

Report on the Progress of Pharmacy

For the Year 1912

(Seventh Installment.)

Transmutation of Elements: Present Status.—Briefly reviewing the endeavors made to prove the possible transmutation of the elements, the "Pharmaceutische Zeitung" (Sept. 18, 1912) describes the present status of these investigations as follows: In 1907, Ramsay and Cameron made the surprising statement that they had succeeded in the conversion of copper into lithium. This statement was shortly thereafter proven by Madam Curie to be erroneous. It is now again asserted that these two scientists have succeeded in the transmutation of elements. Distilled water was placed in contact with a very small quantity of "Niton," with the result that beside the expected liberation of oxygen and hydrogen, "Helium" was also produced, and, furthermore, the lines of "Neon" were also recognized in the resulting gaseous mixture. These results are regarded by Ramsay and Cameron as indisputable proof of the transmutation of an element. Inasmuch, however, as these experiments were made with the element "Niton," but recently discovered by Ramsay and subjected to limited study only, the claim of the successful transmutation of an element should not be unconditionally accepted.—Pharm. Zeitung., LVII (1912), No. 75, 757.

Bismuth Carbonate: Improved Test for the Presence of Nitrates and Commercial Quality.—Walter Ryley Pratt has found a modification of the Sprengel process for determining nitrates in water to be well adapted and quite reliable for the estimation of nitrates in commercial bismuth carbonate. The method depends on the color reaction produced by sodium or ammonium nitrate with phenol-disulphonic acid in presence of sulphuric acid, due to the formation of a derivative of nitrophenol, and is equally effective for the quantitative estimation of soluble nitrate and of insoluble nitrate. The phenol-disulphonic acid used for the colorimetric

assay was prepared by heating 3 gm. of pure phenol with 20 cc. of pure concentrated H_2SO_4 on a water-bath for six hours. The standard nitrate solution contained 0.7215 gm. pure potassium nitrate per litre (1 cc.—1/10 mgm. nitrogen), and with these reagents a series of shades were prepared from solutions containing respectively 1/100, 1/75, 1/50 mgm. of nitrogen. The samples of bismuth carbonate were then tested as follows: The bismuth carbonate was thoroughly triturated to break down aggregated masses, and 0.02 gram treated directly with the phenol-disulphonic acid. On the addition of ammonia, the bismuth was precipitated and filtered off. The filter-paper was washed with about 50 cc. of distilled water, the color being easily washed away from the precipitate. The filtrate was made up to 100 cc. in a Nessler cylinder and compared with the standard shades. Using a dilution of approximately 1/100 to 1/50 mgm. of nitrogen it was found that the shades could be easily and accurately matched. The amount of nitrogen present, expressed in milligrams, multiplied by the factor 102.14 gives the percentage of bismuth subnitrate present (calculating the total nitrate as $BiONO_3$). If the factor 19.29 is used, the result gives the percentage of nitrate as N_2O_5 .

Of seventeen samples of bismuth carbonate examined only one showed a total absence of nitrates, two showed traces, while the others showed quantities varying from 1.15 to 3.27 percent., though only two of them exceeded 1.98%. The author considers his research shows that a limit of 2 percent. of total nitrate, calculated as $BiONO_3$, is generous, and that it can be readily and satisfactorily determined by the color-test modified as described. It seems curious that so many of the samples should contain sulphate, which no doubt comes from the sodium carbonate used in the manufacture. He states that more complete

washing would be a decided advantage, and that it would be advisable to insist on a limit of alkalinity, as one or two of the samples examined were decidedly impure in that respect.—*Trans. Brit. Pharm. Conf.*, 1912; through *Pharm. Journ. and Pharmacist*, Aug. 3, 1912, 152.

Lead: Determination in Chemicals.—G. D. Elsdon directs attention to certain difficulties encountered in carrying out Warington's colorimetric test for lead and describes two processes which he has found satisfactory in the determination of lead in chemicals, either of which is reliable:

1. The required quantity of the chemical is dissolved in water, the solution filtered through an 11.0 cm. filter-paper, and the lead estimated in the filtrate in the usual manner. The filter-paper is then washed with five successive quantities of 10 cc. of 0.6 percent. acetic acid, the washings being mixed. The lead is then estimated in these washings by adding 3 cc. of saturated sulphuretted-hydrogen water, and comparing the color produced with standards (made with 0.6 percent. acetic acid) containing known amounts of lead. It is important that the comparisons be made with standards containing the same strength acid as that used for the washings. The lead so found added to the lead found in the original filtrate will give the total lead in the chemical.

