PHARMACEUTICAL ABSTRACTS

EDITOR: A. G. DUMEZ, 32 S. Greene Street, Baltimore, Maryland.

ABSTRACTORS

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CHEMISTRY

BIOCHEMISTRY (*Continued*)

Vitamin A—Aqueous Colloidal Solutions of. The liver of a sheep, which had been grazing in a meadow, is run through a meat chopper, then triturated in a porcelain mortar with powdered glass and its own volume of saturated alcoholic alkali. The resulting mass is mixed with 96% alcohol (3 to 4 liter per Kg. of liver) and kept in an ice box for 12 hours. The alcoholic solution is mixed with an equal volume of petroleum ether, and distilled water is added in small increments until the alcohol is well diluted. The petroleum ether extract is then dried with sodium sulfate and evaporated to complete dryness in vacuum. The residue is dissolved in a minimum volume of alcohol in an atmosphere of carbon dioxide. The resulting solution is cooled to a temperature of −15° C. to remove stearin. The solution is treated with a small volume of water, and its alcohol is removed by a rapid current of steam in a period of 15 to 40 minutes using a capacious flask on account of foaming. The flask and its contents are cooled in an atmosphere of carbon dioxide; and the aqueous colloidal solution of carotene is placed in narrow-neck ampuls whose necks are filled with oil. The solution resembles good milk which is somewhat yellowish from a high carotene content, may contain as many as 6250 international vitamin A units per cc., is colorless and tasteless, may be administered intravenously or mixed with foods and is quite stable under oil, in vacuum or in tightly closed glass containers. The more dilute the solution the more rapid the loss of vitamin A potency by oxidation.—A. RATSCHEWSKIJ. *Z. Vitaminforsch.*, 6 (1937), 203–206; through *Chimie & Industrie*, 39 (1938), 728–729. (A. P.-C.)

Vitamin A—Conditions Influencing Storage of, in Liver. When rats are fed a synthetic diet of varying fat, cholesterol and choline content, but with the same amount of standardized cod liver oil, it is shown that the storage of fat or cholesterol in the liver, increases the total vitamin A stored. Since animals receiving no fat other than cod liver oil stored as much as those on a normal diet containing fat, this is not regarded as a question of better absorption when much fat is present. A second series of experiments were made to determine the fat of vitamin A stored, when fat depots are depleted under the lipotropic influence of choline. These experiments confirm that the vitamin A storage is facilitated by fat transport to liver, but reserves are rapidly depleted when vitamin A is stopped and fat continued. Again, when the diet is rich in vitamin A but poor in fat, the reserve completely disappears in the short time of nine days. The same reduction in vitamin A stored occurs in a diet rich in fat and vitamin A when the vitamin is withheld. Acceleration of depletion is caused by administration of choline which hastens disposal of fat. The vitamin A was assayed by examination of the unsaponifiable matter extracted with chloroform in a Hilger "vitameter A." The amount present was assessed by the product $E^{1\%}_{1\,cm.}$ × fat percentage × weight of liver.—T. THORBJARNARSON and J. C. DRUMMOND. *Biochem. J.*, 32 (1938), 5; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 777. (F. J. S.)

Vitamin A—Nature of, in Cod Liver Oil. On molecular distillation of cod liver oil, the vitamin A is eliminated partly at 120° C. and partly at 190° to 230° C., probably in the forms of vitamin A-free alcohol and esters, respectively. A fraction prepared by molecular distillation, and having an activity of 325,000 U. S. P. units per Gm. was treated with maleic anhydride in benzene solution for ten days at room temperature. A light petroleum solution of the product deposited crystals having m. p. 219° to 220° C. A synthetic product made from vitamin A palmitate gave no depression of m. p. On saponification, palmitic acid was separated and identified. Thus vitamin A palmitate occurs in Norwegian cod liver oil.—A. O. TISCHER. *J. Biol. Chem.*, 125 (1938), 475; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 777. (F. J. S.)

Vitamin B_1—Interaction of, in Enzymic Reactions. Cocarboxylase is of considerable physiological importance, since in mammalian tissue it functions as the coenzyme for a specific pyruvic acid dehydrogenase. Previous work has shown that cocarboxylase is a diphosphoric ester of vitamin B_1, and this paper deals with the conditions of its synthesis by a duodenal enzyme preparation. The latter was prepared by defatting and drying the mucosa from pig's duodenum, and in the presence of vitamin B_1 (synthetic) under sterile conditions was capable of synthesizing considerable amounts of cocarboxylase on both sides of the p_H scale, either with or without added phosphate. The enzyme was estimated by the method of Lohmann and Schuster using pyruvate solution, but this is not quantitative. A method of purification using lead acetate as a precipitant is described, whereby a product free from all pigments and most impurities was obtained. Bac-

teria-free cocarboxylase is very stable and may be preserved with traces of toluene. It is hydrolyzed and inactivated by boiling with $N/1$ hydrochloric acid for ten minutes, also by kidney tissue, but not by the duodenal enzyme preparation. When large doses (50 mg.) of vitamin B_1 were administered to three healthy men no ill effects were observed, and the vitamin appeared in the urine from two to seventeen hours after its ingestion. No cocarboxylase could be detected in the urine, the enzyme apparently being dephosphorylated by the kidneys.—H. TAUBER. *J. Biol Chem.*, 123 (1938), 499; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 777.

(F. J. S.)

Vitamin B_1—Quantitative Measurement of, by the Thiochrome Reaction. Results with the chemical assay of vitamin B_1 in wheat embryo by the thiochrome reaction gave results 42–73% as great as those obtained by biological assay in rats by the bradycardia method. With certain proprietary yeast preparations, the chemical assay appeared to be 0, while the usual activity of 6–10 I. U. per Gm. of vitamin B_1 was known to be present. Vitamin B_1-pyrophosphate, which appears to be of fundamental biological significance is insoluble in isobutyl alcohol and therefore is not included in the chemical assay. Vitamin B_1 may also exist combined with protein, in which form it might be expected to be difficult to extract chemically from tissues. Therefore the quantitative recovery of crystallized vitamin B_1 added to a substance under analysis cannot be taken as evidence that the results obtained for that substance by the thiochrome method are a complete measure of the vitamin activity of the material.—M. PYKE. *Nature*, 141 (1938), 1141; through *Squibb Abstr. Bull.*, 11 (1938), A-1220. (F. J. S.)

Vitamin C (Ascorbic Acid)—Determination of Urinary Excretion of. Urinary determinations should be made on fresh samples as soon as possible or 10% glacial acetic acid should be added. Indophenol titration is satisfactory. Vitamin C decreases in the urine in acute infections. Available information suggests that disturbances in metabolism may be developing when the daily excretion falls below 10 mg. of vitamin C.—T. D. WALKER. *Virginia Med. Monthly*, 65 (1938), 475–478; through *Chem. Abstr.*, 32 (1938), 9137. (F. J. S.)

Vitamin C in Honey. Samples of honey collected mainly from species of *Mentha* strongly reduced iodine and were found to contain 1.6–2.8 mg. of vitamin C per Gm. A few other samples, from buckwheat, etc., contained 0.07–0.22 mg. It is pointed out that this iodine absorbing capacity must be taken into account in carrying out the diastase test.—C. GRIEBEL. *Z. Unters. Lebensm.*, 73 (1938), 417–420; through *J. Soc. Chem. Ind.*, 57 (1938), 843. (E. G. V.)

Vitamin Concentrate—Manufacture of, from Asparagus. An extract is prepared from fresh asparagus by expressing the juice, drying this in vacuum at a low temperature, and subsequently extracting the residue with a 25% solution of ethyl alcohol or methyl alcohol, or a combination of the first and last processes may be employed. The extract is concentrated in vacuum at 45–55° to one-tenth of its volume, separated from the material which precipitates on keeping, treated with one-fourth to one-half of its volume of ethyl alcohol or methyl alcohol separated from the material which precipitates, and concentrated in vacuum to one-half of its volume. The precipitate which forms after keeping for 1 to 3 days is removed and the ethyl alcohol-free concentrate bottled and pasteurized.—C. DICKENS. U. S. pat. 2,052,219; through *J. Soc. Chem. Ind.*, 57 (1938), 727. (E. G. V.)

Vitamins—Interaction of. The effect of excess of vitamin A, B_2 and C on the assay of vitamin D, and of excess of vitamin D on the assay of vitamin A has been examined. In a first experiment a series of tests were carried out on young rats according to the line test technic for vitamin D. All the rats received international standard vitamin D, and in addition one-half of the rats received a daily supplement of the vitamin under examination. The supplements which were given in large doses consisted of, (*a*) carotene in coconut oil, (*b*) a vitamin B absorption product on acid clay and (*c*) a solution of ascorbic acid in distilled water prepared daily before use. The latter was included although the fact is generally accepted that the rat does not need a supply of vitamin C. A table of figures is reproduced where the responses are expressed as a ratio of vitamin D with supplement to vitamin D alone. From the fact that no figure is significantly different from unity it is concluded that the assay of vitamin D is not modified by the presence of these complements. The influence of a large dose of vitamin D on the weight response of rats to a dose of vitamin A was studied in a second series of experiments. All rats received a small dose of a particular sample of cod liver oil as the source of vitamin A. The vitamin D intake was maintained on three levels giving a weekly dose of 8, 25 and 100 international units. From a

table showing the mean increase per rat per week no difference in response with the three levels was observed. The authors conclude that the presence of any vitamin in large amounts will not vitiate the assay of any other vitamin provided the basal diet is adequate.—H. M. BRUCE and G. E. PHILLIPS. *Biochem. J.*, 32 (1938) 1.; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 778. (F. J. S.)

ANALYTICAL

Acetanilid and Phenacetin—Separation of. In *Pharm. Acta Helv.*, 13 (1938), 34–38, Bürgin has described the separation and identification of the constituents in a mixture containing phenacetin, salicylic acid, antipyrine, caffeine, dimethylaminoantipyrine and quinine sulfate. If the mixture also contains acetanilid, it is treated as follows. After separating the salicylic acid as previously described, the ether extract contains a mixture of acetanilid and phenacetin. This mixture is treated with 10 cc. 2*N* tartaric acid and 40 cc. water and boiled. On cooling, most of the phenacetin crystallizes out. The solid is filtered off and on recrystallization melts at 135°. The trace of phenacetin remaining in the filtrate is removed as the periodide using the method of Emery and the filtrate decolorized with sodium thiosulfate, made alkaline with sodium bicarbonate and extracted with chloroform. The chloroform is removed by distillation and the residue recrystallized from water when the plates melt at 112–113°.—A. BÜRGIN. *Pharm. Acta Helv.*, 13 (1938), 75. (M. F. W. D.)

Acetone—Approximate Rapid Determination of, in Aqueous Solutions. The method is based on the measurement of the time required for the appearance of an emulsion of the condensation product of acetone with furfural (difurfurylidene-acetone) in alkaline solution. This rate is a function of the concentration in acetone, and is expressed by the equation $X = \frac{C}{1 + \frac{v - v'}{v'' - v'}}$ in which X and C are the acetone concentrations of the unknown solution and of the standard solution, respectively, and v, v' and v'' are the times for the formation of the emulsion in the unknown, in the standard and in the latter when diluted twofold. A preliminary approximate determination is first carried out; then 1 cc. of the solution + 1 cc. of 0.2% furfural + 1 cc. of 60% potassium hydroxide solution is diluted with water so that the acetone concentration is not more than 0.05%, and the rate of appearance of the emulsion is again measured.—E. K. NIKITINE. *J. Prikl. Khim.*, 9 (1936), 1543–1546; through *Chimie & Industrie*, 39 (1938), 649. (A. P.-C.)

