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Original and Selected Papers.

DR. DAVY'S NEW TEST FOR ARSENIC.

BY H. H. CROFT.

Dr. Edmund Davy* has proposed a modification of Fleitman's test for arsenic, or rather for arseniuretted hydrogen, which, for convenience, ease of execution and susceptibility, seems to leave nothing to be desired. The objections to Marsh's test are that the zinc or the sulphuric acid may contain arsenic, and may vitiate the test, unless previous trials be made for the purpose of ascertaining their purity. The apparatus required, especially where very small quantities have to be sought for, may not be within the reach of those who have not a tolerably well-appointed laboratory. Nothing can exceed Marsh's proof for elegance and accuracy when properly carried out, but it appears to the writer that the new plan is so satisfactory and simple as to warrant its introduction in by far the larger number of cases.

Fleitman recommended the production of arseniuretted hydrogen by the action of caustic potassa on zinc, in presence of arsenic. The gas evolved was made to act on paper moistened with silver nitrate, when a dark brown stain is produced by arsenic, but none by antimony; the latter metal not giving antimoniuretted hydrogen in alkaline solutions. To avoid the possibility of arsenic in the

*Chemical News, No. 846.

zinc employed, aluminum and magnesium have been recommended as substitutes. The galvanic test is, as Dr. Davy states, altogether too troublesome for general use. The writer has been in the habit of using Fleitman's test for some years, but, as stated by Dr. Davy, it labours under the disadvantage of not giving off the arseniuretted hydrogen, unless with the aid of heat, and its accuracy depending on the purity of the zinc.

Dr. Davy uses sodium-amalgam, made by adding one part of metallic sodium to eight or ten parts of gently warmed mercury, (this quantity of sodium seems to be too large, say one to twenty), whereby a solid amalgam is formed. Neither of these metals are at all likely to contain arsenic, and the latter may be easily purified by nitric acid, if necessary.

The substance to be examined, whether in a liquid or even in a solid form, such as copper-arsenite, arsenate, aniline colours, arsenical sulphides, or even finely powdered arsenic itself, is introduced into a little water in a test tube and a piece of the amalgam about the size of a grain of wheat introduced. The tube is then rapidly covered with a piece of paper soaked in silver nitrate, or a crucible cover moistened with a drop of the solution, which should be made by dissolving twenty grains of silver nitrate in one ounce of water, and adding two drops of nitric acid. The solution becomes of course at once alkaline, and evolves arseniuretted hydrogen, which, acting on the silver solution, produces at once, by separation of silver, a brown mark on the paper, or a silvery stain on the porcelain. To avoid any effect by accidental spirting, Dr. Davy recommends to cover the mouth of the tube with a piece of bibulous paper, and place the nitrated paper, or porcelain, above this.

One thousandth of a grain of arsenious acid in one cubic centimeter of water can be readily detected, and even one millionth after a short time.

Antimony, under similar circumstances, *e.i.*, in alkaline solutions, gives no such result: hence it may be better to make the liquid strongly alkaline before adding the amalgam; but if acid (tartaric) be added, then antimoniuretted hydrogen is evolved and a very similar stain produced from silver antimonide.

These stains—by arsenic or antimony—may be very easily distinguished by soaking in ammonium sulphide, filtering off the solution obtained, evaporating to dryness and observing the colour

of the residue and its behavionr to hydrochloric acid. That from arsenic is yellow and insoluble, that from antimony, orange, and soluble in the acid.

It may be remarked that these stains are not due to deposition of arsenic or antimony, as in Marsh's test, but to formation of silver or silver antimonide; hence they do not totally disappear on treatment with potassium iodate (the writer's favourite test) or sodium hypochlorite.

The test has been tried in the writer's laboratory with most satisfactory results. The following salts have been examined and found to give most reliable indications. A most minute trace was, in each case, employed--probably not the hundredth of a grain. While paper moistened with silver nitrate gave, in some cases, almost imperceptible marks, those obtained from porcelain covers moistened with a drop of the silver solution, in all cases exhibited the reaction; more especially on warming gently. To make the experiments, very short test tubes or small porcelain capsules may be employed; in long tubes the result is not so satisfactory.

Scheele's green—a most minute trace.
Schweinfurth green " "
Arsenic (Cobalt) " "
Copper Arsenate " "
Ammonium-Magnesium Arsenate.
Calcium Arsenate "
Calcium Arsenite "
Ferric Arsenate "
Barium Arsenate "
Arsenic Sulphides "
Donovan's solution.

The writer has also tried Copper-nickel and Arsenical Pyrites (Mispickel) with most satisfactory results.

The test seems, therefore, to be one that while easily available is also excedingly delicate.

University College, Toronto, March 16th, 1876.

LABORATORY NOTES ON OILS.*

BY J. T. ARMSTRONG, F.C.S.

Analytical chemists have no more difficult task than the examination of most of the fatty oils, and with very few exceptions the report they return to the merchant who sends them the oils for examination is far from being so satisfactory as could be wished. The difficulties are chiefly these: First, that the specific gravity is but of little avail, especially when oils are adulterated with other oils of similar nature; and, secondly, the lack of standard samples for chemists to base their results upon. When we remember that there are about sixty kinds of oils having an animal or a vegetable origin, we need not be surprised that analytical chemists should have such a limited knowledge of their individual composition.

Further, to be thoroughly *au fait* in oil analysis, our analytical chemists would require to be constantly on 'Change, to see how the markets were going, because these regulate the class of oil used for adulteration; for it would never pay him to examine an oil for the ordinary fee so thoroughly as to tell the precise adulterant, unless he had some previous indication of what would probably be used. The necessity for more information on the identity of oils is shown by the errors made by Dr. Morgan a few weeks since, when he stated in court, first, that train oil was a vegetable product, and then, on being again asked, said it was a mineral oil.

First, let us examine some of the tests for oils in general use, and which I may call imperfect tests for the reason that if they detect an adulterant the oil must not have been adulterated skilfully.

Colour Tests.—Among these are what I call colour tests, such as adding to the oils to be tested sulphuric acid or different alkalies and noting the change of colour and the different shades produced. I have always found these insufficient as regards most of the seed oils, and but barely useful in respect of most of the fatty oils, except where the colour has been of a very marked character, and not, as is the case with most samples, only just a shade different from colour produced if the oil be genuine. There are, however, a few exceptions when such tests are very useful. As an example, if I take 20 parts of olive oil and agitate the same with 2 parts of ammonia, a thick liniment is the result; but if I take 20 parts of poppy-seed oil and add 2 parts of ammonia I get a crumbly mass.

Oilometers.—The next tests we have to examine are the oilometers in use. These, unless very accurately made and used in conjunction with a thermometer, are but of little use, and at any

*Read before the Liverpool Chemists' Association, and published in the Chemist and Druggist.

time only as a rough test, for some of the oils run so near each other (take, for instance, olive, rape and seal), that it is impossible to detect the admixture of one with the other. Of course the difference between Sperm and Gallipoli is easily shown, and if sperm oil be adulterated with another fish oil to 12 per cent. it is readily observed by the oilometer. But the makers of these instruments are not particular enough to adjust them to the exact temperature, nor do they make them fine enough, because too short in the stem. It is, I am sure, unnecessary for me to describe the manner in which the oilometer is used after what I have said, but the following table will show you the range of the instruments. I give the record of a few out of many experiments made with them :

Seal oil	16
"	28½
Pale seal	22
Dark seal	23½
Menhadden oil	20½
" "	21½
East Indian fish oil	18½
Double refined cotton-seed oil	24½
Cotton oil	23
American cotton oil	24
" "	24½
Linseed oil	21
Syracuse	26
Lard oil	26
Mineral oil	16
Sperm oil	43
" "	40
Rape oil	27½

HYDROMETERS.—There is a hydrometer made with a range of 850° to 950°, which for light fluid oils, such as ordinary mineral lubricating oils, I have found very useful, and having a length of tube of about 12 centimetres, it will be fonud to be, for ordinary purposes, fairly accurate, but being adjusted at 60° the oil to be tested must be at that temperature. Of course, if the gravity of the oil is regulated by mixing it with resin or india rubber this test will be of no avail, and others must be made.

VISCOSITY OF OILS.—The viscosity of oils is another comparative test, which consists in noting the time an oil takes to run through a tube kept for the purpose, and the time, either longer or shorter as the case may be, that one oil takes than another. This gives the result wished for, the temperature being kept in all cases the same. For example, if a certain quantity of water runs through a tube in twelve seconds, olive oil will take 197 seconds. This,

with the testing of the oil for acid and the length of time it takes to run a certain distance on an uninclined sheet of iron before becoming "gummy," is, perhaps, one of the best for generally testing oil in respect to its lubricating power.

SPECIFIC GRAVITY.—Perhaps one of the best tests, if you first get a pure oil to start with (as a standard), is that of specific gravity. The co-efficient of expansion of the oil should also be taken into consideration, but the care and manipulation required is very great if accurate results are to be attained. I use a 50 gramme bottle, and find first what weight of distilled water it contains at 50° C. I next determine the weight of the same quantity of the oil and its temperature. Lastly, the weight of the oil is divided by the weight of the water. This gives the specific gravity. The co-efficient of expansion in this way has been found to be 0·00063 for every 1° C. Some time ago, in relation to this subject, a gentleman published in the *Chemical News* a list of 38 experiments made with different oils, and gave at the same time in a very able manner (for he was treating a difficult subject) the way his experiments were performed, but with respect to his results given about some of the oils, my experiments do not compare favourably. Whether he or I had the pure oil to work upon is to be proved. I just say this to show the difficulty of procuring pure oils for first experiments, for I have no doubt our experiments were both accurately performed.

And now to examine a few of the oils individually.

PETROLEUM.—A good test for petroleum oil is to mix sulphuric acid with its own bulk of water and add the oil to be tested. The water and acid ought to become a little yellow, and, of course, the oil whiter, when mixed together. It should have a specific gravity of between 0·797 and 0·805, and be perfectly sweet in smell. I am sorry to say that the Americans are loading the burning oils they are sending into this country with as much naphtha as they possibly dare. This is a state of things that ought not to be allowed, and it is quite time the Government looked more fully into the indiscriminate sale of these highly dangerous burning oils, for I firmly believe from experiments made by myself that if the oils spoken of were thoroughly tested, and results of quantities put together, it would be found that more than two-thirds of the oil sold would give off inflammable vapours at under 105° Fahr. The subject of the testing of petroleum oils is one that would repay any chemist to give much time and attention to.

BOILED LINSEED OIL.—I should have wished to have said much upon the subject of boiled linseed oil, for I have given it a little of my attention, but time has prevented me from doing so. I have found that the oil must be perfectly clean and bright before being boiled, and the heat raised to about 325°. The older the oil is in its raw state the better, and the chief cause why we have so many complaints on every hand about boiled linseed oil is because every

maker thinks he has succeeded in finding something by adding which he can cause it to absorb oxygen from the air, thereby making it a good dryer; but my experience has been that there are very few of these materials, and the few are all expensive ones, that at all benefit the oil by being mixed with it. It would be a great deal more to the advantage of the oil if makers were to pay a little more attention to its manipulation, and not care so much about trying to make it dry as quickly as possible, but to make it last on the wood as long as possible.

RAW LINSEED OIL.—Linseed oil has been sold for pharmaceutical use mixed very largely with cod oil, which, of course, for many purposes will be very deleterious. It is detected by mixing 40 grammes of the oil with 12 grammes of nitric acid and well agitating together. It is then put by till the acid and oil separate, and if the oil has a darker brown colour and the acid become yellow, it is a proof of adulteration with cod oil. One of the chief reasons that it is so difficult to get a pure sample of linseed oil is that where the crushers procure the seeds other seeds get mixed with the linseed. This I have often found to be the case, but this might be remedied by sifting, as the other seeds are of a different size.