2. The chemical is dissolved in water and 0.5 cc. of 60 percent acetic acid added for every 50 cc. of the solution; the solution is then filtered. The filtered solution is then made alkaline with ammonia, and the lead estimated as usual.—*Trans. Brit. Pharm. Conf.*, 1912; through *Pharm. Journ. and Pharmacist*, Aug. 3, 1912; 143.

Methyl Alcohol: Expeditious Detection in Pharmaceutical Preparations.—Franz Lörinsch proposes the following simple and quick method for the detection of methyl alcohol in pharmaceutical preparations, such as spirits, fluidextracts, tinctures, etc. Having eliminated iodine, if present, by decolorization with thiosulphate, or free ammonia by acidulation with sulphuric acid the preparation is subjected to distillation. To 1 cc. of the distillate 1 cc. of 25% diluted sulphuric acid and 8 cc. of 1/10 N potassium permanganate solution are added, the mixture allowed to stand about 10 minutes, and filtered; 1 cc. of the filtrate is then mixed with 1 cc.

of a 3 percent. solution of iron albuminate, and 2 cc. of concentrated sulphuric acid is carefully added, whereupon an intense-violet colored ring is developed at the zone of contact of the two liquids due to the presence of formaldehyde produced from methyl alcohol contained in the preparation under examination. In this test the albuminate of iron may be replaced by 1 cc. of a mixture of equal parts of milk and water to which 1 drop of solution of ferric chloride has been added.—*Ztschr. d. Allgem. Oesterr. Apoth. Ver.*, 1912, No. 35.

Methyl Alcohol: Toxicity.—In a paper read before the British Pharmaceutical Conference, Thomas Tyrer and F. C. Gosling observe that the toxicity of methyl alcohol is now placed beyond doubt. Attempts to ascribe the toxic quality to other constituents of commercial methyl alcohol and wood naphtha have failed, and there is no doubt that methyl alcohol is itself toxic.—*Trans. Brit. Pharm. Conf.*, 1912; through *Pharm. Journ. and Pharmacist*, Aug. 3, 1912, 128.

Formaldehyde: Examination of Commercial Solutions and Tablets.—In a paper read before the British Pharmaceutical Conference, 1912, C. H. Hampshire and S. Furnival report the results of examination of eleven commercial samples of formaldehyde solution and eighteen samples of tablets and describe the methods employed for the determination of their constituents. The *specific gravity* at 15.5° C. of the solutions varied from 1.0804 to 1.0886. The *formaldehyde* content, which was determined by the method of Lemme and adopted in the G. P., ranged from 35.38 to 37.33 percent. by weight. The *methyl alcohol* content, as determined by the method of Blank and Finkenheimer, varied from 10.16 to 17.22 percent. by weight; the *acidity*, calculated as formic acid, varied from 0.043 to 0.085 percent.; the *ash*, determined by evaporation and subsequent ignition in platinum, was exceedingly small, ranging from 0.0029 to 0.048 percent., with only traces in two cases, and none at all in two others. The method of the "Codex" for detecting the presence of *acetone*, proved unsatisfactory; but by a method of their own devise, which enabled the detection of as little as 0.2 percent., none of the samples gave indications of more than a trace, and in one case it was entirely absent. Regarding the formaldehyde tablets, the results show that

many of the tablets on the market contain much less formaldehyde than is required by the formula of the B. P. Codex.—*Trans. Brit. Pharm. Conf.*, 1912; through *Pharm. Journ. and Pharmacist*, Aug. 3, 1912, 133.

