluble.

From these experiments it follows that croton-chloral hydrate (commercial) may be dispensed in aqueous solution of a strength corresponding to two grains in the fl. drachm. A very pleasant vehicle for its administration seems to be the simple elixir as prepared in our city, and the following prescription illustrates the manner of its use:

℞. Croton-chloral hydrate.....g. viij.
Warm water.....fl. ʒ i.
Simple elixir.....fl. ʒ vij.
Ft. solut.

Owing to the alcohol contained in the simple elixir, a larger quantity than two grains to the fl. drachm could, if desirable, be incorporated and held in solution by the above mixture.

The sources from which the main portion of the above paper on croton-chloral is compiled are *Jahresbericht d. Chemiz*, by Nauman, 1869-70; and *Jahresbericht d. Pharmacie*, etc., by Wiggers and Husemann, 1869-71. The original papers are to be found in the *Bericht der Duetschen Chemischen Gesselschaft*, Berlin, 1869-71.

OLD AND NEW REAGENTS FOR COMMON PHENOL.*

BY EGIDIO POLACCI.

The author points out the distinctions between the blue color produced by phenol and hydrochloric acid with a chip of fir-wood and that given by hydrochloric acid alone. The violet coloration given by perchloride of iron is indecisive as being common to all the phenols. The blue coloration given by the successive action of ammonia and a hypochlorite is less general. As this method turns on the conversion of the phenol into anilin by the action of ammonia, the test is only available where the absence of anilin is satisfactorily demonstrated. Cresylic acid and thymol yield similar results. In complex organic fluids the reaction may fail. The conversion of phenol into picric acid by the action of nitric acid cannot be used for the detection of the first mentioned body, since the same result is obtained with a great variety of bodies. The author pours into a narrow test-tube concentrated sulphuric acid to the height of four or five centimetres, and adds cautiously the aqueous solution containing the phenol, in such a manner that the two liquids may not mix. A formation of three colors is soon perceived at the line of contact of the two liquids. These three are soon reduced to one, a vermillion red, which, setting out from the plane of division,

*Gaz. Chim. Ital., translated in the Chemical News.

diffuses itself through the entire mass of the phenol solution. This color is stable, and remains unaltered for months. If the red liquid is removed from the acid and treated with an alkali, it becomes yellow without losing its transparency. This reaction serves to detect one part of phenol in about 2000 of water. Another method is as follows:—In a well glazed porcelain crucible is put a little of the most concentrated sulphuric acid, to which is added a relatively minute portion of bichromate of potash. The mixture is well stirred so that the liberated chromic acid may be uniformly distributed through the sulphuric acid. A small drop of the liquid under examination is placed upon the acid mixture, which immediately gives a brown coloration at the point of contact. If the proportion of phenol is larger than one part in 30,000, the coloration is accompanied with a chocolate-brown precipitate. The author has also examined Landolt's test, which consists in adding to the suspected solution bromine water in slight excess. If phenol is present, a yellowish-white precipitate is produced. The sensibility of this reaction extends to one part in 45,500. As Landolt has remarked, precipitates, more or less similar, are produced by oxybenzoic acid, the homologues of phenic acid, anilin, toluidin, quinia, quinidin, cinchonia, strychnia, narcotina and morphia. The author considers that the yellowish-white precipitate may be recognized as tribromo-phenol by the following reactions:—It has a special odor, slightly recalling that of the hydride of salicyle. It is insoluble in acids, but soluble in alkalies, ether, and absolute alcohol. A very small quantity of water completely separates tribromo-phenol from its alcoholic solution. If carefully heated on platinum foil it may be volatilized unchanged without leaving a residue. But if the heat is strong the compound is decomposed and burns with a smoky flame, evolving much bromine, and leaving a carbonaceous residue. A portion placed in a porcelain capsule, and treated with sulphuric acid and bichromate of potash, produces a chocolate-brown color, with the escape of bromine vapors. If the bichromate is dissolved in water, and the experiment conducted in a glass tube, with the application of heat, the liquid takes a fine green color. If gently heated with nitre and concentrated sulphuric acid, it forms oily drops of a fine red color, which burn, leaving a bulky carbonaceous residue.

A GUIDE TO THE EXAMINATION OF URINE.

(Continued from our last.)

BILE IN THE URINE.—The presence of bile in the urine can seldom be overlooked, since it gives a dark greenish brown color to the secretion. Two substances must be tested for, the bile pigments, and the bile acids, each of which must be looked for separately.

The bile pigments. *Gmelin's Test.* Ordinary nitric acid, which nearly always contains some nitrous acid, is poured into a test tube to the depth of half an inch. A portion of the urine to be examined is then gently poured down the side of the tube, held almost horizontally, on to the surface of the acid, so that the two fluids may touch but not mix; this operation is most conveniently performed by means of a pipette. At the line of contact, a zone of red appears in every urine; but if pigment be present, a zone above becomes first green, then violet, blue, and red, representing the various stages of oxidation of the coloring matters; the most characteristic are green and violet. This reaction may also be performed by allowing a drop of nitric acid, and of the urine to be examined, to run together on a porcelain dish, when the play of colors mentioned above will be observed at their line of contact.

Caution.—Any urine which contains a large quantity of indican will give a blue or violet, and even green, color with nitric acid. This is a frequent occurrence in cases of melanotic cancers, when the urine often has a dark brown appearance.

The bile acids. *Pettenkofer's Test.* Some of the fluid containing the bile acids, is placed in a porcelain dish, and a drop of saturated solution of cane sugar added; strong sulphuric acid is then dropped into the mixture, taking care this acid is clearly in excess of the amount of bile acid present, *i.e.* about the same volume as the fluid containing the bile acids. On applying heat (which must only be moderate) a beautiful cherry-red color is produced, passing into a deep purple. The *purple* color is the only reaction characteristic of the presence of bile acids.

Another, and perhaps a better, way of performing Pettenkofer's test is to pour the fluid containing the bile acids into a test tube; sulphuric acid being then added, at first in small quantity to precipitate the bile acids, but afterwards in amount sufficient to re-dissolve them, which renders the mixture perceptibly hot to the hand. A drop of syrup may now be let fall into the fluid, which then shows a play of colors passing from pink to cherry red, and from red to purple.

The test should never be applied directly to urine: setting aside the fact that the bile acids are never in sufficient quantity to give the reaction, the urine in jaundice frequently contains a small quantity of albumen which gives a reddish violet reaction with sugar

and sulphuric acid, while the action of the acid upon the other constituents of the urine renders it impossible to be sure of the distinctive colors of Pettenkofer's test. If, therefore, it be very desirable to ascertain whether the bile acids be present in the urine, the method introduced by Hoppe must be employed for their separation; a long and somewhat complicated process, which can seldom be adopted by the clinical student.

With this object the urine must be rendered faintly ammoniacal with caustic ammonia, and then diacetate of lead added, so long as a precipitate occurs. The precipitate must be collected on a filter and washed with distilled water; then boiled with alcohol over a water bath, and filtered while hot; to the filtrate a few drops of potash or soda are to be added, and the solution evaporated to dryness over a water bath. The residue is again to be boiled with absolute alcohol over a water bath until but a small quantity is left. This must be then shaken with ether in a stoppered bottle, and after some time, the alkaline salts of the bile acids will crystallize out. In order to prove that these crystals are salts of the bile acids, they must be dissolved in a little distilled water, and tested with Pettenkofer's method, as directed above.

Clinical Import.—The bile pigments and the bile acids are present in the urine in most cases of jaundice. In hot weather, the bile pigments may sometimes be detected by means of Gmelin's test, in the urine of persons who are not jaundiced. The quantity of bile acids present is usually not more than ·02 per cent; the smallness of the amount in the urine, being probably due to their oxidation after entering the blood.

Urea.—The clinical student may sometimes wish to know if the urine contains urea, or if a given fluid be really urine, or some other secretion. The fluid is first to be tested for albumen, which, if present, must be removed by acidulation with a few drops of acetic acid, raising the temperature of the fluid to the boiling point and filtering. This filtrate is used for the subsequent operations of evaporation, etc., as stated below.

If the urine is free from albumen, some quantity, 2 or 3 fluid-ounces, must be evaporated in a Berlin dish over a water bath, until the fluid has the consistence of syrup. A water bath is essential, because an open flame would decompose the urea. After the syrupy fluid has completely cooled, nitric acid, as free as possible from nitrous acid, is added, drop by drop, so long as a precipitate is formed. An excess of nitric acid is desirable. Some of these crystals of nitrate of urea, removed with a glass rod and placed under the microscope, show flat rhombic or hexagonal plates closely united to one another.

Clinical Import.—Urea is the most important constituent of the urine; a healthy man excretes from 300 to 500 grains in the 24 hours. In some acute diseases, pneumonia, typhoid fever, and

acute rheumatism, it is greatly increased owing to the excessive tissue-metamorphosis, and may be present in such quantity as to give a precipitate, without previous concentration, when the urine is acidulated with nitric acid. In other diseases, as uræmia and Bright's disease, the quantity of urea is below the average.

URIC ACID.—To ascertain if the urine contain uric acid, it is necessary to acidulate about a fluid-ounce of the urine with a fluid-drachm of hydrochloric acid, or strong acetic acid, in a suitable glass vessel, an ordinary beaker being best, and to set it aside, covered with a glass plate, for 24 or 48 hours. At the end of that time, if uric acid be present, reddish brown crystals will be seen attached to the sides and bottom of the glass, or floating on the surface of the fluid. These crystals have the flat rhombic, oval, or hexagonal shape of uric acid; they are soluble in alkalies, and give with nitric acid and ammonia the murexid test.

A healthy man excretes, on an average, about 7 or 8 grains of uric acid in the 24 hours.

Clinical Import.—The excretion of uric acid is usually increased *pari passu* with the urea, as in pyrexia, or acute rheumatism, and in chronic liver diseases. An excess of uric acid is observed after an attack of gout; it is often entirely absent from the urine immediately before the paroxysm, and may disappear for days when this disease has become chronic.

HIPPURIC ACID.—Hippuric acid exists in small quantity in the urine in health, but the amount is greatly increased in cases of corea. The method of preparing it from human urine is troublesome, and will rarely be required to be used by the clinical student. Two or more pints of *perfectly fresh* urine must be taken, and milk of lime added till the fluid becomes alkaline; the mixture is boiled and filtered, the filtrate evaporated over a water bath to a syrupy consistence, and then extracted with alcohol; next the spirituous extract must be filtered, and filtrate evaporated to a small quantity, over a water bath. To this, when quite cold, hydrochloric acid should be added so long as crystals are formed.

The crystals of hippuric acid obtained in this manner, seen under a microscope, are long and needle-shaped prisms; they are distinguished from those of benzoic acid by their insolubility in ether.