Alkaloids of Opium—Analytical Separation of the Chief Secondary. Various difficulties encountered in the application of the Klyachkinoa method (*Arch. Pharmazie*, 271 (1933), 558-568) led to the following modifications. In the separation of the alkaloids from the opium, treatment with hot dilute acetic acid, followed by addition of a smaller quantity of cold concentrated hydrochloric acid, yields the alkaloids in a pure condition more rapidly than the original procedure. For the precipitation of narcotine and papaverine proceed as follows: add 40 cc. of 2.5% acetic acid to the dry opium-alkaloid extract, warm gently, let cool, add a few drops of hydrochloric acid to complete solution, add 10% sodium hydroxide solution drop by drop with vigorous stirring (with a glass rod) to redissolve the precipitate that forms; the neutralization point is reached when there is a permanent turbidity that increases without further addition of sodium hydroxide, the solution at this point being still slightly acid to methyl red and having a p_H of about 5; immediately add powdered sodium acetate crystals stirring vigorously so as to obtain a well crystallized precipitate, and allow to stand for 15 to 18 hours before filtering. For 0.2 Gm. of bases dissolved in 40 cc. of dilute acid, 2 to 10 Gm. of sodium acetate is required for papaverine and 2 to 4 Gm. for narcotine; for 0.2 Gm. papaverine and 0.5 Gm. narcotine, or opium extract itself, use 7 to 10 Gm. of sodium acetate. Even under optimum conditions, only 98.5% of these bases precipitate, the remainder precipitating ultimately with the thebaine. Separation of narcotine and of papaverine is quicker and surer by Anneler's method (*Arch Pharmazie*, 258 (1920), 130). The mixed alkaloidal bases must absolutely be purified before trying to separate them.—J. DETRIE and J. LELIÈVRE. *Compt. Rend. 17me Congr. Chim. Ind., Paris*, (Sept.-Oct. 1937), 174-177. (A. P.-C.)

Aluminum—Detection of, with Eriochromocyanin. By means of the test 0.001 mg. of aluminum can be detected in the presence of 100 times as much lead, silver, mercury, cadmium,

bismuth, antimony, tin, thorium, lanthanum, cerium, tungsten, molybdenum, uranium, titanium, zirconium, barium, strontium, potassium, sodium, lithium, rubidium, cæsium, thallium and ammonium. Titanium, zirconium and thorium give violet-red to blue-violet precipitates when considerable is present but the aluminum test can be obtained. Beryllium gives a similar reaction; the test can be made, however, if fifth-normal acetic acid is added to the heated solution which has been made alkaline and then, after cooling, the color is compared with that of a pure beryllium solution. The phosphate, oxalate, fluoride, tartrate, silicate, borofluoride, silicofluoride, ferricyanide and chromate anions interfere.—E. EEGRIWE. *Z. Analyt. Chem.*, 108 (1937), 268–269; through *Chimie & Industrie*, 39 (1938), 654. (A. P.-C.)

Aluminum, Magnesium and Zinc—Microchemical Detection of, with 1-Aminoanthraquinone-2-carboxylic Acid. A hundredth normal solution of the potassium salt was obtained by dissolving 0.266 Gm. of 1-aminoanthraquinone-2-carboxylic acid in 10 cc. of decinormal potassium hydroxide and diluting to 100 cc. All cations, with the exception of potassium, sodium, lithium and ammonium, give reddish precipitates with this reagent. As little as 0.009 mg. of aluminum, 0.024 mg. of magnesium and 0.065 mg. of zinc give recognizable test reactions.—J. V. DUBSKY and M. HRDLICKA. *Mikrochem.*, 22 (1937), 116–118; through *Chimie & Industrie*, 39 (1938), 653. (A. P.-C.)

Antimony Ions—9-Methyl-2,3,7-Trihydroxy-6-Fluorone, a Special Reagent for. The method of preparing the reagent is described. When moist it is a red powder becoming reddish brown when anhydrous. A saturated solution of the powder in alcohol gives a bright red precipitate with either antimonous or antimonic ions. The rare elements cerium and germanium give similar precipitates and iron gives a violet-black color in a buffered solution. The test is made in slightly acid solution. R. DUCKERT. *Helvetica Chim. Acta*, 20 (1937), 362–367; through *Chimie & Industrie*, 39 (1938), 653. (A. P.-C.)

Arsenic—Method for the Detection of Small Quantities of. The Martin and Pien method (*Bull. Soc. Chim. France*, 47 (1930), 646–654) was studied and improved. A silver nitrate, self-toning, daylight, photographic paper is used as test paper, suitably in strips 5 by 120 mm., placed in the outlet tube of the hydrogen generator in such a manner that only the sensitized face comes in contact with the gases. The tube is surrounded by black paper to protect the test paper from the light. Between the generator and the tube containing the test strips is interposed an absorber containing 5 cc. of potassium hydroxide solution (112 Gm. per liter, to remove interfering gases. An all-glass apparatus is described. In order to obtain uniform results it is important that the hydrogen be generated at a uniform and constant rate, suitably obtained by using 1 cc. of sulfuric acid diluted to 15 cc. and four 0.50-Gm. pellets of platinized zinc. A very satisfactory scale of stains can be prepared from 0.002 to 0.030 mg. of arsenic, and may even be extended down to 0.0005 mg. The sensitiveness can be extended down to a few hundredths of 1γ by using 2-mm. test strips and a smaller apparatus. If interferences (*e. g.*, large quantities of chlorides which might cause distillation of arsenic trichloride) are feared, 1 cc. of 10% ferric alum solution is added and the solution is neutralized with ammonia; the precipitate is filtered, washed and redissolved in 20% sulfuric acid, and arsenic determined in the solution. As the presence of ferric salts notably reduces the rate of evolution of hydrogen, the concentration of acid and the amount of platinized zinc should be increased.—L. TRUFFERT. *Ann. Fals.*, 31 (1938), 73–85. (A. P.-C.)

Atropine—Note on Iodometric Determination of. The following procedure is recommended for the semi-microdetermination of atropine. To about 5 cc. of an aqueous solution of neutral atropine sulfate add a large excess of $N/10$ iodine. Dilute to 50 cc. with distilled water, mix, allow to stand for two minutes, filter through a fritted-glass filter and determine the excess iodine in the filtrate with $N/10$ thiosulfate. One cc. of $N/10$ iodine is equivalent to 0.00434 Gm. of atropine sulfate.—T. DUJARDIN. *J. pharm. Belg.*, 20 (1938), 571–574. (S. W. G.)

Barbiturates—Method of Identification of. The following procedure is given: Introduce several mg. of the barbiturate into a dry centrifuge tube, add 2–3 cc. of pure 99% methyl alcohol, shake until dissolved then add 2 drops of cobalt-calcium reagent (1 Gm. each of cobalt nitrate and calcium chloride in 10 cc. distilled water), and, after mixing, 1 drop of 20% sodium hydroxide solution. On shaking an indigo color and then precipitate is obtained. Centrifuge or let stand, reject the colorless liquid, add 2–3 drops of diluted hydrochloric acid (1:5) and mix with a fine rod. Pour the solution onto a slide, and after one or two minutes examine the crystals formed under a

microscope. If the crystals are not definite, dissolve the mixture with a drop of ammonia then add 2–3 drops of hydrochloric acid (1:5) and mix with a small rod until crystals form. Characteristic crystals for Veronal, Soneryl, Dial, Sandoptal, Numal, cyclopentenylallylurea, Luminal, Rutonal and Phanodorm are shown. Applications of the procedure to blood, urine and viscera are discussed.—M. PESEZ. *J. pharm. chim.*, 28 (1938), 69–82. (S. W. G.)

Benzene—Spectrographic Identification and Determination of. The proposed method is based on the study of the ultraviolet absorption spectra of benzene in alcoholic solution, and enables the identification of 0.1 mg. of benzene. The absorption curve of the alcoholic solutions is traced using the apparatus and procedure of Fabre and Amy (*J. pharm. chim.*, 22 (1935), 5). By evaluation of the optical density of the maxima, the amount of benzene may be determined for quantities equal to or greater than 2 mg. within 5%. The technic is applied to the detection and determination of benzene in the atmosphere by condensing at low temperature in the presence of 95% alcohol, which fixes the benzene quantitatively. The apparatus is illustrated and its manipulation described.—P. LAURIAN. *J. pharm. chim.*, 27 (1938), 561–577. (S. W. G.)

Bismuth—New Organic Reagent for. A mixture of 1 % solution of 2-methyl benzothiazole in 95% alcohol and 1*M* potassium iodide is a sensitive reagent for bismuth and antimony. Bismuth may be detected in the presence of antimony and all the other cations encountered in the usual qualitative analysis scheme by the deep red-orange color of the bismuth precipitate, while antimony alone gives a yellow precipitate. Copper and ferric ions interfere, due to the formation of free iodine, but the interference is eliminated by sodium bisulfite. Mercuric ion forms a white precipitate with 2-methyl benzothiazole alone.—B. NAIMAN. *J. Chem. Educ.*, 14 (1937), 484–486. (E. G. V.)

Bourbonal—Reactions Which Distinguish, from Vanillin. The reactions of bourbonal (I) and vanillin are discussed. I is best characterized microchemically as the phototropic phenylhydrazine. A saturated aqueous solution (5 cc.) is treated with 1 cc. of Deniges' solution (phenylhydrazine) and warmed until the precipitate is crystalline. The colorless product is exposed to sunlight until it becomes bright red, filtered, washed with water and dried at 100°, when it again becomes colorless. The dry powder becomes red on exposure to light. The phototropic change is reversible at greater than 80°.—F. HOEKE. *Chem. Weekblad*, 35 (1938), 316–319; through *J. Soc. Chem. Ind.*, 57 (1938), 845. (E. G. V.)

Burow's Solution—Assay of. The following procedure is recommended: Dilute 10 Gm. of the solution with 150 cc. of water, introduce a suspension of pulped filter paper (1 paper 3.5 cm. dia.) and 7–8 drops of perhydrol, heat, alkalinize with ammonia T.S., heat for several minutes, then continue as directed in the Belgian Pharmacopœia. With certain commercial samples which give no precipitate with ammonia T.S. the following procedure is recommended: Dilute 5 Gm. of the solution with 100 cc. of water, add 3 cc. of ammonia T.S., then acidify with 5 cc. of glacial acetic acid. Heat, add 25 cc. of ammonium phosphate solution, boil for several minutes, allow to cool, wash the precipitate by decantation, collect the precipitate, dry, ignite and weigh as aluminum phosphate. Tests for identity and purity are given.—C. STAINER. *J. pharm. Belg.*, 20 (1938), 411–414, 428–430. (S. W. G.)

Calcium Lactate—Dissociation of. The true calcium-ion concentration of even dilute solutions of calcium lactate is much lower than is generally presumed; *e. g.*, in tenth molar (approximately 3%) solutions the ionized calcium is only about one-third of the total calcium. This observation should play an important part in the biological or medicinal applications of calcium lactate. Calcium gluconate behaves similarly, contrary to the chloride and acetate.—G. KILDE. *Z. Anorg. u. Allg. Chem.*, 229 (1936), 321–336; through *Chimie & Industrie*, 39 (1938), 716. (A. P.-C.)

Cannabis Indica—Characteristic Color Reaction for. Cannibinol when mixed with 2 drops of 30% hydrogen peroxide and 10 drops of sulfuric acid gives a blood-red color. When treated in the cold with 2–3 cc. of 5% acetaldehyde in alcohol and several crystals of vanillin (0.03 Gm.), then 1–2 cc. of hydrochloric acid, a fleeting sea green, then slate gray, then indigo and finally violet colors are observed. The following reagent is recommended: Vanillin 0.4 Gm., acetaldehyde 0.06 Gm., 95% alcohol 20 cc. The reaction is applied to cannabis as follows: Extract the sample with petroleum ether, evaporate on a water bath, to the residue add exactly 2 cc. of the aldehyde-vanillin reagent and 1 cc. of hydrochloric acid. Stopper, shake and examine the color after 10 minutes. Compare with a standard prepared at the same time and under the same

conditions. The reaction is claimed to be specific for cannabis.—P. DUQUENOIS and H. N. MUSTAPHA. *Bull. sci. pharmacol.*, 45 (1938), 203–205. (S. W. G.)

Cannabis Indica—Fourth Report on, by League of Nations Commission on the Traffic in Opium and other Noxious Drugs. The following conclusions are reported: (1) Petroleum ether is the solvent best suited for extraction of the active principles of cannabis, and consequently should be used in carrying out the Beam test. (2) The Beam test may be carried out by adding the alcoholic solution of hydrochloric acid or potassium hydroxide to the petroleum ether solution without previous evaporation. (3) A new phenol has been isolated from the resin of cannabis. (4) In testing for cannabis it is advisable to carry out the acid reaction of Beam when the alkaline reaction is negative. (5) Decolorizing charcoal need not be used when the petroleum ether solution is colored. The hydrochloric acid in absolute alcohol may be added and the reaction caused by the phenol may be observed in the alcohol layer.—F. DEMYTTENAERE. *J. pharm. Belg.*, 20 (1938), 341–344, 357–359. (S. W. G.)

