Report on the Progress of Pharmacy

For the Year 1912

(Fifth Installment.)

Digitalis: Resume of the Active Constituents of Leaves and Seed.—In an address delivered before the "Rostock Apothecaries Socity," Prof. Kobert gave the following interesting resume regarding the active constituents of digitalis:

The leaves and seeds of *Digitalis purpurea* and *Digitalis Grandiflora* contain glucosides of the digitalin-group as well as glucosides of the saponin group—the leaves containing the active substances, digitoxin, digitophyllin and gitalin, together with the inactive saponins gitalin and digitsaponin, while the seeds contain digitalin and gitalin, of the digitalin-group, together with the active saponins digitonin Schmiedberg and digitonin Kiliani. Besides these well-defined substances, digitalis contains some enzymes, the composition of which has not yet been thoroughly investigated, but of which it is known that they possess oxidizing and hydrolyzing action upon the glucosides and thereby reduce their activity. Furthermore, it has been found that manganese is a constant associate of these enzymes (also called oxydases), and that thereby the leaves of the yellow variety of foxglove (*Digitalis grandiflora*), containing less manganese than those of the red variety (*D. purpurea*), are correspondingly less susceptible to this decomposition. To a certain extent protection from this change is afforded by properly and quickly drying the fresh leaves; but this is not always practicable in the case of wild growing digitalis, the leaves of which do not at once reach the pharmacist after collection, and have frequently undergone change before they are delivered. The final products of the decomposition of the three active cardiac glucosides, namely gitalin, digitoxin and digitalin, are considered, aside of the glucoses split off by their hydrolysis, to be completely inactive, and consist of the so-called digitoxigenin and digitaligenin.

Of the active substances of digitalis leaves —digitoxin, digitophyllin and gitalin—only the last named, gitalin, is represented in the infusion, into which it passes along with digitsaponin, so that digitalis leaves, even when extracted thrice successively with boiling water, do not lose their activity completely. But inasmuch as the infusion of the leaves possesses extraordinary salutary properties, it is demonstrated that gitalin must be considered by the practicing physicians as being the most important component of the drug. In a chemically very impure condition it has heretofore been supplied under the name of "digitalein," but it is now only a question of time when it will be available in a chemically pure form. Prof. Kobert recommends, in order to utilize the activity of the leaves completely, that the administration of the infusion be alternated with a dose of digitoxin, and that similarly the activity of the seeds may be secured by alternately administering solution of gitalin and digitalinum verum Kiliani.—Pharm. Ztg. LVII (1912), No. 59, 597.

Plant Specimens: Preserving and Mounting.—William Huren demonstrated before the Botanical Society of Western Pennsylvania a simple and effective method of preserving plant specimens whch will revolutionize the present slow and laborious mounting of herbarium collections. The fresh specimens are subjected to process of drying by means of steam, cold air and a press, which preserves their natural color. After this they are imbedded or inlaid on a soft surface, as blotting paper, cardboard, silk, etc., and a final protective coating of liquid celluloid is applied. The specimens thus finished retain their natural color, resemble paintings and are prac-

tically indestructable.—Sc. Am., 1912, Vl. 107, 10. O. R.

Powdered Drugs: Commercial Quality of Some of the More Important Drugs.—Henry G. Greenish and Miss Dorothy J. Bartlett have examined a large number of samples of powdered drugs of commerce, comprising thirty-three of gentian and eleven each of nux vomica and ipecacuanha, and describe the methods and results in a lengthy paper read at an evening meeting of the Pharmaceutical Society of Great Britain. The results, which were obtained both by chemical and microscopical methods, show that

Commercial Powdered Gentian still leaves much to be desired. Intentional adulteration with foreign vegetable powders still continues. Carelessly cleaned root is ground to powder, and a large proportion of the samples are deficient in water soluble substances.

Powdered Nux Vomica of commerce is of satisfactory quality. All the samples had normal microscopic characters, and contained alkaloid ranging from 2.38 to 2.80 per cent. This is partcularly gratifying in view of the fact that the powdered nux vomica of French commerce has recently been found to be frequently adulterated with ground olive stones and with raspings of ivory nuts.