Commercial Formates: Revision of the Formulas Given in the B. P. Codex.—Asked to supply sodium formate answering the requirements of the B. P. Codex, Thomas Tyrer and F. C. Gosling found the article in stock to be in well-defined prismatic crystals containing two molecules of water of crystallization, instead of one as stated in that work. The authors were unable to prepare

Sodium Formate containing only 1 molecule of water, and recommend, in accordance with their experience and the variation in water content of six commercial samples, from nil to 36%, that the formula should be amended to 2 molecules of water for the true crystallized salt. ($\text{NaCHO}_2 \cdot 2\text{H}_2\text{O}$).

Other chemical formulas for formates were also investigated and the corrections made, as shown in the following summary:

	B. P. C. Formula
Sodium Formate.....	$\text{NaCHO}_2 \cdot \text{H}_2\text{O}$
Potassium Formate.....	KCHO_2
Lithium Formate.....	$\text{LiHCO}_2 \cdot \text{H}_2\text{O}$
Calcium Formate.....	$\text{Ca}(\text{CHO}_2)_2$
Ferric Formate.....	$\text{FeC}_6\text{H}_5\text{O}_{12} \cdot \text{H}_2\text{O}$
Ferrous Formate.....	$\text{Fe}(\text{CHOO})_2$
	Established Formula
Sodium Formate.....	$\text{NaCHO}_2 \cdot 2\text{H}_2\text{O}$
Potassium Formate.....	KCHO_2
Lithium Formate.....	$\text{LiHCO}_2 \cdot \text{H}_2\text{O}$
Calcium Formate.....	$\text{CaC}_2\text{H}_2\text{O}_4$
Ferric Formate.....	$\text{Fe}_3(\text{CHO}_2)_4$
Ferrous Formate.....	$\text{Fe}(\text{CHO}_2)_2 \cdot 2\text{H}_2\text{O}$

—*Trans. Brit. Pharm. Conf.*, 1912; through *Pharm. Journ. and Pharmacist*, Aug. 3, 1912, 157.

Calcium Lactate: Method of Preparing a Pure Salt.—The experiments of C. A. Hill and T. T. Cocking demonstrate that calcium lactate is liable to vary in composition according to the method of preparation, varying particularly in the amount of water of crystallization. It may be neutral or contain either lactic acid, calcium hydroxide, or calcium carbonate. Pure calcium lactate is readily prepared by precipitation of its cold saturated solution with acetone, washing the precipitate with acetone and then with ether.

A product thus prepared was neutral to phenolphthalein, and contained 70.07 per cent. of anhydrous calcium lactate calculated on the yield of 0.1394 gram of calcium sulphate from 0.3187 gram of the substance. The proportion of anhydrous calcium lactate calculated for the pentahydrated salt is 70.78 per cent. Regarding the solubility of calcium lactate, the authors have been unable to confirm the oft-repeated statements that the salt becomes insoluble with age. The widely divergent statements made in regard to its solubility do not appear capable of explanation on the ground that they were possibly made at different temperatures or with salts of varying hydration. In determining the solubility of calcium lactate care must be taken that the temperature does not rise above the point for which the observation is to be recorded, since solutions of calcium lactate appear to exhibit supersaturation in a marked degree. Experiments made by a method described, giving very concordant results, show the mean solubility of the hydrated salt ($\text{CaC}_6\text{H}_{10}\text{O}_6 \cdot 5\text{H}_2\text{O}$) to be as follows: At 0°C , 1 in 32; at 15°C , 1 in $18\frac{1}{2}$; and at 30°C , 1 part of salt in $12\frac{1}{2}$ parts of water.

The authors recommend the salt to be made official (B. P.) should be the hydrate $\text{CaC}_6\text{H}_{10}\text{O}_6 \cdot 5\text{H}_2\text{O}$; that it be required to be neutral, or very slightly acid with a limit of acidity stated; and that it be required to yield upon treatment with sulphuric acid, ignition, further treatment with sulphuric acid and re-ignition, not less than 41 or more than 45 per cent. of its own weight of calcium sulphate. Limits of lead and of Arsenic should also be introduced.—*Trans. Brit. Pharm. Conf.*, 1912; through *Pharm. Journ. and Pharmacist*, Aug. 3, 1912, 155.