Hippuric acid, when evaporated to dryness with nitric acid, in a porelain crucible, over a lamp, and then further heated to redness, gives off a gas smelling like oil of bitter almonds. This reaction is common to benzoic and hippuric acids.

When benzoic action is taken by the mouth, it is converted in the body into hippuric acid, which appears in the urine in quantity equivalent to that of the benzoic acid ingested.

CHLORIDES.—Chlorides may be known to be present by the following test. To a fluid-drachm of urine in a test tube, a drop of nitric acid is added, and then a few drops of a solution of nitrate of

silver; if a trace of chloride be present, a cloudiness only will be given; but if any quantity, a white precipitate is thrown down, soluble in caustic ammonia and reprecipitated thence by the addition of nitric acid in excess.

The nitric acid is added at first to prevent the precipitation of the phosphates with the chlorides.

By far the greater part of the chlorine in the urine is in combination with sodium.

A rough comparative idea of the quantity of chloride present may be made from day to day, by always taking the same quantity of urine, acidulating in a test tube with nitric acid, and adding a solution of nitrate of silver until no further precipitate is formed. The test tube must then be set aside for 24 hours, and a note then taken of the proportion of the chloride of silver deposit, for comparison with other observations.

On an average, an healthy male adult excretes 250 grains of chloride of sodium in the 24 hours.

Clinical Import.—The chlorine is diminished or entirely absent during the period of hepatization in acute pneumonia; it is also diminished in acute rheumatism and many pyrexial diseases, especially when large serious transudation takes place.

PHOSPHATES.—The presence of phosphates in the urine may be ascertained by the following test. A fluid is prepared by adding a drop or two of caustic ammonia to a fluid-drachm of a solution of sulphate of magnesia in a test tube; hydrochloric acid is added until the precipitate caused by the ammonia is re-dissolved. Caustic ammonia is again added in excess, until the fluid is strongly ammoniacal. A fluid-drachm of urine is now poured into another test tube, and rendered ammoniacal with caustic ammonia; to this urine some of the prepared solution is added, and a precipitate of the ammoniaco-magnesian phosphate occurs at once, if the urine contain the ordinary amount of phosphates; but the precipitate forms slowly, if the phosphates are present in very small amount.

The normal quantity of phosphoric acid excreted by a male adult in the 24 hours is about 50 grains.

Clinical Import.—The amount of phosphoric acid in the urine is increased in diseases of the nervous centres, and after great mental application. Acute febrile diseases cause increase of the phosphoric acid from increased tissue-metamorphosis, while in Bright's disease and some forms of dyspepsia the quantity of the phosphates is diminished.

SULPHATES.—The sulphates are at once recognised by the addition to some of the urine, in a test tube, of a drop of hydrocloric acid, and afterwards of a few drops of a solution of chloride of barium; a white precipitate, insoluble in nitric acid, is thrown down.

The quantity of sulphuric acid excreted by a healthy male adult in the 24 hours is aqout 30 grains.

Clinical Import.—The quantity of the sulphates is increased by a full animal diet; very little is known for certain of their amount in disease, and that little is at present of not much importance.

(To be continued.)

REMARKABLE POLYPORUS FROM CANADA.*

BY SIR R. CHRISTISON, BART.

A short time ago I came accidentally upon a mysterious specimen—mysterious, I mean, to myself—which I had put aside in 1843 till I should receive farther information about it, and of which I had lost sight during other and very different pursuits. The label on it bears that it is "a fungus from the White Pine" of Canada, presented to me by Dr. James Johnston, at the time Assistant-Surgeon in the 71st Highland Light Infantry. On presenting it to the Botanical Museum, I found that it seemed as novel and strange to Dr. Balfour and other experienced botanists as it was to myself; but a small fragment, evidently of the same kind of substance, was subsequently found in the collection of the garden.

As a cursory examination proved it to be an object of interest, I applied to Dr. Johnston for further information; and fortunately, considering the long period which has elapsed since he parted with it, he was able to turn up in a memorandum-book the following note, taken on April 28, 1841, when he got it at "Penetangingshine,† Georgian Bay, Lake Union," viz., "Bought a Wahboda—Indian Rhubarb—a fungus growing on top of White Pine—very scarce—thirty-three years' growth. Indians say it lives—cries like a child—bleeds when wounded—and does not fall unless killed. This specimen was brought down by three rifle-balls. A tonic bitter, recommended as an application to wounds. It was brought to me from a distance of upwards of 50 miles."

The Wahbodo is still in a state of perfect preservation, as when I got it thirty-one years ago. It is 18 inches long, from 22 to 26 inches in girth, firm in external texture, and very fibrous, the fibres longitudinal. It is very white. It weighs thirteen pounds. It is strongly marked by thirty-three parallel rings, or seems to be made

* Read at the July Meeting of Edinburgh Botanical Society. Reprinted from the *Gardeners' Chronicle* for July 18, 1874, and published in the *Pharmaceutical Journal & Transactions.*

† This is evidently intended for *Penetanguishene*, Georgian Bay, *Lake Huron*. The error is probably attributable to the illegibility of Dr. Johnston's notes. ED. CAN. PHARM. JOUR.

up of so many circular superimposed cakes, somewhat more than half an inch in thickness. At one side of its thicker end there is attached, over a space as large as the palm of the hand, a quantity of the outer bark of a smooth-barked pine. On cutting out with the saw a quarter section along its whole length, it was found that the rings outside penetrate a very short way inwards; that the texture everywhere is in general spongy, white, and fibrous; but that there are also many long, longitudinal, rudely parallel lines on the surface of the section, which are brownish, harder, not at all fibrous, and which obstructed the saw by adhering to it like a resin. The powder has a strong, pure, almost aromatic, bitter taste, very like that of sulphate of quinia.

Dr. Maclagan made a rough analysis of it for me, and found that it consists, in 100 parts, of 64·59 resin, 15·79 cellulose, and 9·62 watery extract. The bitterness he found to reside, not in the resin, but in the watery extract, and it therefore must depend on some other proximate principle, possibly crystaline.

On consulting the opinion of the most eminent English authorities on the subject of the fungi, Dr. Balfour found that all considered this substance, from an examination of small fragments of it only, to be ligneous texture degenerated and much altered by the presence of a species of Polyporus, which Mr. Berkeley thinks will probably prove to be *P. Pini Canadensis* (Schweinitz).

ARTIFICIAL FORMATION OF THE AROMATIC PRINCIPLE OF VANILLA.*

BY F. TIEMANN AND W. HAARMANN.

In a lenghty and elaborate paper recently published, an abstract of which has also been read before the French Academy, the authors describe their researches upon coniferin, from which body they have succeeded in producing artificially, a substance identical with vanillin, the aromatic principle of vanilla. The following abstract will present the chief points of interest to our readers:

Among the numerous glucosides of vetgetable origin there is one, coniferin, which for a long time escaped the notice of chemists and physiologists; although it is found in considerable quantity in the members of one of the most widely distributed orders of plants. This body was first found in 1861, in the juice of the cambium of the *Larix europœa*, by Hartig, who for that reason called it "laricin." Afterwards, its presence being recognized in the cambium of all the

* Pharmaceutical Journal and Transactions; see Can. Pharm. Jour., Vol. VIII. p. 30.

appeared to exist in all the Coniferæ, W. Kubel, who was the first to study it chemically, with the consent of Hartig, again changed the name to coniferin.

Coniferin may be prepared in the following manner: At the time of the formation of the wood, in the spring or early summer, such conifers as *Abies excelsa* and *A. pectinata*, *Pinus strobus* and *P. Cembra*, *Larix europœa*, etc., are felled, and the trunks are sawn into several pieces and are afterwards barked. The juice of the cambium is collected by scraping the wood with a sharp instrument, such as a piece of glass. This juice is boiled and filtered to eliminate albuminous matters; then evaporated to about one-fifth its original volume. After a time it deposits brown colored crystals, which are pressed, and purified and decolorized by repeated recrystallization and treatment with animal charcoal. The greater part of the impurities may be removed by treating the brown solution of coniferin, whilst still warm, with small quantities of acetate of lead and ammonia; the resinous and coloring matters being precipitated, whilst the coniferin remains in solution. Excess of acetate of lead may be easily removed by means of a current of carbonic acid gas.

Coniferin is slightly soluble in cold water, more soluble in hot water and in alcohol, but is not soluble in ether. It crystallizes upon cooling in white, transparent, brilliant, sharp-pointed crystals, frequently grouped in a star or rosette. Its fusing point is 185° C. These crystals become opaque and dull in contact with air, losing part of their water of crystallization, which is driven off completely at 100° C. The aqueous solution of coniferin is bitter, lævogyrous, and does not reduce Fehling's solution, even after prolonged boiling. It is not altered by dilute acid in the cold, but when heated with a few drops of hydrochloric or sulphuric acid, the solution deposits a white resinous matter, which in drying ordinarily becomes yellow or orange, whilst glucose is then found in the liquor. In contact with strong sulphuric acid, coniferin is at first colored deep violet, and afterward dissolved, communicating to the liquid a red color; upon the addition of water, an indigo blue resinous matter is precipitated. If strong sulphuric acid be poured, a little at a time, into an aqueous solution of coniferin, as the temperature rises there is formed a deposit of the white resinous matter above mentioned; then the liquid becomes violet and turbid, and, after the addition of a considerable quantity of the acid, a clear dark red solution is obtained as in the preceding case.

Moistened with carbolic acid or concentrated hydrochloric acid, after some time coniferin acquires an intense blue color; in the sunlight this coloration is almost instantaneous. It is upon this reaction that the use of pine wood as a test for carbolic acid is based.

In order to determine the chemical constitution of coniferin, the authors sought first to determine the nature of the product or products resulting from its decomposition with elimination of glucose.

As before stated, dilute hydrochloric or sulphuric acid, aided by heat, split it up into a resinous matter and glucose; but the properties of the resinous matter so obtained not appearing sufficiently definite, it was determined to effect the decomposition by fermentation by means of emulsion. For this purpose, 50 grams of pure coniferin were placed in 500 grams of water, 0·2 to 0·3 grams of dry emulsion added, and the mixture kept at a temperature between 25° and 26° C. The action commenced immediately, and in a few hours the presence of glucose in the liquor could be detected. The undissolved crystals of coniferin gradually disappeared, and in their place were deposited at the bottom of the vessel white flocks which were distinguishable from coniferin by their solubility in ether. After six or eight days the process of fermentation terminated, and by that time the bottom of the vessel was covered by a thick layer of this crystalline matter, the supernatant liquor being clear and slightly colored. The liquor containing the precipitate was shaken with ether, which removed the flocks, and upon evaporation generally left a residue of well-formed white prismatic crystals. Sometimes, however, it left an oily residue, from which crystals were obtained upon cooling by a freezing mixture. The crystals were pressed between filtering paper, and purified by recrystallization from ether. The aqueous solution, having had any remaining emulsion removed by coagulation by heat and filtering, was found to contain in solution only glucose, and it may be, slight traces of undecomposed coniferin.