Powdered Ipecacuanha of commerce was not quite so satisfactory, although with one exception they contained sufficient total alkaloid to comply with the recommendation of the Committee of Reference in Pharmacy. Two of the samples were not quite pure, one was probably Cartagena ipecacuanha and one other was not ipecacuanha at all—possibly supplied by mistake, however.—Pharm. Journ. and Pharmacist, February 17, 1912, 201-203.

Coptis Root: Source and Constituents of Two Kinds Used in India.—David Hooper states that coptis root, as used in India, is obtained from two sources. The first is collected in the Mishmi Mountains northeast of Assam, and is derived from *Coptis Teeta*, Wallich. The second kind of root is imported into Bombay from Japan and China, the latter probably being derived from *Coptis Teet*, var. *Chinensis*, while it is conjectured that the Japanese drug is the root of *Coptis anemonaefolia*, Sieb. et Zucc. There are slight differences between the two kinds of drug met with in the Indian baraars. "Mishmi tita" from Assam is a yellowish-brown rhizome, as thick as a quill or larger, having wiry rootlets or spiny projections where they have been broken off; the rhizome is jointed and frequently contorted, at the upper end of the joints become more marked, and one or more stem-clasping petioles often remain attached. A transverse section shows a thin brownish-yellow bark, with bright, orange colored, waxy segments of wood. The overseas drug brought to Bombay is more slender, of a light brown color, with fewer wiry rootlets; the rhizome often branches at the crown into two or three heads, which terminate in tufts or leaf-stalks crowded together and not separate as in the Assam drug. A transverse section shows a thick brown bark, with dull, yellowish-brown waxy segments. Both roots are extremely bitter and communicate a yellow color to water.

The Assam drug is the kind preferred and commands a much higher price than the Bombay drug. The drug has been analyzed by J. Dyson Perrins as far back as 1862, who reported a yield of 8½ per cent of berberine in a sample derived from *Coptis Teeta*. This statement has remained unchallenged during all the years since, and Mr. Hooper has therefore subjected samples of the drugs from Assam and from Bombay to chemical examination, with the following results:

	Assam	Bombay
Moisture	8.9	7.7
Ash	3.1	3.3
Alcoholic Extract	17.95	17.30
Resin	1.5	2.7
Berberine (as iodide)	7.63	7.17
Berberine (as hydrochloride)	8.6	8.3

The alkaloid was determined by calculating from the absolutely dried iodide, $C_{20}H_{17}NO_4$, HI, and the air-dried hydrochloride, $C_{20}H_{17}NO_4$, HCl, $2H_2O$. While the analysis points to the Assam root as a slightly better drug, it does not warrant any serious difference being made between the commercial valuation or medicinal reputation of the two kinds.—Pharm. Journ. and Pharmacist, April 13, 1912, 482.

Euonymus Atropurpureus: Chemical Examination of the Root-Bark.—A resumé of the literature showing that with the exception of dulcitol no definite constituent has heretofore been isolated from "Wahoo" bark, Harold Rogerson has made a complete

chemical examination of the drug and summarizes his result as follows:

The material employed consisted of the root-bark of *Euonymus astropurpureus,* Jacquin. An alcoholic extract of this material when distilled in a current of steam yielded an amount of a pale-yellow essential oil equivalent to 0.01 per cent of the weight of the drug.

The portion of the extract which was soluble in water contained a quantity of dulcitol (m. p. 186-188°) amounting to 2.09 per cent of the weight of the drug; a new acid, $C_5H_4O_3$ (m. p. 121-122°), which evidently is furan-B-carboxylic acid; a new crystalline alcohol, $C_{21}H_{36}O_4$ (m. p. 248-250°), which possesses a bitter taste, and has been designated euonymol; and a sugar, which yielded d-phenylglucosazone (m. p. 208-209°), together with small amounts of coloring matter.

The portion of the extract which was insoluble in water consisted of a dark brown resin, amounting to 3.2 per cent of the weight of the drug. From this resin the following substances were isolated: Three new alcohols, namely, euonysterol, $C_{31}H_{51}O.OH$ (m. p. 137-138°), homo-euonysterol, $C_{40}H_{69}O.OH$ (m. p. 133-134°), and atropurol, $C_{27}H_{44}(OH)_2$, melting at 283-285°; citrullol, $C_{22}H_{36}O_2(OH)_2$ (m. p. 285-290°), which has previously been obtained from colocynth (J. Chem. Soc., 1910, 97,102) and a mixture of fatty acids consisting of palmitic, cerotic, oleic, and linolic acids.