Alkaloids: General Method for Their Determination in Drugs.—Felix Daels describes the following general method for the determination of alkaloids in drugs: To 10 gm. of the dry powdered drug in a 400 cc. flask, add 200 cc. of chloroform, followed by 50 cc. of a 2 percent. solution of NaOH. Weigh the flask and contents, boil half an hour under a reflex condenser, allow to cool, and restore the original weight with chloroform. Then filter off 150 cc. of the chloroform solution through kieselguhr, shake the filtrate with 150 cc of acid solution of known titre, and filter (the acid solution?: Rep.) again through

kieselguhr, collecting 100 cc. This represents, in addition to the alkaloid from 5 gm. of the powdered drug, a quantity of sodium hydroxide corresponding to 0.4 cc. of a 1/10 N.NaOH solution, which must be included in the calculation. The acid solution is titrated with 1/10 N.NaOH solution, using hæmatoxylin as indicator, and the values found, after deducting 0.4 cc., are calculated in the usual way. The author mentions some slight deviation from this general process which he has found expedient in the assay of several drugs: Cinchona, Ipecacuanha, Nux Vomica, Hyoscyamus, Aconite, and Belladonna.—*Jour. de Pharm d'Anvers*, 1912, No. 14 .

Indicators of the G. P. V.: Review of Their Chemistry and Uses.—Eugen Nickel contributes a review of the chemical characters and uses of the indicators directed in the G. P. V. These are considered according to origin under three heads, vegetable, inorganic-chemical, and organic-chemical compounds, embracing under the first head: Litmus, starch and hæmatoxylin; under the second: Potassium chromate, ferriammonium sulphate, and potassium iodide; and under the third: Phenolphthalein, iodeosin, and dimethylaminoazobenzol. The details must be consulted in the original, in *Pharm. Ztg.*, LII (1912), No. 60, 696-697.

Phenolphthalein: Influence of Alcohol and Some Neutral Salts on End-Reactions.—E. Lenk and J. Monschein find that if ammonium chloride is added to a weak solution containing phenolphthalein, the red color disappears and more alkali must be added in proportion to the amount of water present. If, however, alcohol is added, much more alkali will be necessary; as more alcohol or water is added, the effect of the latter is seen to be greater to an increasing extent. In some of the cases recorded the amount of alkali required was thirty times as much when alcohol was added as when an equal volume of water was employed. Ammonium chloride may be replaced by magnesium sulphate or some other salts.—*Chem. Ztg.* May 11, 1912, p. 534.

Colchicine: Reactions.—According to C. Reichard's investigations colchicine is an alkaloid possessing but feeble reactionary properties. It is, however, distinguished from the prepondering majority of alkaloids, independent of its distinctive color, that it is

capable of crystallizing from its chloroformic solution in chemical combination with its solvent, and that its behavior towards reducing agents of all kinds is perfectly negative. An extremely characteristic property is the formation of a lemon-yellow solution in concentrated sulphuric acid, which is permanent on dilution with water, and the peculiar odor reminding of honey and wax which is manifested when even very small quantities are used. Colchicine is furthermore identified by its behavior to nickel sulphate, and particularly to the rainbow color display of a mixture of colchicine, water, and mercuric chloride.—*Südd. Apoth. Ztg.*, 1912, No. 73.

Hyoscyne Hydrobromide: Commercial Variation.—Experiments reported to the Brit. Pharmaceutical Conference, 1912, by H. Finemore and Dorothy Braithwaite point to the necessity of pharmacists for care in the examination of their stock of hyoscyne hydrobromide. An examination of six commercial samples showed that only four of them approximate in character to the pure laevorotatory compound.—*Trans. Brit. Pharm. Conf.*, 1912; through *Pharm. Journ. and Pharmacist*, Aug. 3, 1912, 136.

Pilocarpine: Detection in Presence of Quinine.—M. G. Meillère takes advantage of the solubility of quinine chromate and insolubility of pilocarpine chromate in chloroform, for the detection of pilocarpine in ointments, hair dressings, etc., containing both alkaloids. The faintly acidulated solution of alkaloids is treated with potassium dichromate as long as a precipitate forms, and then extracted with chloroform as long as this becomes colored. On the addition of chloroform and oxygenated water (=Solution of Hydrogen Dioxide) to the residual liquid, the characteristic color reaction of pilocarpine manifests itself if present. The quinine is detected in the chloroform solution after eliminating the chromic acid with ammonia.—*Journ. de Pharm. et Chem.*, 1912, No. 3.