The pure crystalline product, when recently prepared, is quite inodorous, but after a time acquires a feeble, though well-characterized, odor of vanilla. The same odor is produced when either of the decomposition products or coniferin is heated with dilute sulphuric acid, and still more clearly when an oxidizing mixture of sulphuric acid and solution of bichromate of potash is used. The crystalline decomposition product, reduced to fine powder, was therefore triturated with water, sulphuric acid and bichromate of potash in solution added, and the mixture distilled. At first a liquid, smelling strongly of ethylic aldehyde, was obtained, in which the presence of that aldehyde could be detected. The next portions did not present this character, but were strongly acid, and diffused a well-characterized odor of vanilla. From these portions of the distillate, ether removed a body which crystallized in stellate groups of crystals, possessing in a high degree the odor and taste of vanilla.

Operating in this way the yield was very small, in consequence of the rapid resinification of the decomposition product under the influence of the sulphuric acid, and in this state it was only slowly and partially attacked by the oxidizing mixture. It was found more easy and advantageous to operate directly upon coniferin. This was done by pouring an aqueous solution of coniferin into a hot mixture of bichromate and sulphuric acid, and heating the whole together for several hours in a flask furnished with a returning condenser. After

cooling, the liquid was filtered to eliminate a little resinous matter which was deposited, and then agitated directly with ether. Upon distilling or evaporating this solvent a yellowish oil was obtained, which, after some days, formed a crystalline mass. By recrystallizing this from water and decolorizing with a little animal black, fine crystals were obtained having the odor and taste of vanilla. They melted at 80° to 81° C., were readily soluble in ether and in alcohol, pines, the name of "abieten" was conferred upon it. Finally, as it difficultly soluble in cold water, and more soluble in hot water. Their composition was represented by the formula, $C_8 H_8 O_3$. In fact, this body presented the same properties and was identical in composition with vanillin, or vanillic acid, the substance to which vanilla owes its aroma. Vanillic acid was a short time since studied by M. Carles, who prepared from it a series of salts having the general formula $MC_8 H_7 O_3$, in which M represents one equivalent of a metal; he also prepared iodine and bromine substitution products. The facts observed by him are stated by the authors to accord exactly with those observed by them in operating upon vanillin prepared from coniferin.

ADMINISTRATION OF PHOSPHORUS.

At a meeting of the Medical Society of London, Mr. Ashburton Thompson read a paper on the above subject, an abstract of which appears in the report published in the *Pharm. Jour. and Trans.:*

The author commenced by remarking that the internal use of phosphorus was almost as old as the discovery of the element itself, and that the medical literature of the century, dating from 1720, offered more essays on this than on any other single subject. Yet the employment of this element as a remedy was never firmly established, its history presenting fluctuations in popular favour that are unknown in the history of any other remedy. These fluctuations suggest that an element of danger attended the very great remedial properties it was found to possess. That this was the case was evidenced by the records of its use, where more than one case of fatal poisoning can be found. The author then alluded to the recorded experience of Drs. Hughes, Bennett, James, Cotton, and Broadbent, who gave phosphorized oil in doses equivalent to from 1-40th to 1-8th of a grain of free phosphorus in an aggregate number of fifty-two cases, with the frequent occurrence of abdominal derangement; then to his own experience of nine cases, in every one of which symptoms of poisoning had been observed—slight in all but one, in which death was hourly expected for three days. He then recited two cases of great interest, one already reported in the *Lancet* by Mr. Reedale. A child ten years old took for twenty-three

days 3-5ths to 9-10ths of a grain of solid phosphorus, and the ethereal solution daily, without evincing any serious symptoms, but did so after the fifth dose of 5-6ths of a grain dissolved in oil. The other case was reported by Solin. A male adult took half a grain of phosphorus in ether every twenty-four hours for nine days, and yet died of less than one grain dissolved in oil, and taken during thirty-five hours. He stated that others beside himself had found that a dose of phosphorus, poisonous when dissolved in oil, might be far exceeded if dissolved in ether and alcohol; while the excellent results obtained with the latter preparations testified to their activity. No case with the last-named solutions had been recorded. Mr. Thompson then considered what chemical change might account for the exhibition of unexpected toxic power on the part of phosphorized oil, and he asserted that phosphorized cod-liver oil might be given with the same safety as phosphorized ether or alcohol, and in the same doses. The main difference between this fish-oil and the vegetable (almond or olive) oils generally employed was, that the latter absorb very large proportions of air. As phosphorus oxidized very easily, this absorption exposed the element to change. Freely exposed to air, phosphorus passes rapidly into phosphoric acid—a harmless medicine; but it seemed plausible to the author to imagine that the density of vegetable acids, together with the peculiar manner in which they present oxygen to phosphorus, might serve to delay the element in its lowest and first stage of oxidation—viz., as hypophosphorous acid. The author then reviewed the important characteristics of this body—viz., causticity, its extreme avidity for oxygen, the ease with which it is absorbed; and alluded to a remark of Devergies, which showed that he had regarded their transformation as the cause of poisoning in Solin's case; also to Personne's recent experiments, which show that phosphorus, dissolved in hypophosphorus acid, is most really absorbed, and becomes imbued with toxic powers quite out of proportion to the actual quantity of free phosphorus present. The author alluded to the possible influence of idiosyncrasy, and stated that, having watched more than 400 cases treated with this drug, and having carefully considered most of the hitherto recorded observations, he did not feel satisfied that any peculiar idiosyncrasy with regard to it existed, but he awaited the result of further experience. The solutions of phosphorus in vegetable oils do not, for the reasons stated, afford a safe means of exhibiting free phosphorus. The manner of preparing the oil in France consisted in heating it to about 560° F., and in England to 300°, which certainly drove off the air and water suspended in the oil, but did not avoid the dangers which must arise in the manner described from absorption of fresh portions of air and aqueous vapour, and therefore the author declined to use phosphorized vegetable oil any longer. He referred to the absorption of solid phosphorus by the stomach, and deduced the rule that it should be taken

with food. Of zinc phosphide, he said that since it acted only after decomposition by the acids of the stomach it followed that many doses might accumulate and remain unchanged if the secretions of that organ were alkaline. If the accumulations were then suddenly brought in contact with acid, symptoms of poisoning would occur. This had happened in a case noted by Prof. Gubler. The obvious and very necessary precaution consisted in the use of an acidulated tonic with each dose of the drug, or the dietetic employment of lemonade during the medication. Mr. Thompson concluded by stating that these rules, though simple, had never been formulated before, and he believes that ignorance of the facts on which they are founded had conferred on free phosphorus a reputation for treacherously poisonous qualities, even in remedial doses, in reality, appertaining (in the case of phosphorized vegetable oil at least) to an unsuspected admixture of combined (oxidized) phosphorus.

THE EFFECTS OF SUMBUL.—This drug, said to be an excellent nervous sedative, especially for the "shakiness" which follows "strong liquor galore," is not much used in the United States. Mr. J. Morgan, in the *Medical Press and Circular*, narrates a curious effect of an overdose of the tincture, half an ounce, had on a young man. He took that quantity during the night. He felt confused during the next day, but in the afternoon became more overwhelmed, having a great tendency to snore, and did so while quite awake; he felt as if his legs were not his own, and could not trust himself to walk. There was a general feeling of tingling, stomach not sick, pupils natural and obedient to light, a strong odor of the medicine from the breath and skin, and especially from the palms of the hands, which felt, he said, "sticky." He had been given strong coffee and tea, and had been kept moving by the attendants, who worked vigorously. The snoring, while quite awake and conscious, and lasting for several hours, was remarkable, as well as the peculiar odor of the sumbul being more perceptible from the skin than from the breath. The effect gradually passed off by the next evening.—*Phila. Medical and Surgical Reporter.*

CHARACTERISTICS OF PURE CHLORAL HYDRATE.—In his endeavor to produce chloral hydrate of the most perfect purity, Liebreich has made experiments which have led him to publish the following as the external features which should characterize the preparation:—The crystals should be perfect rhomboids, of a glassy appearance, and sounding like glass when struck, not scaly, and perfectly dry. Chloral hydrate with these characteristics Liebreich considers preferable to that in cakes, which is no longer manufactured for him.

INTRODUCTION OF TEA.—We have been favoured with a communicatiod from Mr. Daniel Hanbury, in which he states that having recently had occasion to search some old newspapers in the British Museum, he observer the following advertisement in the *Mercurius Politicus*, No. 435, September 23rd to 30th, 1658. Though it is probably well known to antiquaries, in may be interesting to some of our readers:—"That Excellent, and by all Physicians approved, *China* Drink, called by the *Chineans*, *Tcha*, by other Nations *Tay alias Tee*, is sold at the *Sultaness-head*, a *Cophee-house* in *Sweetings* Rents by the Royal Exchange, *London.—Pharm. Jour. and Trans.*

Editorial.

AN ANGLO-AMERICAN PHARMACOPŒIA.

We notice that some of our medical contemporaries have taken up the subject of the advisability of having an international codex representing Great Britain and the United States. In a discussion tending to so desirable an object we gladly join, and would heartily engage in furthering any attempt to bring into closer accord the the pharmaceutical standards of those two great English-speaking countries.

This subject was first brought forward by a writer in the *British and Forign Medico-Chirurgical Review*, who in reviewing the last Revision of the United States Pharmacopœia; calls attention to the great diversity in the strength of British and United States preparations bearing the same, or similar names; and also to the wide disparity in the names by which substances, identical in composition, are designated. These variations affect the more potent remedies rather than those of less importance. Thus, the strengths of tincture of aconite, B. P. and U. S. P. may be approximately indicated by the numbers 5 and 17; belladonna, 2 and 5; cantharidis, 5 and 14; nux vomica, 4 and 11. Even tincture of opium, which, of all others, should be of uniform strength, differs in the proportion of about four grains of opium to the fluid ounce. In the infusions, as indeed in all other classes, this difference exists to a considerable extent; thus, the respective strengths of the infusions of calumba, cascarilla, digitalis and senna are represented by the numbers 21-14, 43-29, 3-7, 43-29.

In a foot note to an article in the *American Journal of Pharmacy*, Prof. Maisch, the editor, expresses his belief that the *majority* of the various preparations of the two authorities are practically identical in strength, like tincture of digitalis, hyoscyamus, etc. Though this may hold good in regard to the larger number of compounds, it admits of very numerous and important exceptions, as shown by the examples we have given, and it is very questionable whether, taking everything into consideration, the exceptions do not in influence outweigh the alleged rule.