In the course of this investigation no product could be obtained corresponding to the "euonymin" of Wenzell or of Schmiedeberg, and, moreover, no evidence of the presence of any glucosidic substance in the bark. —Pharm. Journ. and Pharmacist, May 25, 1912, 689; from Communication of the Wellcome Research Laboratories.

Fagara Xanthroxyloides, Lam.: Chemical Constituents of the Fruits.—Having recently received from German Toga a quantity of the root, bark, and fruit of *Fagara Xanthoxyloides, Lam,* which are used there as a remedy for diseases of women, Prof. H. Thoms, assisted by his pupil, H. Priess, has subjected this material to chemical examination. From the fruits a volatile oil was distilled, which was found to contain dipentene, methyl nonylketone, caproic acid, acetic acid (in the form of an ester), linalool, a sesquiterpene, and a crystallisable substance of the formula $C_{12}H_8O_4$. This crystalline substance was found in larger quantity in the residue left after the distillation had been completed; it proved on examination to be a powerful fish-poison, and was therefore named xanthotoxin. Xanthotoxin melts at 145°-146°, is a lactone, and contains a methoxy-group. Further investigation showed that it was not only isomeric with bergapten, but contained the same groups of atoms. It is, however, a pyrogallol derivative yielding pyrogallocarbonic acid, $C_6H_2(OH)_3$ COOH (1, 2, 3, 4) when carefully fused with caustic potash, whereas bergaptene is a phloroglucin derivative. From the constitution of xanthotoxin, as indicated by the chemical composition and behavior, it must be regarded a methoxyderivative of cumarin-cumarone-pyrogallol. The constitution of bergaptene is not yet definitely known, but the author is now engaged in attempting to elucidate its constitution.—Pharm. Journal and Pharmacist, Jan. 13, 1912, 29.

Gelsemium: Aesculin not a Constituent.—O. Tunmann having proposed a method for the detection of aesculin by micro-sublimation, which he consideres specially adapted to the identification of gelsemium, mentioning that aesculin under the conditions of this test does not behave as it does under the conditions of an ordinary chemical experiment, Frank Tutin has made and describes experiments which prove the fallacy of Tunmann's assumption that the sublimate consists of aesculin and that in fact, the sublimate obtained consists of scopoletin (=Aescularin 5-methyl ether), which is the fluorescent principle in gelsemium. In consideration of his doubts based on a number of facts mentioned, Mr. Tutin determined the behavior of anhydrous aesculin, aesculetan, scopoletin, and finely ground gelsemium on heating. Small quantities of these materials were placed in small, thin glass tubes, the open end sealed, and the substances simultaneously heated in a metal bath, the temperature of which was recorded by a thermometer placed in the liquid. At 140° the scopoletin just commenced to sublime, and at 150° a distinctly crystalline sublimate was obtained. The temperature was then raised to 170°, at which point it was kept for several hours. The scopoletin then sublimed fairly rapidly, yielding almost colorless, well-formed crystals. The gelse-

mium also yielded a small sublimate, which was, for the most part composed of crystals of scopoletin. The aesculetin remained unchanged. The temperature was then raised to 210°, and again maintained several hours. The scopoletin fused, and sublimed rapidly; the gelsemium yielded a further sublimate, largely a tarry matter; aesculatin slowly sublimated in pale yellow crystals; the aesculin was decomposed, giving a further sublimate of tarry matter, together with crystals of aesculatin, the identity of which was proved by the melting point (264°).—Phar. Journal and Pharmacist, Feb. 10, 1912, 157; from Wellcome Chem. Research Publication.

Gum Thus or Canadian Olibanum: A Substitute for Olibanum—Karl Dietrich reports on an American substitute for olibanum, which comes into the drug market from Hamburg. Its M. Pt. is 77-78°. The following are its constants as compared with Resina Pini and Terebinthinae.

	Acid Number.
Gum Thus	145.65 to 146.03
Pine Resin	105 to 160
Turpentine	194 to 144
	Saponif Number.
Gum Thus	169.19 to 170.78
Pine Resin	150 to 190
Turpentine	108 to 179

The yield of oil of turpentine is as follows:

Gum Thus	9-10 percent.
Pine Resin	3- 4 percent.
Turpentine	20-25 percent.