RAPE-SEED OIL.—The English makes of rape oil I have found of late very much adulterated with hemp-seed oil. For many purposes it is always necessary to test the oil to see if all the acid that has been used in refining it is thoroughly washed out. Most of the cruciferous seeds contain a small portion of sulphur, and this acts as a good basis to go upon to distinguish this class of seed oil from others, such as nut oil and linseed oil.

OLIVE OIL.—Olive oil I have found adulterated with an admixture of rape and resin oil, cotton-seed oil, poppy-seed oil, linseed and rape oil. There is a great difference in the olive oil sent into this country, even from the same places, and I have always found that the oils that are sent home first, being those that are made from the first ripe fruit, are the best, and I am sure of this, that many improvements are to be made in its manufacture and in the gathering of the fruit that would greatly enhance its monetary value both to the grower and manufacturer.

DETERMINATION OF ALCOHOL IN FUSEL OIL.—Perhaps it would be well to state for the benefit of any pharmacists present that the London Custom House authorities test the amount of alcohol in fusel oil in the following manner—by adding equal volume of water to the liquid to be tested, and agitating the same thoroughly. They then allow it to stand for about ten hours, and find it by that time separated into two layers, the fusel oil of course being the top one. The lower layer is taken, and its specific gravity found, the difference between that and the specific gravity of the original water indicating by calculation the proportion of spirit. I fancy, from my own experience, there must be a better test than this, for I fear the

result may not always be the alcohol present, but some other body. In my note-book I find a remark to the effect that it would well repay anyone to examine the essential oils for water, which most of them contain, although they appear to be perfectly limpid ; and I throw this out as a hint for some one present to take up the question, for all my own spare time will be employed with the fatty oils, as I am sure the question will well repay careful examination.

RESIN OIL.—This oil is chiefly made by means of distillation in the ordinary manner from the American varieties of resin, and is chiefly used for the manufacture of ordinary carriage grease, and I am sorry to say, on account of its readiness to combine with other oils, is often employed as an adulterant. It is, however, easily detected when used a little freely by heating any mixture with which it may be combined the smell of the resin will be readily perceptible. There are some sorts of resin oil, which, when specially purified, are very suitable for mixing with other oils for machinery with heavy bearings, and which moves with great rapidity, but the strong smell and its tendency to deposit resin when hot must be entirely removed before using it.

TRAIN OIL.—Great quantities of resin oil are used for the adulteration of this oil, the strong smell of the fish hiding that of the resin, and also because the oils strongly resemble each other in respect to their density.

MINERAL OIL.—Perhaps the question of adulteration of animal and vegetable oil with mineral is one of the most important, and one upon which much has been said and written, yet, I am sorry to say, to but little purpose. There is no doubt that for many kinds of machinery the admixture is very beneficial, and is carried on to a very great degree. I think such mixture would prove commercially beneficial to users of steam power in the hands of those who know their business, and who carry on the same in a straightforward and honest manner. But it would never do, as is thought by some, to leave the mixture of these oils to the consumers themselves, for the simple reason that the buying of the mineral oil necessitates the thorough testing of many samples before a good one can be got, and afterwards the oils should be mixed under the guidance of those who have been scientifically taught how to do it. Oil thus mixed is readily detected by its bluish tinge and by its smell. If not thus, it can in most cases be proved by seeing if the oil will saponify. Some people have been led away with the idea that the gravity of the oil will readily tell an admixture of mineral, but such is not the case, as oils are being made of same specific gravity as those with which they are to be mixed ; and I know that a large Scotch firm had an order recently for some mixed mineral oil, to be of the same specific gravity as Malaga olive, and this was delivered to the firm giving the order in large quantities.

MINERAL OIL AND OTHER OILS.—There has been much talk

of late in the cotton spinning district about the number of fires that have occurred in cotton mills, and some who have not taken trouble to inquire thoroughly into the subject have put it down to the innovation of a mixture of mineral oils with other oils, such as olive, that has been long used to lubricate the spindles in these mills. This led me to make a number of experiments on the subject, and I found on taking an average of my results, and considering that I only used first-class mineral oils, although I used many sorts of seed and animal oils, that the addition of mineral oil, instead of increasing the liability to fire the mills, retarded the same, and also that the more mineral oil the mixture contained the less liability was there of the same firing.

EXTRACTS FROM AN ESSAY ON PARAFFIN AND ITS USES IN PHARMACY.*

BY F. STACY. CHARLESTOWN, MASS.

The increase in the flow of oil in Pennsylvania since 1867 has been nearly fifty per cent. The export of petroleum in 1860 was only 1,500,000 gallons; in 1868, 99,000,000; in 1870, 141,000,000; and to-day, 300,000,000 gallons are annually consumed.

All the crude oil that comes to the seaboard is brought in tank-cars, having an average capacity of 3,600 gallons each. There are about three thousand of these cars now in use, although the numbers on them run as high as five thousand six hundred. The great bulk of the oil produced goes to New York, where it is pumped into large iron tanks, erected at the termini of the different lines, some of these tanks holding thirty thousand barrels, or 1,200,000 gallons. The total storage capacity of all the yards is about 8,000,000 gallons. From these yards the oil is taken in tank-boats or barges, of which there are forty, with a total carrying capacity of 1,300,000 gallons, to the different refineries, where it is converted into kerosene, naphtha, paraffin, coal-tar, and the like.

The discovery of paraffin has been generally credited to Reichenbach. According to Wittstein, the late Dr. Buchner discovered it in 1820, ten years before Reichenbach mentions it. Dr. Buchner named it *bergfett* (mountain fat), and describes its properties accurately. Paraffin of the first quality resembles wax, and is not affected by light or air. It is soluble in benzol, chloroform, and bisulphide of carbon. It has a peculiar feeling while held in the hand, and produces insensible perspiration. It can be made from the destructive distillation of any fatty oils.

*Read before the American Pharmaceutical Association, and published in the Proceedings.

Immense quantities of this article are used in the manufacture of candles, both in this country and England, and it makes an excellent article. The next largest purchasers are the refiners of beeswax, who use enormous amounts in the adulteration of that article. The average price of paraffin is from twenty to thirty-five cents per pound, and the average price of beeswax forty-five to sixty-five cents; spermaceti about the same.

Prof. James F. Babcock, in an essay on beeswax (p. 374 of Proceedings, 1867), says: "Paraffin is capable of taking the place of wax to a much greater extent than has been supposed. When melted with oils it forms crystalline scales on cooling, but this property is entirely destroyed by the addition af five to ten per cent. of wax, this addition causing the mixture to cool in a homogeneous mass without crystallization." Paraffln, in solution in naphtha or bisulphuret of carbon, has been used as an application to cloth to render it waterproof; and to metallic surfaces, gilt, or tinselled articles, etc., as a protective varnish. It may also be found suitable as an application to leather, cordage, etc., for the same purpose. A saturated solution of paraffin in benzol has been used with success in preserving pictures and photographs. Paraffin has the advantage over other greasy matters in not becoming coloured by time. Large quantities are sold to confectioners, who purchase the soft or gum-stock, which is used largely in chewing-gums and some of the varieties of soft candy. It has been used with success in coating fruits, which retained their freshness for months; also for coating the interior of barrels. The manufacturers of some of the varieties of friction-matches use this article to render the wood more inflammable, and it is also beginning to be largely used for laundry purposes, many retailers having daily calls for it for that purpose. It is useful in the preservation of wood, and meat has been kept good many weeks by immersion in it. It is used in starch manufactories to give a gloss to starch. Falke recommends it as a substitute for the more expensive wax in the preparation of wax paper. He says: "Paraffin is not only much more easily applied than wax, but, as before stated, is much less costly, and will no doubt soon rival parchment paper in its application. The melting-point of the different bodies presenting the appearance and properties of paraffin lie between 100° and 149°, which is a lower temperature than that required for the liquefaction of wax, and hence it is more easily applied, and remains in a fluid condition for a longer time, which enables it to permeate the paper more readily. The wax-paper, on being slightly overheated, chars very easily, which is avoided to a great extent by using paraffin, inasmuch as the latter body volatilizes or distils off unchanged at a high temperature. Wax-paper, when kept for some time, emits an offensive odor, which is not the case with paraffin. Paraffin is not attacked by acids or alkalies, which renders it useful for many purposes in which wax does not

answer; at the same time it is nearly fifty per cent cheaper than wax, and permeates paper about one third more rapidly."

In 1874 the value of the exportation from New York was $63,481; from Boston, $1,455; Philadelphia, $334; total $65,270. The result of the writer's investigations in regard to this article are, that it possesses many qualities which render it useful in the laboratory, and that it is gradually working its way into pharmacy, and is destined to become extensively used in our profession for a variety of purposes.

Filtering-paper, after being soaked in it, may be kept several weeks in concentrated sulphuric acid without undergoing the slightest alteration; for this property, it is employed with advantage as a coating to labels on bottles containing strong acid; fluoric acid does not act upon it except it be heated. Its value for luting purposes is too well known to be mentioned. At the Downer Kerosene Works there are three varieties of this stock manufactured, viz., A, test 130° melting-point, B. test; 125° melting-point; and No. 2, 120° and upwards. The elegant sample which you see before you, so firm and solid in its structure, is No. A; the other, which appears to be lighter and more porous, is No. 2, which is the quality recommended by Mr. Merrill, of the Downer Works, for pharmaceutical purposes, it being softer and less liable to crystallize. The failure of so many pharmaceutists to make a handsome ointment with this valuable agent may be attributed in a great measure to their using the harder quality of the paraffin.

ON BROMIDES AND HYDROBROMATES.*

BY CHARLES BULLOCK, PHILADELPHIA.

When bromine is united direct with the caustic alkalies, it plays the same part as iodine and chlorine, forming five parts of bromide and one of bromate.

The most important of the bromine compounds is the potassium salt. By the United States Pharmacopœia bromide of iron is first formed, and the ferrous bromide decomposed by carbonate of potassium. The British Pharmacepœia directs its preparation by the union of bromine with caustic potash. The bromate formed during the process is reduced to bromide by subsequent calcination of the product with charcoal.

Of the two processes, the British offers the advantage of avoidance of a tedious washing of the precipitated carbonate of iron, and a long evaporation.

*Read before the American Pharmaceutical Association, and published in the Proceedings, 1875.

The bromide of potassium, now so extensively in use, is made by the manufacturers on a large scale by the process of the British Pharmacopœia.

The alkaline bromides, other than of potassium and sodium, can readily be prepared by the process of Ferdinand F. Mayer, described in his paper "On Alkaline Iodides and Bromides," published in the American Journal of Pharmacy, 1862, vol xxxiv. p. 289. The action of ferric iodide and bromide with alkaline carbonates, whether the carbonates are soluble or insoluble, gives rise to alkaline iodides and bromides; while the presence of an excess of iron causes the reduction of the oxygen acids (if formed). The products are free from iodates and bromates. I have repeatedly used the process of Mr. Mayer with success and satisfaction.

In the preparation of bromides of iron, zinc and cadmium, there is no difficulty experienced, bromine uniting, as it does directly, with these metals. In the case of cadmium the union of the elements is slow, and time has to be allowed to perfect the process.

Bromide of ammonium is directed by the United States Pharmaceopœia to be prepared by decomposition of ferrous bromide by ammonia water. Mr. Charles Rice, in the American Journal of Pharmacy for 1873, vol. xiv., p. 249, describes a process for the preparation of this salt by the decomposition of bromide of potassium by sulphate of ammonia. The sulphate of potassium formed is rendered more insoluble by the addition of alcohol. The process described by Dr. Wilson H. Pile for making this salt, published in the Proceedings of the American Pharmaceutical Association for 1874, p. 434, affords a ready method for its production. The author states that no bromide of nitrogen is formed, and that the product is free from bromate.

For the *extemporaneous* preparation of bromides, there is no process more satisfactory than the decomposition of bromide of barium by a sulphate of the base desired, when that sulphate is soluble. Bromide of barium is readily prepared by the process of Mr. Mayer, before alluded to.