Anhydrous Crystalline Quinine: Production.—J. Ville describes a rapid and easy method for the production of anhydrous quinine in a crystalline state. A current of air charged with ammonia is driven through an aqueous solution of quinine hydrobromide heated on a boiling water-bath, and kept at that temperature during the whole operation. The quinine is thus precipitated in white,

crystalline lamellæ, which when washed and pressed between porous plates contain no water of crystallization. It melts at 172°-173°, and on cooling becomes a crystalline mass of fine needles.

Quinine Trihydrate is obtained by the author by allowing an aqueous 2.5 percent solution of quinine hydrobromide, treated with half its volume of acetone and made alkaline to very slight opalescence with ammonia, to evaporate spontaneously in a crystallizing dish covered with a funnel.—Bull. Soc. Chem. de France, April 20, 1912, 398.

Strychnine: Modification of the B. P. Test for Brucine.—In the British, and in most of the other pharmacopœias, the test for brucine in strychnine is to pour nitric acid on the crystals and to observe whether any red coloration is produced. D. B. Dott says that this test is unsatisfactory inasmuch as it is difficult to properly observe or define a transient tint which quickly changes to a darker color, caused by the rapid action of the strong nitric acid on the strychnine, and suggests the following modification of the test: Dissolve 0.05 gm. of the powdered strychnine in 4 cc. of a mixture of equal volumes of nitric acid and water, at the ordinary temperature; the color of the solution, after five minutes, should be purely yellow, showing no red or orange tinge.—Trans. Brit. Pharm. Conf., 1912; through Pharm. Journ. and Pharmacist, Aug. 3, 1912, 144.

Santonin: Manufacture in Turkestan.—From an interesting article on the production of santonin in Turkestan, which appears in "Westnik finansow" (1912, No. 88), it appears that the manufacture of this important vermifuge is confined practically to Turkestan, where extensive manufacturing plants have been established since the Russians have taken possession; and since the habitat of the plant (*Artemisia cina*), from which it is prepared, is restricted to a small territory of the earth's surface, and confined to Russian Turkestan, the supply of material has become a Russian monopoly and, in consequence, that of the product also. While the plant grows only within narrow limits on the left bank of the Syr-Darja it grows profusely on the right bank of this river, extending over the entire plain, between the large and small streams, up to the Altai range of mountains. Most of this land, which is inhabited

by the nomad Kirgise, has been acquired by the Russian crown and is rented out on certain terms covering the exclusive right to collect the flowers. During the harvest of the flowers, which is confined to a very brief period (usually between the 15th or 20th of August, and the 1st or 5th of September), the manufacturers open storage-centers, for the reception of the crop, which are again closed at the end of the harvest, and the collection requires the watchful care of a large number of employes, since the flower must be collected at the proper period of development—the santonin-content being greatest when just opening. The average yield of flowers is estimated at 50 to 60 thousand puds (1 pud = 16.375 kilograms, Rep.), but in some years is as low as 40,000 puds, of which a large portion is exported. The manufacture begins immediately after the harvest, the average yield of santonin (more or less crude) being 1 part from 150 parts of flowers. The produce, which is mainly exported to Germany, is about 400 puds, but occasionally has been as high as 1500 puds. The refuse material (dregs) is used as fuel after drying and forming into "briquets."—Pharm. Ztg., LVII (1912), No. 77, 778.

Strophanthus Glucoside: Comparative Investigation.—A. Heffter and F. Sachs have determined by a comprehensive investigation of the strophanthus glucosides that the amorphous strophanthin of *Strophanthus hispidus* closely resembles the strophanthin of *S. kombe*, both in its physiological activity and in chemical character. Besides this amorphous strophanthin, however, the Kombé seeds contain a crystalline strophanthin. While the gratus-strophanthin of Thoms is only slightly bitter, the others mentioned are all markedly bitter. Crystalline kombé-strophanthin alone has the property, in a slight degree, of disintegrating the red blood corpuscles. Its toxicity on rabbits is very close to that of the amorphous glucoside, and less than that of gratus-strophanthin, but there appears to be very little difference in its action on the human subject from the amorphous glucoside with which it is associated.—Pharm. Journ. and Pharmacist, Aug. 24, 1912, 271.