Consequently Gum Thus occupies a place about midway between Resina Pini and Terebinthina. The conclusions reached are that Gum Thus is a valuable American Pine resin, which however, contains no gum and therefore is not a gum resin.—Ph. Zhalle 1912, No. 24, 652-654. O. R.

Black Mustard Seeds: Alleged Deficiency in Myrosin.—As well known, black mustard seeds contain a glucoside, sinigrin, and an enzyme, myrosin—the latter acting upon the sinigrin in the presence of water, decomposing it with formation of volatile oil of mustard (allyl isothyocyanate. The statement has been frequently made that these seeds do not always contain sufficient myrosin to decompose all the sinigrin they contain, and that, to effect this, white mustard seeds, which contain an excess of myrosin, must be added to them. Prof. Henry G. Grunich in collaboration with Miss Dorothy J. Bartlett, has now made a comprehensive series of experiments, to ascertain to what extent, if any, this statement is correct, and as a result of their experiments, which are described in detail, they have arrived at the following conclusions:

(1) That in all black mustard seeds examined there is sufficient myrosin to decompose all the sinigrin present.

(2) That in two of the samples examined there is sufficient myrosin to decompose a much larger quantity of sinigrin than the seeds themselves contain.

(3) That, if properly preserved, black mustard seeds retain their myrosin for many years.—Pharm. Journ. and Pharmacist, Feb. 17, 1912, 203-205.

Psoralea Corylifolia: Chemical Examination of the Seeds.—Ernest W. Mann and R. E. Griffiths report the results of a chemical examination of seeds of *Psoralea corylifolia,* a plant growing as a common herbaceous weed over a great part of India, where the seeds have found some medicinal use. By steam distillation and extraction of the distillate with ether and petroleum spirits, about 0.2% of an oil and crystalline substance was obtained, having a marked heavy aromatic odor, the aqueous portion of the distillate giving a slight reaction for aldehyde by Schiff's test. By direct extraction of the powder 13.7% of a thick brownish oil was obtained. By extraction with alcohol 37.2% of a brown, thick extract was obtained, which, after extraction and washing with petroleum spirit, resolution on alcohol, and precipitation by pouring in water, yielded a resinoid amounting to 9.2 percent. of the seeds. This resinoid was practically entirely soluble in ether, chloroform, and in ethylacetate; but by treatment with ethyl acetate it was possible to divide it into two portions—the one insoluble, the other of an acid nature passing into solution. An inconsiderable trace of alkaloidal matter was obtained from the seeds by direct extraction with Prollius' fluid.—Pharm. Journ. and Pharmacist, Feb. 24, 1912, 260.

Storax: New Method of Examination.—Dr. C. Ahrens recommends and describes in minute detail a method for the examination of storax which depends upon the solubility

of its essential constituents in petroleum benzin. The petroleum-benzin extract, carefully dried to constant weight according to specific directions, is a light yellow, very thick liquid product, having an agreeable odor, and strong refractive power. Adulteration with colophonium, if in large quantity, is recognized by the darker color and the odor of the extract, and the loss of its fluidity. The author gives directions for determining the acid and saponification values of this extract, but does not mention the percentage of extract yielded by normal storax, nor give the actual constants observed. He has made a series of examinations of commercial samples of Storax and believes the method to be useful for detecting adulterations.—Pharm. Ztg. LVII (1912) No. 65,655; from Ztsch. f. öff. Chem. 1912, No. 14.

Strophanthus Courmontii: Relative Toxicity, Therapeutic Action, etc., of the Seeds.—Dr. Gordon Sharp describes some pharmaceutical experiments made with tincture prepared from the seeds of "Mandala Stropanthus" (S. *courmontii,* Sacl., var. *Kirkii*) in the same proportions as the B. P. tincture. While the active constituents of this variety of strophanthus is not definitely known, it is almost certainly a glucoside related to stropanthin, but perhaps more nearly to ouabain (pseudo-stropanthin), the glucoside yielded by *Acokanthera schimperi,* A. DC., and by the Gaboon arrow poison. The experiments have demonstrated that while the lethal doses for frogs needs to be three or four times that of *S. Kombi,* the therapeutic dose of the tincture for man need not be more than three-fifth larger than that prepared from the official seeds. The author does not doubt that in early days, when Stropanthus was new to practice, many of the successful results were obtained from tincture made from these seeds, and his present investigation shows that the seeds of *S. courmontii* are far from inert.—Pharm. Journ. and Pharmacist, Feb. 10, 1912, 161-162.