The inconvenience and risk attending this state of things is thus spoken of by the writer first named: "To British medical men cast abroad in America, and to American physicians landed in England, it must be vexatious, and, at times, a cause of injury to patients, to find that well known formulæ, common by name to both, differ widely in their doses and activity, on one and the other side of the Atlantic."

There are many other reasons which may be urged against the present arrangement. Prof. C. H. Thomas, in a paper in the *American Journal of Pharmacy*, alludes to the disparity in terms, etc,, and traces its effect on the progress of pharmacy. It has raised a barrier to the interchange of thought and communication scarcely less formidable than a total difference in tongue and race. The value of works on therapeutics, and the practice of medicine, written by English or American authors is, by the same cause, seriously impaired and sometimes entirely destroyed. The difficulties of teaching medical and pharmaceutical students is much augmented, as it is almost impossible to fix upon the memory the confusing details connected with the activity, nomenclature, and posology of the different preparations.

Other reasons for the unification of the two pharmacopœias might be brought forward, but enough has been adduced to prove the advisability of the undertaking. We have, however, in Canada, a special interest in this matter, as, by the present arrangement, we are certainly made to suffer more than any other nationality. We have adopted as our standard the British Pharmacopœia, but our proximity to the United States, and the consequent infusion of the American element, have rendered absolute adherence to this standard impossible. In the more westerly portions of this province the United States Pharmacopœia is used almost to the exclusion of the legal authority, and even in other portions of the Dominion this is more or less the case. The confusion and risk attending this are so well known to our readers that we need not further pursue this part of the subject. On behalf of Canadian pharmacists we may, however, say that a fusion of the standards would be hailed with pleasure, and would be productive of untold benefit to those concerned—physician, patient and dispenser—as well as the cause of pharmacy generally.

As to the means to be adopted to bring about this desirable re-

sult, we have, so far, seen no better suggestion than that made by the Philadelphia *Medical Times*. Our contemporary recommends that the American Association, at their next meeting, appoint, with power to act, a committee, which shall attend the following meeting of the British Medical Association, and ask for the selection of a committee of conference; the two committees to form a joint commission to arrange the details for the actual performance of work. This plan appears quite feasible, and we hope will be put into execution. Once get the machinery into motion, and we see no reason why the work could not be successfully completed, and that to the satisfaction of all parties.

THE ADULTERATION ACT.

In commenting on the article on this subject which appeared in a recent issue of this journal the *Chemist and Druggist* says:—"It is a principle in ethics that the influence of an evil deed can never be circumscribed; it spreads its ever-widening circles through all time and space. This fate seems to be reserved for our Adulteration Act. A corresponding one has lately passed the Canadian Legislature, and from the 1st of January next the tradesmen of the Dominion are to be liable to the same harrassing as we at home have borne. What is most singular, however, is that the Canadian authorities seem scarcely to have studied the experience gained in England at all. Consequently, unless it should happen that all their analysts prove very learned and very wise men, they are just laying a snare for themselves which they might, to a great extent, avoid."

It may be quite possible that the framers of the Canadian Act have not improved the opportunity afforded them by English experiences, and that the prognostications of the *Chemist and Druggist* may, in some measure, be fulfilled. Just legislation on this matter is beset with many difficulties, and the practical working of any Act must of necessity be imperfect; but, at the same time, it cannot be denied that the interests of the public demand protection. We have no doubt that, bad as the Adulteration Act of Great Britain may be, it has been instrumental in doing an amount of good far overbalancing the harassing of which our contemporary complains.

This appears to be the verdict of the Parliamentary Committee, whose labors have just terminated, and whose duty it was to investigate the shortcomings of that measure.

Our contemporary finds fault with us for indorsing the definitions contained in the Canadian Act. It is held that these definitions are so far from being full or explicit that, without undue stretching, they may be extended to mean almost anything. That, for instance, the definition affecting *drink* "may be held to include the spoon which stirs the toddy." It may be possible to twist such a meaning out of it; but none but the *Chemist and Druggist*—which dearly loves its little joke—would ever attempt such a perversion. We are still inclined to uphold our opinion as *practically* correct, and think these definitions calculated to facititate the working of the Act. In this opinion the *Pharmaceutical Journal* of London appears to coincide. At all events, we shall soon have an opportunity of testing the matter; and we hope that a measure calculated to do so much good will not be defeated by the ignorance and zealotry of those who may be appointed to carry it out.

FALSIFICATION OF CASTOR OIL.

In another column will be found a communication from Mr. Barker, of Trenton, regarding a case of substitution of a mixture of lard and croton oils for castor oil. The compound was put up in the ordinary round castor oil bottle, and was administered as the genuine article, but with such effect as to require the immediate services of a physician. This is a serious instance of substitution, and its recurrence should be guarded against. It is scarcely possible that druggists would be subject to this fraud, as we believe our wholesale houses to be above anything of the kind; and it may be presumed that our pharmacists would soon detect the admixture. Grocers and general storekeepers, who deal with houses of less respectability, and who make price subservient to quality, will be most liable to the imposition, and in any case the public will have to suffer.

The adulteration of castor oil with that of croton seeds has been practised before. Pereira speaks of such a mixture being sold as *concentrated castor oil*, and of very serious consequences having

resulted from its administration. He also alludes to another case of adulteration, in which the oleine of lard—lard oil—was mixed with castor oil. It is probable that the adulteration spoken of by our correspondent partakes of the nature of both these mixtures, as lard oil alone would not possess the viscidity characteristic of castor oil. Pereira states that castor oil may be mixed with 33 per cent. of another fixed oil, and yet be soluble in its own volume of strong alcohol; so the test given in the old Edinburgh Pharmacopœia will not detect a smaller admixture. We have not made any experiments on the subject, and should be glad if our correspondent would obtain a sample of the adulterated oil, ascertain its exact composition, and find tests for detecting the fraud.

INTERVIEWING EXTRAORDINARY.—It is an admitted fact that in America the art of interviewing has been carried to a degree of perfection unparalleled in any other part of the world. In most countries the reporter is an ordinary, commonplace, industrious citizen, gathering his scraps of news within limited bounds, or, at the worst, merely indulging in a flight of imagination, for the delectation of his insatiable patrons—the public. Of a far different stamp is the American Bohemian. He is one of the powers that be, ruling and judging men's actions and opinions with despotic hand. His chief attribute is impudence. Thus armed, he penetrates into all classes of society; the President is despoiled of his State secrets; a visiting Prince, protected though he may be by the hauteur and reticence of his class, is successfully invaded; the doomed prisoner in his cell is made to tell his story of guilt to the world; and even when passed beyond this mortal threshold, the disembodied spirit is roused by relentless interviewing "mediums" to satisfy a curious public as to the secrets of its prison house. Heretofore, it has been matter for congratulation that the scientific press has kept aloof from the interviewing system. We are sorry, however, to remark that an attempt has been made at its introduction, and that, too, by a contemporary of pharmaceutic, and, we fear, spiritualistic proclivities. A late number of that journal contains the article which has aroused our apprehensions. It is in the form of its first and leading paper, and is entitled "An Interview with Dr. Muspratt." The opening paragraph is as follows:—"Dr. Muspratt, with whom we have the honor of a personal acquaintance, is editing a most elaborate work upon *Chemistry, as applied to Arts and Manufactures*. In his second volume he gives an instructive chapter upon Disinfectants. * * * This subject being of

extreme importance to the welfare of families, we will accept with gratitude from Dr. Muspratt those facts which have a practical illustration." Taking into consideration the event of Dr. Muspratt's death in February, 1871, and also that his work on Chemistry was finished in 1860, we can only explain our contemporary's "personal acquaintance" as being of a spiritual nature. As representing a similar class of readers with those of the New Lebanon *Druggist*, we must protest against the introduction of this means of discussing scientific subjects, more especially as our contemporary has promised his readers another interview in his next issue.

Correspondence.

ADULTERATION OF CASTOR OIL.

To the Editor of the Canadian Pharmaceutical Journal.

SIR,—One of the medical men of this place informs me that he was called to see a patient who lives several miles in the country. He found her laboring under the effects of some strong purgative poison. He was informed that she had only taken a dessertspoonful of castor oil, which had been purchased from a store near by. He examined the bottle; it had a whitish deposit on the side, where it appeared to have been lying some time. It was nothing else than lard oil with croton oil put in it.

It is put up in the same style of round bottles sold by wholesale grocers through the country. I thought it advisable to publish this to show the trade what adulteration or fraud is going on.

Yours truly, W. T. BARKER.

Trenton, Aug. 27th, 1874.

Students' Department.

Answers to the following questions must be sent in so as to be received by the editor before the twentieth of each month. Competitors must be engaged in the drug business, not being proprietors or having passed examination, and must furnish, with the answers sent, their real names and addresses. It is trusted that all answers sent will be the *bona fide* work of competitors, and that no assistance will be sought except such as is afforded by books.

Answers requiring calculation and involving fractions must be given in decimals, which need not be carried beyond the third place.

The following books are offered this month as prizes:—

FIRST PRIZES.

United States Dispensatory.
Parrish's Pharmacy,
Garrod's Materia Medica.
Gray's Manual of Botany.
Fownes' Chemistry.

SECOND PRIZES.

Gray's First Lesson's in Botany.
U. S. Pharmacopœia, 1873
Wittstein's Practical Pharmaceutical Chemistry.
Roscoe's Chemistry.

Successful competitors may select from any of the above works, and on notifying the editor, the book selected will be forwarded by post.

QUESTIONS.

1. *Chemistry.*—How much nitric acid, officinal strength, is *theoretically* required to oxidize the quantity of phosphorus mentioned in the officinal process for Acid. Phosphoric. Dilutum? (Answer to be given in ounces, avoir., and decimal parts thereof).

2. *Pharmacy.*—How many grains are there in one imperial pint of *Syrupus, B. P. and U. S. P.?*

3. *Materia Medica.*—Give an account of the history, collection, properties, and medical uses of the various kinds of Aloes used in medicine, or occurring in commerce. (Answer not to exceed one page foolscap).

4. *Botany.*—Give instances, from indigenous plants, of the more common leaf forms.

5. *Dispensing.*—Describe the various methods of making quinine into pills, with objections to each; and the precise quantity of ingredients necessary for making into pilular form ten grains of quinine.

6. *Prescriptions.*—Write, in unabbreviated Latin, a prescription for an eight-ounce mixture; to contain 16 doses; each dose to consist of thirty drops of Tinct. Opii, five drops Ol. Anisi, ten grains Magnes. Carb., and half an ounce of water. Give appropriate directions for administration, every two hours, and make any remarks necessary as to dose, best method of compounding, &c.

ORDER OF MERIT.

Maximum Number of Marks = 70.