Proteolytic Ferments: Action of Light.—The action of both visible and ultra-violet rays of light has been tried by H. Agulhon on yeast-sucrase, maltamylase, pancreatic

amylase, emulsin, pepsin, rennet-ferment, catalase, tyrosinase, and malt peroxidase. He finds that ultra-violet rays not only destroy micro-organisms, but they rapidly destroy all the ferments named, provided these are present in media which are permeable to the rays. Sucrase, laccase, and tyrosinase are only attacked by visible light rays in presence of active oxygen, and are less rapidly destroyed by ultra-violet rays in the absence of that element. Emulsin and catalase are decomposed *in vacuo*, by all light rays, but less actively without than in the presence of oxygen. Rennet-ferment is unaffected by ordinary light, but is destroyed by ultra-violet rays with equal rapidity in presence of oxygen and *in vacuo*.—*Annales de Pasteur*, 26 (1912), 38.

Amygdonitrile Glucoside: Isolation from Leaves of Photinia Serrulata.—In 1906 Guignard examined the leaves and other parts of *Photinia serrulata* with reference to the considerable amounts of hydrocyanic acid they yield on distillation. H. Herissey has now isolated the cyanogenetic glucoside by submitting the fresh leaves to the process of Bourquelot. It proves to be amygdonitrile glucoside. This is the third instance that this glucoside has been found in plants—first, by the author in *Cerasus padus*; then by Power and Moore in *Prunus serotina*; and, thirdly, as above. Possibly prulaurasin or some other glucosides are present as well.—*Journ. de Pharm. et Chem.*, 1912 (5), 574.

Emulsin: Reversible Reaction.—Seven years ago Visser found that when emulsin was allowed to react, in an aqueous medium, with saligenin and glucose, a product was formed which was regarded as almost certainly salicin, although its identity was not fully established. E. Bourquelot and M. Bridel, having now shown that emulsin, in the presence of alcohol 85 percent. is capable of hydrolyzing 54 percent. of any salicin in solution, it was considered probable that the reverse action in the same medium would give a better yield than water, as in Visser's experiment. This was found to be a fact, and the optical deviation attained in fourteen days was in accordance with theory. On removing the alcohol, and evaporating the residue with water-saturated acetic ether, a method which was found capable of removing salicin from a mixture of saligenin and glucose, a gluco-

side was dissolved out. It was not salicin, however. It was a transparent amorphous hard mass, without a trace of crystalline structure, very soluble in water; $\alpha_D -30.02$; not reducing Fehling's reagent; rapidly hydrolyzed by emulsin without regenerating saligenin. It has not yet been definitely identified, but the above characters are those of Koenig and Knorr's B-ethyl glucoside. In any case, it is established that emulsin is capable of a reversible activity, and to a greater degree than has hitherto been considered possible.—*Compt. rend.*, 154 (1912), 1375.

Volatile Oils: Variability of Optical Rotation.—Rob. Frey contributes some interesting memoranda concerning the variability of the optical rotation of volatile oils mentioned in the G. P. V., among the constants serving for their valuation. The optical rotation is influenced by a variety of causes, such as the conditions of development of the plant, the method of production, fractionation, age, etc., so that some of the oils may vary within considerable limits from dextro- to laevorotation. In the case of turpentine oils, for example this variation may be from 15° to 40° , a difference of 55° in the specific rotation. An examination of a number of conifer-oils in a 94.7 mm. tube showed the following average optical rotatory constants: Ol. terebinthin. rectificat., 2.5° ; ol. terebinthin. Gallic, -6.5° ; Ol. Pini (Kienöl), 14.9° ; Ol. Pini silvestris (pine-needle oil), -19.2° ; Ol. Pini punilionis, -7.2° . By judicious admixture it becomes quite possible to make an optically inactive product from dextro and laevorotatory turpentine oils, or to produce mixtures having the desired intermediate degrees of optical rotation. Again, it has been shown that by fractionation, American turpentine oil will yield fractions having according to the temperature of distillations the specific rotations of 14.61° , -0.36° and -13.17° , while similarly French oil of turpentine yields fractions of -42.2° and 18.34° , and the oils from the oleoresins of pine and of fir yield fractions between 155° and 160° , showing the rotations of 20.2° and -7.9° , respectively.—*Pharm. Ztg.*, LVII (1912), No. 78, 785.