Cannabis Indica—Note on. A critical review of the chemical constituents and analytical reactions of the drug. The author points out certain similarities in behavior between cannabis and morphine.—S. COUTIERE. *Bull. sci. pharmacol.*, 45 (1938), 15–18. (S. W. G.)

Cannabis Indica—Tests for. The author reviews Beam's test as applied in acid and basic media and offers suggested changes in the procedures. The 5% solution of potassium hydroxide in 95–96% alcohol may be replaced by solutions of the alkali in methyl, amyl or isopropyl alcohols; and the potassium hydroxide may be replaced by sodium hydroxide. Samples having a high resin content are treated as follows: Prepare a 1:5 extract by macerating the drug with petroleum ether for 5 hours. Filter, and, if the filtrate has a pronounced green color, treat with animal charcoal. Evaporate 1–2 cc. of the filtrate in a porcelain dish below 50°, add 4–5 drops of alcoholic potassium hydroxide and mix. The violet color is established in a few seconds. Variations for different types of preparations containing cannabis are given. The addition of 15–20 drops of acetone and 15–20 drops of alcoholic sulfuric acid solution (2:5) to the dry residue from the benzin extraction causes the formation of a cherry-red color reaching a maximum in about half an hour. This reaction is given by other resins. The author recommends the following procedure: Powder a small portion of the sample, triturate for several minutes with several pellets of potassium or sodium hydroxide; then add 5–10 cc. of 95–96% alcohol and triturate the mixture repeatedly during 5–10 minutes. Filter through paper collecting the filtrate in a small stoppered graduated cylinder. Usually the same violet color observed in the Beam test is noted on the border of the filter while the filtrate is a purple violet. Dilute about 1 cc. of the filtrate with 5–6 cc. of distilled water, add about 1 cc. of amyl alcohol, shake and allow to separate. The violet color in the amyl alcohol layer is stable for several days. This procedure is claimed to be more sensitive than Beam's method. Other experiments are reported and a number of analyses are described.—J. BOUQUET. *Bull. sci. pharmacol.*, 107–122, 161–173. (S. W. G.)

Carbon and Hydrogen—New Semi-Micro Method for the Determination of. A description of improvements in the apparatus used in the method of H. ter Meulen and J. Heslingaen (Neue Methoden der Organisch-Chemischen Analyse) intended to render it suitable as a general method for the determination of carbon and hydrogen. The catalyst consists of a mixture of manganese dioxide and minium heated to 400° C. Potassium chromate heated to 200° C. is used to decompose the nitrous gases formed in the combustion of nitrogenous compounds. To facilitate repeated use of the same charge of catalyst, a platinum spiral heated to dark red is used. Oxygen is fed by means of a Dennstedt compensator; the combustion flame is automatically controlled by means of a Sucharda and Bobranski regulator; Blumer absorbing tubes are used. All heating is done electrically, except that the platinum boat is heated with a Bunsen burner connected directly to the Sucharda and Bobranski regulator. Combustion is carried out in a transparent quartz tube.—B. HEPNER and M. POJAS. *Compt. Rend. 17me Congr. Chim. Ind., Paris* (Sept.–Oct. 1937), 397–399. (A. P.-C.)

Carbon Dioxide—Determination of, in Wines. The method of Babo and Mach (Weinbau und Kellerwirtschaft, 3rd edition., 4, p. 663) is described with minor modifications.—L. BENVEGNIN and E. CAPT. *Mitt. Lebensm, Hyg.*, 29 (1938), 26–33; through *J. Soc. Chem. Ind.*, 57 (1938), 1090. (E. G. V.)

Chemical Analysis by X-Ray Diffraction. This paper gives tabulated data on the diffraction patterns of 1000 chemical compounds which makes it possible to carry out routine testing

by the Hull method. The scheme of analysis will be readily understood by any one familiar with X-ray diffraction. Every crystalline substance has a characteristic diffraction pattern which is obtained from a small quantity of a mixture as well as from the pure substance, so that the photograph obtained from a mixture is the sum of the photographs that would be obtained from the superposed photographs of each individual constituent. The intensity of the lines gives good information with respect to quantity. Thousands of patterns which have been found can be classified in such a way that they can easily be used for the identification of an unknown constituent of a mixture. From the data of the patterns, the positions of the three strongest lines are read off in the order of decreasing intensity. The first number represents the group, the second number the subgroup and the third number the location within the subgroup. In the entire index book there are only 27 subgroups which contain more than three patterns and only one group which contains more than 5 patterns. The necessary application and manipulative technic are described. Wherever it is necessary to maintain an analytical laboratory, and invaluable supplementary technic will be found in X-ray diffraction. The substances present are shown in their true state of combination. The analysis is conclusive although only minute amounts of material are necessary; the samples are tested in the state received; different crystalline phases, states of oxidation or hydration or physical state are recognized; and a permanent record is always on file.—J. D. HANAWALT, H. W. RINN and L. K. FREVEL. *Ind. Eng. Chem., Anal. Ed.*, 10 (1938), 457–512. (E. G. V.)

Chromotropic Acid as Indicator in Fluorescence-Volumetric Analysis. Chromotropic acid (1,8-dihydroxynaphthalin-3,6-disulfonic acid) has been used as a reagent for detecting titanium, chromium, silver and iron. The golden-yellow aqueous solution of chromotropic acid is light yellow in the presence of acid and becomes violet-red in the presence of bases. Moreover, the dilute aqueous solution of chromotropic acid in filtered ultraviolet light shows a characteristic light blue fluorescence which increases as the concentration is raised; a 5% solution is greenish brown and opaque in ultraviolet light. The fluorescence of very dilute aqueous solutions of chromotropic acid is increased by the addition of hydroxyl ions so that a slight fluorescence in an alkaline solution disappears entirely upon adding acid. Titrations of hydrochloric acid against sodium hydroxide and potassium bicarbonate show that consistent results can be obtained by titrating under filtered ultraviolet light.—E. A. KOCSIS and Z. v. Sz. NAGY. *Z. Analyt. Chem.*, 108 (1937), 317–321; through *Chimie & Industrie*, 39 (1938), 655. (A. P.-C.)

Cod Liver Oil Emulsions—Analysis of. Chemical methods for examining cod liver oil emulsions and the value of the latter for feeding animals were studied. The following method is recommended for determining the oil in such emulsions: Mix 15 Gm. of the emulsion thoroughly with 40 Gm. of anhydrous sodium sulfate; after allowing to stand for 1 hour, extract for 6 hours with petroleum ether in a Soxhlet apparatus, taking care to regulate the heating so as to avoid melting the hydrated sodium sulfate in the extraction thimble; when distilling off the last traces of petroleum ether from the extracted oil use a stream of nitrogen to avoid oxidation. This method was applied to emulsions of known composition, both before and after storing for several weeks. The correct amounts of oil were found and the chemical constants of the oils isolated from the emulsions checked the constants of the original oils with the exception of a slight rise in acidity of the emulsified oils during storage. Liver oils isolated as described gave a blue color turning to violet-blue and brown when 0.06 cc. of oil was dissolved in 2 cc. of chloroform and treated with a mixture of 0.06 cc. of sulfuric acid and 2 cc. of chloroform. Work on the detection of substances associated with rancidity showed that the Kreis test cannot be applied to cod liver oil emulsions unless suitably modified. The usual tests for free aldehydes and ketones can be applied directly. Feeding experiments with pigs showed that epihydrinaldehyde and similar aldehydes and ketones commonly found in fatty oils other than cod liver oils cannot be responsible for the poisonous properties of some cod liver oil emulsions. Emulsification of cod liver oil without exclusion of air was without effect on vitamin D potency but resulted in a 90% loss in vitamin A content. Feeding experiments with calves showed that it is advantageous to supply the cod liver oil in emulsified form only in case the oil is given before feeding.—H. WERNER and H. SCHMALFUSS. *Fette u. Seifen*, 44 (1937), 348–351; through *Chimie & Industrie*, 39 (1938), 729. (A. P.-C.)

Ferric Salts—Application of Reducing Action of Cuprous Oxide to Determination of. The following procedure is recommended: Introduce into a 100-cc. volumetric flask 10 cc. of the ferric

solution (5–25 Gm. per liter), 40–50 cc. of distilled water, 5 cc. of 50% phosphoric acid and 1 Gm. of cuprous oxide (brownish black oxide should not be used). Make up to 100 cc. with distilled water, shake vigorously for 1–2 minutes, filter through a plaited filter carrying the excess cuprous oxide with the liquid in order to keep the iron in the ferrous state. Dilute 50 cc. of the filtrate with about 200 cc. of distilled water, add 5 cc. of sulfuric acid (1:2), then titrate with $N/10$ permanganate. The end-point is reached when a pale mauve color, resulting from the mixture of the permanganate violet and cupric blue, is obtained and persists 10–20 seconds. The method is more rapid than any other analagous procedure.—P. FLEURY and M. HARLAY. *J. pharm. chim.*, 27 (1938), 513–523. (S. W. G.)

Fluorine—Determination of, in Insecticide Products. The gravimetric method of Bonis and the volumetric ytterbium nitrate method of Frere are most satisfactory.—H. BEGUE. *Ann. Agron.*, 7 (1937), 431–439; through *J. Soc. Chem. Ind.*, 57 (1938), 829. (E. G. V.)

Fusel Oil—Determination of, with Vanillin-Sulfuric Acid Reagent. To 1 cc. of distillate 2. cc. of 0.5% vanillin in concentrated sulfuric acid are added, with shaking after heating at 100° for 3 minutes. One cc. of water is added, with shaking. The reddish violet color is compared after one-half hour with that produced by a control solution (1% isoamyl alcohol in 15% ethyl alcohol).—M. YAMADA and K. TAKAKISI. *Bull. Agric. Chem. Soc. Japan*, 14 (1938), 55; through *J. Soc. Chem. Ind.*, 57 (1938), 1091. (E. G. V.)

Gravimetric Analysis—New Method of. Instead of precipitating in a beaker as is usually done, the author points out that the precipitation may be carried out in a funnel, the end of which has a piece of rubber tubing closed with a clamp. The funnel may be suspended on a ring above the suction filtered and the precipitate may be washed directly onto the tared filter. If a fritted glass filter is used, the precipitation may be carried out in the tared filter before the suction is started.—A. BOUTARIC. *Rev. sci.*, 6 (1938), 249; through *J. pharm. Belg.*, 20 (1938), 596. (S. W. G.)

Hydrastis—Tincture and Fluidextract of, Micro-Determination Method of the Total Alkaloids in. A method for the determination of the alkaloids in the tincture and fluidextract of hydrastis has been investigated whereby both the berberine and hydrastine content can be determined as total alkaloids. The basis of this method is that berberine, which forms a quaternary base in ammonical solution and hence cannot be shaken out with ether, is first reduced quantitively to dihydrodesoxyberberine (canadin)—a tertiary base which is soluble in ether. Then the canadin and hydrastine are titrated together. The procedure described is as follows: to 1–2 Gm. of the preparation are added 3 cc. dilute acetic acid, 3 cc. dilute sulfuric acid and 0.5–1.0 Gm. powdered zinc. The mixture is then heated on a water bath with frequent stirring by means of a glass rod, and then the slightly yellowish mixture is filtered while hot through a pledget of cotton into a shaking cylinder. The vessel, zinc and filter are then rinsed three times with 3 cc. of hot water previously acidified. The solution is allowed to cool and then decomposed with ammonia until the precipitated zinc hydroxide is dissolved. The solution is cooled again, and then shaken with 15 cc. ether for 1–2 minutes. The ethereal solution is separated, dried over anhydrous sodium sulfate, filtered into a small vessel and the solvent removed by evaporation. Three cc. of 0.1 N hydrochloric acid and 3 cc. water are then added, the mixture is cooled and the excess acid is titrated with 0.1 N sodium hydroxide using dimethyl yellow as the indicator. One cc. of 0.1 N hydrochloric acid is equivalent to 0.03585 Gm. of total alkaloids. A method is also described whereby the berberine content of hydrastis is determined by first forming the picric acid salt of this alkaloid.—H. NEUGEBAUER and K. BRUNNER. *Pharm. Ztg.*, 82 (1937), 1212–1213. (N. L.)

