Reports of A. Ph. A. Committees

THE PROGRESS OF PHARMACY

Abstracts from the Report on the Progress of Pharmacy for the year 1911, by C. Lewis Diehl, Reporter:

(Fourth Installment.)

Drugs: Identification by Pyro-Analysis.—L. Rosenthaler finds that useful assistance in the identification of a drug can often be obtained by subjecting it to heat in the dry state and examining the sublimate produced. This is specially the case where the drug is in too fine a powder for recognition by microscopic characters, and the quantity available is too small for ordinary chemical examination. A small quantity of the powder is introduced by means of a long funnel into a suitable tube, so that none of it comes into contact with the side walls; the drug should be covered with a layer of asbestos, to prevent any of the powder being carried up mechanically. The tube is closed with a rubber stopper having two holes, one of which carries a doubly-bent tube leading to a small vessel acting as receiver, and a tube through the other leads to an air pump. The air is exhausted, and the tube containing the drug heated in a bath of sulphuric acid or paraffin; a sublimate will generally form in the same tube, and other distillation products will pass into the receiver, and can be tested by treatment with various solvents, etc. The following drugs gave crystalline sublimates when treated in this way:

Cinchona gave a nearly colorless tar, containing crystals, which appeared as triangles, rhombs, and hexagons, and showed bright colors with polarized light; they were insoluble in ether, soluble in alcohol or acetic acid, the latter solution giving a precipitate with picric acid, Wagner's reagent, or Mayer's reagent.

Barberry Leaves gave colorless irregular crystals, showing bright colors with polarized light, and giving reactions of hydroquinone.

Frangula Bark gave yellow columnar crystals, united with each other at angles of 45° and 90°. An ethereal solution of the sublimate gave with caustic soda the red color of oxymethylanthraquinone.

Cascara Sagrada gave bright yellow amorphous masses containing needle-shaped dark yellow or brown crystals, and darker colored drops; the oxymethylanthraquinone test gave a positive result in this case also.

Rhubarb gave bright yellow masses containing crystals, some lance-shaped and single, others needle-shaped in radiating groups; the residue of an etheral solution gave a purple color with caustic soda.

Galls gave crystalline layer resembling "ice flowers," and giving reactions of gallic acid with a little pyrogallol.

Hydrastis yielded a tar, at first colorless and afterwards brownish-yellow, which became completely crystalline with a dendritic appearance, or in parts with an appearance like that of threads of bacteria; neither hydrastine nor berberine was found in the sublimate, alcoholic solution of which gave a green color with $FeCl_3$.

Characteristic sublimates were also obtained from *Opium, Cubebs, Calabar Beans, Black Pepper, Aniseed,* etc.—Ber. d. Deutsch. Pharm. Ger., 1911, 6, 338.

German Tobacco: Distribution of Nicotine in the Plant.—Dr. R. Gaze reports the results of a long series of experiments undertaken with the object of ascertaining the distribution of nicotine in different parts of the tobacco plant, his experiments being confined principally to tobacco grown in Germany. His results show that the nicotine content of German tobacco does not alone vary considerably in individual plants of the same species—ranging from 0.56 to 0.1%, but it varies in the individual leaves of the same plant, as well as in the axils—the content of alkaloid at the axil points being appreciably smaller than in the other parts of the leaf. The ex-

periments were carried out in each case with nine plants of each species planted in June and harvested in August, which were raised from seeds reliably obtained from seven different localities.—Apoth. Ztg. XXVI (1911), No. 90, 938.

Linseed: Percentage and Properties of Mucilage.—According to the investigations of H. A. D. Neville, linseed contains about 7% of mucilage, which, as obtained by swelling up the seeds in very dilute sulphuric acid and precipitation from the colloid solution obtained with much alcohol, is a slightly acid substance, having a percentage composition corresponding to a carbohydrate, and contains a small quantity of ash. Purification by repeated solution in water and precipitation by alcohol lowers the ash-content somewhat, but does not remove the acid property. On hydrolysis with diluted sulphuric acid, dextrose, galactose, arabinose, xylose and small amounts of cellulose-like substance and of an acid yielding a soluble barium salt, are formed; while on boiling with hydrochloric acid, furfurol is evolved in quantity corresponding to the presence in the mucilage of about 17% of pentosans. Malt extract, saliva, and pancreatic juice have no action on the mucilage.—Pharm. Jour. and Pharmacist, Oct. 21, 1911, 528; from Chem. Trade Jour., Sept. 16, 1911, 265.