Cubebs: Method of Identification.—Confirming the observation of Umney and Potter that cubebs offered on the market, particularly such imported via London, have recently

been frequently sophisticated with different sorts of pepper-fruits, Caesar & Loretz state that they have recently met with a consignment containing scarcely any genuine cubebs but large quantities of *Piper nigrum*. They confirm furthermore the statement of Umney and Potter that the fruits used for sophisticating cubebs are difficult to distinguish in their externals from the genuine fruits, but they have resorted with advantage to the sulphuric acid test, which is carried out as follows: The fruit is triturated in a small mortar to fine powder, the powder transferred to a small, plain filter (4 cm. diameter), and 1 or 2 cc. of ether is poured upon the powder. The filtrate is collected in a small porcelain dish, allowed to evaporate spontaneously, 1 or 2 drops of sulphuric acid are added to the residue and the two are stirred together with a glass rod. A handsome purple-red color is developed and this is intensified if 1 or 2 cc. of ether is poured upon it and evaporated by moving the dish to and fro on the hand. False cubebs subjected to this test give a dirty brown color. The test should be carried out simultaneously with several fruits of different appearance.—Pharm. Ztg., LVII (1912), No. 84, 845.

Medicinal Mixtures: Potential Increase of Activity.—Dr. J. Abelin observes that the pharmacological activity of medicinal mixtures has during recent years formed the frequent subject of scientific study. He says it is a well-recognized fact that two medicaments, administered together, will under circumstances exert a much more potent effect than either of them by itself in corresponding doses. In surgical practice, also, it has been experienced that by the judicious combination of two narcotics a better and more lasting narcosis is produced than is possible by the use of one of the narcotics by itself. Moreover, a dose of a medicament which by itself is ineffective, may acquire pronounced potency by the addition of insignificant quantities of a second substance which, given by itself, would be without any effect whatever. Another important observation is the increased potency acquired by a medicament when it is administered in broken doses, as for example when morphine is given in small, subdivided doses at short intervals, by which a stronger and more lasting narcosis is produced than when the entire dose is given at

once. The author gives numerous examples, quoting the experience of a number of investigators—Schneiderlin, Krawkow, Fühner, Bürgi, Blessing, and others—and sums up the results of his review in the following sentences:

Increased potency of activity may be expected by the combination of two medicaments: (1) When both medicaments belong to different pharmacologic-chemical groups; (2) when to the dose of a medicament, ineffective by itself, a very small quantity of some other corresponding medicament is added; and (3) when the stated dose of a medicament is given in divided portions at short intervals.—Pharm. Ztg., LVII (1912), No. 79, 796.

Fruit Juices: Utilization of Garden Fruits to Make Palatable Wines.—P. Carles directs attention to the statement that during ordinary seasons in France 20,000,000 kilos of cherries are absolutely wasted, and in good years as much as 50,000,000 kilos. This loss is mainly due to difficulties of transport between rural districts and towns. If this fruit could be fermented, a wholesome beverage might be obtained. The reason that palatable "Wines" cannot be made from cherries and other garden fruits is stated to be due to their deficiency in tartaric acid. The author says if this is added in such proportions as to bring the total acidity of the juice to the equivalent of 7 to 9 gm. of tartaric acid to the liter, fermentation will proceed normally, regularly, and completely, as in the case of wine made from grapes. All that is necessary is a preliminary titration of the fruit juice and the addition of the requisite amount of acid. As fermentation proceeds, the potash salts present in the juice, having combined with the acid to form potassium acid tartarate, are precipitated precisely as occurs when grape juice is fermented.—Report de Pharm., 24 (1912), 241.