Leeches: Method of Preservation.—While the demand for leeches (*Sanguisuga medicinalis*) is modernly comparatively rare, in some localities pharmacists are not infrequently called to supply them. Theissen therefore makes some timely suggestions respecting the method of preserving them in a healthy condition, which are so simple that they can be readily carried out without occasioning trouble and with the apparent probability of avoidance of loss. The vessel containing the leeches should be kept in a cool place, accessible to fresh air, and as remote from the fumes of acids and the vapors and emanations of the drug store; nor will it suffice to place them in the cellar, however cool this may be. The animals themselves should never be touched until required for use, and then only the particular leech and with the hands previously well washed and wiped. The container of glass should be provided with a layer of peat-mold and a small amount of fresh water, and, the leeches having been introduced, it should be tied over with a double layer of well-washed gauze. In accordance with the weather (heat or storm) the water must be changed more or less often, but never by first removing the gauze covering —fresh water being allowed to flow through the gauze after removing the original water by tilting the vessel. Under this treatment certain algae are formed upon the peat-mold, which do not interfere with the health of the animals and may possibly be beneficial to them. At all events, under the treatment described the author has had no reason to complain of loss or inability to supply healthy leeches.—Pharm. Ztg. LV I (1912), No. 59, 596.

Albumins: Determination of the Different Kinds in Urine.—After illuminating the various errors that arise during systematic urine examinations, Grimbert gives accurate descriptions of the methods for the determination of the different kinds of albumen that may be present in urine. The importance of the subject makes a detailed description of these methods very desirable, but it must suffice here to briefly describe the preliminary experiments leading to the identification of the different albumins that may be present, leaving the details of carrying out the individual experiments for consultation in the original: To 10 cc. of the filtered urine 10 cc. of a saturated solution of sodium chloride and 2 drops of nitric acid are added. A turbidity of precipitation results, and the mixture is heated to boiling. If the turbidity disappears *primary albumen* alone is present; but if it remains, then *serin, globulin,* or *acetic acid-soluble-albumen* are present. The mixture is now filter-

ed. If the filtrate remains clear after cooling, but gives the biuret reaction, the presence of *secondary albumoses* and *peptones* is indicated, while failure to give the biuret reaction demonstrates their absence. If, however, the filtrate becomes turbid on cooling and gives the biuret reaction, only *primary albumoses* are present.—Pharm. Ztg. LVII (1912), No. 64, 644-645; from Journ. de Pharm d'Anvers, 1912, No. 13.

Yellow Coloring Matter of Ergot: Character, Composition and Chemical Relations.—Albert Freedom briefly reviews the characters of three yellow coloring matters from ergot heretofore described by different experiments, namely:

Sclerocrystallin, $C_7H_7O_3$, obtained by Dragendorff and Podwyssotzki (1877) in form of pale yellow needles;

Ergochrysin, $C_{21}H_{22}O_9$, obtained by Jacobj (1897) both in yellow crystals and amorphous; and

Secalonic Acid, $C_{14}H_{14}O_6$, obtained by Kraft (1906) in form of citron-yellow needles.

On comparing the descriptions of these three substances, the author says, we are forced to the conclusion that they are identical, and assuming Jacobj's molecular weight to be correct, his formula $C_{21}H_{22}O_9$ is the right one for the anhydride, while Kraft's formula, $C_{14}H_{14}O_6$, for secalonic acid is based upon analytical data that agree almost as well with the formula $C_{21}H_{22}O_9$, as with the one chosen by him—this applying also to the less accurate analyses of Dragendorff and Podwyssoszki.

By a method described, Mr. Freedom has now obtained a crystalline yellow coloring matter from ergot, which in several respects resembles that described, but which has the formula $C_{15}H_{14}O_7$ when dried *in vacuo* over sulphuric acid. It is further distinguished by the very high melting point, 338° C, whereas Kraft's secalonic acid melts at 224°. The substance in question was obtained pure in the form of pale yellow needles scarcely soluble in water, and sparingly soluble in alcohol or ether, but more readily soluble in chloroform, and quickly soluble in solutions of sodium hydroxide or carbonate with a golden yellow color. The author has obtained the acetyl derivative, which is shown to be derived from the anhydride, $C_{15}H_{12}O_6$, of the coloring matter, the latter probably belonging to the "flavone group" of coloring matters.—Pharm. Journ. and Pharmacist, May 4, 1912, 562-569.