No.	NAME.	Chemistry.	Pharmacy.	Materia Medica.	Botany.	Dispensing.	Prescriptions.	Extra.	Total.
1	G. Inglis, Yorkville	9.9	9.9	9.0	9.0	10.0	10.0	9.0	66.8
2	"Hydrogen," Ottawa	9.9	9.9	10.0	10.0	4.0	9.0	10.0	62.8
3	J. H. Bowman, London....	9.9	9.0	10.0	10.0	9.0	5.0	9.0	61.9
4	A. Wilson, Hamilton	8.0	9.9	8.0	8.0	6.0	8.0	6.0	53.9
5	J. E. McGarvin, Orangeville	9.4	6.0	10.0	10.0	7.0	2.0	8.0	52.6
6	J. E. Shore, London	8.5	9.0	7.0	10.0	3.0	7.0	5.0	49.5
7	T. A. Hewitt, Toronto	8.0	9.0	6.0	10.0	8.0	4.5	4.0	49.5
8	J. Jepson, Woodstock	2.0	5.0	10.0	10.0	9.0	5.0	6.0	49.0
9	R. N. Thurtell, Guelph....	7.0	9.0	8.0	6.0	4.0	4.0	7.0	45.0
10	F. A. Brady, Ingersoll	8.0	5.0	6.0	10.0	6.0	4.0	4.0	43.0
11	R. E. Scott, Sarnia	1.0	7.0	8.0	10.0	10.0	3.0	3.0	42.0
12	R. A. Kirkland, St. Thomas.	2.0	3.0	8.0	8.0	9.0	5.0	5.0	42.0
13	B. Robinson, Kingston	4.0	3.0	5.0	10.0	5.0	5.0	5.0	37.0
14	J. A. Perry, Simcoe	....	....	8.0	10.0	8.0	2.0	8.0	36.0
15	A. B. Welford, Woodstock.	2.0	3.0	6.0	2.0	8.0	6.0	4.0	31.0
16	H. Polson, Walkerton	2.0	2.0	3.0	10.0	8.0	1.0	0.0	26.0
17	S. G. Warren, Walkerton..	2.0	2.0	3.0	10.0	8.0	1.0	0.0	26.0
18	G. McLaren, Watford	....	....	7.0	.....	6.5	4.5	5.0	23.0
19	T. Comport, Woodstock ..	3.0	4.0	5.0	7.0	1.0	2.5	0.0	22.5
20	R. Muir, Toronto	9.0	5.0	7.0	7.0	....	....	0.0	22.0
21	A. Doherty, Caledonia	1.0	5.0	1.0	1.0	2.0	2.5	0.0	12.5

The FIRST PRIZE is awarded to Mr. G. INGLIS, Yorkville; the Second Prize to Mr. ROBERT MCCORMICK, Ottawa.

If these gentlemen will designate their choice of prizes, the books selected will be forwarded by mail.

ADVICE TO COMPETITORS.

We have been much gratified at the answers received, and more especially at the care bestowed on some of the papers. There are, however, some points of failure to which allusion may, with advantage, be made. These may be appropriately put in the way of advice; and we would recommend competitors to give this a careful perusal.

Never attempt to answer a question without you thoroughly understand its meaning. We always endeavour to make our questions as plain as possible; but it appears that there are some who misapprehend their true purport. Of this character were several competitors at the last trial, who, in answering the second query, requiring a list of the strengths, &c., of all the alcohols officinal in the B. P. & U. S. P., gave alcoholometrical tables, taking up many pages, and yet not conveying the precise answer to the question.

Never copy verbatim from any published work. It would seem unnecessary to offer this suggestion, but we have met with a number of instances where pages have been copied entire from some standard book. Students need never attempt anything of this kind, as it is always certain to be detected, and will affect disastrously the value assigned to the answer. As no notice had been given in relation to this matter, we have in the last examination made allowances which will not be repeated. It will, therefore, be well to understand that, in future, such answers will be accounted of no value whatever.

Having a thorough understanding of the meaning of the question, make yourself thoroughly acquainted with the subject to which it refers, and, in as short and concise a form as possible, put your ideas on paper. A celebrated Frenchman once sent to a friend a very long letter, and excused himself for the length of the epistle by saying that he had not time to write a shorter one. Realize the force of this illustration, and carry it out in framing your answers.

Always consider neatness an essential. Slovenly, blotted, and partly illegible papers are seldom of much value. Neat and well arranged answers carry with them a recommendation independent of other considerations, and greatly influence the value of "extra" marks.

Use foolscap paper, and sign your name at the foot of each page. This is for the convenience of the examiner. It will be at once seen that to keep in order four or five quires of paper, of every conceivable shape and size, is no easy matter; and without the signature it is possible that some confusion might occur.

Send the answers on Dispensing and Prescriptions on a sheet or sheets separate from the rest. Mr. Gregory, of Lindsay, has kindly consented to take charge of this department, and it is necessary that answers be sent to him for the ratings. The same reason renders it necessary for all papers to be in the hands of the editor before the 20th of each month. Answers received after this will be disregarded.

Transactions of Pharmaceutical Colleges and Societies.

AMERICAN PHARMACEUTICAL ASSOCIATION.

(Reported by Mr. Saunders.)

The twenty-second annual gathering of the American Pharmaceutical Association was held in the City of Louisville, Ky., beginning on the afternoon of the 8th of September. This city is very centrally situated on the Ohio River, and within very easy access of Nashville, Cincinnati, Indianapolis, Chicago, and other important cities. It has a population of about 150,000. The fine halls in the Liederkranz buildings were placed at the disposal of the Association, and the first session was called to order at 3 o'clock by the President, John F. Hancock, of Baltimore.

There were present Vice-Presidents Wm. Saunders, London, Ontario; Paul Balluff, New York; Treasurer Chas. A. Tufts, Dover, N. H.; Secretary John M. Maisch, Philadelphia; Local Secretary E. Scheffer; Reporter on Progress of Pharmacy, C. Lewis Diehl, and sixty-nine members.

The following Committee on Credentials, was appointed: Paul Balluff, New York; Geo. Roberts, Baltimore; and Wm. Saunders, London, Ontario, who reported the presence of duly authorized representatives from the following Colleges of Pharmacy and Pharmaceutical Societies:

Philadelphia College of Pharmacy; Massachusetts College of Pharmacy; Maryland College of Pharmacy; Chicago College of Pharmacy; New York College of Pharmacy: Louisville College of Pharmacy; Cincinnati College of Pharmacy; National College of

Pharmacy, Washington; Tennessee College of Pharmacy; Ontario College of Pharmacy; New Hampshire Pharmaceutical Association; Indianapolis Pharmaceutical Association; Literary and Scientific Association of the German Apothecaries of New York; New Jersey Pharmaceutical Association; Newark Pharmaceutical Association; Lexington Pharmaceutical Association; Richmond Pharmaceutical Association; Washington Pharmaceutical Association; St. Clair Pharmaceutical Association of Southern Illinois; Alumni Association, Philadelphia College of Pharmacy; Alumni Association, New York College of Pharmacy; Alumni Association, Massachusetts College of Pharmacy; Alumni Association, Maine College of Pharmacy.

A committee was appointed to nominate officers for the year, with instructions to report the following morning. A committee on specimens on exhibition was also named. The annual reports of the Secretary and Executive Committee were read and adopted, after which the President was called upon to deliver his annual address. After reviewing the progress of Pharmacy during the year, President Hancock dwelt at some length on the very important subject of the education of pharmacists; several useful and practical suggestions were made, which were subsequently acted on by the Association.

Second Session—Wednesday Morning.

The Association was called to order at 9 o'clock, when the minutes of the last meeting were read and adopted.

The Nominating Committee submitted the following report:

For President—C. Lewis Diehl, Louisville, Ky.

Vice-Presidents—Joseph Roberts, Baltimore, Md.; Wm. T. Wenzell, San Francisco, Cal.; Augustus R. Bailey, Boston, Mass.

Treasurer—Charles A. Tufts, Dover, N.H.

Local Secretary—To be ballotted for at the close of the session.

Reporter on Progress of Pharmacy—C. Lewis Diehl, Louisville, Ky.

The Secretaryship is not open to nomination, as Prof. John M. Maisch, of Philadelphia, Pa., is the permanent incumbent.

COMMITTEES.

Executive Committee.—Geo. W. Kennedy, chairman, Pottsville, Pa.; Wm. McIntyre, Philadelphia; J. L. Lemberger, Lebanon, Pa.; Chas. A. Heinitsh, Lancaster, Pa.

Committee on Drug Market.—Wm. Wright, jr., chairman, New York; J. P. Muth, Baltimore, Md.; Emil Scheffer, Louisville, Ky.; Wm. F. Horton, Boston, Mass.; John Calvert, San Francisco, Cal.

Committee on Papers and Queries.—Wm. Saunders, chairman, London, Ont.; John F. Judge, Cincinnati, Ohio; W. S. Thompson, Washington, D.C.

Business Committee.—E. H. Sargent, chairman, Chicago, Ill.; T. R. Baker, Richmond, Va.; Wm. H. Eagle, Harrisburg, Pa.

Committee on Unofficinal Formula.—Richard V. Mattison, Philadelphia, Pa.

Committee on Adulteration and Sophistication.—Adolph W. Miller, chairman, Philadelphia, Pa.; M. L. Peixotto, New York.; J. R. Mercian, Jersey City, N. J.

Committee on Legislation.—John M. Maisch, Philadelphia, Pa.; T. L. A. Greve, Cincinnati, Ohio; B. Ferguson, Washington, D.C.; Geo. J. Luhn, Charleston, S. C.; A. G. F. Streit, Belleville, Ill.; S. S. Garrigues, East Saginaw, Mich.

Committee on Liquor Dealers' Licence of Apothecaries.—F. Hassencamp, Baltimore, Md.; Jas. S. Robinson, Memphis, Tenn.; W. T. Baldus, Washington, D.C.; John Colgan, Louisville, Ky.; E. C. Jones, Philadelphia, Pa.

Committee on Infringement of Stamp Tax.—Oscar Olberg, chairman, Washington, D.C.; J. Faris Moore, Baltimore, Md.; Herman Vogelbach, Philadelphia, Pa.

Committee on Photographic Album.—P. W. Bedford, chairman, New York; J. S. Kirkbride, St. Louis, Mo.; John A. Milburn, Washington, D. C.; George H. Schaffer, Ft. Madison, Iowa; Benjamin Lillard, Nashville, Tenn.

Committee on Ebert Prize.—Charles Bullock, chairman; Wilson H. Pile, John M, Maisch, Philadelphia, Pa.