Hydrocyanic Acid—Determination of, in Almond Syrup. Orgeat syrups prepared in accordance with the Belgian Pharmacopœia IV contained 0.003–0.004% of hydrocyanic acid, of which a small fraction only existed in the free state. The hydrocyanic acid content of the syrup diminishes with age. According to Schoofs, orgeat syrup, a medicament of variable composition and difficult preservation, can be readily dispensed with in therapy. The paper contains a considerable amount of anlytical data and references.—F. SCHOOFS. *Bull. acad. roy. med. Belg.*, 3 (1938), 89–108; through *Chem. Abstr.*, 32 (1938), 9400. (F. J. S.)

Hydroxyl Groups—Alcoholic Determination of, in Presence of Free Carboxyl Groups. Various methods proposed for the determination of hydroxyl or acetyl values of fatty acids are discussed. The preparation of, for example, castor oil fatty acids (ricinoleic acid) needs great care

in order to avoid the formation of estolides or lactones, and details are given of a technic (saponification followed by rapid acidification with a large excess of hydrochloric acid) whereby acids of ester value −0.6 can be prepared.—I. M. JAKES and J. HOKL. *Fette u. Seifen*, 45 (1938), 306–311; through *J. Soc. Chem. Ind.*, 57 (1938), 1066. (E. G. V.)

Insecticide Evaluation—Biological Factors in Peet-Grady Results for Liquid. Sources of error are: variations in sex ratio (the male fly being the more readily killed), differences in culture susceptibility, composition of the test population. For laboratory-reared house flys, the proportion of males is 51.4%.—A. C. MILLER and W. A. SIMANTON. *Soap*, 14 (1938), 103–113; through *J. Soc. Chem. Ind.*, 57 (1938), 852. (E. G. V.)

Insecticide Evaluation—Modified Peet-Grady Method of Liquid. Details are given of a "large-group modification" of the test, which avoids the usual sources of error and is quicker to carry out.—W. A. SIMANTON and A. C. MILLER. *Soap*, 14 (1938), 115–117; through *J. Soc. Chem. Ind.*, 57 (1938), 852. (E. G. V.)

Ipomea Pes-Capræ—Phytochemical Study of. This widely distributed plant, used medicinally in various ways and for a variety of ailments has been investigated chemically. Details of this investigation are reported. Tests for alkaloids were negative. Resin content was found to be 7.27%. The ash contained sulfate, chloride and carbonate radicals and the following metals: tin, iron, aluminum, magnesium, calcium, sodium and potassium. Silica was present also. Volatile oil was 0.048%. Its constants were determined. Extractive from petroleum benzin yielded pentatriacontane; triacontane; a sterol, $C_{29}H_{49}OH$; behenic, melissic, butyric and myristic acids. Glycerol, saturated fatty acids and an unsaturated acid were found. Alcoholic extractive contained volatile oil, butyric acid, chlorophyl, resin, sodium and potassium chlorides and a catechol tannin. Various extractives were administered to cats but there was no apparent effect.—GUSTAV E. CWALINA and GLENN L. JENKINS. *J. Am. Pharm. Assoc.*, 27 (1938), 585. (Z. M. C.)

Iron—Determination of, in Biological Material. A convenient sized sample of material, containing at least 0.02 mg. of iron, was accurately measured and placed in a 300-cc. Kjeldahl flask. If the sample was a dry powder, a few cc. of water were added. Five cc. of nitric acid (distilled to remove iron impurities) and one cc. of concentrated sulfuric acid were added, and the flask was gently heated so that the solution was just boiling. Further 5 cc. additions of nitric acid were made as the solution began to char, until the oxidation had ceased. One cc. of perchloric acid was then added and the flask was heated more vigorously until white fumes began to form. Heating was stopped at this stage if the solution was colorless; otherwise, it was continued until this point was reached. After cooling, the solution was diluted to about 25 cc. Usually the solution was clear, but if a precipitate of calcium sulfate was present, as with milk samples where there is a large proportion of calcium to iron, this was filtered off and the filter paper washed. A drop of bromophenol blue was added to the acid ash solution and concentrated ammonium hydroxide added until the acid was neutralized. About 3 cc. excess ammonium hydroxide was then run in, a total of 8 cc. usually being required, and hydrogen sulfide was passed in until the solution became saturated. It was allowed to stand for a few minutes and filtered by suction on a fine Jena glass filter, the filtrate being discarded. This type of filter would pick up a precipitate so finely dispersed as to appear only as a faint green coloration, if visible at all. Care was taken not to suck the precipitate dry, as this might result in some loss of iron due to oxidation to the soluble sulfate. Without washing, the precipitate was dissolved in 1.0 cc. of 1:1 hydrochloric acid. The Kjeldahl flask was rinsed into the filter once with 1 cc. of the acid and several times with small amounts of water, and the whole was sucked through the filter, which was washed several times with water. The combined filtrate and washings were boiled to remove excess hydrogen sulfide, and affect solution of any colloidal sulfur. After cooling, the solution was quantitatively transferred to an appropriate volumetric flask and the excess acidity neutralized with 25% sodium hydroxide. The solution was left sufficiently acid to remain perfectly clear. It was then diluted to the mark. The Evelyn photoelectric colorimeter was used for the actual determination of the iron. An accurately measured aliquot of the iron solution containing about 0.01 mg. of iron was placed in a colorimeter tube and 3 cc. of an acetate buffer containing 83 Gm. per liter of sodium acetate and 120 cc. per liter of glacial acetic acid were added, with sufficient water to bring the total volume to 12 cc. About 50 mg. of hydroquinone, gaged roughly on the tip of a spatula, was dissolved in the solution. On the addition of 1 cc. of 0.1% α,α'-dipyridyl solution, the characteristic pink color de-

veloped immediately. A blank was carried through the entire procedure at the same time. The color was estimated with the colorimeter, using Evelyn's filter 520 and setting the galvanometer to read 100 with the blank in place in the tube holder. By so doing, the effect of any iron contamination in the reagents was automatically eliminated. The use of a wet-ashing procedure largely prevented the formation of pyrophosphates. However, if there was any delay in the maximum color development, the iron solution was acidified and heated, and the iron estimation repeated.—S. H. JACKSON. *Ind. Eng. Chem., Anal. Ed.*, 10 (1938), 302–304. (E. G. V.)

Iron in Must Wine and Cider—Rapid Determination of Minute Amounts of. Iron is determined in the ash by reduction to ferrous iron with copper and sulfuric acid in the presence of platinum, the ferrous iron being titrated with potassium chromate (ammonium phosphate indicator). In the cases of must and sweet wine most of the sugar is removed by fermentation with yeast before ashing. The iron contents of a number of Swiss wines are recorded. They bear no relation to the origin of the wine.—E. CAPT. *Mitt. Lebensm. Hyg.*, 29 (1938), 33–44; through *J. Soc. Chem. Ind.*, 57 (1938), 1090. (E. G. V.)

Isopropyl Ether and Methylene Chloride—Study of, as Solvents in Alkaloidal Assaying. Insolubility of isopropyl ether and methylene chloride in water permit classification as "immiscible solvents." Isopropyl ether has lower vapor pressure than ether, higher boiling point, higher flash point, less solubility in water and in some cases higher solvent power. Methylene chloride has a lower boiling point than chloroform and a specific gravity of 1.33 and is practically insoluble in water. A comparative study of these solvents with those now used in official assay processes was undertaken. Experimental work covered belladonna leaves, cinchona, nux vomica and guarana; procedure and tabulation of results are included. The following conclusions were reached: (1) It has been shown that a 3:1 mixture of isopropyl ether-methylene chloride is not as efficient as a 3:1 mixture of ethyl ether-chloroform for extracting the alkaloids from the drug in the assay of belladonna leaves. It has also been shown that methylene chloride is not quite as good as chloroform for the same purpose; however, it has been established that methylene chloride is about as efficient as chloroform for removing the alkaloids from aqueous solution in the final extraction with immiscible solvent. (2) In the assay of cinchona, isopropyl ether cannot be substituted for ethyl ether to extract the alkaloids from the drug; however, methylene chloride may be used in place of the chloroform. It has been found that methylene chloride is equally as efficient as chloroform for removing the alkaloids from the aqueous layer, in the final extraction of cinchona alkaloids. Alcohol increases the amount of material extracted when used with ethyl ether-chloroform or ethyl ether-methylene chloride in extracting the drug. (3) Isopropyl ether is not as efficient as ethyl ether when used with chloroform or methylene chloride to extract the alkaloids from nux vomica. Methylene chloride may be used as a substitute for chloroform in the assay, either to extract the alkaloids from the crude drug or to remove them from the aqueous layer in the final extraction step of the assay. Less troublesome emulsions were encountered when methylene chloride was used to extract nux vomica alkaloids from alkaline aqueous solution than when chloroform was used. (4) Methylene may be used as a substitute for chloroform in the assay of guarana. —M. L. JACOBS and GLENN L. JENKINS. *J. Am. Pharm. Assoc.*, 27 (1938), 672. (Z. M. C.)

Kalmia Polifolia, Ericaceæ—Phytochemical Study of. Because of reports of poisoning, this study was undertaken. Review of literature covers physiological action and uses of the Genus *Kalmia* and previous work done on some species. Both leaf and stem were studied microscopically. A thorough chemical study was made and some toxicological tests were tried. Both leaves and stems contain sugars and tannins. Pectins from leaves were examined. Only a trace of volatile oil was obtained and tests for alkaloids were negative. Two substances were obtained which gave color reactions for phytosterols. The glucoside asebotin was found in the leaves. No toxic effects were observed.—CLAIRE EVANS. *J. Am. Pharm. Assoc.*, 27 (1938), 681. (Z. M. C.)

Lead—Potentiometric Estimation of, with Sulfite Solutions. Experiments with lead acetate in dilute acetic acid show that solutions fiftieth-normal or less can be titrated with hydrogen sulfide solution and the end-point determined with a potentiometer. The hydrogen sulfide reagent is prepared by dissolving sodium sulfide in a buffer solution composed of equal parts of fifth-normal sodium acetate and fifth-normal acetic acid. The solution kept under hydrogen is quite stable and shows practically no change after 30 hours. It is not practical, however, to work with stronger solutions of hydrogen sulfide. The reagent was standardized iodometrically. The solution to be titrated is placed in a flask with a stopper carrying a platinum electrode, a siphon to a

saturated calomel cell and a dropping burette. Mechanical stirring is unnecessary. The results are accurate and the procedure is convenient for the analysis of dilute lead solutions.—G. L. MAHESHWARI and J. B. JHA. *J. Indian Chem. Soc.*, 14 (1937), 42–45; through *Chimie & Industrie*, 39 (1938), 655. (A. P.-C.)

Magnesium—Determination of, in Presence of Excess Ammonium Oxalate. In the determination of magnesium as magnesium ammonium phosphate, low results are obtained in the presence of large amounts of ammonium oxalate. The negative effect of the oxalate increases as its concentration in the solution increases and as the magnesium content decreases. The error, however, is quite variable, even when the magnesium and oxalate contents are constant. Generally speaking, the ammonium oxalate concentration should lie between 4.0 and 50 mg. per 100 cc. of solution.—V. T. TCHOUKO. *J. Prikl. Khim.*, 10 (1937), 364–366; through *Chimie & Industrie*, 39 (1938), 651. (A. P.-C.)

Medicaments—Use of Drop Analysis for Investigation of. III. Volatile furfuraldehyde derivatives, obtained during the hydrolysis of sugars and other carbohydrates, are brought to a filter paper impregnated with *o*-dianisidine, with which compound Sciff bases are formed by condensation. The limits of identification are 50–100 micrograms for sugars and 10 micrograms for other carbohydrates. Alpha-amino-acids are converted into aldehydes by means of alkaline sodium hypochlorite and detected by decolorized fuchsin solution. The limit of identification is 50–10 micrograms.—O. FREHDEN and L. GOLDSCHMIDT. *Mikrochim. Acta*, 2 (1937), 184–187; through *J. Soc. Chem. Ind.*, 57 (1938), 728. (E. G. V.)