Fagaramide: A Constituent of the Root Bark of Fagara Xanthoxyloides, Lam.—In conjunction with F. Thümen, Professor H. Thoms has isolated from the root-bark of *Fagara Xanthoxyloides*, Lam. an interesting amidé, to which they have given the name fagaramide. It was obtained by extracting the root-bark with benzene, concentrating and adding petroleum spirit, when the fagarmide crystallized out. It crystallizes well from alcohol, has the empirical formula $C_{14}H_{17}NO_3$, and melts at 119° to 120° C. It yields a bromine compound of the formula $C_{14}H_{17}NO_3Br_2$ which crystallizes without decomposition from benzene and other hydrocarbons only, crystallization from alcohol resulting in the separation of bromine. By oxidation with potassium permanganate, fagaramide yields piperonal and piperonylic acid and on prolonged boiling with 50 per cent. alcoholic potash decomposes into an unsaturated acid, which proved to be piperonylic acid and a base, volatile in a current of steam, which was identified as isobutylamine. From these products the conclusion was drawn that fagaramide was the isobutylamide of piperonylacrylic acid.

The isobutylamide of piperonylacrylic acid belongs to the group of substituted acids, very few members of which have been found in nature. The one best known is piperine, the alkaloid of *Piper nigrum*.—Pharm. Jr. and Pharmacist, May 25, 1912, 686.

Methyl Alcohol: Toxicity.—In addition to the Berlin catastrophe other cases of poisoning by methyl alcohol, either by internal or external use, or by inhalation, etc., are quoted from Germany, Hungary, Russia and the United States. Statistics by Buller, Casey and Wood in the latter country show 200 cases of poisoning, resulting in blindness or death. Dr. Rudolf Foerster writes on the action of methyl alcohol, generally producing atrophy or paralysis of the optic nerve. Strange to state, however, that large quantities of methyl alcohol have but very little effect on some persons, while small amounts will prove fatal to others.—Ph. Zhalle, 1912 No. 2, 46.

Nicotine: Estimation in Tobacco.—In an article on "The Toxic Factor in Tobacco" in the "Lancet" (April 6, 1912), the author,

questioning the reliability of the methods hitherto used for estimating the amount of nicotine in tobacco, proceeds to describe a method which he evidently regards as being satisfactory and better than other published methods. The opinion is expressed that the chief obstacle against arriving at the true amount of nicotine in tobacco has been due to the difficulty of separating ammoniacal compounds from alkaloidal base;" and the method recommended is the precipitation of the nicotine from solution by adding excess of iodine, dissolving the periodide (after washing) in acetone, and titrating with thiosulphate. The calculation is based on one molecule of nicotine combining with four of iodine.

E. F. Harrison and P. A. W. Self, commenting on the above, observe that while not dissenting in any way from the view that most or all of the published methods are by no means trustworthy or satisfactory, they are compelled to regard the method given by the *Lancet* chemist as being quite as unsatisfactory as most of the others. They give their reasons for this view, supported by experimental data, and describe a simple method to which they have been led in the course of some years experience in the determination of nicotine in tobacco, which they have found to give reliable results. This method consists in the addition of alkali to the tobacco or preparation of nicotine (slacked lime being used in the case of tobacco), and then to distill in a current of steam until all the nicotine has passed over, as shown by a few drops giving no cloudiness when treated with acid and excess of iodine. The distillate is received in a measured excess of standard acid, the delivery-tube of the condenser dipping below the surface so that no loss can occur; when all the nicotine is over, the distillate is titrated with standard alkali, using litmus solution or tincture of cochineal as indicator, and from the amount of acid neutralized by the distillate the total volatile alkali, consisting of nicotine and ammonia, is found. A further 10 cc. of normal acid is then added, and the liquid evaporated to about 50 cc. It is possible to lose traces of nicotine during the evaporation, but when once the total volatile alkali has been determined, loss of nicotine is of no consequence, and loss of ammonia cannot occur. The nicotine is then completely precipitated by iodine, and the ammonia determined in the liquid by adding thiosulphate and distilling with alkali. The working details are given, but must be consulted in the original, in Pharm. Journ. and Pharmacist, June 1, 1912, 1912, 718-719.