Permanent Committee on the Pharmacopœia.—George F. H. Markoe, Boston, Mass.; P. W. Bedford, New York; Alfred B. Taylor, Philadelphia, Pa.; J. Faris Moore, Baltimore, Md.; Albert E. Ebert, Chicago, Ill.; Wm. H. Crawford, St. Louis, Mo.; Jas. C. Wharton, Nashville, Tenn.; C. Lewis Diehl, Louisville, Ky.; Richard Stabler, Washington, D. C.; John F. Judge, Cincinnati, Ohio; C. H. Dalrymple, Morristown, N. J.; Chas. A. Tufts, Dover, N. H.; Wm. Saunders, London, Ontario; Paul Balluff, New York.

THE NEW PRESIDENT.

Prof. C. Lewis Diehl, the newly elected president, was conducted to the chair by Messrs. Gordon and Moore, John F. Hancock, of Baltimore, retiring. Prof. Diehl, on taking the chair, made a few brief remarks expressive of his thanks for the distinguished honor conferred upon him by the Association.

The chairman of the committee on the drug market read a very interesting and instructive report, which should be read in full to be appreciated. Among other matters of interest, it was stated that the recent reduction in the price of Borax was due to the fact that the United States now produces annually some 3000 tons, while the home consumption does not exceed 600 tons. The cause of the recent advance in the price of opium was due to unfavorable reports from Smyrna regarding the crop of 1874. Iodine, which was

formerly obtained almost exclusively from Scotland and France, is now procured almost exclusively from Peru, where it is prepared from the mother liquors of nitrate of soda; about 30,000 lbs. are annually obtained from this source. Iodine now is not more than half the price it commanded but a short time since, and will probably decline still further, unless a combination of the European and Peruvian manufacturers can be effected.

Mercury has largely advanced, and is still advancing. This is chiefly due to a falling off in the production of the various mining districts, the California mines are not yielding as much as formerly, the Borneo mines are producing but little, so also the Austrian mines. It was expected that the greatly advanced prices would stimulate production, but little perceptible increase has taken place.

Oil of Peppermint has advanced on account of injury to the crop from frosts during the past winter, while the oils in the market have been largely adulterated. Rhubarb is in full supply at comparatively low figures. Pink Root is now being offered in considerable quantities at moderate prices. Senega Root is rather scarce and commands higher figures, but that offering is of good quality. Indigenous drugs are now supplied chiefly from the South, where many of them grow most luxuriantly, and where labor is cheaper than it is in the North.

The report of the Committee on Adulteration and Sophistication of Drugs, which was submitted by the chairman, Charles Rice, and read by the secretary, was adopted and referred for publication. We append a few interesting extracts from this document.

HOW TO INSURE THE PURITY OF THE DRUG MARKET.

It should be the aim of this association to stand guard over the quality of all substances relating to pharmacy, and to seek out and denounce all frauds. To do this properly, a committee should not only gather all information obtainable from others, but should especially direct their attention to some prominent staple articles, obtaining samples at various places, and carefully examining or analyzing them.

To represent the actual state of the market, samples should be purchased anonymously by confidential and discreet agents, appointed for certain districts, say one for each State, who could send their samples to said committee for examination.

This plan is, no doubt, susceptible of improvement; but if it were carried out it would, in the course of time, develop a central bureau for the detection of adulterations, and result in the establishment of a museum, with all the facilities and appliances for conducting these necessary experiments. Thus would be secured to our people a portion of the benefits which England derives from its "Adulteration Act."

The report is divided under three heads; first, crude drugs and commercial products; second, chemical and pharmaceutical preparations; and third, miscellaneous substances.

We shall, however, notice but few articles under the above captions.

CRUDE DRUGS AND COMMERCIAL PRODUCTS.

Balsam of Fir.—Under the name "Oregon Balsam of Fir," an eleoresin has, during the last year, appeared in commerce. Prof. Maisch could not trace this drug beyond New York. It is a thick, transparent, bright, brown liquid, of a turpentine and aromatic odor. On rubbing it between the fingers, different odors become apparent, and last of all, that of nutmegs. It is probably a solution of resin in oil of turpentine, flavored with the oil of *Eucalyptus globulus* and the essential oil of nutmegs.

Balsam of Peru.—Reference was also made to the Balsam of Peru as having been found adulterated with liquid storax.

Dandelion.—Attention was called to the fact that chicory had been foisted upon the market as Dandelion Root, and of that spurious article a so-called officinal Fluid Extract of Dandelion had been prepared and sold for the genuine extract.

Ginger.—Some so-called Jamaica ginger was found to be common or American ginger, whitewashed and dusted over with Plaster of Paris.

Linseed Oil.—As used for manufacturing printers' ink, has been found adulterated with cod liver oil, previously made almost odorless.

Olive Oil.—Much of the Italian olive oil used for table purposes was said to be only fish oil made at home.

Rhubarb.—Reference was also made to rhubarb, of the common variety, being rubbed with turmeric to give it the fine light yellow color of the Turkey species.

CHEMICAL AND PHARMACEUTICAL PREPARATIONS.

Acids.—In regard to the three mineral acids—nitric, muriatic and sulphuric—the latter is the only one found generally pure. The impurities of the commercial acetic, citric, tartaric and other acids were dwelt upon and clearly illustrated.

Citrate of Magnesium.—The substitution, or at least admixture, of tartrate of soda is as common as ever. The necessity of accurate knowledge upon this and other matters, as insisted upon in England, was couched in an incident in the case of a druggist in Bermondsey, England, who, having a call for some granular citrate of magnesium, bought two pounds from a neighbor, and sold one-fourth of a pound over the counter immediately. On analysis, this was found to contain citric and tartaric acids, carbonate of sodium and sugar. His defense, that he had sold it as he had bought it, and had had no time to analyze it, was of no avail, and he was accordingly fined ten pounds and costs.

Cream of Tartar.—The usual impurities are still reported; among others, carbonate of magnesium, salt and starch.

MISCELLANEOUS SUBSTANCES.

The British papers and journals are full of reports and trials under the "Adulteration of Food Act," for selling adulterated articles of consumption, such as tea, coffee, mustard, butter, flour, pepper, cocoa, jams, bread, etc., etc.

Butter.—This was found to be adulterated with lard, drippings, tallow, palm oil, and oils or fats from certain seeds.

Flour.—The great staple was found sometimes to contain alum, as much as ten grains in four pounds.

Extract of Meat.—Mr. Thomas Williams found fifty grains of red lead in a can of South American extract; said can having been painted red to give it a more showy and saleable appearance.

Port Wine.—To detect spurious port wine, add to a portion of it in a test-tube an equal volume of amylic alcohol, and shake. The upper layer will assume a more or less characteristic pink or purple color. Genuine port wine yields no color to fusel oil. The poisonous matters used to color wine may produce fatal effects.

REPORT OF COMMITTEE ON LEGISLATION.

The report of the Committee on Legislation was read by the chairman, Secretary Maisch. This was in reference to various laws passed by the Legislatures of several States, in regard to the regulation of pharmacy, which were reported to be succeeding well; this being especially the case with reference to the States of Alabama, Kentucky and Missouri.

Answers to several Queries were read. One on American Extract of Liquorice by A. W. Miller of Philadelphia, with samples. Another by P. W. Bedford of New York in reference to the impurities contained in commercial sulphate of potassium. One from Chas. Rice, of New York, on the various processes of preparing oleate of mercury. Still another on the alcoholic and aqueous extracts of quassia, by J. S. Whall of Boston. G. W. Kennedy, of Pottsville, Pa., read a paper on the manufacture of suppositories, in which he reported in favor of making them by hand, claiming that in this way the ingredients could be more uniformly mixed and the suppositories as quickly made as with the moulds. The reading of this paper elicited a good deal of discussion, in which many of the members took part, we could not help thinking that those in favor of the moulds had the best of the argument.

At the close of the morning session the Association proceeded in a body to the lower Liederkranz Hall to examine the articles on exhibition. The hall was very tastefully arranged and much credit is due to the local secretary, Mr. E. Scheffer, for the excellent disposition made of the various articles shown. In the centre of the hall Mr. A. Laner, Florist, of Louisville, had a beautiful display of plants and flowers. A very fine display of Drugs and Pharmaceutical products was made by Messrs. Hazell, Marsh and Gardiner, of New York. We observed particularly some unusually fine Cardamom Seeds, a sample of Gurgun Balsam, a new substitute for Copaiba, a huge bottle of magnificent scales of Pyrophosphate of Iron, and many other excellent products. The firm was represented by Mr. P. W. Bedford, whose gentlemanly courtesy, and untiring good nature and zeal in the interests of Pharmacy have made him a special favourite. Messrs. Rosengarten & Sons, of Philadelphia, and White & Co., of New York, both had very fine displays of choice chemicals, but the most extensive exhibitors in this department were Messrs. G. Mallinckrodt & Co., of St. Louis, Mo. Two hundred choice specimens of chemicals were shown by this firm, all very tastefully arranged. The gem of this collection and that which seemed to attract the wonder and admiration of all visitors was a

large piece of most beautifully crystallized Metallic Bismuth. Messrs. Hance Bros. and White of Philadelphia, made a very nice display, consisting chiefly of Fluid Extracts, and sugar coated pills, besides which they had a very useful Drug Mill. McKerson & Robbins also had a large collection of Fluid Extracts, Fruit Syrups, Chamois, Sponges, Perfumery and Fancy Goods. Sargeant Studley & Co., of New York, had a case of elegant Ivory Goods, consisting largely of Ivory back Brushes and Looking Glasses, and Ivory Combs; the price set on one of the handsomest brushes was $35. Dr. Pile, of Philadelphia, had a table covered with carefully made Specific Gravity Bottles, Hydrometers, Aluminium grain Weights, &c. A beautiful Soda Fountain was shown by C Lewis Diehl, of Louisville, made for him by Wm. Gee, of Philadelphia. Messrs. Good, Roof & Co., of New York, importers of Brandies, Wines, &c., had a large display in their line; there was also a handsome lot of Druggists Glass Labels exhibited by Messrs. Winterburn and Stoz of Cincinnati.

Messrs. B. O. & G. C. Wilson of Boston, had a very fine collection of Botanic Drugs. E. Scheffer & Co., exhibited his Pepsin in the three forms of dry, liquid and saccharated. Among the other exhibitors were G. H. Schafer & Co., of Fort Madison, Iowa, Messrs. R. A. Robinson & Co., and Arthur Peter & Co., of Louisville.

[Owing to want of space we are compelled to defer until our next issue the publication of the conclusion of this report.—ED. CAN. PHAR. JOUR.]

BRITISH PHARMACEUTICAL CONFERENCE.