It is desirable, however, to utilize some bromine salt in common use for this purpose. Bromide of potassium offers this advantage; and, if the bromide to be obtained is soluble in dilute alcohol, the product will be almost entirely free from impurity. The process is based on the sparing solubility of sulphate of potassium in dilute alcohol, one fluid ounce of dilute alcohol taking up only 1.25 per cent. of sulphate.

The literature of the bromides of the organic bases is very scant, and experiments had to be made to determine their character, with the following results:

Hydrobromate of cinchonia crystallizes in prismatic needles. 100 parts of water, at 70° F., take up 5.6 parts of the salt. It is sparingly soluble in alcohol, and dissolves readily in dilute alcohol.

Hydrobromate of morphia crystallizes in prismatic needles. 100 parts of water, at 70° F., take up 9 parts of the salt. It is sparingly soluble in alcohol, and dissolves readily in dilute alcohol.

Hydrobromate of quinia crystallizes in prismatic needles, having a disposition to arrange themselves in rosettes. 100 parts of water, at 70° F., take np 2.1 parts of the salt. It is sparingly soluble in alcohol, and dissolves readily in dilute alchol.

Bihydrobromate of quinia crystallizes in cubical plates. 100 parts of water, at 70° F., take up 38.7 parts of the salt. It is sparingly soluble in alcohol, and dissolves readily in dilute alcohol.

Hydrobromate of strychnia crystallizes in prismatic needles. 100 parts of water, at 70° F., take 3.2 parts of the salt. It is sparingly soluble in alcohol, and dissolves readily in dilute alcohol.

All of the aforementioned bromides of the organic bases being soluble in dilute alcohol, the following formulas for their manufacture yielded satisfactory results:

Hyrobromate of Cinchonia.

R. Cinchoniæ Sulph.....36.6 grains.
Potassii Bromidi .....11.7 "

Dissolve the cinchoniæ sulph. in one fluid ounce of warm alcohol, and the bromide of potassium in one fluid drachm of water. Mix the solutions; filter from the precipitated sulphate of potassium; add one and a half fluid ounces of water to the alcoholic filtrate, evaporate, and crystallize.

Hydrobromate of Quinia.

R. Quiniæ Sulph .....43.6 grains.
Potassii Bromidi.....11.7 "

Dissolve the quiniæ sulph in one fluid ounce of warm alcohol, and the bromide of potassium in one fluid drachm of water. Mix the solutions; filter from the precipitated sulphate of potassium; add two fluid ounces of water, evaporate, and crystallize.

Bihydrobromate of Quinia.

R. Quiniæ Sulph.....43.6 grains.
Potassii Bromidi .....23.4 "
Acid Sulph. Dil. (U.S.P.), gtt. xxxv.

Dissolve the quiniæ sulph. in half a fluid ounce of water, to which the dilute sulphuric acid had previously been added, and the bromide of potassium in one fluid drachm of water. Mix the solutions; add one fluid ounce of alcohol; filter from the precipitated sulphate of potassium, evaporate to six drachms, and crystallize.

Hydrobromate of Morphia.

R. Morphiæ Sulph .....32.5 grains.
Potassii Bromidi .....11.7 "

Dissolve the morphiæ sulph. in one fluid drachm of warm water,

and the bromide of potassium in one fluid drachm of water. Mix the solutions; add half a fluid ounce of alcohol; filter from the precipitated sulphate of potassium, evaporate, and crystallize.

Hydrobromate of Strychnia.

R. Strychniæ Sulph.. ..... 45.grains.
Potassii Bromidi... .....11.7 "

Dissolve the strychiniæ sulph. in a mixture of one fluid ounce of water and two fluid drachms of alcohol, and the bromide of potassium in one fluid drachm of water. Mix the solutions; add one fluid ounce of alcohol; filter from the precipitated sulphate of potassium, add one fluid ounce of water to the alcoholic filtrate, evaporate, and crystallize.

The term "bromide," applied to bromine combinations with organic bases, is of doubtful propriety, as the alkaloids neutralize hydrobromic acid without displacement of the hydrogen of the acid. The resulting salts are more correctly termed *hydrobromates.*

NEW INDUSTRIAL APPLICATIONS OF SALICYLIC ACID.*

BY M. R. WAGNER.

As the result of numerous experiments with salicylic acid, it appears that this product, which has hitherto been applied only to medicinal and pharmaceutical uses, may be usefully employed in numerous other departments of industry which have not hitherto been noted.

The author gives the results of his experiments in this direction, which we translate from *Le Technologiste*:

I.—THE PRESERVATION OF ALIMENTARY PRODUCTS.

Instead, as Kolbe directs, of sprinkling fresh meat with salicylic acid, in dry power, Wagner employs a saturated aqueous solution, with which the meat is watered, and afterwards preserved in hermetically sealed vessels.

Meat which had been thus treated on the 28th of April, 1875, and deposited in a cellar, was found, on the 20th of June, to have undergone no trace of decomposition, and gave no odor.

It is worthy of notice that a solution of salicylic acid causes raw meat after a time to assume the greyish appearance of meat which has been cooked.

Salicylic acid is a most valuable addition to salt brines used for the preservation of various articles of food, such as salted meats, pickles, &c.

*From the Laboratory.

Carbolic acid has been employed to some extent in the preparation of smoked meats as a substitute for the usual smoking, but it appears that salicylic acid answers the same purpose without the dangerous results which have sometimes resulted from this practice.

Fresh butter kneaded with 1 or 2 parts in a thousand of salicylic acid in powder, or, better, covered with a diluted solution, is preserved, even in warm weather, from two to eight times as long as ordinary butter prepared in the usual manner.

II.—PRESERVATION OF WINES AND VINEGAR.

Wagner adopts the ideas of Neubauer with regard to the employment of salicylic acid in œnology, and adds that the property of salicylic acid of preventing fermentation may become of great importance in the manufacture of wines and vinegar. A very slight addition of salicylic acid to a cask of wine retards fermentation to a very notable extent, so that delicate product can be fully preserved even in the warmest season.

III.—MANUFACTURE OF GLUE AND GELATINE.

Salicylic acid may be advantageously employed in the vats used for the marceration of the crude materials from which glue and gelatine are prepared. It is also valuable as an addition to the materials during the boiling, as it appears to facilitate the conversion of the tissues into gelatine. Aqueous solutions of gum arabic and gelatine are preserved for a long time by the addition of minute quantities of salicylic acid, without losing in any degree their adhesive properties.

The sizing used by weavers, as well as the paste employed by bookbinders, paper-box makers, &c., is prevented from decomposition by the addition of salicylic acid. The albumen of blood or of eggs may be preserved indefinitely in the same manner.

IV.—TANNING.

The introduction of salicylic acid seems to promise a new future to this important industry, as soon as this product is furnished at a sufficiently low price. By the use of a small portion of this acid, the operation of swelling (*gonflement*) may be much facilitated. The use of the sour bath made of refuse malt and bran, give rise be fermentation to putrid exhalations, especially when thick hides, like those destined for sole leather, are being prepared, when the operation may be prolonged for three or four weeks. In such cases, the addition of a small percentage of salicylic acid not only prevents the disagreeable odor, but gives to the hide a desirable reddish color. The employment of this acid is also advantageous in the manufacture of kid-skins intended for gloves, as well as in the preparation of parchment, vellum, gold-beaters' skins, strings for musical instruments, &c.

It is highly probable that salicylic acid may facilitate the ordinary action of the tanning materials, not only in its action upon the

gelatine, but in preventing the souring of the bark liquors by fermentation, producing gallic acid, which, as is well known, possesses no tanning action.

V.—THE PRODUCTION OF DYE COLORS AND WRITING INK.

Salicylic acid may prove useful to dyers for the production of violet shades.

The sensibility of this acid for the persalts of iron is, according to Dolfus, greater even than that of sulphocyanide of potassium; for while the latter, diluted with 64,000 times its weight of water, scarcely gives a reaction, salicylic acid gives a violet reflection even with a dilution of 572,000.

A violet-black ink may be prepared by the use of salicylic acid which possesses some advantages over the ordinary gallic inks. The production of a cheap writing fluid by its use is only a question of time.

VI.—PERFUMERY.

Salicylic acid promises to be of service to the perfumer; for, in addition to its combination with methyl—in methyl salicylic ether (oil of gaultheria) which may now be easily produced artificially—its combinations with other radicals to produce fragrant ethers may be of service.

The salicylate of potassium prepared by the neutralization of salicylic acid by carbonate of potassium exposed to the air becomes yellow and gradually decomposes, producing an intense odor of roses.

When the mixture is distilled with water, there is obtained a product having the odor of oil of roses.

Oil of spirea also may be prepared artifically by the decomposition of salicylic acid. The author is continuing his researches, and probably will be able to announce still further applications of this aid in other chemical arts.

THE BEST FORM OF BLISTERING LIQUID.*

BY JAMES DEANE, F.L.S.

The introduction of acetic ether into the Supplement to the British Pharmacopœia has brought into prominence the question of its use as a solvent of the active principle of cantharides in the preparation of blistering liquid. I, therefore, made a few experiments with the object of determining whether it was superior or not to a mixture of acetic acid and ether in its power of exhausting the can-

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

tharides. The results of my investigations are the subject of this paper.

I. I prepared 20 fl. ozs. of Liq. epispasticus, B. P., the formula for which is

Cantharides..... .....8 oz.
Acetic Acid .....4 fl. oz.
Ether .....a sufficiency

The cantharides are moistened with the acid, and the ether passed through in a percolator till 20 fl. ozs. of liquor is obtained. The liquid thus prepared had a sp. gr. of ·769 and the marc yielded to pressure about 5 fl. ozs. of ethereal liquid, and weighed after exposure for some days to the air more than 8 ozs.; after drying in a water bath it weighed 6½ ozs.

2 fl. ozs. of the liquor evaporated yielded 37·8 grs. of extractive, which was entirely soluble in chloroform, and yielded 0·8 gr. of cantharidin.

2 fl. ozs. of the expressed liquid treated in the same way yielded 6·2 grs. extractive, of which 0·7 gr. was cantharidin.

II. I made a liquor in the following manner:

8 ozs. of cantharides were moistened with 4 fl. ozs. of acetic ether, allowed to stand in a closely covered vessel for about twelve hours, packed in a pecolator, and acetic ether poured on till 20 fl. ozs. were obtained. The product had a sp. gr. of ·898. The marc yielded about 5 ozs. of pressings, and weighed, when dry, 6¼ ozs.

2 fl. ozs. of the liquor yielded an extract weighing 47·5 grs., this differed from the former in not being entirely soluble in chloroform, and in giving 2·2 grs. of cantharidine.

2 fl. ozs. of the pressings yielded 4·1 grs. extract, in which were visible small crystals of cantharidin, but not in sufficient quantity for estimation.

III. Professor Tichborne has before pointed out the fact of the water of the acetic acid in the B. P. preparation being retained in the marc, and recommended the employment of glacial acid instead of the acid of the ordinary strength. I therefore prepared some according to his directions, with the exception of mixing the acid with an equal quantity of ether before moistening the cantharides. The product had a sp. gr. of ·782. 2 fl. ozs. yielded 43·3 grs. extract, and 1·8 gr. cantharidin. 2 fl. ozs. of the pressings gave 2·7 grs. extractive and ·8 gr. cantharidin.

It will be seen from these results that the three preparations (judging from the amount of cantharidin they contain) stand in the following relation to each other with regard to efficiency:—B. P. .8; Tichborne, 1·8; acetic ether, 2·2, the number of grains respectively contained in 2 fl. ozs., which corresponds to 350 grs. of cantharides.