Extractum Belladonnae Alcoholicum, B. P.: Modification of Formula.—Arthur W. Nunn observes that Alcohol Extract of Belladonna, B. P. is not altogether satisfactory; it is always a sticky mass, and becomes softer with age. A more constant and far handier preparation is obtained by operating on the fluidextract, preliminary as directed in the B. P. as far as obtaining the weight of the "moderately firm extract," and finding the amount of milk sugar required. Then treat the residue with sufficient of a mixture of 7 parts 90% alcohol and 1 part of water, to make a syrupy liquid. Now add the requisite quantity (previously ascertained) of milk sugar, and evaporate to the required weight (about three-fourth that of the fluidextract used). The next step is to "granulate" the residue of evaporation by passing it through a No. 20 sieve; again check the weight of the mixture, and then dry by very gentle heat, making up the loss in weight at the end of the process with dried potato starch, and mixing lightly.—Pharm. Journ. and Pharmacist, March 9, 1912, 318.

Zittman's Decoction: Rehabilitation into Medical Practice.—In the course of his interesting address on the biological valuation of drugs containing saponins, by the haemolytic effect of the latter when brought in contact with blood corpuscles, Prof. Kobert, discussing the possible value of the method in clearing up some of the contradictory statements regarding the medicinal properties of sarsaparilla, directs attention to the rehabilitation of the well-known but obsolete "Zittman's Decoction" by its readmission into the G. P. V. During the discussion following it was mentioned by Dr. Fröhlig, a member of the revision commission, that this rehabilitation of the ancient medicament was solely in consequence of the earnest recommendation and request of the medical members of the commission, who gave a decided preference to this preparation over that of "salvarsan" which had also been proposed for admission.—Pharm. Ztg. LVII (1912) No. 21, 214.

Liquor Opii Sedativus, B. P. C.: Cause of Precipitation and Remedy.—J. Manson has investigated the cause of the persistent precipitation in Liquor Opii Sedativus B. P. C. and finds this to be due to the decomposition of the calcium morphinate produced under the conditions of the method of preparation. This compound is decomposed by the carbonic acid of the air, calcium carbonate is formed and is precipitated, carrying with it the liberated morphine alkaloid, together with some extractive matter. If Liquor Opii Sedativus is a "desideratum," its stability might be maintained by the addition of dilute sulphuric acid, whereby an impure solution of morphine sulphate would be obtained—the lime being precipitated as sulphate. The ordinary sherry wine prescribed should also be replaced by detannated sherry. This, of course, alters the nature of the preparation, but its stability would be insured.—Pharm. Jour. and Pharmacist, March 9, 1912, 330.

Ointments: Their Bactericidal Effect.—As early as 1895 did Dr. E. Breslauer report on this subject. Dr. Robert Koch in 1881 proved that phenol dissolved in alcohol or oil does *not* possess any disinfectant properties. The author, Dr. Hugo Kuehl, states that the same is true of carbolated petrolateum. He refers to the toxicity of mercury, silver, and lead salts as based upon the dissociation theory of Arrhenins. Breslauer found that hydrous wool fat (lanolin) and cold cream (Ung. Leniens) are superior to petrolatum and anhydrous wool-fat as ointment bases, as carriers of disinfectants. The explanation is that ointment bases containing water are better carriers for antiseptics, because they are more readily absorbed.—Ph. Zhalle, 1912, No. 11, 273-276. O. R.

Cacao Suppositories: Addition of Wax to Promote the Incorporation of Aqueous Solutions.—P. van der Wielen and J. van Riel find that, by the addition of 2.5% of wax to cacao butter a base is obtained for suppositories which will permit the incorporation of aqueous solutions, glycerin or ichthyol up to the amount of 1 gm. to a 3 gm. suppository. They find that by the addition of wax the melting point of the cacao is reduced from the normal (32.5°) until the addition amounts to 3.4%, at which it has the melting point of 31.0°; by the further addition it then rises, reaching the body temperature (37.0°) when 6.05% of wax has been added. The authors furthermore find that the addition of 2.5% of wax serves well also for the incorporation of iodoform when the suppositories are made by the melting-method. If, for example, 300 mgm. of iodoform is melted with 3. gm. of cacao butter, the iodoform is completely dissolved at the melting temperature, but on cooling is again separated forming *large* crystals before the fat completely solidifies. By adding 2.5% wax, however, the crystals formed are very much smaller. The addition of wax presents the further advantage of obviating the use of hollow suppositories for the reception of solutions of potent medicaments.—Pharm. Ztg. LVII (1912), No. 55, 554; from Pharm. Weekbl. 1912, No. 25.