Mercurous, Mercuric and Silver Ions—Detection of, by Spot Tests. Chromotropic acid gives a brown precipitate with mercurous, a bright yellow precipitate with mercuric and a white precipitate that darkens rapidly with argentic ions. The test made on filter paper impregnated with a drop of freshly prepared 5% chromotropic acid solution is sharp when 0.2 mg. of the ion in question is present.—E. A. KOCSIS and G. GELEI. *Z. Anorg. u. Allg. Chem.*, 232 (1937), 202–204; through *Chimie & Industrie*, 39 (1938), 653–654. (A. P.-C.)

Mercury—Method for the Determination of Small Quantities of, in Air. The method is based on the reduction of gold chloride by mercury. The sensitiveness is increased by impregnating silica gel with gold chloride, drying and activating in vacuum at high temperature. The gel is then filled into the special testing tube of the Draeger DS apparatus. When air containing mercury is passed through the tube, characteristic colorations are produced and the amount of mercury present can be determined by comparison with standard tubes. The method is sensitive to a concentration of 0.001 mg. of mercury per liter of air.—K. GROSSKOPF. *Draeger-Hefte*, (1937), 3589–3591; through *Chimie & Industrie*, 39 (1938), 675–676. (A. P.-C.)

Methenamine as a Qualitative Reagent. Applicability of the methenamine in sulfuric acid color test to a large number of compounds has been studied. Substances tested, with the color developed, are reported. The authors conclude that the reagent is useful but for toxicological purposes may lead to fallacies. It is possible to differentiate closely related compounds.—KIRBY E. JACKSON. *J. Am. Pharm. Assoc.*, 27 (1938), 578. (Z. M. C.)

Morphine and Oxydimorphine—Identification of. (1) Place several particles of the alkaloid in a dry tube, add 2 cc. of hydrochloric acid and several crystals of dimethylaminobenzaldehyde or 4–5 drops of a 1:20 solution of the compound in alcohol. Heat in boiling water and observe the color produced after 2–3 minutes. Oxydimorphine gives a pale green changing to an emerald-green after 2 minutes. Morphine, codeine, dionine, peronine and heroine give a pale rose which becomes intensified to a current-red. (2) Substituting sulfuric acid for hydrochloric acid, oxydimorphine gives in the cold a yellowish tint changing to rose; after heating, a reddish changing to brown and finally a dark green. Morphine gives an orange-red color in the cold, and on heating the color changes to brown-red. On diluting with 10 cc. of water the former changes to brownish, then to a definite pale blue; while the latter changes to orange and then loses its color entirely. (3) Add several particles of the alkaloid and 3–4 drops of glyoxylic acid reagent to 2 cc. of sulfuric acid in a dry tube. Heat in boiling water for 1–2 minutes and observe, in the case of oxydimorphine, a blue-green to emerald-green color. Colors obtained with other alkaloids are tabulated.—M. PESEZ. *J. pharm. chim.*, 27 (1938), 255–262. (S. W. G.)

Morphine—Procedures for Determination of, in Opium. The author critically reviews the published methods and recommends the procedure of Eder and Wackerlin (*Quart. J. Pharm.*

Pharmacol., 10 (1937), 684) as the best available.—E. LEGER. *Bull. sci. pharmacol.*, 45 (1938), 193–200. (S. W. G.)

Organic Analysis—Some Practical Helps in. Tests for esters, saponification of esters in the presence of other substances, and the separation of alcohols from mixtures with esters are described.—G. H. CHIESMAN. *J. Chem. Educ.*, 15 (1938), 92. (E. G. V.)

Oxalic Acid—Color Reaction for. The following procedure is recommended for a solution containing 0.1 Gm. of oxalic acid in 1000 cc. Add 0.5 cc. of hydrochloric acid to 5 cc. of the solution, insert a pure zinc plate, reaching to the surface of the liquid and weighing 1–2 Gm. Boil the mixture for about one minute, remove from the flame and allow the reduction to continue for two minutes. Transfer the liquid, which contains glyoxylic acid formed by the reduction of oxalic acid, to a Pyrex tube, add 5 drops of 1% phenylhydrazine hydrochloride solution, bring to a boil, then cool in a current of water (this step is indispensable). Add to the cooled mixture an equal volume of pure hydrochloric acid and 5 drops of 5% potassium ferricyanide solution, then mix well. A current-red color develops in a few seconds. The reaction is negative to, and not interfered with, by the acids generally used in qualitative chemical analysis. The reaction is sensitive to 0.02 mg. of oxalic acid.—M. PAGET and R. BERGER. *J. pharm. chim.*, 27 (1938), 577–579. (S. W. G.)

Passiflora Incarnata—Chemistry of. This plant has been widely used but its use has been on an empirical basis so a study was undertaken to obtain definite information as to its chemistry. Report is made of the analysis, including procedures and tabulated results. Myristic, palmitic, oleic, linoleic and linolenic acids were identified and constants recorded. Also in the lipid fraction melissyl alcohol and sitosterol were found. A hydrocarbon was isolated from the petroleum ether fraction. Other organic constituents were catechol, gallic acid and glucose. The plant contained a water-soluble depressor material.—EDWIN J. FELLOWS and CLAYTON S. SMITH. *J. Am. Pharm. Assoc.*, 27 (1938), 565. (Z. M. C.)

Phosphoric, Arsenic and Arsenious Acids—Reactions of Difficultly Soluble Salts with, and Their Use for the Qualitative Separation of Arsenic and Phosphoric Acids. Arsenic and phosphoric ions can be separated qualitatively from the arsenious ion by means of lead carbonate, by heating for 15 minutes; a precipitate of lead arsenate and phosphate is formed, while arsenious acid remains in solution, to the extent of 79.5 to 93%. The reaction can be used to separate the phosphoric ion in the systematic analysis of cations of groups I, II and III.—A. D. VOROBIOVA. *J. Prikl. Khim.*, 10 (1937)380–387; through *Chimie & Industrie*, 39 (1938), 651. (A. P.-C.)

Phytochemistry. What It Is, and How It Has Developed. The detection, isolation and estimation of plant components are discussed. Various plant processes are discussed. Some of the more important problems awaiting solution in the field of phytochemistry are enumerated.—R. C. BURRELL. *J. Chem. Educ.*, 14 (1937), 520–527. (E. G. V.)

Picrotoxin—Toxicologic Study of. The following tests for identification of picrotoxin are recommended: (1) *Langley's reaction.* The residue obtained upon evaporation of several drops of picrotoxin solution (1:1000) is mixed with several crystals of potassium nitrate. Add one drop of sulfuric acid, mix and neutralize with solution of sodium hydroxide (30%). A brick-red color is produced immediately and disappears in about five minutes. The reaction is sensitive to 0.2 mg. of picrotoxin. (2) *Benzaldehyde reaction.* Dissolve the picrotoxin in two drops of 20% solution of benzaldehyde in alcohol and add one drop of sulfuric acid. An intense violet-red color is gradually produced. The reaction is sensitive to 0.05 mg. of picrotoxin. (3) *Minovici's reaction.* Add to the dry residue containing picrotoxin one drop of sulfuric acid and one drop of 20% solution of anisaldehyde in alcohol. Heat on a water bath and observe the immediate formation of a violet color, the intensity of which varies with the amount of picrotoxin present. The reaction is sensitive to 0.05 mg. of picrotoxin. The method of Florence (*Ann. Med. Legal. Bailliere*, Paris, 1924) is recommended for the extraction of the picrotoxin.—H. LECOQ. *J. pharm. Belg.*, 20 (1938) 305–307, 323–326. (S. W. G.)

Potassium—Microreactions of. By treating freshly precipitated lead iodide with a saturated solution of sodium iodide, there is obtained a double iodide of lead and sodium which, with potassium, gives characteristic needle-shaped crystals of $KPbI_3.2H_2O$. The reaction is not given by the metals which generally accompany potassium (lithium, magnesium, calcium, iron, aluminum, etc.). It is sensitive to about 0.00015 mg. of potassium.—A. KNIGA. *J. Prikl. Khim.*, 10 (1937), 371–373; through *Chimie & Industrie*, 39 (1938), 651. (A. P.-C.)

Pyrethrins—Determination of. The material separated by extraction is saponified and the chrysanthemic acids are separated by means of the soluble barium salts from extraneous acids. From one portion of the acidified filtrate the monocarboxylic acid is extracted by low boiling point light petroleum at 1-2° and determined by Wilcoxon's method with Deniges' reagent. The two acids are liberated from another portion of the filtrate, the monocarboxylic acid is removed by distillation in steam, and the dicarboxylic acid is titrated against 0.02 *N* sodium hydroxide. The application of the method to the testing of the quality of pyrethrum powder is described.—G. CANNERI and D. BIGALLI. *Annali. Chim. Appl.*, 28 (1938), 15–22; through *J. Soc. Chem. Ind.*, 57 (1938), 729. (E. G. V.)

Qualitative Organic Chemistry—Sealed Tube Oxidation in. The method, of value where where permanganate oxidations do not work, consists in the oxidation in sealed tubes with dilute nitric acid.—E. L. BROWN, N. CAMPBELL and G. S. LEARMONTH. *J. Chem. Educ.*, 15 (1938), 217–219. (E. G. V.)

Qualitative Chemical Analysis—Methods of. There is presented in outline form a logical arrangement of fundamental topics for a general course in quantitative chemical analysis in which emphasis is directed particularly to the sample and to the separation and measurement of the desired constituent.—M. G. MELLON and D. R. MELLON. *J. Chem. Educ.*, 14 (1937), 365–371. (E. G. V.)

Quinine and Rotenone—Reaction of, with Vanadic Reagent. Addition of 0.1 Gm. of vanadium pentoxide to 10 cc. of sulfuric acid enhances the color reactions of quinine and rotenone. —A. TAPIA FRESES. *Biol. Soc. Quim. Peru*, 3 (1937), 219–220; through *J. Soc. Chem. Ind.*, 57 (1938), 729. (E. G. V.)

Quinine—Simple and Characteristic Microreaction of. Place about 1 mg. of sample on a slide, dissolve in a droplet of *N*/2 sulfuric acid, add an equal volume of a 10% aqueous solution of crystalline sodium acetate. Mix gently but continuously until a faint white border appears. A network of long clinorhombic needles of basic quinine sulfate is observed at magnification of 100–150 diameters.—G. DENIGES. *Bull. trav. soc. pharm. Bordeaux*, 76 (1938), 121–122. (S. W. G.)

Quinine Sulfate—New Method for Crystallization of. A procedure for the crystallization of quinine sulfate based on the precipitation of the crystalline alkaloidal salt from a weakly acid (sulfuric) solution by the addition of sodium acetate is described. The most favorable and rapid results are obtained with a 1% solution of quinine sulfate in about *N*/30 sulfuric acid, and addition of 4–5 cc. of 10% solution of crystalline sodium acetate per 100 cc. of alkaloidal solution. Allow the crystals to dry at room temperature, wash with a cold saturated solution of basic quinine sulfate, then dry and desiccate.—G. DENIGES. *Bull. trav. soc. pharm. Bordeaux*, 76 (1938), 117–120. (S. W. G.)

Rotenone—Colorimetric Determination of. Rotenone is best determined by extracting (soxhlet) the root with acetone and applying Goodhue's color test to the extract. The results accord with biological efficiency. Some other ingredients of the root give the test.—S. SCHONBERG. *Compt. rend. X VII Cong. Chim. Ind.*, 1938, 947–952; through *J. Soc. Chem. Ind.*, 57 (1938), 829. (E. G. V.)

Rotenone Determinations on Derris, Timbo and Barbasco. In connection with the determination of rotenone by different commercial methods, some examples are given of results obtained by the author's cold chloroform process in comparison with the short time extraction process with carbon tetrachloride (described). With derris roots and cubé roots the former process, and with timbo and barbasco the latter process, usually gives higher results. It is suggested that the best procedure for commercial purposes is to assay derris by the cold chloroform process, and other roots by both processes, taking the higher result as being nearer the truth.—W. M. SEABER. *J. Soc. Chem. Ind.*, 57 (1938), 372. (E. G. V.)