Curcumin Paper: Preparation.—The "Vierteljahrschrift f. prakt. Pharm. (1911, 72,) recommends the preparation of curcumin paper by dipping sheets of the best white filter paper in a solution of 0.1 Gm. of curcumin in 100 Cc. of 90%, drying the paper in the dark and so preserving it in well-stoppered bottles. *Curcumin* is made for this purpose by drying turmeric at 100°, extracting it in a Soxhlet with petroleum benzin for four hours, then drying, and extracting it in the Soxhlet with benzene (benzol) for 8 or 10 hours. On cooling, the curcumin separates from the benzol solution within 12 hours.—Pharm. Zeutralh. LII (1911), No. 34, 900.

Powdered Rhubarb: Detection of Turmeric.—Dr. E. Richter gives the following directions for detecting turmeric in powdered rhubarb by means of boric acid: Triturate 0.1 gm. of the powder with 5 drops of a 1:30 solution of boric acid which has been acidulated with hydrochloric acid, spread the magma out on a watch glass as far as possible and evaporate to dryness on a water bath. The dry residue is scraped from the watch glass, triturated as fine as possible, a portion of the powder is transferred to an object glass with a drop of liquid paraffin. Under the microscope the presence of curcumin is then distinctly revealed by the red color of the particles, the rhubarb simply retaining a yellowish color.—Apoth. Ztg. XXVI (1911), No. 88, 921.

Casimiroa Edulis: Constituents of the Seeds.—Under the title of "Zapote blanco" the Mexican Pharmacopœia recognizes both the fruit and seed of *Casimiroa Edulis*, a tree widely distributed throughout Mexico and Central America. The fruit is edible, but the seeds have been stated to be deleterious and even poisonous, and although the subject of chemical investigation, and reported to contain both an alkaloid and a glucoside, no definitely characterized substance has hitherto been isolated from them. Frederick B. Power and Thomas Callan have now made a complete chemical investigation of these seeds in the Wellcome Chemical Research Laboratories, and report the results obtained with 37 kilograms of the kernels. This material was first completely extracted with hot alcohol, the greater portion of the alcohol then removed, and the resulting thick extract distilled in a current of steam. A small amount of a pale yellow essential oil was thus obtained, which possessed an agreeable aromatic odor. It has the following constants: d=0.9574 at 20°; ^{a}D—2°25′ in a 25 Mm. tube. From the portion of the extract which was soluble in water there were isolated: (1) A new alkaloid, *casimiroine*, $C_{24}H_{20}O_8N_2$ (m. p. 196-19°), of which the aurichloride and picrate were prepared. This alkaloid, on heating with alkalies, undergoes hydrolysis with the elimination of carbon dioxide, yielding a new base, *casimiroitine*, $C_{23}H_{22}O_7N_2$ (m. p. 171°), in accordance with the following equation: $C_{24}H_{20}O_8N_2+H_2O=C_{23}H_{22}O_7N_2+CO_2$, (2) A new alkaloid *casimiroedine*, $C_{17}H_{24}O_6N_2$ (M. P. 222-223°), of which the aurichloride was prepared; and (3) benzoic acid, with a trace of salicylic acid. The aqueous liquid contained, furthermore, a quantity of sugar, which yielded d-phenylglucosazone (M. P. 205°).