The cantharides employed in these experiments were freshly powdered; 500 grs. exhausted with ether, the ether distilled off, and the residue treated with bisulphide of carbon gave cantharidin, which

after washing with a few drops of alcohol weighed 2·9 grs. This is equivalent to 2·0 grs. from 350, the excess of ·2 gr. in experiment II., I attributed to the great difficulty in obtaining the cantharidin quite clean when acetic ether is used. The employment of chloroform in the estimation I found to be attended with disadvantages, it being very difficult to exhaust the cantharides by percolation with that menstruum, in consequence of the sp. gr. of the oil they contain being much less than that of the chloroform, and the first portion that passes through being therefore lighter than that which follows. To confirm my results I exhausted 500 grs. with acetic ether, and set the liquor aside to evaporate spontaneously; from this I obtained 2·9 grs. in large crystals.

It has been found in practice that a preparation made in the proportions of the B. P. formula is stronger than necessary; 4 or 5 ozs. to the pint being sufficient. If made of this strength, either acetic ether or the mixture of glacial acid and ether would extract all the virtue from the cantharides; and the question as to which is the better of these two menstrua becomes medical rather than pharmaceutical.

Mr. Brady, who experimented on the subject many years ago, says, "The objection to mixed fluids is that as the more volatile evaporates it causes a sort of centrifugal tendency in the atoms, and instead of drying evenly leaves a thick film at the circumference, whilst the centre is bare; the resulting vesicle being a ring, not an even circle, and surrounded by an areola of inflamed tissue of very painful sort."

It appears to me, therefore, that we have in acetic ether a compound admirably adapted to the preparation of blistering liquid; it thoroughly exhausts the cantharides, has a pleasant odour, and is free from the objection above-mentioned to the use of acetic acid and ether. Further, it may, if required, be used in the preparation of vesicating collodion, pyroxylin being readily soluble in it.

VASELINE, AND ITS APPLICATION TO SUPPOSITORY MAKING.*

BY A. W. GERRARD, F.C.S.

Under the name of vaseline a substance has recently been introduced into this country from America as possessing properties which recommend it as a basis in many respects superiour to ordinary fats and oils for ointments, cerates, and like preparations. This body is said to be purified residue remaining after the frac-

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

tional distillation of petroleum or rock oil. In colour it is a pale translucent yellow; its consistence is that of a slight jelly, being soft and unctuous to the touch; it is tasteless and odourless, and possesses a melting point of 94° F. It is chemically neutral and unoxidizable, and has, therefore, the desirable and important quality of freedom from rancidity, which is the most objectionable characteristic of the fats in ordinary use. In its behaviour to reagents it may be likened to paraffin, which is characterized by the obstinacy with which it resists change. Applied to the skin or an open wound it is readily absorbed, occasioning neither pain nor irritation.

Obviously, therefore, the uses to which this preparation may be advantageously applied are many and varied, but in that matter I will principally leave those who may use it to their own conceptions, experiments, and opinions. A sample of it coming before my notice, a probable use thereof which suggested itself to me was, as a basis for suppositories and pessaries, and several experiments were made to test its suitability. Vaseline alone is of too soft a character for this purpose, requiring the addition of some denser body to give it solidity. In seeking this hardening substance it was necessary to bear in mind that its melting point must not be so high, neither should it be used in such quantity as to render the preparation when made so that they would not melt at the temperature of the body. Such a substance I found in paraffin. This, when melted with vaseline in the proportions of one of the former to four of the latter, forms on cooling an excellent basis of firm consistence and elegant appearance, melting at the temperature of the human body. Suppositories made therefrom readily harden in and easily leave the moulds. They are somewhat more greasy to the touch than those prepared from oil of theobroma, but they possess some advantages over it. 1st. Having a melting point near the temperature of the body they melt slowly into an unctuous mass which is cleanly and causes no inconvenience to the patient. 2nd. Its absence from rancidity and liability to change give its preparations a more reliable and permanent character. 3rd. By reason of its power of contraction being greater than that of oil of theobroma, the suppositories leave the moulds with greater ease.

The price of the article is somewhat high compared with the substances for which it is intended as a substitute. it being 4s. 6d. per pound. I believe, however, there is a chance of its becoming cheaper.

The reading of this paper gave rise to the following discussion:

Mr. Martindale exhibited some samples of preparations of vaseline which had been kept for some two or three months, and he said that he was very much obliged to Mr. Moss for his investigation of the subject. He (Mr. Martindale) had not had a chance of going further into the matter than what he had published in his circular. He believed that the manufacturers were entirely at one with Mr. Moss in stating that vaseline did

contain paraffin, that is, that paraffin could be got out of it. What they disclaimed was, using paraffin wax in making it, or that it was an artificial compound made with paraffin wax and some other of the hydrocarbons similiar to it. He believed it to be a purified by-product got in the preparation of the petroleum oils for burning, which were largely imported into this country. He would draw attention to one preparation for which he thought it had special merits, and that was diluted nitrate of mercury ointment. This was an ointment which, when prepared in the usual way, became rancid in about twenty-four hours. If one part of nitrate of mercury ointment was diluted with seven of vaseline, it formed a preparation which would keep. The sample on the table was made on the 14th November, and still had a bright colour, and was unoxidized. The mercury had not been reduced to the metallic state, which would have been the case if the ointment had been made according to the Pharmacopœia formula. Then it was known that the ordinary ointments of zinc and lead soon became rancid; but when prepared with vaseline they would keep fresh for any length of time. There was on the table a specimen of red oxide of mercury ointment, which had been made ever since the 13th of November; also an acetate of lead ointment, containing two grains to the drachm, which was quite free from any rancidity. The latter substance was prepared with a vaseline of a paler colour than the other samples. The manufacturers had a purer preparation but they did not make it on a large scale. It was a form of vaseline entirely void of yellow colour, it was of a pure pale opal, and bore a great resemblance to glycerine starch. There was also some yellow oxide of mercury ointment, which had been made about two months. Vaseline would mix with glycerine, as Mr. Moss had stated, but only mechanically. There was no perfect homogeneous blending, and the substances could be separated by melting the mixture, in which case the glycerine went to the bottom and the vaseline came to the surface. Vaseline was largely employed in the United States as a pomade; and a perfumer in London had on hand a large quantity of the substance, and would, probably, very soon have a quantity of it prepared for the heads of the people of this country. It undoubtedly made a very elegant pomade. Cosmoline was made of two consistences, one of which resembled the preparation of vaseline, and had a melting point of about 90°. The other preparation of cosmoline had a melting point of somewhere about 105°. Undoubtedly the harder consistence of one preparation of cosmoline was due to its containing more of the paraffin wax. That could be added to the vaseline, and it formed a mixture which he called ceratum petrolei. That mixture was not like vaseline itself. On cooling, the paraffin separated from it, and the mixture required beating to form a homogeneous ointment afterwards, and to form it anything like a presentable preparation for pharmaceutical use. Vaseline took the colour from alkanet root very readily, and with a little perfume, such as otto of rose, formed an elegant lip-salve. He could scarcely agree with Mr. Gerrard that it was suitable for forming suppositories. In the ceratum petrolei he had one-seventh of paraffin wax. He took the melting point and he found it to be somewhere about 100° Fahrenheit, which was slightly above the temperature of the body. It was desirable that the melting point of suppositories should be decidedly and definitely below the temperature of the body. He did not think that the substance could be brought into use so as to surpass the ordinary oil of theobroma for the purpose of making suppositories.

Mr. Gale exhibited some samples of preparations which he had made from vaseline. He could confirm what Mr. Martindale had just said on

the subject, and he thanked Mr. Moss for his investigation. Among the samples were nitrate of mercury ointment diluted with vaseline, zinc ointment made as far back as the 4th of October, and red oxide of mercury ointment. These samples were in capital preservation.

The President, in expressing the thanks of the meeting to the gentlemen who had contributed information on the subject, said that vaseline seemed to be a very useful vehicle for various preparations and ointments, or a useful material, at least, in these ointments in which lard was generally used.

Professor Redwood remarked that vaseline appeared to give promise of being a very useful substance. It certainly was a very elegant one. All he had to say was that before they recommended it they should know a little more of its history.

Mr. Allchin said that he had heard of many bodies being brought forward as substitutes for lard, and this was another such substitute. His own experience was that, if they wanted the medicinal property of any one of those agents, such as nitrate of mercury and zinc, there was no better menstruum than lard. Paraffin, of all substances, appeared to be most objectionable, inasmuch as he felt quite certain that it would be found not to be absorbed by the skin. He knew of no body which was so readily absorbed by the skin as lard, and which, consequently, presented such advantages as a vehicle for the various agents. These substitutes for lard were not wanted. He knew that lard was a despised thing, but any one who had observed its qualities as much as he had would be of opinion that there was no substitute for it if they wanted the medicaments to be absorbed into the skin or the surrounding parts.

Mr. Williams said that he was himself going to make almost the same remark as Mr. Allchin had just made. He hoped that pharmacists would not permit themselves to recommend an article for medical use before it had been thoroughly investigated medicinally as well as practically. Paraffin might be a very beautiful thing for mixing such things as oxide of mercury, oxide of zinc, and oxide of lead ointments, but it was another question whether it would be good medicinally, and he believed that that question must be settled by the medical profession before they, as pharmacists, recommended the new substances. Paraffin was not one of the substances which, by well-known physical laws, would be indicated as likely to be absorbed by the system; whereas lard was admirably adapted for absorption, and oleic acid was still better. When, however, they came to the paraffins, they were using bodies of a different character altogether. He appealed to anybody who was acquainted with the laws of physics whether it was probable that such substances would be useful as vehicles for active principles which were to be absorbed by the skin; and he, therefore, hoped that as pharmacists they would hesitate to appear to recommend in any way, by the authority or the name of the Society, these new American preparations until they were very much better convinced by experience that their use as vehicles for medicinal agents was advantageous.

Professor Attfield said that the name of "vaseline" was one which would suggest that it had definite properties, and the termination of the name was such as was commonly given to the name of an alkaloid, although he supposed no one would mistake vaseline for an alkaloid. Still, the fact of its having a definite name suggested a definite character, whereas they had heard that night that the melting point of vaseline varied very considerably, so that it was obviously a mixture of substances and not a

definite substance, as its name would indicate. Mr. Martindale appeared to have worked with a sample which melted at 92°; Mr. Gerrard with one which melted at 94°; and Mr. Moss with one which melted at 37° Centigrade, which was equal to 98·6° Fahrenheit. Mr. Martindale had referred to a variety which melted at a temperature as high as 105°.

Mr. Greenish wished to ask Mr. Gerrard a question. He had said that with three-fourths of vaseline and one-fourth paraffin he made a suppository of a melting point equal to the temperature of the body. He should have thought that the high melting point of the paraffin would have raised that of the mixture beyond the temperature of the human body.

Mr. Gerrard said that he had stated that the suppository contained one-fifth of paraffin. The suppositories he had referred to had been tried that day in University College Hospital, and were found to be perfectly soluble.

Mr. Greenish said that he had made a great many suppositories with different mixtures of paraffin, and he had found that paraffin made prettier suppositories than any substance he had ever met with, but he believed that, medicinally, paraffin, in any form, would be the worst possible substance for such preparations.

Mr. Martindale, in correction of Dr. Attfield, said that when he spoke of varying melting points he was referring to cosmoline. The melting point of vaseline was pretty uniform, about 94°. There were two kinds of vaseline, one having a pale yellow colour, and another opaline. Both had about the same melting point.

Mr. Moss said that in speaking of the mixture of vaseline and glycerine he did not intend it to be understood that it was other than a mechanical one; he had said that it could be made in any proportion. The separation observed by Mr. Martindale when the mixture was heated so as to liquefy the vaseline, was just what one would expect to occur from a consideration of the very different nature and specific gravity of the two liquids. Mr. Allchin and Mr. Williams had both said that vaseline and cosmoline would not do for external applications in place of lard, because paraffin was not readily absorbed by the skin. As a matter of fact, paraffin and vaseline were used very generally for external applications in the United States, and they were, indeed, used alone. They possessed properties which physicians found extremely useful, and which showed that they must be absorbable by the skin to some extent, or, if not absorbed this negative property might perhaps be an advantage. As to recommending vaseline, he, for one, did not go so far. Indeed, it was not the province of himself, or any chemist or pharmacist, to recommend a body for medical use. He had simply made an investigation of its physical properties, and some of its chemical ones, and detailed the results as plainly as possible, adding a little of what had been said by others.