Salicylic Acid and Salicylates—Determination of, in Pharmaceutical Preparations. Detailed procedures are given for the estimation of salicylic acid in aqueous and alcoholic solutions, sodium borate, syrups, colloidal preparations, pastes, pomades and powders and of sodium salylicate in mixtures with aspirin and with pyramidone.—D. PONTE. *Boll. chim. farm.*, 77 (1938), 457–459; through *Chem. Abstr.*, 32 (1938), 9389. (F. J. S.)

Salicylic Acid Compounds—Fluorescence of. Deribere describes the fluoresences displayed, under illumination by Wood's light, of about twenty inorganic salts and organic derivatives of salicylic acid, and recommends their utilization in the detection of salicylates, which are some-

times employed in violation of hygienic rules.—M. DERIBERE. *Ann. hyg. publ. ind. sociale*, 1938, 3757; through *Chem. Abstr.*, 32 (1938), 9399. (F. J. S.)

Selenium—Microdetermination of, in Toxicology. The procedure is based upon separation and precipitation of metallic selenium, oxidation and solution of the reduced metal, determination of selenium. *Method:* To 2 cc. of a 1:1000 selenious solution in a 30-cc. Erlenmeyer flask add 0.5 cc. of 1:10 hydrochloric acid and 1 cc. of 20% hydrazine sulfate solution. Place in a cool water bath, heat to boiling and maintain at this temperature for one hour. The level of the water in the bath should be the same as that in the flask. Transfer the precipitate to a 3G3 Jena glass filter, rinse the flask and filter three times with 2–3 cc. portions of boiling distilled water. Rinse the flask three times with 6–10 cc. of a mixture of 20 cc. reagent hydrochloric acid and 40 cc. of saturated bromine water, passing each portion through the filter and collecting the filtrate in a 200 cc. flask. This should have carried all the selenium into solution as selenious acid, but the flask and filter may be washed with 20–30 cc. of boiling distilled water. Heat to boiling to remove excess bromine, and concentrate to about 20 cc. To the cooled solution add 2 cc. of 10% potassium iodide solution, let stand for about one minute. Add an excess of $N/100$ thiosulfate and titrate with $N/100$ iodine using starch indicator. One cc. of $N/100$ iodine corresponds to 0.000277 mg. of SeO_2.—VIGNOLI and SAVELLI. *J. pharm. chim.*, 27 (1938), 437–443. (S. W. G.)

Silver—Detection of, by Means of Hexamethylenetetramine. Hexamethylenetetramine gives with silver characteristic crystals which are readily identified under the microscope. Precipitation can be carried out in presence of nitric acid. The limiting concentration of silver nitrate lies between 1:4000 and 1:5000.—L. ROSENTHALER. *Mikrochem.*, 21 (1937), 215; through *Chimie & Industrie*, 39 (1938), 655. (A. P.-C.)

Silver—Iodometric Method for the Estimation of. A method for titration of silver in the presence of copper is suggested for an experiment in qualitative analysis.—C. K. DEISCHER and W. M. MCNABB. *J. Chem. Educ.*, 15 (1938), 86–87. (E. G. V.)

Sparteine—Comparative Study of Methods of Determining. Different methods are critically discussed. The authors recommend the following procedures: (1) Exhaust 2 Gm. of the power with 350 cc. of ether and 15 cc. of 10% sodium hydroxide solution, by shaking at intervals. Let stand for twelve hours, shake out with 1% sulfuric acid in the presence of helianthine. Remove the last traces of ether on a water bath, filter, then precipitate with an excess of Bertrand's reagent (10% silicotungstic acid), filter, wash, dry, ignite and weigh. Weight of the residue x 50 x 0.1625 = % sparteine. (2) Method based upon extraction with an apparatus enabling perforation with ether, and described in *Bull. sci. pharmacol.*, 44 (1937), 285.—A. GUILLAUME and A. PROESCHEL. *Bull. sci. pharmacol.*, 45 (1938), 255–264. (S. W. G.)

Sulfate Determination—Micromethod for. Measure 2 cc. serum into a centrifuge tube, add 2 drops 4% sodium fluoride and 6 cc. 0.4% uranyl acetate, mix and centrifuge. In the case of other fluids it is necessary to adjust to p_H 5 with an acetate buffer before adding the uranyl reagent. Measure 2 cc. of the supernatant liquid into a centrifuge tube, and a drop of 0.04% thymol blue and enough 10% hydrochloric acid to give a faint reddish color, then add 0.5 cc. acetic acid and 4 cc. of a 0.1% benzidine acetone reagent. Mix vigorously and place in cold water. Centrifuge after 20–30 minutes, wash precipitate with acetone, dry 4–5 minutes in water bath at 60°, add 1 cc. of a 1% borax solution in 0.1 N sodium hydroxide, dissolve at 60° and dilute to 7 cc. with water. Treat a standard benzidine-hydrochloride acid solution similarly. Develop the color by adding 1 cc. of α-naphthoquinone sulfonate solution and 5 minutes later, 2 cc. acetone. Match the colors in a colorimeter.—S. TANAKA. *J. Biochem.* (Japan), 28 (1938), 37–49; through *Chem. Abstr.*, 32 (1938), 9136. (F. J. S.)

Sulfur—Reaction of. A small amount of sulfur (less than 1 mg.) in $4N$ sodium hydroxide solution gives with pyridine a blue color. After some time the color changes to green, and if the amount of sulfur is large a brown color is obtained. An analogous reaction may be carried out by using acetone instead of pyridine, but the color obtained is more green than blue. Moderate heating favors the development of the color. Tests to determine the mechanism of the reaction have been reported and are being continued.—L. VAN ITALLIE. *J. pharm. chim.*, 27 (1938), 465–467. (S. W. G.)

Tellurium—Iodometric Determination of. The following procedure is recommended: Measure 10 cc. of sodium tellurate solution and 20 cc. of Bougault's reagent (hydrochloric and hypophosphorous acids) into a 50-cc. flask, cover with a small funnel and heat on a boiling water

bath for a half hour. Transfer the precipitate to a 3G3 Jena glass filter, was the precipitate with three 20-cc. portions of boiling distilled water to remove acid, then place the filter in a beaker and add an excess of $N/10$ iodine to the precipitate, aiding solution by stirring with a slightly flattened glass rod. This should be continued until no more black particles of tellurium remain, then rinse the filter with distilled water, add 10 Gm. of sodium bicarbonate and determine by means of standard solution of arsenous acid the number (n) of cc. of $N/10$ iodine used up in the oxidation. The tellurium present in the sample may be calculated by the equation: $Te = \frac{0.0127}{4} \times n = 0.003175\ n$. The tellurium is oxidized to TeO_2; therefore each atom of tellurium corresponds to two molecules of iodine.—VIGNOLI and BEN KHALED. *J. pharm. chim.*, 27 (1938), 443–445. (S. W. G.)

Thallium—Bromometric-Potentiometric Titration of, with Heyden's Chloramine. Chloramine reacts with water to form $CH_3C_6H_4SO_2NH_2$, hypochlorous acid and sodium hydroxide. The hypochlorous acid formed will react with hydrochloric acid and potassium bromide to form free bromine, which is capable of oxidizing univalent thallium to the trivalent state. A platinum wire was used as one electrode and a normal calomel cell as the other. The latter was connected with the solution through a siphon tube filled with saturated potassium sulfate solution. A 10-cc. portion of decinormal thallium nitrate solution was treated with 10 cc. of 10% potassium bromide solution +5 cc. of twice normal hydrochloric acid +35 cc. of water, and the mixture was titrated slowly at room temperature with decinormal chloramine solution. The results of 11 experiments were all within 2% of theoretical.—O. DEL FRESNO and A. AGUADO. *An. Soc. Esp. Fis. Quim.*, 34 (1936), 818–822; through *Chimie & Industrie*, 39 (1938), 650. (A. P.-C.)

Trimethylcarbinol (Tertiary Butyl Alcohol)—Microdetermination of. To 5 cc. of aqueous distillate containing a few mg. of trimethylcarbinol add a mixture of 5 cc. of Denigès' reagent and 5 cc. of water, shake lightly, heat 10 minutes in a boiling water bath, collect the yellow precipitate of $(HgSO_4.HgO)_3HgO.C_4H_8$ on an asbestos filter, wash free from acid, dissolve in 10 cc. or more of decinormal hydrochloric acid (heating if necessary) and titrate the excess of hydrochloric acid with decinormal sodium hydroxide using methyl red as indicator. Each cc. of decinormal acid neutralized by the precipitate is equivalent to 0.925 mg. of trimethylcarbinol. Denigès' reagent comprises 50 Gm. of mercuric oxide, 200 Gm. of sulfuric acid and 1000 cc. of water.—A. LINDENBERG. *Compt. Rend. Soc. Biol.*, 125 (1937), 135–138; through *Chimie & Industrie*, 39 (1938), 659. (A. P.-C.)

Trinitroglycerin—Identification of, in Alcoholic Solution. The authors criticize the French Codex procedures and recommend the following method for identifying trinitroglycerin in alcoholic solution. Add one drop of sodium hydroxide solution to several drops of the alcoholic solution; after several seconds, dilute with 1–2 cc. of water, add 5–10 drops of Tromsdorff's reagent or solution of potassium iodide with starch, then acidify with sulfuric acid (1:10). If trinitroglycerin is present blue starch-iodide will form.—H. CARON and D. RAQUET. *J. pharm. chim.*, 27 (1938), 533–534. (S. W. G.)

Vitamin B_1—Modern Methods of Assay for, Especially the Bradycardia Method. Three methods of Vitamin B_1 assay were compared: the rat growth method (modification of Krieger-Lassen), the bradycardia method (Harris) and the thiochrome chemical method (Karrer and Kubli). In the bradycardia method in place of the usual needle electrodes, clamps with contact surface covered with thin felt wet with 1% sodium carbonate solution were used as leads from the rat neck and tail. A three stage vacuum tube amplifier was used. The measurements were reproducible provided that, before the cardiographic record was taken the animals had had a certain amount of exercise (two minutes running in a electrically driven runway drum). When needle electrodes are used the preliminary exercise period is unnecessary for the placing of the needle under the skin stimulates a nervous muscle reflex which raises cardiac activity to maximum values. The accuracy of assay by the rat growth method was found double that of results obtained by the bradycardia method ($\pm 12\%$ obtained in the rat growth method with 10 animals; to obtain the same accuracy in the bradycardia method 20 animals were necessary), but the bradycardia method was held to be the best known method of assay because of the rapidity with which the assay could be conducted. The accuracy of the thiochrome method was not as satisfactory ($\pm$ 20%) but the ease of technic made it suitable for series analyses.—H. F. PEDERSEN. *Dansk. Tids. Farm.*, 12 (1938), 137. (C. S. L.)

PHARMACOGNOSY

Vegetable Drugs

Agaric—Study of Male and Female. The author has examined male and female agaric histologically and chemically. They give respectively with sulfuric acid a reddish brown and no color; with sulfuric acid and vanillin a violet-red in about ten minutes and no color; with zinc chloroiodide no color and a greenish blue. The evidence indicates that agaricic acid is present in male agaric to an appreciable extent; while if present at all in the female plant the amount is negligible. The author states that the use of female agaric as a substitute for true or male agaric is fraudulent, but that the admixture may easily be made unknowingly by the collectors.—A. Goris. *Bull. sci. pharmacol.*, 45 (1938), 157–160. (S. W. G.)

Carum Copticum—Essential Oils in, Dynamics of the Formation of. It is possible to distil the essential oils from the whole plant. The best time for gathering is during the period of lacteal ripeness or the beginning of seed maturity when the phenol content of the oil is highest. The distillation may, without particular loss, be performed on the following day.—S. M. Strepkov. *Boton. Arch.*, 39 (1938), 206–209; through *Chem. Abstr.*, 33 (1939), 316. (F. J. S.)