The portion of the extract which was insoluble in water consisted of a soft, oily

resin, from which the following compounds were obtained: (i) Sitosterol, $C_{27}H_{46}O$; (ii) ipuranol, $C_{28}H_{38}O_3(OH)_2$; (iii) a mixture of fatty acids consisting of palmitic, stearic, oleic, linolic, and linolenic acids; (iv) a new lactone, casimirolid, $C_{24}H_{28}C_6$; (M. P. 229-230°), which yields a new hydroxy-acid, designated as casimiroic acid. $C_{28}H_{38}O_4(OH).CO_2H$ (M. P. 207°). From this acid there were prepared the silver and copper salts, methyl ester, and acetyl derivative; (v) a yellow, phenolic substance $C_{16}H_{12}O_6$ (M. P. 215-218°), which also appears to be a new compound. Physiological experiments conducted by Drs. Dale and Laidlaw failed to reveal any specific action of this material or any of the products described.—Pharm. Jour. and Pharmacist, Nov. 11, 1911, 623.

Wallflower Oil: Preparation and Properties.—From the flowers of *Cheiranthus Cheiri*, L. (the common "Wallflower"), E. Kummert obtained by extraction with low boiling solvents a dark-colored extract of an ointment-like consistence which when freed from wax and fats by means of strong alcohol and subsequent subjection to steam-distillation, yielded 0.06% (calculated on the flowers?Rep) of an oil having the following constants: b. p. 40° to 150° (3 MM.); sp. gr. at 15°, 1.001; acid val., 0.35; ester val., 20.0; sapon. val., 20.35. When strongly diluted this oil had the natural odor of the flowers, but in the concentrated state it had a disagreeable odor. Subjected to fractionation in vacuo (3 MM.), a small fraction of bodies boiling below 40° was obtained. These bodies had an unpleasant odor, and were probably of the nature of mustard oil. From the higher boiling fractions a mixture of odorous bodies was obtained, pointing to the presence of *anisic aldehyde* and *irone*. Furthermore, after freeing the oil from ketones and aldehydes, the presence of nerol, geraniol, benzylalcohol, linalool, traces of phenols and lactones, together with acetic acid, salicylic acid, and anthranilic acid were determined. Finally, from the highest boiling fractions, which had a well-marked odor of indol, the author isolated the methylester of anthranilic acid, indol and a small proportion of bases with an odor reminding of pyridine.—Schimmel's Rep., Oct., 1911, 05; from Chem. Ztg. 35 (1911), 667.

Cardamom Root Oil: Yield and Properties.—From cardamom roots received from Indo-China, Schimmel & Co. have obtained, in a yield of 0.64%, a lemon yellow oil possessing a peculiar aromatic odor, which bears no resemblance to that of the oil from seed. So far, attempts to ascertain the parent-plant of the oil have been unsuccessful. The oil gave the following constants: $d_{15}°$ 0.9066, ^aD-32°57′, $^nD_{20}°$ 1.48151, acid v. 3.7, ester v. 87.9 ester v. after acetylization 96.7. The oil was soluble in 0.5 vols. 95% alcohol; when more alcohol was added the mixture rapidly turned turbid, and did not become clear again until the solvent had been increased to 4 vols. The results of further examination, which is given in some detail show the presence in this cardamom-root oil of cineol, bisalbolene and a paraffine—bisalbolene being the principal constituent.—Schimmel's Rep., Oct., 1911, 105.

Nilgiri Wintergreen Oil: Botanical Source and Characters.—Werner Reinhart communicates a short account of the preparation of wintergreen oil in India from *Gaultheria fragrantissima*, Wall (*G. fragrans*, D. Don.; *G. punctata*, Blume; *Arbutus laurifolia*, Buch.-Ham.), a little-known plant which occurs gregariously over extensive tracts of the higher Nilgiri-region, and is also frequently met with in the Palni and Travancore Hills. It differs markedly in its habits from *G. procumbens*, L., the parent plant of the American wintergreen oil, which is a small, creeping shrub, while *G. fragrantissima* grows into a strong high bush. The oil is prepared by the natives in the neighborhood of Cotacamund by simple distillation of the leaves with water in primitive copper stills, the oil yield being very small, and the distilling therefore unprofitable. A sample of this Nilgiri wintergreen oil accompanying Mr. Reinhart's communication was examined by Schimmel & Co. While it resembles the oil from *G. procumbens*, both in odor and its other properties, it was inactive, whereas the latter is faintly laevorotary. The following constants were obtained: d15°, 1.1877; ^aD, O°; $^hD_{20}°$, 1.53485; ester val., 364.8=99% methyl salicylate. Soluble in 7 vol. and more of 70% alcohol. The oil had a reddish-brown color. —Schimmel's Rep., Oct., 1911, 96-97.