Mr. Kingzett said it gave him pleasure to be able to confirm the conclusions his friend Mr. Moss had arrived at. Until the previous evening he had not heard even of vaseline, but since then he had examined, as far as time permitted, a sample of this body given to him by Mr. Moss, and unaccompanied with any information regarding its nature. He found it to have a melting point of about 35° C. (=95° F.); at higher temperatures it volatilized and the white fumes burnt with a luminous flame like paraffin Although it gave a greasy stain to paper it was free from fats and fatty acids, as shown by the facts that caustic potash failed to saponify it, and the filtrate gave with hydochloric acid no precipitate of fatty acid. On boiling it with alcohol it melted, but little dissolved and that which dissolv-

ed was re-precipitated on cooling in flakes (crystalline?). In ether it for the most part dissolved at the ordinary temperature, giving a solution having a powerful blue fluorescence, but flakes of perfectly white matter were left undissolved, and this on isolation was found to resemble ordinary white paraffin wax. The melting point, therefore, of the vaseline would vary according to the amount of this substance present, for being a solid paraffin it would have a higher melting point than the other semi-solid constituents. From these facts and from the observation that sulphuric acid had no action on the substance, he had concluded that vaseline was a mixture of at least two paraffins and possibly more. In regard to the observations made by Mr. Williams and Mr. Allchin, he as a physiological chemist, would remark that whether lard or vaseline was used as the basis of ointments they served a common purpose, of presenting to body surfaces the desired medicines, but exercised no specific actions themselves. At any rate the vaseline possessed many advantages over lard, the most striking of which was its inability to absorb oxygen, a property which would render it especially useful in protecting surgical instruments, etc., from rust.

MEDICAL VALUE OF VINEGAR.*

Dr. W. H. Griffith says in the *Medical Press and Circular*:—

When freely diluted, vinegar acts as a refrigerant, and is used to sponge the body in fevers, and as a lotion to sprains and bruises; it is also a useful application to the breasts in cases of painful distention with milk, and to prevent suppuration. Warm vinegar is recommended by Dr. Dewees as an application in the early stage of mammary abscess.

Strong acetic acid acts locally as an astringent and stimulant, and when concentrated it is irritant and caustic. As a local astringent it has been found useful in hemorrhage from the nose, uterus, hemorrhoidal tumors, and ulcers, and administered in the form of enema it has quelled hemorrhage from the large intestines. It has been employed as an astringent gargle in cases of relaxed uvula and tonsils, and oxymel is a valuable adjunct to astringent gargles.

Strong acetic acid, or glacial acetic acid, has the power of removing warts, especially when of a syphilitic nature, and corns, owing to its solvent power over the albumen composing them. As a lotion for ringworm of the scalp, acetic acid is of great service, and when diluted it soothes the itching of psoriasis and lichen. Dr. Broadbent proposed to destroy cancerous tumors by injecting acetic acid into their substance; the injection should not be too strong or too frequent, lest phlegmonous inflammation ensue. Glacial acetic acid vesicates speedily, and may be used in cases in which cantharides is inadmissible; it gives great pain, however, and is liable to cause troublesome sores. When taken internally, in moderate quantities, at intervals, vinegar increases the appetite and facilitates digestion, being a solvent of all the protein bodies

* Phila. Med. and Surg. Rep.

except casein. When taken in excess, however, it seriously impairs the digestive powers, and Morgagni affirms that it causes thickening of the coats of the stomach. It has a tendency to produce emaciation, owing, probably, to its solvent action on the fibrine of the blood, and Haller went the length of recommending it as a remedy for obesity, an advice which has been not unfrequently followed by fatal results. According to some chemists, vinegar, or acetic acid, becomes changed into lactic acid in the system. Vinegar is most injurious to anæmic or chlorotic females, and nursing mothers should carefully abstain from it, as instances are on record in which its employment by the mother induced fatal diarrhœa in the infant. Although vinegar is liable to produce diarrhœa and colic, curious to say, it has been found to relieve the colic of lead-poisoning. Some therapeutists have classed the substances under consideration among the arterial sedatives, and have recommended their administration in hæmoptysis, hæmatemesis, and the sweating of hectic. I have never seen good effects from such a treatment, and a knowledge of the chemical action of vinegar upon the blood would lead me to expect results the reverse of beneficial. Vinegar augments the secretion of the salivary glands, and so assuages thirst; it also palliates the heat of the skin, and for these reasons it has been administered in fever. Its tendency to produce colic and diarrhœa is a serious objection to its use in such cases. Clysters of vinegar have been recommended for ascarides of the rectum.

GUM ACACIA AS A FOOD.*

On this subject Dr. W. H. Griffiths says, in a recent article:—

Frerichs, Blondlot, and Lehman have ascertained that gum is not acted on by the saliva or gastric juice; and Hammond states as his opinion that, owing to its "clogging" the intestines, it is absolutely injurious as an aliment. On the other hand, it has been asserted that Arabs live almost entirely on gum during the gum season, and Hasselquist affirms that a caravan of Abyssinians subsisted on it for two months. It is stated, however, that it enters largely into the diet of the natives of Senegal. As the result of my own investigations, I would certainly attribute to it definite nutritive qualities, for I have experimentally determined that the consumption of two or three ounces of gum daily will enable an adult to do on a less proportion of other food. It has been stated that gum passes through the bowels unaltered, but I have not found this to be the case. Boussingault affirms that, having fed a duck with fifty grammes, he recovered forty-five from the excrements. Like Garrod, I have been unable to detect gum in the urine, even after the administration of large quantities.

* Phil. Med. and Surg. Rep.

Editorial.

COUNTER PRESCRIBING.

A legal decision of considerable interest to chemists and druggists was given recently in a case tried in the Court of Exchequer, London. The action was brought by the Apothecaries' Society, to recover a penalty of twenty pounds, for infringement of the Apothecaries' Act, in the matter of counter prescribing. The learned judge, Baron Bramwell, in summing up the evidence, remarked, that if a man entered a chemist's shop, and asked for something to cure a bad headache, the supplying of such demand would be illegal and a technical infringement of the law. The jury considered that the defendant had broken the law and gave in a verdict accordingly.

The case was a somewhat peculiar one, and, from what we have learned, it appears that the defendant had far overstepped the bounds of his profession. He had formerly been fined for illegal prescribing, but afterwards associated himself with a qualified medical practitioner. Since that time medicine and pharmacy have been more than a little mixed, and to all intents and purposes the defendant has been practicing as an apothecary. Under these circumstances it is probable that the penalty was well deserved, and the case would have attracted little attention but for the extraordinary nature of the judge's decision. This has astonished pharmacists and physicians alike, and some members of the latter class have not been slow in taking advantage of the opportunity of organizing for a wholesale onslaught on all prescribing druggists. It is said that the "Medical Defence Association" has given notice of prosecution to more than two hundred druggists residing in the east end of London. On the other side, the Pharmaceutical Society do not treat the matter with indifference, but wisely resolve to defer action until further aggressive demonstrations are made. It is to be hoped that we shall be spared the ridiculous spectacle which this war would present, and that when the heat and inflation of the moment is past, the prudence and zeal of the Medical Defence Association will be more nearly equalized.

We have on more than one occasion given our view on the subject of counter prescribing, and at this time would merely say that

extreme opinions on either side are untenable and impracticable. Our esteemed contemporary, the *Pharmaceutical Journal* of London, put the question in a clear and common sense light and arrives at conclusions which we heartily endorse:

"No one who is cognizant of the circumstances that have given rise to the practice of 'Counter prescribing,' and takes an impartial view of the matter, can fail to recognize that however much he may disapprove of the practice in the abstract, there are many facts which powerfully tend to its maintenance, and in some instances place the chemist and druggist under the necessity of adhering to it, or at least provoke him to its continuance.

"In the first place there is the fact that to the apprehensions of a very large class of the community no distinction is known between the doctor's shop and the druggist's shop. It is mainly among this class that the demand for medical aid regardless of medical qualification exists and that the services of the chemist and druggist are sought for, in cases of minor ailments, in such a way that it is scarcely possible to avoid concurrence in the demand. A strong stimulus to the practice of 'Counter prescribing' is also furnished in many places by the fact that there is really no obvious, or to the ordinary appreciation, recognizable difference between the shop of the druggist and that of his neighbour the doctor. In some towns and in certain parts of the metropolis even, the open shops kept by medical men for the exercise of the druggist's business as well as their own, are so numerous as to interfere seriously with the trade of properly registered chemists and druggists. The proprietor of the 'medical hall' is under no necessity to have gone through the examination which the chemist and druggist must pass before he can carry on business for himself, and when the latter finds not only his retail trade but his chance of dispensing being taken from him by a period who is virtually free from the restrictions of the Pharmacy Act to which he is bound to conform, it is not be wondered at that the chemist should follow the bad example of confounding another man's business with his own, and seek to equalize the competition he experiences, by performing some of the functions of the medical man, for which he finds ample opportunity.

"We point to these unquestionable influences not in any way, with the desire of justifying the practice of 'Counter prescribing' by druggists, but as illustrating the fact that whatever blame attaches to it, medical men are as much open to reproach as chemists and druggists. Under such conditions as we have mentioned above, it is little wonder that occasionally cases should be met with in which both medical men and chemists combine for the purpose of setting at more thorough defiance the principles that should regulate their respective action, and thus we find developed various forms of 'secret alliances' which on various occasions we have done our best to discourage. * * * * *

"In regard to this subject it is gratifying to find that one at least of the medical journals takes a very rational view of it. Besides admitting that both by usage and the too common incapability to distinguish between a doctor and a druggist, a natural basis exists for the practice of 'Counter prescribing,' the *Medical Press and Circular* refers to the fact that medical men are partly responsible for the existence of the practice they complain of. It adds, also, that the profession has never adopted any well concerted measures to put a check upon this practice, and that, moreover, by so many of its members keeping open shops and dispensing their own medicines, it has laid itself open to the retort that if chemists now and then trespass upon the province of medical men, the latter interfere far more openly and to a much greater extent with the business and profits of the chemist and druggist.

"Our contemporary acknowledges that the difficulties of the case are such that it doubts whether the druggist and medical practitioner will ever be able to able to keep entirely within their respective provinces, and limit their practice exclusively to that for which they are respectively best qualified. On the contrary it considers that if each endeavours to do so, there is reason to believe the good intentions of the druggists would sometimes have to yield to strong pressure from without.

"We congratulate our readers that views so reasonable have found expression in the columns of a medical journal, and we would suggest that in dealing with the subject a similar consideration and regard for the determining influence of special circumstances should be manifested also from the druggist's point of view."

BOTANICAL SOURCE OF DAMIANA.

In the number of this Journal for December last, page 183, it was stated that there was some doubt as to the botanical origin of damiana. Three specimens of leaves, each said to be the true damiana, but belonging to plants entirely different, were exhibited at a meeting of the Philadelphia College of Pharmacy. Samples of each of these were forwarded to Mr. E. M. Holmes, Curator of the Museum of the Pharmaceutical Society of England, who, in a paper in the *Pharm. Jour. & Trans.* defined their botanical position. The San Francisco variety was found to be identical with the leaves of a drug which had been originally sent to the late Daniel Hanbury, but which had not been examined until lately. This plant was said to belong to the order *Turneraceæ*, and probably to the species *Turnera microphylla*, D.C. The second specimen, or Hel-

mick's damiana, differed from the former in having smooth instead of hairy leaves, and was thought to be only a glabrous variety of the same plant. The other sample was found to be a composite plant, undoubtedly *Aplopappus discoideus*, D.C., identical with specimens in the herbaria of Kew and the British Museum. The taste of this plant recalls that of sage. The upper and under surfaces of the leaf are covered with resinous points or glands, and the upper surface is rugose like that of argel leaves. Mr. Holmes does not at all attempt to decide which of these is the true damaina, but confines himself altogether to a description of the chemical characters the specimens.