Chrysanthemum Balsamita L., Var. Tanacetoides Boiss.—Pharmacognostic Study of. Purpose of this study was to determine yields at various seasons of the year and to study morphology and histology of the plant. It was found that published descriptions of the plant are essentially correct. The cauline leaves were found to have four lobes usually and even five or six instead of two as stated by Gray. Specific gravity, refractive index, optical rotation and percentage yield determinations of oil have been made. The chief constituent of the oil is *l*-carvone.—Ralph F. Voigt. *J. Am. Pharm. Assoc.*, 27 (1938), 643. (Z. M. C.)

Citrus Fruits—By-Products from. A description is given of methods suitable for the extraction of calcium citrate, essential oils and pectin from Indian citrus fruits.—J. L. Sarin. *J. Indian Chem. Soc., Indust. Ed.*, 1 (1938), 59–62; through *J. Soc. Chem. Ind.*, 57 (1938), 1094. (E. G. V.)

Croton Seed—New, from Nayasaland. The seeds of *Croton megalobotrys*, Muell. Arg., averaged 2.4 Gm. in weight and consisted of shell 37.4% and kernel 62.6%. The moisture-free kernels on extraction with light petroleum gave 49.8% of a semi-drying oil with a sp. gr. at 15.5° of 0.9292, a refractive index at 20° of 1.4756, acid value 1.5, saponification value 196.5, iodine value (Wijs, $^1/_2$ hour) 129.2, unsaponifiable matter 0.9%.—*Anon. Bull. Imp. Inst.*, 36 (1938), 151–153; through *J. Soc. Chem. Ind.*, 57 (1938), 1066. (E. G. V.)

Digitalis Leaves—Deterioration of. The literature contains contradictory reports. Experimental work undertook to determine keeping qualities of the leaves containing varying amounts of moisture. Air-tight and open containers at various controlled temperatures were used. Results are carefully tabulated and discussed. The following conclusions were reached: (1) From the results obtained, it would appear that digitalis leaves containing from 4.8 to 11.9% moisture deteriorate on standing. (2) The percentage of deterioration which occurs during a storage period of 100 days does not appear to bear any relation to the moisture content within a range of 4.8 to 11.9% or to the temperature of storage within a range of 70° F. to 100° F. (3) No evidence was obtained which would appear to indicate that storage in air-tight containers enhances the keeping qualities of the drug during a 100-day storage period. (4) Further investigation should be carried out employing a longer storage period and moisture contents lower than 4.5%.—B. V. Christensen and Robert Blackwell Smith, Jr. *J. Am. Pharm. Assoc.*, 27 (1938), 841. (Z. M. C.)

Drugs—Standardization of Certain. An address.—Schenck. *Suddeut. Apoth.-Ztg.*, 78 (1938), 737–741; through *Chem. Abstr.*, 33 (1939), 314. (F. J. S.)

Ergot—Botanical, Physiological and Chemical Characteristics of. A discussion. Since the cultivated drug contains only insignificant amounts of the active alkaloids, it should not be substituted for the natural product.—P. Casparis. *Mitt. naturforsch. Ges. Bern* (Sitzber.), 1936, Tl. 2 (1937), 34; through *Chem. Abstr.*, 32 (1938), 9399. (F. J. S.)

Opium—Powdered, Microscopic and Chemical Examination of.—P. Marangoni. *Ann. chim. farm.*, Aug. (1938), 35–42; through *Chem. Abstr.*, 32 (1938), 8696. (F. J. S.)

Pharmacognostical Descriptions, B. P. The following botanical drugs are briefly discussed, and comparisons of tests run on them are made with official tests: catechu, aconite, ipeca-

cuanha, cinnamon, solanaceous leaves, cascara. Several cuts of a few of the above drugs are shown.—L. A. KAY and S. OLDHAM. *Pharm. J.*, 140 (1938), 663. (W. B. B.)

Piscaria Setigera Piper (Eremocarpus)—Chemical Study of. I. The Oil of the Seeds. The plant, known as Turkey Mullein, is briefly described and experimental work reported. The seeds yield a non-drying fixed oil. Its physical and chemical properties are reported.—J. D. SMITH, J. A. MITCHENER, JR., and HENRY M. BURLAGE. *J. Am. Pharm. Assoc.*, 27 (1938), 666. (Z. M. C.)

Powders—Examination of Pharmaceutical Vegetable, in Wood's Light. The following procedure is recommended: Macerate 1 Gm. of the powder with 100 cc. of 95% alcohol for twelve hours, filter and place 25 cc. of filtrate in each of four crystallization dishes, diameter 5 cm., height 2.5 cm. Add 1 cc. of *N* ammonia to dish no. 1; add 1 cc. of *N* acetic acid to dish no. 2; dishes no. 3 and 4 were not altered Plunge into each dish a strip of Durieux no. 122 filter paper 3 cm. wide and 13 cm. high, allow to stand for two hours, then dry the strips and examine in Wood's light. The observed changes are divided into the following parts: coloration of the part immersed; band (number, form and color); fring: terminal part of the capillary image (form and color); subfringe: space between the band and the fringe (color). The Universal Code of Colors was used in naming the observed tints. A Gallois type SBLWL mercury lamp with a Wood's untraviolet filter and alternating 110V current was used. The results obtained in the untreated alcoholic filtrates are tabulated for many powdered drugs. The authors claim that buckthorn (*Rhamnus frangula*) and cascara are readily distinguished by this method, as well as rhubarb and rhapontic, safran and marigold, etc.—P. MANCEAU and C. NETIEN. *Bull. sci. pharmacol.*, 45 (1938), 145–156. (S. W. G.)

Pyrethrum Flowers. Until recently the United States has been obliged to depend almost entirely on Japan as a source for the important insecticide pyrethrum. Efforts to grow pyrethrum commercially have been made in many countries, but only in Kenya has better pyrethrum than the Japanese product been raised. This paper is a brief description of the progress that has been made in developing a new and better source of supply in Kenya.—V. A. BECKLEY, C. B. GNADINGER and F. IRELAND. *Ind. Eng. Chem.*, 30 (1938), 835–838. (E. G. V.)

Radix Ginseng, a Drug with Estrogenic Properties. An illustrated and descriptive article giving the constituents of this root and indicating its uses, notably by the Chinese. Twenty-four references are given.—U. WEBER. *Suddeut. Apoth.-Ztg.*, 78 (1938), 645–648, 657–658, 667–669; through *Chem. Abstr.*, 32 (1938), 9392. (F. J. S.)

Rhubarb—Luminescence Analysis of. The results of several analyses are reported.—R. SEIFERT. *Suddeut. Apoth.-Ztg.*, 78 (1938), 735–737; through *Chem. Abstr.*, 33 (1939), 314. (F. J. S.)

Sarsaparilla and Japecanga. Frequently encounter confusion between sarsaparilla and japecanga as japecanga is being used to adulterate roots of sarsaparilla. Detailed pharmacognostic and morphologic description of the two roots are given together with cuts of cross-sections to demonstrate differences between sarsaparilla and japecanga.—NARCISSO SOARES DA CUNHA. *Trib. Farm.*, 5 (1937), 145. (G. S. G.)

Spring Herbs—Microscopical Examination of. III. The distinctive characters of *Potentilla verna* and *P. heptaphylla* are described.—V. MOUCKA. *Z. Unters. Lebensm.*, 75 (1938), 330–339; through *J. Soc. Chem. Ind.*, 57 (1938), 842. (E. G. V.)

Theobroma Cacao, Linn.—Composition of the Fats from the "Germs," Seed Shells and Cotyledons of the Seeds of. A detailed examination of the fats extracted by light petroleum from hand-purified samples of "germs" (3.2–4.5% of viscous fluid oil), shells (1.9–2.5%), and cotyledons from fermented (and roasted ?) cacao beans from 6–10 known sources is reported. The three classes of fats had (*inter alia*): acid value 22.5–30.2, 14–47; saponifiable value 164.9–176.4, 168.8–180.5; unsaponifiable matter 7.9–15.6, 7.1–14.5, 0.2–0.34% (0.24–0.36% in the technical cacao butters); iodine value 67.5–85.1; hydroxyl value 25.2–33.3, 21.1–38.9, 3.9–7.6; petroleum-insoluble hydroxylacids, 0.9–2.5, 0.1–1.2, 0.003–0.006%; petroleum-soluble fatty acids 78.6–85.2, 81.8–88.8%, having iodine values of 67.1–85.8, 47.6–58.5, 34.9–39.4, and the % compositions: saturated acids 38.6–48.1, 50.1–55.5, 59.7–65.3; oleic acid 9.8–44.8, 31.9–40.5, 30.8–37.1; linoleic acid 14.8–42.3, 7.8–14.5, 2.7–4.0. No significant difference was observed between the quantity or character of the shell fats from unroasted or roasted beans, and apparent differences reported by earlier workers are attributed to the incomplete removal of nib fragments from the shell.—K. H.

BAUER and L. SEBER. *Fette u. Seifen*, 45 (1938), 293–299; through *J. Soc. Chem. Ind.*, 57 (1938), 1065. (E. G. V.)

Volatile Oils—Behavior of, in Salvia Sclarea. The volatile oils in the racemes of *Salvia Sclarea*, while drying in the shade, decrease after three hours to 67%, after six hours to 45.1% and after one month to 37.7% of the original content. By drying in the sun, the decrease is to 46.4% in three hours and to 38% in six hours. The oil in the leaves first decreases while drying in the shade but later increases after ten days to a maximum of 131% and then falls to a minimum of 63.0% after two months. During the drying process, the quantity of free acid and ether and the specific weight of the oils increase. During the development of the plant, the maximum oil content of the racemes is attained by the end of the blossom and then abruptly decreases in the lactic maturity of the seeds. The oil content varies during the course of day and night reaching a maximum about midnight and a minimum in the early afternoon. The formation of free acids during the period from beginning of blossom to full development appears to coincide with the formation of volatile oils. The curves of the acid number have two minima and two maxima in the state of lactic and beginning of growth maturity of the seeds; the curve represents a reflèction of the curve of the volatile oil number.—S. M. STREPKOV. *Boton. Arch.*, 39 (1938), 166–176; through *Chem. Abstr.*, 33 (1939), 315. (F. J. S.)

PHARMACY

GALENICAL

Adrenaline—Ampuls of, Preparation of, and a Pharmacological and Chemical Investigation of. III. A study of the effect of the addition of trichlorbutanol and mannitol as preservatives in ampuls of adrenaline solutions.—W. LÜHR and H. G. RIETSCHEL. *Pharm. Zentralhalle*, 79 (1938), 226–232. (N. L.)

Adrenaline—Ampuls of, Preparation of, and a Pharmacological and Chemical Investigation of. IV. A continuation of the study of the effect of gases and heat on ampuls containing solutions of adrenaline.—W. LÜHR and H. G. RIETSCHEL. *Pharm. Zentralhalle*, 79 (1938), 245–249. (N. L.)

Adrenaline—Stability of, in Adrenal Extracts. Beef adrenals were extracted with distilled water, sodium sulfate solution or half saturated ammonium sulfate solution. The greatest resistance to oxidation was manifested by the colloidal extract and was attributed to the presence of proteins.—P. DONINI. *Rass. clin. terap. sci. affini*, 37 (1938), 185–186; through *Chem. Abstr.*, 32 (1938), 9393. (F. J. S.)

Avertin Solutions—Stability of. Avertin solutions may be used up to four days after preparation, and in some cases even longer provided they are maintained at room temperatures. The addition of alcohol up to 5% will retard crystallization during cold weather. The congo red indicator should be added only a short time before use and then put into the bulk of the fluid. When Avertin solution is dispensed in vacuum flasks it should be used within a few hours. Solutions that are to be stored for some time should be prepared at a temperature not above 38°, and allowed to cool immediately. A table is given to demonstrate the stability of Avertin solution in the presence of hydrobromic acid. Another table shows the stability of Avertin solution at room temperature. Rate of decomposition of Avertin solutions at 60° and 80° is shown by graphs. Ethyl alcohol has little inhibitory effect on the decomposition of Avertin at 100°.—E. H. WATSON. *Pharm. J.*, 140 (1938), 642. (W. B. B.)