Licorice: Valuation of the Root and Commercial Extracts.—Ella Eriksson contributes an interesting and practical paper on the val-

uation of licorice root and the commercial extracts prepared from it, on the basis of the sweetening components of the same. While glycyrrhizin must be regarded as the principal sweetening ingredient, and its estimation is therefore of primary importance, the valuation of a sample of root or extract is not complete without the determination of the sugar—saccharose and glucose—which are also present though in variable quantities. In fact, in the experience of the author's investigations, the quantities of these three sweetening substances fluctuate considerably not alone in the root, but more particularly in the extracts. It seems quite probable that the glycyrrhizin undergoes changes in the course of manufacture, and it may therefore be assumed that these various bodies, in some as yet unexplained way, are transformed, the one into the other. The author gives explicit directions for determining the three varieties of sugar, by a method which is based upon their respective reactions with Fehling's solution, and may be outlined as follows:

1. *Glucoses,* by allowing the original solution (obtained by percolation or solution) to remain in contact with Fehling's Solution, *in the cold,* during 15 hours, then collecting, and weighing the cuprous oxide formed.

2. *Saccharose, by boiling* the filtrate obtained from (1), for a short time, collecting and weighing the cuprous oxide.

3. *Glycyrrhizin,* by *prolonged boiling* of the filtrate from (2) and estimating its quantity on the basis of the glucoronic acid indicated by the further reduction of Fehling's solution.

Of the two sugars, saccharose is in preponderance. But that certain changes occur in the sweet principles of licorice root during its manufacture into extracts is evident from the fact that, although the average yield of extract is 30% and the glycyrrhizin content in the root fluctuates between 6.49 and 8.15%, the latter fluctuates between 9.85 and 23.9% in the extracts yielded in the proportions mentioned.—Arch. d. Pharm. 249 (1911), No. 2, 144-160.

Cinnamomum Burmanni, Blume: *Yield and Properties of Oil from the Bark.*—Two lots of cinnamon bark have been received by Schimmel & Co., the one from the island of Celebes, the other from the island of Timor, which when anatomically examined by Dr. Giessler proved to be identical, the parent-plant of both, according to this authority, being Cinnamomum Burmanni, Blume (C. Kiamis, Nees). This material yielded on distillation 0.5% of brownish-yellow oil with an aroma resembling that of Ceylon cinnamon oil, being $d_{15}°$, 1.0198; ^{a}D-1°50′; $^{n}D_{20}°$, 1.58282; soluble in 0.8 vol. and more of 80% alcohol, but giving no clear solution with 10 vols. of 70% alcohol. The cinnamic aldehyde content, as determined with neutral sodium sulphite, was 77%; with bisulphite it showed 80%, but this is considered untrustworthy. The phenol content was approximately 11%. —Schimmel's Rep., Oct., 1911, 106.

Blaud Pills: Commercial Composition.—Albert E. Parkes and John D. Roberts communicate the results of examination of a large number of commercial samples of Blaud Pills, with special reference to their conformity to the B. P. formula in the composition of the pill mass, and the character of their coating. They found the pill mass to differ considerably from the official formula in many cases. Many of the samples were evidently made from ferrous carbonate, and the precipitate, without washing, made up into pills. Some of the samples were also deficient in iron. Most of the pills were the so-called "Pearl-coated" variety, for which purpose steatite (magnesium silicate) is principally used. There is evidence, also, that in some cases steatite is added to the pill mass itself. The authors regard the use of siliceous matter as being reprehensible, and quite unnecessary as an excipient. When such pills are allowed to disintegrate in water or dilute acid, the coating, under the microscope, has the appearance of transparent, sharp, angular particles, resembling finely-ground glass, and the ingestion of such siliceous matter by persons in delicate health must be attended with grave risks.—Pharm. Jour. and Pharmacist, Sept. 2, 1911, 320.