Syrup of Raspberry: Amyl-Alcohol Test for Tar Colors.—E. Schroedter's experience supports the statement that the G. P. V. test for the absence of tar colors in syrup of raspberry is liable to be misleading, since amyl-alcohol is apt to take up the natural coloring matter of the fruit, particularly when the berries have ripened well and have a deep red color. It is true that the color so imparted to the alcohol is comparatively faint, pale

rose-red, but its occurrence may be misinterpreted unless it is distinctly understood that the amyloalcohol separating slowly after vigorous shaking with the syrup must be decidedly red to indicate the presence of a tar pigment. A simple and reliable test for the latter consists in dyeing a woolen thread, previously saturated with sodium acetate solution, in the syrup.—Pharm. Ztg., LVII (1912), No. 72, 728.

Liq. Kali Arsenicosi, G. P. V.: Advantage of Using Monocarbonate in Place of Bicarbonate of Potassium.—Héro Krüer observes that the combination of arsenous acid and potassium bicarbonate is not effected at the temperature of boiling water, a temperature of 102° being required, and that by the foaming produced by the evolution of CO₂ portions of the arsenous acid are carried to the upper portions of the reagent glass, where it adheres persistently and is difficult to remove. If the bicarbonate (1.0) is replaced by monocarbonate (0.7), the required temperature is quickly reached and the frothing is practically avoided.—Pharm. Ztg., LVIII (1912), No. 78, 786.

Cellophan: A New Cellulose Product for Impervious Paper.—In "Les Nouv. Remèdes" (No. 15, 1912), a new cellulose product is described under the name of "Cellophan," which is prepared in the bleachery at Thaon-Vosges by dissolving cellulose, reprecipitating it, and then subjecting the precipitate to treatment similar to that employed in paper-making, by which it is obtained in form of transparent and very stable sheets of 14/100 mm. thickness and upward. These sheets are odorless and tasteless, swell up when immersed in water, and burn like ordinary paper without exploding. It is not affected by alcohol, ether, chloroform, iodine, or volatile and fixed oils, but is attacked somewhat by alkalis. It is superior to parchment paper as a filtering medium for bacteria and as a dialyzing membrane. By boiling water, hydrogen dioxide, and corrosive sublimate it may be sterilized, and thus becomes useful as a substitute for the more expensive materials usually employed for the protection of surgical appli-

ances, and bandages, as well as a protective wrapper, replacing economically gauze, caoutchouc, parchment paper, and tin-foil usually employed for medicines, food products, etc., or for one or the other of these purposes. The new material may be colored, pressed into any desirable shape, and readily receives imprints.—Pharm. Ztg., LVII (1912), No. 75, 758.

PROGRESS OF THE METRIC SYSTEM.

M. Charles Edouard Guillaume, Director of the International Bureau of Weights and Measures, recently communicated an interesting paper on the "Evolution of the Metric System," to the Société de Phisque. He noted that the system is now obligatory in the Argentine, Austria-Hungary, Belgium, Brazil, Bulgaria, Chili, Columbia, Cuba, Denmark, France, Germany, Guatemala, Holland, Italy, Luxemburg, Mexico, Montenegro, Norway, Peru, Portugal, Roumania, Servia, Spain, Sweden, Uruguay, and the Central Mexican republics. In Bolivia, Egypt, Great Britain and Ireland, Greece, Japan, Paraguay, Russia, Siam, Turkey, Venezuela, and the United States it is optional only. But it appears probable that Greece and Siam will shortly declare its use obligatory, and in the United States legal units of existing weights and measures are defined by their relation to metric units, and not by the British Imperial standards. The fundamental units defined by the 1889 Convention, at which twenty states were officially represented, were those of length, time and mass. The two former are clear enough, but the kilogram is frequently supposed to be a unit of weight, whereas ever since its introduction in 1799 it has never been really considered anything but a mass unit. In view of the feeble but appreciable difference between the volume of a kilogram of water and a cubic decimetre, a distinction is made between the latter and the litre. A litre, according to the most up-to-date authorities, contains 27/1,000,000 (twenty-seven millionths) more than a cubic decimetre.—*The Chemist and Druggist*.