Selenium: Technical Objection to its Presence in Sulphur and Pyrites.—The "Zeitschr. f. Agnew. Chemie" calls attention to the importance which attaches to the presence of selenium in sulpuric acid, since mineral oils and wax refined by the acid containing the impurity assume an incurable yellow color, and even minute traces of the element in the liquor of a sulphite cellulose factory may give rise to serious difficulties. A circumstantial process for the estimation of small quantities of selenium in sulphur and pyrites is therefore given, the details of which may be consulted in the abstract from Chem. Trade Journ., June 1, 1912, 598, printed in Pharm. Journ .and Pharmacist, July 13, 1912, 47.

Carbonated Waters: Estimation of Ammonia.—G. D. Elsdon and Norman Evers, having noticed that the amount of free ammonia found in carbonated waters was often small, even in the case of obviously bad waters, have found that the presence of carbon dioxide in the distillate in quantities greater than 5 parts per 100,000 seriously interferes with the color produced by Nessler's solution. From an examination of waters aerated in the laboratory it was found that an aerated water containing as much as 0.020 parts of free ammonia per 100,000, might, if treated by the ordinary method, be returned as practically ammonia

free. The following process is proposed as the most satisfactory method of overcoming this difficulty: After removal of as much carbon dioxide as possible by shaking in a "Winchester," 500 cc. of the water are transferred to the distillation flask, and 5 cc. of N/H_2SO_4 (or more if the alkalinity of the water requires it) are added. Fifty cc. are then distilled off and rejected, thus removing the carbon dioxide. An equivalent quantity of N/NaOH and the usual amount of sodium carbonate are then added, and the estimation of free and albuminoid ammonia proceeded with in the usual manner. Many waters were aerated in the laboratory, and examined by this process. The results on the aerated waters were practically identical with those on the original waters as regards free ammonia. The albuminoid ammonia is slightly increased by aeration, whether it is estimated by the above process or by the ordinary method.—Pharm. Journ. and Pharmacist, March 23, 1912, 394.

RECOGNITION OF SYNTHETIC DRUGS BY NATIONAL PHARMACOPOEIAS.

The Editor of the Chemist and Druggist, (London) recently examined 15 national pharmacopoeias in order to determine the extent to which the modern synthetics are recognized officially, and sums up as follows:

"In all of the fifteen Pharmacopoeias considered in the foregoing *resume,* antipyrin, phenacetin, saccharin, and sulphonal are official. Leaving out of consideration the British Pharmacopoeia, 1898, the remaining fourteen Pharmacopoeias, which have all appeared during the present century, in addition to the above mentioned four synthetics, recognize forty-nine different new synthetic remedies. In the following tabulation the popular trade names are used, the figures indicating to what extent they are official:

Dermatol, 13 times.
Duotal, 13 times.
Trional, 12 times.
Diuretin, 11 times.
Salipyrin, 11 times.
Aspirin, 8 times.
Urotropine, 7 times.
Heroin, 6 times.
Protargol, 6 times.
Tannalbin, 6 times.
Aristol, 5 times.
Dionin, 4 times.
B-Eucaine, 4 times.
Creosotal, 4 times.
Iodol, 4 times.
Salophen, 4 times.
Veronal, 4 times.
Benzonaphthol, 3 times.
Euquinine, 3 times.
Lactophenin, 3 times.
Pyramidon, 3 times.
Tannigen, 3 times.
Tannoform, 3 times.
Xeroform, 3 times.
Airol, twice.
Betol, twice.
Exalgin, twice.
Migrainin, twice.
Novocaine, twice.
Stovaine, twice.
Suprarenin, twice.

Anesthesine, afoxyl, arsacetin, arrhenal, collargol, chinosol, diiodoform, reffatin, itrol, orexine tannate, orthoform, phenolphthalein, sozoiodol acid, sozoiodol ammonium, sozoiodol zinc, thiocol, urethane, and vioform, 1 each."