Extract of Malt: Valuation.—Dr. E. Seel discusses the demands that should be made in order to properly determine the value of malt extracts, which are usually confined to the physical characters of the preparation, such as color, consistence, odor and taste. The color depending on the kind of malt used for their preparation, these extracts are differentiated as light and dark in accordance with the color of the malt employed; but this

is not a safe criterion, since the color of the malt employed is liable to vary also according to the method and care in manufacture. The consistence of a properly-made extract of malt should be thick syrupy, depending on a content of about 25% of water, and the odor should be agreeably aromatic, malt-like. The merely physical characters are, however, liable to be misleading, and must be substantiated by a knowledge of the chemical character of the preparation. It may be of good consistence and yet be deficient in maltose (of which it should contain about 55%) with corresponding excess of dextrin, while diastase, nitrogenous bodies (particularly albuminoids) and mineral substances are important constituents which must be taken into account. Of the nitrogenous bodies in malt extracts the albumoses and the phosphorus containing nucleo-proteids, which are rendered soluble by the peptases of the malt, are the most important constituents on account of their ready assimilability. These should be present to the amount of from 4 to 6%. The acid contents, mainly lactic acid, should be insignificant (only a few pro mille). Of the mineral constituents, the readily assimilable phosphorus and iron compounds are also of therapeutic importance, and should not be neglected in a chemical valuation of malt preparations.—Pharm. Ztg. LVI (1911), No. 27, 273; from Med. Klin., 1911, No. 12.

Honey: Rapidity of Inversion of Cane-Sugar by Bees.—A. Korndoerfer observes that the nectar of flowers consists principally of cane-sugar, which when it is collected by bees and placed in their honey bags, undergoes inversion and is then deposited in the cells of the comb. To study this change more exactly, the author placed two colonies of bees, in autumn, into empty combs and supplied them with a 50% solution of cane-sugar. After half an hour sufficient had been taken by the bees to be extracted from the comb and examined; it was then found to contain 42 to 44% of invert sugar, showing that in passing once through the honey bags four-fifths of it had been inverted. Observation showed that bees took two minutes to fill their honey bags and an equal time to empty them into the cell, and this large amount of chemical change occurs in that short time.—Apoth. Ztg. XXVI (1911), No. 64, 659.

Pharmaceutical Formulas

PROPOSED FOR A. PH. A. RECIPE BOOK.

(Continued from page 173)

In the present installment a number of formulas, domestic and foreign, are given for lubricating jellies or pastes to be used for surgical instruments, catheters, etc. There seems to be a wide range of opinion as to the proper amount of tragacanth, and also of glycerin in this preparation.

The Chairman of the Committee on Recipe Book has made a number of experiments along these lines and finds that from 2.5 to 3 percent of tragacanth is required to form a jelly which is thick enough to be put up into collapsible tubes. This undoubtedly is the proper method of dispensing this lubricant, in order to preserve its sterility.

Inasmuch as there is quite a demand for such a preparation, I believe the pharmaceutical profession should have a reliable formula for same, so each pharmacist can prepare it himself.

Comments and criticisms are invited.

Respectfully submitted,

OTTO RAUBENHEIMER, Chairman.

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(For Abbreviations, see February, Page 169.)

No. 23.

PARENOL LIQUIDUM.

Liquid Parenol.

B. P. Cx.

Liquid Petrolatum	70 Cc.
White Wax	5 Gm.
Distilled Water, a sufficient quantity	
To make	100 Cc.

Melt the Wax in the Liquid Paraffin, pour the mixture into a warm mortar, and gradually add the Distilled Water, previously warmed.

This is a *neutral* liniment which is readily absorbed by the skin and causes no irritation.