In the *Philadephia Medical & Surgical Reporter*, for March 4th, Dr. J. T. Rothrock gives the result of an examination of a plant which had been received by the editor of the above Journal from a medical friend residing in Monterey, Eastern Mexico. This plant was said to be the true damiana to which extraordinary medicinal properties had been ascribed, and, from the circumstances under which the specimen was received, we think it probable that this is the case.

Dr. Rothrock had no difficulty in at once referring the plant to the *Compositæ*, and to the species *Bigelovia venata*, Gray. This damiana, or *Yerba Antirheumatica* has had a somewhat checkered botanical history. In De Candolle, 1836, it is figured as *Aplopappus discoideus*, and later as *Linosyris Mexicana*, Schlechtendal. From this is probably derived the name *Cineraria Mexicana* under which designation the specimen of the plant under consideration was forwarded. By Humboldt, Bonpland, and Kunth it was figured in their magnificent work as *Baccharis venata*; and, finally, it appears in Professor Asa Gray's revision of the genus *Bigelovia (Proc. Amer. Academy*, vol. viii. p. 638*)* as *Bigelovia venata*, under which name Dr. Rothrock considers it should now be known.

The shrub yielding the leaves is very common in Mexico, is much branched; bark grey, spotted with black; wood, yellow; leaves, half-an-inch to an inch long, from an eighth to a quarter of an inch wide, thick, wedge-shaped, more or less toothed at the apex; covered, at numerous points, with a resinous or gummy exudation. The whole plant has a peculiar pleasant odor.

From this it appears that Rothrock's damiana is identical with the New Yorkspecimen forwarded to Mr. Holmes. It yet remains

to be determined whether the medicinal character of the drug is equal to its reputation, and we hope that this matter will be as satisfactorily cleared up as the botanical history around which so much mystery was no doubt intentionally thrown by the persons who introduced the new aphrodisiac.

ORIGIN OF THE WORD "TOBACCO."

That the word *tobacco* is of American origin is pretty generally acknowledged, but, according to a German *savant*, cited by the *Journal of Applied Science*, we shall have to give up the idea. The principal reasons for this are that the word occurs in two works written before the year 1492, the date of the discovery of the New World. One of these works is the Koran, which says: "In later times there will be men calling themselves Moslems; but they will be Moslems only in name for they will smoke Tambaco." Against this it has been urged that this passage is an interpolation or addition of later times. Considering, however, the reverence in which the sacred book has been held, a falsification of this kind would have been almost impossible. It is, moreover, maintained that the word occurs in the earliest copies of the Koran. The word is also found in the works of a Rabbinical writer who lived before Columbus. "The Persians eat *Tabkahi* without salt." The word rendered "to eat" also signifies "to drink," and the Persians and many other Orientals call smoking tobacco, drinking. It is also asserted that the root of the word *tobacco* is to be found in many languages of the Old World. Among the wares imported into Alexandria, during the reign of the Emperor Commodus was one designated *duakkha*. It is supposed that cassia or cinnamon was indicated, and, strangely enough, this is the name bestowed on tobacco by the Shawnee Indians, while the inhabitants of the Mosquito Coast call tobacco *tuakko*. Many other similarities are traced out, and to say the least of it, our German friend has succeeded in throwing some considerable doubt on a generally received opinion.

Editorial Summary.

COMPOSITION OF PIL. HYDRARGYRI.—Mr. H. Senier, has made an examination of various samples of blue pill with a view of determining the composition of this supposedly uncertain compound. The results of his experiments were given in a paper read before the British Pharmaceutical Society, and are reported in the *Pharm. Jour. and Trans.* The specimens, obtained from various London manufacturers, and of ascertained age, were tested for mercuric oxide, metallic mercury, ash and organic matter. The following table gives the results, calculated into percentages:

No.	Age.	Metallic Mercury.	Mercuric Oxide.	Mercurious Oxide.	Ash.	Organic Matter.
1	18 hours	32·49	none	a trace	1·20	66·31
2	5 weeks	32·26	·09	·25	1·20	66·20
3	3 months	31·60	·24	·62	1·18	66·36
4	3 months	31·15	·44	1·60	1·12	65·59
5	6 months	32·44	·50	·80	1·70	64·56
6	14 months	29·86	·98	2·60	1·20	65·36
7	19 months	31·59	·50	2·50	1·00	64·41
8	24 months	28·40	1·80	4·22	2·10	63·48
8	(?)	30·23	1·06	3·24	1·05	64·42

It will be observed that the proportion of mercury and organic matter does not vary widely from the Pharmacopœial requirements, and comparing these results with others of a much earlier date, we must conclude the manufacturers are more conscientious than formerly. The influence of time appears to be considerable, and if, as stated, the therapeutical action of blue pill depends largely upon the proportion of oxides present, this becomes a matter of particular importance. In the course of two years the proportion of both oxides increased from a mere trace to 1·80 to 4·22 per cent. In the case of hydrarg. cum-creta the same fact has been observed, and some prescribers modify the dose according to the age of the sample. As suggested by the author, it might not be amiss to bear this in mind in regard to blue pill.

MORTALITY OF VARIOUS TRADES AND PROFESSIONS.—There appears in the *Chemist and Druggist* an interesting abstract of a series of lectures, delivered recently by Dr. B. W. Richardson, before the Society of Arts. The subject was "Unhealthy Trades," and a large amount of useful information, principally based on statistics which may be considered reliable, was presented. A list of mortal-

ity of persons engaged in various occupations was given, and the figures were deduced from official returns for the years 1861, 1862, and 1871. From this we find that the most healthy of all occupations is that of a barrister. Of an average rate of 100, representing the deaths of males, aged fifteen years and upwards, engaged in all occupations, the favored class of barristers escapes with a death-rate of 63. Clergymen rank next as 71, then Protestant ministers 75. Much further down the list we find Roman Catholic priests, who are rated at 103. As remarked by our contemporary, "this difference may be attributed to the greater devotion of the latter or the simpler life of the former." In this classification, grocers, and shopkeepers generally, stand high as far as their chances of long life are concerned. Chemists and druggists are not however so fortunate. The former class are rated at 76 to 77; the latter at 110. Passing down the list we notice the following prominent classes: Farmers, 85; civil engineers, 86; laborers, 91; bakers, 99; schoolmasters, 102; tailors, 109; commercial travellers, 110; commercial clerks, 111; printers, 115; plumbers and painters, 120; engine drivers and others connected with railways, 121; manufacturing chemists and dye and color manufacturers, 124; hairdressers, 127; inn and hotel-keepers and publicans, 138; and, last of all, coachmen (not domestic) and cabmen, who rank at 143. A study of this table is interesting and not without its lessons, one of which was pointed out by the lecturer, and concerned the class of publicans. Quoting Dr. Farr, the English Registrar-General of vital statistics, he says: "It seems to be well established that by drinking small doses of alcoholic liquors, not only spirits, the most fatal of all poisons, but wine and beer, at frequent intervals, without food, is invariably prejudicial. When this is carried on from morning till late hours in the night, few stomachs, few brains, can stand it. The habit of indulgence is a slow suicide. The many deaths of publicans appear to prove this. Other trades indulge in the publican's practice to some extent, and to that extent share the same fate. The dangerous trades are made doubly dangerous by excesses."

ANTIMALARIAL PROPERTIES OF THE EUCALYPTUS.—In a very pleasing paper read before the British Pharmaceutical Society, Mr. R. D. Glover (*Pharm. Jour. and Trans.*), gave some particulars regarding the beneficial effect of the eucalyptus as realized at a monastery located at one of the most desolate and malarious places in the Campagna. The monastery is situated on a spot consecrated by tradition as the exact locality of the martyrdom of St. Paul, and is about three miles distant from Rome. In early times there arose upon this ground three magnificent churches, and in a monastery adjacent a band of Monks battled for existence with the dread mal-

aria which gradually depopulated the Campagna. For centuries the fever-stricken Monks endeavoured to hold the ground, but, towards the close of the last century the position was deserted, and, until a short time ago, the dismantled churches and ruined monastery became merely a show place for visitors during the winter. As the reputed merits of the *Eucalyptus globulus* became noised abroad, some Trappist Monks determined to put the powers of the tree to the test, and begged permission to occupy the long-deserted buildings. This was granted, and the work of restoration at once commenced, a number of eucalyptus plants were placed in the cloisters, and so well have they grown, that, though scarce six years have elapsed, they have now attained a height of thirty feet. At first the Monks did not venture to remain, during the malarial season, upon this hitherto accursed spot, but, about two years ago, when a second plantation of trees had grown up, they made the experiment, and have resided in the monastery ever since. They do not altogether depend on their barrier of eucalypts, but from the plant have made an extract which they take every morning with their coffee, and thus protected, have withstood the malarious demon which would otherwise have undoubtedly destroyed them. The success of this experiment is so marked as to merit the attention of the Italian Government, which by following the example of the Trappists might render once more habitable the drearly waste of the Campagna.

Fluid Preparations of Senna Extracted by Alcohol.—Simultaneously with the appearance in England of Mr. Siebold's paper, (see this Journal, p. 275) there was published, in the *American Practioner*, of Louisville, an article on the same subject, written by Mr. C. L. Diehl. The author speaks of the advantages of senna which has been exhausted with strong alcohol, before using, and also points out the mode of exhaustion. Tinnevelly or some varieties of Indian Senna are found to answer best, as the Alexandria contains a considerable admixture of arguel leaves. A fluid extract of the exhausted senna may be made as follows: Take of Tinnevelly senna sixteen troy ounces; stronger alcohol, glycerin, and water, of each a sufficiency; macerate the leaves in four pints of stronger alcohol for two days, and express; add to the expressed leaves two pints more of stronger alcohol, and again express; then dry and reduce them to a fine powder. According to the general directions for preparing the officinal fluid extracts, percolate this powder first with a mixture of six fluid ounces of stronger alcohol, two fluid ounces of glycerin, and eight fluid ounces of water, then with a sufficiency of six measures of stronger alcohol and ten measures of water, tlll thirty-two fluid ounces of percolate are obtained. Of this the first twelve ounces are set aside, the remainder of the percolate is evaporated to three fluid ounces, and,

together with one fluid ounce of stronger alcohol, added to the reserved portion; after standing several days decant the clear liquid, or filter. The result is a dark brown, clear, thin syrupy fluid extract, which possesses very little odor or taste, and in these scarcely reminds of senna.

GLYCERINE DROPPER.—A useful little arrangement for the adjustment of liquid excipients for moistening pill-masses is described and figured in the March number of the *American Journal of Pharmacy*. It is the invention of Mr. Wharton of Nashville, and has been improved by Mr. C. A. Bowman. The mode of making this apparatus may be thus stated: A morphia or other suitable wide-mouthed bottle is selected, and a notch made in the shoulder by means of a triangular file; into this scratch the point of a rat-tail file is inserted, and a hole bored into the bottle, and in the direction of the opposite corner of the bottom. If the file be moistened from time to time with a little turpentine this operation will be much facilitated. Into the hole thus formed, a glass tube, slightly bent at one end, is tightly fitted, the bent end projecting from the bottle, and the other touching the bottom at the opposite side. Thus made, the apparatus may be likened to a coal-oil can with a bent spout. Over the mouth of the bottle is now fitted a rubber finger-stall, which completes the arrangement. The excipient is then placed in the bottle, and the rubber shield slipped over the neck, when the slightest pressure thereon has the effect of forcing out the liquid by drops from the tube. A continuous stream may be obtained by continued and harder pressure. The flow of liquid of course stops when the pressure is removed, and air equal in volume to that of the displaced liquid enters through the tube. It will be seen that the tube must be fitted quite air-tight into the shoulder of the bottle, or the apparatus will not work.