We are indebted to the *Pharmaceutical Journal & Transactions*, for the following summary of the proceedings of the Conference:

"The business of the first—and probably for a long time the only—visit of the British Pharmaceutical Conference to London has terminated, and about the time of the publication of these pages many of the members will be preparing to start on the excursion by which the London pharmacists crown their efforts to rivet the bonds of friendship which have been established and strengthened between them and their provincial brethren. Whether for the number and quality of the papers, or the interesting discussions that have followed the reading of them, the meeting of 1874 has been a success, the only drawback having been that the number of members attending it have hardly equalled the hospitable hopes of the Local Committee. The interest with which the proceedings of the Conference are watched by pharmacists outside Great Britain was demonstrated by the presence of Dr. de Vrij, from the Hague, Colonel Fornie and Mr. Dobbin from the United States, M. Adrian and M. Gallois from Paris, and Dr. Frazer and Professor Tichborne from Dublin.

"The Conversazione was attended by about three hundred and fifty gentlemen, who found ample occupation in examining the chemical, pharmaceutical, microscopical, botanical, and other articles in the exhibition, or in witnessing the demonstration by Mr. Davies of Mr. Crookes's experiments to show the attractive and repellent properties of light and radiant heat.

"On Thursday the General Meeting of the Conference auspiciously commenced by the announcement that five hundred members had been elected by the Executive Committee the previous day. The President's address, which is printed *in extenso* in another page, was confined to topics of a political nature, and will doubtless obtain the careful consideration of all pharmacists, as containing the opinions of so experienced a leader of their body.

"The first paper was read by Dr. de Vrij, and described a new method of estimating the pharmaceutic value of cinchona barks, by which not only the alkaloids, but also other active substances, particularly the cinchotannic acid, may be readily determined by the pharmacist himself. At the invitation of the President, Mr. Broughton contributed some important observations as to the state in which the alkaloids exist in the barks (viz., one-fifth quinate, four-fifths tannate), furnishing a key to the principle best applicable for their extraction. He also mentioned the practice in India, of employing the combined alkaloids. In the discussion which followed, Mr. Umney and Mr. Giles criticized severely the liquid extract of cinchona of the B. P., the former recommending percolation with proof spirit (product to contain 1 in 1).

"Prof. Fluckiger contributed two papers; in one he reported that he had determined the deposit from essential oil of nutmegs, known generally as myristicin, to be really myristic acid; in the other he described the chemistry of elemi.

"Dr. de Vrij then gave the result of his experience of the anthelmintic virtue of pomegranate root-bark.

"It was appropriate that it should have fallen to the lot of the President to present the first of the reports of investigations, towards the expenses of which grants have been made by the Conference from the funds entrusted to it by Mr. Thomas Hyde Hills. The subject was a continuation of his researches upon the aconite bases. Mr. Groves having prepared specimens of the alkaloids, the determination of their chemical constitution was undertaken by Dr. C. R. A. Wright, who arrived at the conclusion that aconitine, pseudaconitine, and another body which Mr. Groves's at first thought to be Mr. Broughton's atisine, are polymerides. Mr. Broughton has, however, since stated that he is certain that the body to which he has given the name of atisine is not of the same centesimal composition as aconitine, so that Mr. Groves's alkaloid may prove to be a fresh discovery.

"This report was followed by another that had been entrusted to Mr. A. W. Gerrard, on the official plasters, which was an able

criticism of the present formula, and contained several suggestions for their improvement; Mr. Gerrard was also able to contribute to the information of many present by a dexterous demonstration of the art of plaster spreading.

"The use of oleic in pharmacy was the subject of a valuable paper by Professor Tichborne, in which he advocated the substitution of oleic acid for soap in the perparation of the liniments of the Pharmacopœia, and he illustrated his argument by the preparation of Linimentum Ammoniæ, Lin. Potassii Iodidi c. Sapone, Lin. Saponis, and Lin. Terebinthinæ. Objection was raised as to the difficulty of obtaining a sufficiently pure oleic acid, but Mr. Tichborne said that it could be obtained with facility, and even if this be not at present the case, there can be little doubt that a supply would follow the demand.

"Mr. Stoddart then described a modification of Liebig's process for the estimation of phosphoric acid, and afterwards practically exhibited the method of estimating the quality of milk recently suggested by Mr. Horsley, of Cheltenham, which consists in treating the milk in long tubes with ether and water. by which means the casein, salts and butter fat are separated in distinct layers. This process he also proposed to extend to the analysis of butter, showing by experiment, that lard, for instance, in the cold, was not wholly soluble in ether, and therefore separated from the normal butter fat. The perfection of this test was, however, questioned, especially by Dr. Redwood, who, admitting that the test might detect a clumsy adulteration with lard or suet, was of opinion that there was no proof that it would expose a skilful admixture of fats more nearly approaching butter in its physical character.

"This concluded the business of the first day's meeting. In the evening the members dined together at the Cannon Street Hotel.

"On Friday the first paper read was a 'Note on Cortex Rhamni Frangulæ,' by Mr. H. C. Baildon, In continuation of his own and other previous remarks on this bark, Mr. Baildon urges the importance of selecting *good samples*, *i.e.*, corresponding to such a description as that of the German Pharmacopœia, and for administration he recommends concentrated decoction (or liquid extract); also a concentrated tincture. The paper led to the expression of a considerable amount of personal testimony to the value of black alder bard as an aperient.

"Mr. Louis Siebold mentioned the important fact that the concentrated Liq. Amm. Acetatis exerts a very evident solvent power on any lead which may be present in the glass vessel containing it, and suggested the propriety of keeping such solution in bottles of Bohemian glass.

"In a 'Note on Scammony,' by Mr. T. Greenish, the use of

the microscope was recommended in preference to iodine for examining starch present in scammony, to ascertain whether it was derived accidentally from the scammony root, or from wheat, etc.; the shapes of the granules, and especially of the hilum, being quite characteristic. He has found samples of *lump* virgin scammony invariably free from all starches, whilst every sample *in powder* as uniformly contained scammony starch, and some of them wheat starch in addition, which he attributes to the powder being prepared from the smaller fragments contained in cases of mixed qualities of the drug.

"Hydrocyanic acid furnished the topic of not less than four papers. Mr. Barnard S. Proctor recorded the results of some experiments having for their object the discovery of a process for extemporaneous preparations of official acid, and also of a solvent that would diminish the variation in strength dependent on evaporation. Of three solvents,—water, alcohol, and ether,—the latter he found to maintain most nearly its percentage of hydrocyanic acid. Two substitutes for the B. P. hydrocyanic acid were discussed by Mr. W. A. Shenstone, namely, the double cyanide of zinc and potassium proposed by Mr. Towerzey, and the hydrocyanic acid (1-10 of B. P. strength), proposed by Dr. Tilden. Experiments by Mr. Shenstone indicate that acid of 0.2 per cent. suffers trifling (if any) loss from either volatilization or decomposition. Mr. Shenstone also found solutions of the double cyanide perfectly stable. He did not, however, approve of its substitution for the B. P. preperation, but he thought the 0.2 per cent. acid would be legitimate. Mr. J. Williams stated that he had found that 20 per cent. of glycerine preserves acid up to the strength of about 5 per cent. This application of glycerine was suggested by the knowledge of its effectiveness in the case of solution of sulphuretted hydrogen.

"Mr. L. Siebold had found that a dilute acid 0.1 per cent. $^{m}xx = ^{m}j$ B. P. does not deteriorate much in one month in an 8-oz. bottle in daily use; in unopened bottles it will keep at least three months. He also gave a useful caution to inexperienced chemists when estimating the strength of hydrocyanic acid by Liebig's (nitrate silver) method, that alkalinity to test paper is not necessarily an indication that sufficient alkali has been added.

"A contribution to the growing literature respecting the administration of phosphorus was made by Mr. Williams, who prefers for that purpose a solution in alcohol and glycerine, and is of opinion that many of the preparations used and supposed to contain a certain amount of phosphorus, would, if carefully examined, prove to contain in a more or less oxidized condition.

"We must content ourselves with a bare enumeration of the other papers. Mr. Barton expressed a preference for the direct treatment of sarsaparilla root with spirit in larger proportion, in the preparation of the extract. Mr. Haffenden contributed a paper on

the confections of pharmacy; Mr. Muir on Potable Water, and its contamination in house cisterns, and Mr. Daniels on the the syrups of the phosphates. Mr. H. Groves, of Florence, sent some interesting information respecting the medicinal plants in use among the Tuscans, and Mr. Hunt added to our knowledge of the pharmacy of the Flowery Land. Professor C. R. A. Wright sent two papers; one on the 'Essential Oils of Wormwood, Citronella, and Cajeput,' and the other a continuation of his researches on the opium alkaloids. Mr. E. Smith suggested a method for the recovery of iodine from the waste in the preparation of iodoform. Mr. W. E. Heathfield sent some notes on the extracts of aconite, belladonna, hemlock, henbane, and colchicum, and Mr. Schacht took the opportunity of explaining the scope of some experiments he is making to ascertain the relative proportions of conia present in the succus and extract of conium. The last paper read was by the President, and described his experience in the preparation of trimethylamine from the skate.

"Nothing now remained to be done but to pass the usual votes of thanks, to elect the officers, and decide the place of meeting for the ensuing year. It was resolved to meet at Bristol, and again under the presidency of Mr. T. B. Groves."

Registrar's Notices.

LIST OF RENEWALS.—CONTINUED.

Bickle, Thomas, Hamilton.
Boulton, H. C., Exeter.
Crocker, W. H., Waterdown.
Cummines, Thos., Welland.
Deyell, Robt., Port Hope.
Eadie, A. B., Wingham.
Frood, Thos., Southampton.
Harvard, A., Toronto.
Inglis, W. M., Montreal.
Jackes, Baldwin, Toronto.
Jackson, Geo., Egmondville.
Lushington, J. P., Amherstburg.
McLean, John, St. Mary's.
McLennan, Chas., Warkworth.
Matthews, Edwd., Waterford.
Nasmyth, J. H., Stratford.
Ormond, Chas., Peterboro'.
Perrin, Sam., Lindsay.
Rosser, H., London.
Salter, John, London.
Sheppard, C. A., Barrie.
Strong, W. T., London.
Tully. J. D., Peterboro'.
Urquhart, John, Oakville.
Walsh, Wm., Peterboro'.
Williams, Josh., Montreal.
Wright, J. P., Kincardine.

NEW REGISTRATIONS.

Burgess, J. E., London.
Rooke, Thos. S., Toronto.

Anonymous correspondent at Innisfil will be good enough to send name and address to the Registrar.

GEORGE HODGETTS, Registrar.