NEW SOURCE OF CAOUTCHOUC.—Fears have been entertained that the supply of rubber would not last long, by reason of the rapid destruction of the tree, *Ficus elastica*, from which it is, at present, principally derived. There are many other caoutchouc-bearing plants from which a limited quantity might be obtained, but none of them have given much promise of furnishing a cheap supply. The *Journal of Applied Science* speaks, however, of a new source, the *Chavannesia esculenta*, a creeping plant of the Dogbane tribe, growing in Burmah. This plant is cultivated by the natives for the sake of its fruit, which is used as a substitute for tamarinds. The plant grows rapidly, attaining, in five to seven years, a circumference of nine to eleven inches. From calculations given it is evident that its cultivation for rubber would be financially successful. It is shown

that in a few years, and with a very trifling outlay, a plantation of 400 acres would yield over £3,300 sterling. The rubber of this plant has been found to be purer than that from *F. elastica*, and coagulates much more readily.

FORMULA FOR WARBURG'S FEVER TINCTURE.—A formula for this celebrated remedy is copied from the *Lancet* by the *Druggists' Circular*. The information may be considered reliable as it has been furnished by Warburg himself. Some of the ingredients are rather antiquated, as the Confectio Damocratis, formulas for which may be found in *Redwood's Supplement*, p. 687.

R. Aloes (Socotr.)..... .....1 pound.
Rad. rhei, (East India,)
Sem. angelicæ,
Confect. damocratis, aa .....4 ounces.
Rad. Helenii,
Croci Sativi,
Sem. fœniculi,
Cretæ preparat. aa..... . .....2 ounces.
Rad. Gentianæ,
Rad. Zedoriæ,
Pip. Cubeb.,
Myrrh. electuar.,
Camphoræ,
Boleti laricis, aa .....1 ounce.

The above ingredients to be digested with five hundred ounces of proof spirit in a water-bath for twelve hours; then expressed and *ten ounces of quinia* added; the mixture to be replaced in the water-bath till all the quinia is dissolved. The liquor, when cool, is to be filtered, and is then fit for use. The dose is one-half an ounce (or half a bottle, without dilution) after the bowels have been evacuated by any convenient purgative, all drink being prohibited for some hours; in three hours the other half ounce in the bottle is to be administered in the same way. Soon afterwards a free perspiration occurs, especially if the patient be kept warm. One bottle is usually sufficient to complete a cure.

PILL PRESSES.—In the *Am. Jour. Pharm.* we find a paper by Mr S. Campbell, who says that after an extended trial with four of the new presses he thinks "the waste of time and labour involved by their use will ultimately consign them to a place among the rubbish of drug stores." An improvement in these presses is noted by Mr. Remington in another part of the same journal.

Books and Pamphlets.

A Text-Book of Human Physiology; designed for the use of Practitioners and Students of Medicine. By AUSTIN FLINT, Jr., M.D., etc. New York: D. Appleton & Co. Toronto: Willing & Williamson. 1876. 8vo., pp. 978.

Professor Flint's *Physiology of Man*, a work in five volumes, was a great acquisition to medical literature, and thoroughly established the reputation of its author, but as the book was designed for reference it was far too voluminous and elaborate for the wants of the student. The present volume was, therefore, prepared, with a view of supplying a text-book, which, while bringing the science up to the present day, and witholding nothing of importance, should be sufficiently concise, and unincumbered with the discussion of mere theoretical questions. The labor of condensation has been performed with great care, and as a result we have a work thorough enough for the general practitioner, and yet not beyond the grasp of the mere learner. We have no doubt but that in a short time it will be adopted by our medical schools, for though our present text-books are excellent, we believe this to be much superior, and to possess merits which demand recognition.

Not the least valuable and important feature of the work is its illustrations. They number between three and four hundred, and are most beautifully executed. A very large number are original, and many are reproduced from microscopical photographs taken at the U. S. Army Medical Museum. Some of the classical engravings which have appeared in the works of great discoverers, as Fabricius (A.D. 1687), Harvey (1628), and Asellius (1628), are also given, and are very interesting.

Hermaphrodism, from a Medico-Legal Point of View. Chicago: W. B. Keen, Cooke & Co. 1875. 8vo., pp. 45.

This is a translation by Dr. Edward W. Sawyer of a thesis presented to the faculty of medicine, Paris, by Dr. Basile Poppesco. The translator has performed an acceptable task in presenting a work which brings together so much information and presents so many new facts on a subject so obscure, and on which the literature is so scanty.

Monthly Report on the Progress of Therapeutics.

This publication is edited by Dr. W. Hansel Griffiths, of Dublin, who is, by the way, an honorary member of our Ontario College. The report is somewhat after the style of our "Editorial Summary," and contains a review of the therapeutical literature of the month.

The Microscopical Examination of Crude Drugs and other Vegetable Products. By MARK W. HARRINGTON, M.A., Assistant Professor of Botany in the University of Michigan, Ann Arbor. Michigan: John Moore, 1876.

This pamphlet contains some portion of a work yet in manuscript, but which, we trust, will shortly be brought to completion and publication. Its concise and very practical style give promise that the forthcoming work will be a useful one. The part now before us is principally composed of tables for the identification of crude drugs and other vegetable products, and will much facilitate the microscopical studies of the pharmaceutical student, and prove of material advantage to those whose knowledge is of a more advanced character.

The Practitioner. Macmillan & Co., London and New York.

This monthly, edited by T. Lauder Brunton, M.D., F.R.S., has been before the public for a number of years and still maintains the high position which it has always held in the ranks of medical journalism. The numbers for the current year have been marked by still further efforts to enhance the value of the publication, and in this the enterprising publishers have been quite successful. The address of the New York branch of the firm is 21 Astor Place.

The American Journal of Microscopy, New York. Vol. I., No. 3.

During the last eight or ten years we have seen the rise and fall of several journals devoted to microscopical science, and, in most cases, the earlier numbers of these publications foreshadowed their fate. For this journal we predict a favorable course. It is practical, useful, cheap, and well adapted to popularize a subject with which a greater number should be familiar. The price is only fifty cents per year, American currency; the publishers, the Handicraft Publication Co., 37 Park Row.

Eighth Annual Report of the Toronto Eye and Ear Infirmary, 1875.

This institution, designed for the afflicted poor, and of a provincial rather than a local character, is doing a good work. During the past year the number of patients under treatment were 634. Of these 512 were eye-cases; of this number 200 were discharged as cured, and 156 reported as improved. The ear-patients numbered 127, of whom 39 were cured and 48 improved.

Obituary.

JOHN HALLAMORE.

We regret to have to announce the death, at an comparatively early age, of John Hallamore of this city. The deceased was born at Falmouth, in the County of Cornwall, England, in 1827, and commenced his career by studying for the medical profession, but ultimately turned his attention to the drug trade. He emigrated to America in 1846, and after remaining four years in Philadelphia, returned to his native town and commenced business, but his residence in the States had given him such a distaste for English life and habits, that, after a short stay, he once more crossed the Atlantic, and finally settled in Toronto.

He opened a small store on Queen street West, in 1858, and by his strict integrity and business-like habits, won the confidence and esteem, not only of the public generally, but also the medical profession, to whom he was well known as a most conscientious and accurate dispenser, and a well informed druggist.

Public offices had no charms for him; he considered his business his first duty, and necessary recreation was sacrificed for the sake of thoroughly attending to its increasing demands; but being naturally of a weak constitution, this constant strain proved more than he was able to withstand, and in 1870, after twelve years arduous toil, his health failed, and he was never again able to devote so much time and energy to his business. He retired into private life about eight months since, hoping entire rest would somewhat assist in restoring his impaired health. He was not, however, destined long to enjoy the competency he had so industriously and honourably acquired.

On Saturday, 19th February, he was suddenly seized with a severe pain in his head, and although at first no danger was apprehended, it soon became apparent that he was sinking.

After a fortnight's continuous suffering nature became exhausted, and he succumbed to the ravages of the disease on March 14th, deeply regretted by many friends.

Varieties.

A NEW INSECTICIDE.—At the last meeting of the Royal Horticultural Society, the Hon. and Rev. J. T. Boscawen called attention to his insecticide, which consists of camphor dissolved in methylated spirits to saturation, and mixed with soft soap to the consistence of cream. When diluted so as to be fit for use with a syringe, this had been found a most efficacious substitute for fumigating in the case of mealy-bug, scale, red spider, &c.—*The Garden.*

To Retard the Setting of Gypsum.—It has been found that ground plaster sets most speedily when it contains twenty per cent. of water. An excess of water, however, causes the solidification to be considerably retarded. There are several other substances which, when added, conduce to the same result; such as gelatine, glycerine, gum, common salt, marsh mallow, etc. Carbonate of lime is said also to be an efficient means for preventing the rapid setting. It is often useful when employing plaster-of-paris to prolong the time required for it to harden, and it is convenient to know how to effect that result. To the foregoing it may be appropriate to add, that Mr. Gaudin, of Paris, has lately patented a method of treating old plaster that has been broken up and condemned, which fits it again for renewed use, and is not inferior to its original calcined condition. After it has been roasted the second time, and rendered anhydrous, old plaster sets too quickly for common purposes. By calcining the rubbish and mixing it with some of the saline solutions instead of pure water, this objection is prevented. Alkaline solutions are best, and of these a solution of carbonate of soda is preferred because it is the cheapest. When treated in this manner, such plaster will harden by the end of a couple of hours, and possess all the useful properties of fresh gypsum.—*Druggist's Circular.*

Glycerole of Iodide of Potassium.—The many defects pertaining to iodide of potassium ointment are not removed, as is well known, by the substitution of the mixture known as *Glycerinum Amyli* or *Unguentum Glycerini* for lard as excipient. The *Unguentum Glycerini cum Sapone* of the Hungarian Pharmacopœia is more suitable, and Thirault speaks of it having already been used for this purpose for some years. Barberes recommends the following as the best formula for such a *Glyccrolatum kalii iodati*:—Potassii iodidi, 10-0; saponis animalis, 10-0; glycerini puri, 100-0. The potassium iodide is reduced to powder in a spacious porcelain mortar, and dissolved in a sufficient quantity of the glycerine. The soap is dissolved in the remaining glycerine, and the solution is poured warm and all at one time into the mortar, the contents of which are then stirred quickly and uninterruptedly till cool. The resulting glycerole is a pure white homogenous mass, which becomes fluid with the warmth of the hand. It may be kept in closed vessels of porcelain or of black glass. The preparation is not subject to chemical change, the use of it is not followed by the least irritation of the skin, nor does it injure the linen.—*Pharm. Zeit. in Chem. and Druggist.*

Registrar's Notice.

The Registrar begs to remind every person registered and carrying on business as chemist and druggist in the Province of Ontario, that the annual renewal fee of four dollars becomes due on the first day of May next, in accordance with section 17 of the Pharmacy Act. Those members residing in the country who may remit by cheque will please add twenty-five cents to cover collection.

All communications and remittances to be sent and made payable to

GEORGE HODGETTS, Registrar.

P.O. Box 1133, Toronto.