Drugs, Medicines, &c.	$ c.	$ c.
Acid, Acetic, fort	0 14 @	0 15
Benzoic, pure	0 22	0 27
Citric	1 40	1 50
Muriatic	0 05	0 06
Nitric	0 11½	0 15
Oxalic	0 22	0 23
Sulphuric	0 03¾	0 07
Tartaric, pulv	0 50	0 50
Ammon, carb. casks	0 23	0 24
" jars	0 23	0 24
Liquor, 880	0 25	0 28
Muriate	0 14	0 15
Nitrate	0 45	0 60
Æther, Acetic	0 45	0 50
Nitrous	0 40	0 42
Sulphuric	0 50	0 50
Antim. Crude, pulv	0 15	0 17
Tart "	0 55	0 65
Alcohol, 95 per ct.....Cash	2 02	2 05
Arrowroot, Jamaica	0 18	0 22
Bermuda	0 50	0 65
Alum	0 02¾	0 03¾
Balsam, Canada	0 33	0 38
Copaiba	1 00	1 05
Peru	3 40	3 75
Tolu	1 15	1 20
Bark, Bayberry, pulv	0 20	0 22
Canella	0 17	0 20
Peruvian, yel. pulv	0 42	0 50
" red "	2 10	2 20
Slippery Elm, g. b	0 15	0 20
" flour, packets	0 28	0 32
Sassafras	0 15	0 8
Berries, Cubebs, ground	0 20	0 25
Juniper	0 06	0 10
Beans, Tonquin	0 62	1 10
Vanilla	30 00	30 00
Bismuth, Alb	2 90	3 00
Carb.	3 10	3 25
Camphor, Crude	0 38	0 4
Refined	0 45	0 50
Cantharides	2 20	2 30
Powdered	2 30	2 40
Charcoal, Animal	0 04	0 06
Wood, powdered	0 10	0 15
Chiretta	0 23	0 30
Chloroform	1 00	1 55
Cochineal, S. G	0 65	0 70
Black	85	90
Colocynth, pulv	0 60	0 65
Collodion	0 70	0 80
Elaterium	3 20	4 00
Ergot	0 32	0 45
Extract Belladonna	1 50	1 60
Colocynth, Co	1 25	1 75
Gentian	0 50	0 60
Hemlock, Ang	0 00	0 95
Henbane, "	1 50	1 60
Jalap	5 00	5 50
Mandrake	1 75	2 00
Nux Vomic	0 40	0 50
Opium	1 80	
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 32	0 40
Gum, Aloes, Barb. extra	0 70	0 80
" " good	0 40	0 50
" Cape	0 16	0 20
" " powdered	0 20	0 30
Socot	0 50	1 35
" " pulv	1 00	0 00
Arabic, White	0 70	0 75
" powdered	0 60	0 75
" sorts	0 24	0 30
" " powdered	0 42	0 50
" com. Gedda	0 13	0 16
Assafœtida	0 40	0 42
British or Dextrine	0 13	0 15
Benzoin	0 35	0 75
Catechu	0 12	0 15
" powdered	0 25	0 30
Euphorb, pulv	0 35	0 40
Gamboge	1 40	1 50
Guaiacum	0 45	1 00
Myrrh	0 50	0 85

Drugs, Medicines, &c.—*Contd.*	$ c.	$ c.
Sang Dracon	0 60	0 70
Scammony, powdered	6 00	6 50
" Virg. "	14 50	—
Shellac, Orange	0 80	0 85
Gum, Shellac, liver	0 70	0 75
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 21	0 30
Vienna	0 29	0 30
Prices	0 60	0 75
Honey, Canada, best	0 15	0 16
Lower Canada	0 14	0 16
Iron, Carb. Precip	0 20	0 25
" Sacchar	0 40	0 55
Citrate Ammon	1 75	1 80
" & Quinine, oz	0 57	0 58
" & Strychine	0 20	0 25
Sulphate, pure	0 08	0 10
Iodine, good	5 25	5 50
Resublimed	7 00	7 25
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 15	0 16½
Leptandrin.....oz.	0 60	—
Liq. Bismuth	0 50	0 75
Lye, Concentrated	1 50	1 60
Liquorice, Solazzi	0 50	0 55
Cassano	0 23	0 40
Other brands	0 14	0 25
Liquorice, Refined	0 35	0 45
Magnesia, Carb..... 1 oz.	0 20	0 25
" ..... 4 oz.	0 17	0 20
Calcined	0 65	0 75
Citrate.....gran.	0 60	0 75
Mercury	2 00	2 10
Bichlor	1 80	1 90
Chloride	2 10	2 20
C. Chalk	0 75	80
Nit. Oxyd	2 20	2 30
Morphia Acet	5 60	5 65
Mur.	5 60	5 65
Sulph	5 70	5 75
Musk, pure grain.....oz	25 00	—
Canton	0 60	1 20
Oil, Amonds, sweet	0 40	0 45
" bitter	14 00	15 00
Aniseed	4 00	4 25
Bergamot, super	7 00	7 25
Caraway	3 20	3 50
Cassia	2 00	2 25
Castor, E. I	0 16	0 18
Crystal	0 22	0 25
Italian	0 26	0 28
Citronella	1 15	1 25
Cloves, Ang	3 50	3 75
Cod Liver	1 05	1 50
Croton	1 75	2 00
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	4 00	4 25
ord	3 20	3 40
Orange	3 00	3 25
Origanum	0 65	0 75
Peppermint Ang	15 00	16 00
" Amer	5 00	5 50
Rose, Virgin	7 80	8 00
" good	6 60	7 00
Sassafras	0 75	1 90
Wintergreen	6 00	6 50
Wormwood, pure	4 00	6 00
Ointment, blue	1 30	1 50
Opium, Turkey	10 00	10 50
pulv	00 00	12 00

DRUGS, MEDICINES, &c.—*Cont'd*	$ c.	$ c
Orange Peel, opt.	0 30	0 36
" good	0 12½	0 20
Pill, Blue, Mass.	1 60	1 65
Potash, Bi.chrom	0 18	0 20
Bi-tart	0 33	0 35
Carbonate	0 14	0 20
Chlorate	0 45	0 50
Nitrate	8 00	9 00
Potass um, Bromide	85	0 90
Cyanide	0 60	0 65
Iodide	4 50	5 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	0 95	1 00
Podophyllin	0 50	0 60
Quinine, Pelletier's	—	2 45
Howard's	2 52	—
" 100 oz. case.	2 50	—
" 25 oz. tin..	2 47	—
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 50	2 75
" E. I.	0 75	0 90
" " pulv	1 00	1 10
" " 2nd	0 60	0 70
" French	0 75	—
Sarsap., Hond	0 50	0 52
" Jam	0 88	0 90
Squills	0 10	0 15½
Senega	0 90	1 00
Spigelia	0 25	0 30
Sal., Epsom	2 25	3 00
Rochelle	0 32	0 35
Soda	0 02½	0 03
Seed, Anise	0 13	0 16
Canary	0 05	0 06
Cardamon	2 15	2 50
Fenugreek, g'd	0 08	0 09
Hemp	0 06½	—
Mustard, white	0 14	0 16
Saffron, American	0 75	0 85
Spanish	12 00	13 00
Santonine	7 50	8 00
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	6 20	6 50
" Howard's	0 14	0 16
Caustic.	0 05½	0 05¾
Spirits Ammon., arom	0 35	0 35
Strychnine, Crystals	2 25	2 50
Sulphur. Precip	0 10	0 12½
Sublimed	0 03½	0 05
Roll	0 03	0 04½
Vinegar, Wine, pure	0 55	0 60
Verdigris	0 35	0 40
Wax, White, pure	0 75	0 80
Zinc. Chloride oz	0 10	0 15
Sulphate, pure	0 10	0 15
" common	0 06	0 10
DYESTUFFS.		
Annatto	0 35 @	0 60
Aniline, Magenta, cryst	2 50	2 80
" liquid	2 00	—
Argols, ground	0 15	0 25
Blue Vitrol, pure	0 09½	0 10
Camwood	0 06	0 09
Copperas, Green	0 01½	0 02½
Cudbear	0 16	0 25
Fustic, Cuban	0 02½	0 04
Indigo, Bengal	2 40	2 50
Madras.	0 85	0 90
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 01⅞	0 03
Extract	0 9½	0 12
" 1 lb. bxs.	0 13	—
" ½ lb. "	0 14	—
Madder, best Dutch	0 11	0 12
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 35	0 38
Cloves	0 60	0 62
Cayenne	0 28	0 30
Ginger, E. I.	0 19	0 20
Jam	0 29	0 30
Mace	1 65	1 75
Mustard, com	0 20	0 25
Nutmegs	1 15	1 20
Pepper, Black	0 22½	0 23
White	0 31	0 32
PAINTS, DRY.		
Black, Lamp, com	0 07 @	0 08
" refined	0 25	0 30
Blue, Celestial	0 08	0 12
Prussian	0 65	0 75
Brown, Vandyke	0 10	0 12½
Chalk, White	0 01	0 01½
Green, Brunswick	0 07	0 10
Chrome	0 16	0 25
Paris	0 30	0 35
Magnesia	0 20	0 25
Litharge	0 07	0 09
Pink, Rose	0 12½	0 15
Red Lead	0 07¼	0 08
Venetian	0 02½	0 03½
Sienna, B. & G.	0 07	0 08
Umber	0 07	0 10
Vermillion, English	2 00	2 10
American	0 25	0 35
Whiting	0 85	0 90
White Lead, dry, gen	0 08½	0 09
" " No. 1	0 07	0 08
" " No. 2	0 05	0 07
Yellow Chrome	0 12½	0 35
" Ochre	0 02½	0 03½
Zinc White, Star	0 10	0 12
COLORS, IN OIL.		
Blue Paint	0 12 @	0 15
Fire Proof Paint	0 06	0 08
Green, Paris	0 30	0 37½
Red, Venetian	0 07	0 10
Patent Dryers, 1 lb tins	0 11	0 12
Putty	0 03¾	0 04½
Yellow Ochre	0 08	0 12
White Lead, gen. 25 lb. tins	2 35	—
" No. 1	2 10	—
" No, 2	1 85	—
" No. 3	1 60	—
" com	1 30	—
White Zinc, Snow	2 75	3 25
NAVAL STORES.		
Black Pitch	4 10 @	4 50
Rosin, Strained	4 10	—
Clear, pale	5 75	7 25
Spirits Turpentine	0 50	0 52
Tar Wood	4 40	4 50
OILS.		
Cod	0 63 @	0 70
Lard, extra	0 95	1 00
No. 1	0 90	0 95
No. 2	0 80	0 85
Linseed, Raw	0 70	0 72
Boiled	0 75	0 77
Olive, Common	1 05	1 10
Salad	1 80	2 30
" Pints, cases	4 20	4 40
" Quarts	3 25	3 50
Seal Oil, Pale	0 75	0 75
Straw	0 68	0 70
Sesame Salad	1 30	1 35
Sperm, genuine	2 35	2 40
Whale refined	0 70	0 75