DRUGS, MEDICINES, &c.	$ c.	$ c.
Acid, Acetic, fort	0 13 @	0 14
Benzoic, pure	0 22	0 27
Citric	1 05	1 15
Muriatic	0 03½	0 05
Nitric	0 10	0 13
Oxalic	0 16	0 20
Sulphuric	0 03	0 05
Tartaric, pulv	0 49	0 50
Ammon, carb. casks	0 21	0 22
" jars	0 22	0 23
Liquor, 880	0 24	0 28
Muriate	0 14	0 15
Nitrate	0 45	0 60
Æther, Acetic	0 45	0 50
Nitrous	0 40	0 42
Sulphuric	0 50	0 50
Antim. Crude, pulv	0 15	0 17
Tart "	0 52	0 60
Alcohol, 95 per ct.....Cash	2 19	0 00
Arrowroot, Jamaica	0 18	0 22
Bermuda	0 50	0 65
Alum	0 02¾	0 03½
Balsam, Canada	0 33	0 38
Copaiba	1 15	1 20
Peru	2 90	3 20
Tolu	3 25	3 50
Bark, Bayberry, pulv	0 18	0 20
Canella	0 17	0 20
Peruvian, yel. pulv	0 35	0 50
" red "	1 60	1 70
Slippery Elm, g. b	0 18	0 20
" flour, packets	0 28	0 32
Sassafras	0 15	0 18
Berries, Cubebs, ground	0 20	0 25
Juniper	0 06	0 10
Beans, Tonquin	0 62	1 10
Vanilla	14 00	23 00
Bismuth, Alb	2 50	2 75
Carb.	2 65	2 90
Camphor, Crude	0 33	0 35
Refined	0 35	0 40
Cantharides	1 85	1 90
Powdered	2 00	2 10
Charcoal, Animal	0 04	0 06
Wood, powdered	0 10	0 15
Chiretta	0 23	0 30
Chloroform	0 90	1 55
Cochineal, S. G	0 58	0 70
Black	0 75	0 90
Colocynth, pulv	0 60	0 65
Collodion	0 70	0 80
Elaterium	3 20	4 00
Ergot	0 70	0 75
Extract Belladonna	1 80	1 90
Colocynth, Co	1 25	1 75
Gentian	0 50	0 60
Hemlock, Ang	0 00	0 95
Henbane, "	3 00	3 20
Jalap	5 00	5 50
Mandrake	1 75	2 00
Nux Vomic	0 40	0 50
Opium	1 40	
Rhubarb	5 00	5 50
Sarsap. Hon. Co	1 00	1 20
" Jam. Co	3 50	4 00
Taraxacum, Ang	0 70	0 80
Flowers, Arnica	0 17	0 25
Chamomile	0 28	0 32
Gum, Aloes, Barb. extra	0 70	0 80
" " good	0 40	0 50
" Cape	0 16	0 20
" " powdered	0 20	0 30
Socot	0 50	1 35
" " pulv	1 00	0 00
Arabic, White	0 38	0 60
" powdered	0 60	0 75
" sorts	0 19	0 24
" " powdered	0 42	0 50
" com. Gedda	0 13	0 16
Assafœtida	0 25	0 30
British or Dextrine	0 13	0 15
Benzoin	0 35	0 75
Catechu	0 12	0 15
" powdered	0 25	0 30
Euphorb, pulv	0 35	0 40
Gamboge	1 00	1 20
Guaiacum	0 35	1 00
Myrrh	0 50	0 80

DRUGS, MEDICINES, &c.—*Contd.*	$ c.	$ c.
Sang Dracon	0 60	
Scammony, powdered	5 50	6 00
" Virg. "	14 50	—
Shellac, Orange	0 63	0 68
Gum, Shellac, liver	0 52	0 55
Storax	0 40	0 45
Tragacanth, flake	1 10	1 75
" common	0 53	0 65
Galls	0 22	0 30
Gelatine, Cox's 6d	1 15	1 20
Glycerine, common	0 18	0 23
Vienna	0 25	0 28
Prices	0 60	0 75
Honey, Canada, best	0 16	0 17
Lower Canada	0 14	0 16
Iron, Carb. Precip	0 16	0 20
" Sacchar	0 40	0 55
Citrate Ammon	1 40	1 50
" & Quinine, oz	0 40	0 85
" & Strychine	0 20	0 25
Sulphate, pure	0 08	0 10
Iodine, good	3 90	4 20
Resublimed	5 10	5 50
Jalapin	1 25	1 50
Kreosote	2 40	2 50
Leaves, Buchu	0 22	0 32
Foxglove	0 25	0 30
Henbane	0 35	0 40
Senna, Alex	0 27	0 60
" E. I.	0 14	0 20
" Tinnevilly	0 20	0 30
Uva Ursi	0 15	0 17
Lime, Carbolate.....brl	5 50	—
Chloride	0 05	0 06
Sulphate	0 08	0 12½
Lead, Acetate	0 14	0 16
Leptandrin.....oz.	0 60	—
Liq. Bismuth	0 50	0 60
Lye, Concentrated	1 30	1 50
Liquorice, Solazzi	0 50	0 55
Cassano	0 23	0 40
Other brands	0 14	0 25
Liquorice, Refined	0 35	0 45
Magnesia, Carb..... 1 oz.	0 20	0 25
" ..... 4 oz.	0 19	0 20
Calcined	0 65	0 75
Citrate.....gran.	0 60	0 75
Mercury	1 10	1 20
Bichlor	1 30	1 50
Chloride	1 50	1 70
C. Chalk	0 65	0 70
Nit. Oxyd	1 70	1 90
Morphia Acet	3 00	3 20
Mur.	3 00	3 20
Sulph	3 20	3 40
Musk, pure grain.....oz	25 20	.....
Canton	10 60	1 20
Oil, Almonds, sweet	0 45	0 47
" bitter	14 00	15 00
Aniseed	4 25	4 50
Bergamot, super	5 50	5 00
Caraway	3 20	3 50
Cassia	2 00	2 25
Castor, E. I	0 12½	0 14
Crystal	0 22	0 25
Italian	0 26	0 28
Citronella	1 05	1 15
Cloves, Ang	3 75	3 80
Cod Liver	1 50	1 60
Croton	1 40	1 50
Juniper Wood	0 80	1 00
Berries	2 75	3 00
Lavand, Ang.....oz.	0 00	1 00
Exotic	1 25	1 50
Lemon, super	3 50	3 75
ord	3 20	3 40
Orange	3 00	3 25
Origanum	0 65	0 75
Peppermint Ang	15 00	16 00
" Amer	4 00	5 00
Rose, Virgin	8 50	8 75
" good	7 00	7 75
Sassafras	0 75	0 90
Wintergreen	4 40	4 60
Wormwood, pure	4 00	6 00
Ointment, blue	1 10	1 20
Opium, Turkey	6 25	6 50
pulv	8 50	9 00

DRUGS, MEDICINES, &c.—*Cont'd*	$ c.	$ c
Orange Peel, opt.	0 35	0 36
" good	0 15	0 20
Pill, Blue, Mass.	1 10	1 20
Potash, Bi-chrom	0 16	0 18
Bi-tart	0 33	0 35
Carbonate	0 14	0 20
Chlorate	0 30	0 35
Nitrate	8 00	9 00
Potassium, Bromide	75	0 80
Cyanide	0 60	0 70
Iodide	3 20	3 40
Sulphuret	0 25	0 35
Pepsin, Boudault's...oz	1 40	—
Houghton's..... doz.	8 00	9 00
Morson's.....oz.	0 85	1 10
Phosphorous	1 10	1 20
Podophyllin	0 50	0 60
Quinine, Pelletier's	—	2 45
Howard's	2 10	—
" 100 oz. case.	2 07	—
" 25 oz. tin..	2 05	—
Root, Colombo	0 13	0 20
Curcuma, grd	0 12½	0 17
Dandelion	0 17	0 20
Elecampane	0 16	0 17
Gentian	0 08	0 10
" pulv	0 15	0 20
Hellebore, pulv	0 17	0 20
Ipecac, "	1 50	1 60
Jalap, Vera Cruz	90	1 15
" Tampico	0 70	1 00
Liquorice, select	0 12	0 13
" powdered	0 15	0 20
Mandrake "	0 20	0 25
Orris, "	0 20	0 25
Rhubarb, Turkey	2 10	2 25
" E. I	0 75	0 90
" " pulv	1 00	1 10
" " 2nd	0 60	0 70
" French	0 75	—
Sarsap., Hond	0 60	0 65
" Jam	0 95	1 00
Squills	0 10	0 15½
Senega	1 00	1 10
Spigelia	0 25	0 30
Sal., Epsom	2 50	3 00
Rochelle	0 30	0 32
Soda	0 01⅜	0 02⅛
Seed, Anise	0 13	0 16
Canary	0 16	0 17
Cardamon	2 00	2 10
Fenugreek, g'd	0 08	0 09
Hemp	0 06½	—
Mustard, white	0 14	0 16
Saffron, American	0 65	0 75
Spanish	10 00	11 00
Santonine	8 50	8 75
Sago	0 08	0 09
Silver, Nitrate.....Cash	14 85	16 50
Soap, Castile, mottled	0 11	0 14
Soda, Ash	0 03⅜	0 05
Bicarb. Newcastle	4 75	5 00
" Howard's	0 14	0 16
Caustic.	0 05½	0 05⅜
Spirits Ammon., arom	0 35	0 35
Strychnine, Crystals	2 00	2 20
Sulphur. Precip	0 10	0 12½
Sublimed	0 03½	0 05
Roll	0 03	0 04½
Vinegar, Wine, pure	0 55	0 60
Verdigris	0 35	0 40
Wax, White, pure	0 70	0 80
Zinc. Chloride.....oz	0 10	0 15
Sulphate, pure	0 10	0 15
" common	0 06	0 10
DYESTUFFS.		
Annatto	0 35 @	0 60
Aniline, Magenta, cryst	2 65	2 80
" liquid	2 00	—
Argols, ground	0 15	0 25
Blue Vitrol, pure	0 09	0 10
Camwood	0 07	0 08
Copperas, Green	0 01½	0 02
Cudbear	0 16	0 25
Fustic, Cuban	0 03	0 04
Indigo, Bengal	2 40	2 50
Madras	0 85	0 90
Extract	0 26	0 30

DYESTUFFS—*Continued.*		
Japonica	0 07	0 08
Lacdye, powdered	0 33	0 38
Logwood	0 01⅝	0 03
Logwood, Camp	0 02⅝	0 03
Extract	0 12½	0 13
" 1 lb. bxs	0 15	—
" ½ lb. "	0 14	—
Madder, best Dutch	0 10½	0 11
2nd quality	0 10	0 11
Quercitron	0 03	0 05
Sumac	0 06	0 08
Tin, Muriate	0 10½	0 12½
Redwood	0 05	0 06
SPICES.		
Allspice	0 11½ @	0 12
Cassia	0 26	0 28
Cloves	0 55	0 60
Cayenne	0 20	0 25
Ginger, E. I	0 19	0 20
Jam	0 30	0 30
Mace	1 40	1 60
Mustard, com	0 20	0 25
Nutmegs	1 15	1 25
Pepper, Black	0 18	0 20
White	0 27	0 29
PAINTS, DRY.		
Black, Lamp, com	0 09 @	0 10
" refined	0 25	0 30
Blue, Celestial	0 08	0 12
Prussian	0 65	0 75
Brown, Vandyke	0 10	0 12½
Chalk, White	0 01	0 01½
Green, Brunswick	0 07	0 10
Chrome	0 16	0 25
Paris	0 30	0 35
Magnesia	0 20	0 25
Litharge	0 07	0 09
Pink, Rose	0 12½	0 15
Red Lead	0 07¼	0 08
Venetian	0 02½	0 03⅜
Sienna, B. & G	0 07	0 08
Umber	0 07	0 10
Vermillion, English	1 25	1 30
American	0 25	0 35
Whiting	0 1	0 1⅜
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 03⅜	0 04½
Yellow Ochre	0 08	0 12
White Lead, gen. 25 lb. tins	2 45	—
" No. 1	2 20	—
" No, 2	1 95	—
" No. 3	1 70	—
" com	1 30	—
White Zinc, Snow	2 75	3 25
NAVAL STORES.		
Black Pitch	3 90 @	4 25
Rosin, Strained	3 30	4 25
Clear, pale	5 75	7 25
Spirits Turpentine	0 50	0 53
Tar Wood	3 90	4 25
OILS.		
Cod	0 65 @	0 70
Lard, extra	1 10	1 20
No. 1	1 05	1 10
No. 2	0 90	0 95
Linseed, Raw	0 55	0 58
Boiled	0 59	0 62
Olive, Common	1 10	1 15
Salad	1 80	2 30
" Pints, cases	4 20	4 40
" Quarts	3 25	3 50
Seal Oil, Pale	0 72½	0 75
Straw	0 62½	0 65
Sesame Salad	1 30	1 35
Sperm, genuine	2 55	
Whale refined		