Citric Acid—Decomposition of, by Ferric Iron. Many preparations of iron decompose when exposed to light and the best known preventive is exclusion of light, the rate of deterioration being roughly proportional to intensity of light. Eventually the preparation changes color, evolves gas or shows crystalline or muddy deposits. Possibly all three changes take place simultaneously. Solutions that do this contain ferric iron and the salt of an organic acid. The present study showed that citric acid is decomposed by ferric hydroxide and a soluble ferrous salt formed, the identity of which was not determined but which is probably a citrate. The gas evolved is carbon dioxide. Neither acetone nor formaldehyde were detected.—S. I. PELTZ and E. V. LYNN. *J. Am. Pharm. Assoc.*, 27 (1938), 774. (Z. M. C.)

Cocaine Hydrochloride Solutions—Influence of the Initial p_H of, on their Stability. Judged by their toxicity toward the roots of white lupine seedlings, solutions with an initial p_H of 2.1 to 6.1 were less affected by heating than neutral or alkaline solutions.—J. RÉGNIER, R. DAVID and

R. JORIOT. *Compt. Rend. Soc. Biol.*, 125 (1937), 1014–1015; through *Chimie & Industrie*, 39 (1938), 1150. (A. P.-C.)

Digitalis Infusion—Stability of. In tests of digitalis infusion by the Knaffl-Lenz guinea pig method, a 1% infusion contained 93.8% of the potency of the leaves; 2% infusion, 75%; 5% infusion, 69%; and 10% infusion, 53%. When the infusion was stored at room temperature in filled bottles no loss was observed during one month; at 30°, no loss was observed in one week, 18% in two weeks and 50% in one month. Adding 10% by weight of 94% alcohol doubled the stability.—A. VARTIAINEN and Y. AHONEN. *Acta Soc. Med. Fenn. Duodecim*, A19, No. 16 (1937), 1–21; through *Chem. Abstr.*, 32 (1938), 9395. (F. J. S.)

Emulsions in Industry—General Survey. A discussion of emulsion types, emulsifying agents, stability and creaming of emulsions, dual emulsions and phase inversion, emulsion ideals, and why emulsions are used.—H. L. BENNISTER and A. KUIG. *Chemistry and Industry*, 57 (1938), 717–719. (E. G. V.)

Hexamethylenetetramine Solutions for Injection—Spontaneous Decomposition of, and Decomposition Due to Sterilization. Hexamethylenetetramine solutions decompose spontaneously with liberation of formaldehyde which can be detected by means of Jorissen-Vanino's reagent and determined colorimetrically. The amount of formaldehyde liberated from 25% and from 40% solutions is of the same order; the p_H rises, the increase being greater in the 25% than in the 40% solution. The most adequate sterilizing process is tyndallization. Addition of hydrolyzed gelatin exerts an undisputable protective action of colloidal origin on the solutions, and the various sterilizing processes do not affect the liberation of formaldehyde nor the p_H of solutions so protected.—G. TONI. *Boll. Chim. Farm.*, 76 (1937), 61–64; through *Chimie & Industrie*, 39 (1938), 936. (A. P.-C.)

Homeopathic Preparations of Arsenic and Ammonium Iodides—Stability of. The several potencies of these preparations are considered with respect to their stability.—H. NEUGEBAUER and K. BRUNNER. *Suddeut. Apoth.-Ztg.*, 78 (1938), 732–733; through *Chem. Abstr.*, 33 (1939), 314. (F. J. S.)

Insulin Preparations—Protection of, from Premature Destruction in the Stomach and Intestine. One or more organic dyes, for example, Congo-red, indigo-carmine, methyl-orange, and, if desired, resorption-promoting substances, for example, saponins, are added to the insulin solution.—F. LASCH and E. SCHONBRUNNER. Brit. pat. 480,476; through *J. Soc. Chem. Ind.*, 57 (1938), 1231. (E. G. V.)

Lime Water—Conservation of. Twelve samples of lime water were kept in partially filled bottles having ground-glass and cork stoppers. The stoppers were removed from time to time and the contents of the bottles were swirled. After three months the amount of calcium hydroxide decreased 5%. After six months 9 samples met the official requirements, 2 samples were slightly low, and only 1 sample was bad. The author states that no special precautions are necessary for the conservation of this solution.—S. L. NIELSEN. *Farmac. Tidende*, 2 (1938); through *J. pharm. Belg.*, 20 (1938), 521. (S. W. G.)

Medicinal Preparations—Manufacture of Shaped. The use is claimed as a vehicle for medicaments to be introduced as tablets, etc., *per os* or into body cavities of waxy, polyalkylene oxides to which small amounts of modifying substances, for example, water, glycerol, polyalkylene oxide derivatives of hydroxyl-, carboxyl-, amino-compounds or fats, may be added. It is claimed that polyalkylene oxides are non-toxic, non-irritant, readily soluble in body fluids and unaffected by storage.—I. G. FARBENIND. A.-G. Brit. pat. 484,600; through *J. Soc. Chem. Ind.*, 57 (1938), 1102. (E. G. V.)

Moisture—Determination of, Taken Up by Dry Extracts. The author has extended his study published in *Schweiz. Apoth.-Ztg.*, 76 (1938), 265. Samples of extract of belladonna prepared according to the Swiss Pharmacopœia V and by the firm of Lüdy were placed in desiccators containing varying strengths of sulfuric acid at 20° to obtain varying degrees of vapor tension and humidity. The relationship of the three factors humidity, vapor tension and per cent sulfuric acid is shown in a graph. The results of the absorption of moisture by the two extracts when subjected to known conditions are compiled in a table and graphed to indicate the difference in the rates of absorption. At about 6 mm. vapor tension, the official extract has already taken up the maximum of 3% moisture allowed by the pharmacopœia whereas the extract prepared by Lüdy takes up moisture slowly until the aqueous tension is 13 mm. Every degree of humidity of the atmosphere

is represented in a definite percentage of moisture in the extract. The study has shown that the extract of Lüdy is, for practical purposes, unaffected by the average atmospheric conditions whereas the pharmacopœial extract must be continually protected from moisture.—K. SEILER. *Pharm. Acta Helv.*, 13 (1938), 70–75. (M. F. W. D.)

Oral Preparation. Sodium per borate stabilized with not less than 2% of magnesium hydroxide is claimed.—F. W. NITARDY, assignor to E. R. SQUIBB & SONS. U. S. pat. 2,071,043; through *J. Soc. Chem. Ind.*, 57 (1938), 732. (E. G. V.)

Sterile Solutions—Preparation of. The sterilization of various pharmaceutical preparations (in aqueous and oily solution) by filtration or heat is described with special reference to the stability of the preparations.—E. CHIERICI. *Boll. Chim. farm.*, 77 (1938), 177–186, 189–192; through *J. Soc. Chem. Ind.*, 57 (1938), 845. (E. G. V.)

Waters—Medicinal. The author summarizes his findings as follows: Slow filtration at low pressure through a Chamberland L3 filter, into a sterilized resistant glass container appears to have a favorable influence on the preservation of aromatic distilled waters. Waters thus treated, after a year, have their p_H remain at a higher value than those stored without preliminary treatment or contaminated intentionally. Orange flower water retains its fluorescence under ultraviolet light much better when aseptically stored than when contaminated by bacteria or bacteria and fungus; the latter mixture causes the greater loss of fluorescence. The permanganate consumed diminishes considerably in samples stored without precaution; while an increase was observed in the aseptically stored waters. The nature of the contaminent also influences the result. The iodine consumed diminishes after a year, but the drop in the aseptic waters was less than in the contaminated preparations.—J. G. MARCHAL. *Bull. sci. pharmacol.*, 45 (1938), 59–65. (S. W. G.)

NON-OFFICIAL FORMULÆ

Compact Powders. This type of power is divided into two groups: moulded and com. pressed. Several formulæ are included.—JANISTYN. *Sief. Ztg.*, 64 (1937), 286; through *Am-Perfumer*, 36 (1938), No. 2, 34. (G. W. F.)

Cosmetic and Soaps—Raw Materials for. A review dealing primarily with tragacanth. The following formulæ are offered: (1) *Fat-Free, Liquid Hair Fixative.*—Karaya or tragacanth powdered 10 Gm., alcohol 150, triethanolamine 2, glycerin 20, water 800, nipagin 1, perfume oil 2. (2) *Fat-Free, Jelly Fixative.*—Karaya or tragacanth powdered 20 Gm., gelatin 15, sorbitol 30, alcohol 50, nipagin sodium (stock solution 3.5 or 2.5 Gm. of stock solution of nipasol sodium), water 280. Stir the Karaya or tragacanth with alcohol; dissolve the gelatin with 400 Gm. of hot water and add to the gum mixture, add the rest of the water (lukewarm), cool and add the preservative dropwise. The stock solution of preservative is made by dissolving 280 Gm. in 30 of water. (3) *Hair Fixative Jelly (Neutral or Acid).*—Pectin 20 Gm., tragacanth 10, citric acid 5, glycerin 50, water 915.—FLORENTIN. *Reichstoff Ind. Kosmetik*, 13 (1938), 176–180. (H. M. B.)

Cuticolor Preparations. The authors believe that skin-colored preparations should be preferable in dermatology. A number of formulæ are submitted. Cuticolor zinc oxide which is zinc oxide colored with red ferric oxide and yellow ferric oxide to match the skin of the average Caucasian is suggested in place of calamine. Special consideration is given to calamine lotion. By using 2.5% of bentonite with the cuticolor powder, a perfect and practically permanent suspension can be prepared. Bentonite is chiefly hydrous silicates of aluminum, magnesium and iron, is colloidal and adsorbs water readily. A considerable number of combinations were tried. The 2.5% is sufficient if distilled water is used. With lime water there is sedimentation. Other formulæ submitted are phenolated cuticolor lotion, cuticolor cream (including compound spirit of rose geranium), cuticolor paste, cuticolor varnishes, cuticolor gelatin paste, cuticolor ointments (ointment, cerate cream salve, vanishing cream), brown cuticolor powder and brown cuticolor lotion.—BERNARD FANTUS and H. A. DYNIEWICZ. *J. Am. Pharm. Assoc.*, 27 (1938), 878. (Z. M. C.)

Sun Tan Preventative. Powders to prevent sun tan are described. One formula consists of bismuth oxychloride 10%, talc 25%, zinc stearate 5%, rice starch 15%, colloidal kaolin 55%.—JANISTYN. *Seif. Ztg.*, 64 (1937), 235; through *Am. Perfumer*, 36 (1938), No. 2, 34. (G. W. F.)

DISPENSING

Absorption Bases. Hard and soft types are described. Experiments carried out with the soft base (I) show that a white water-in-oil emulsion is obtained with 2 parts of water and one part of I. I is affected adversely by the presence of relatively large amounts of mineral oil. Both types of bases yield better and satisfactory emulsions with petrolatum than with mineral oil.—JOSEPH KALISH and HAROLD ABRAMS. *Drug Cosmetic Ind.*, 43 (1938), 298–299. (H. M. B.)

Aminoacetic Acid—An Incompatibility, Low Iso-Alcoholic Elixir and. It was found that aminoacetic acid could be put into solution with a low Iso-Alcoholic Elixir but after a week or two it was found that the solution had developed a color. Investigation showed that sucrose in the elixir was hydrolyzed to glucose and levulose. Glucose in alkaline solution produces color and levulose will color neutral or acid solutions. To overcome the incompatibility it is suggested that compound tincture of cudbear be added to mask color or else any sugar must be eliminated.—FREDERICK GRILL. *J. Am. Pharm. Assoc.*, 27 (1938), 871. (Z. M. C.)

Aromatic Spirit of Ammonia—Discoloration of. Believing that the terpene content of the oil of lemon might be a factor, experimental work was undertaken to determine this point. If the preparation is made by distillation it does not discolor as readily as if made by simple solution. This was a confirmation of previous work. Made according to U. S. P. XI but substituting an equivalent amount of terpeneless oil of lemon the product developed less color. Such a spirit is water-clear and can be filtered rapidly without loss of volatile constituents.—C. C. REED, P. L. BURRIN and F. E. BIBBINS. *J. Am. Pharm. Assoc.*, 27 (1938), 783. (Z. M. C.)

Cod Liver Oil Emulsions—Antagonism of Emulsifying Agents. The antagonistic effect among emulsifiers which individually produce the same type of emulsion, *i. e.*, oil-in-water emulsions or water-in-oil emulsions, in many cases when mixed together, break such emulsions. In the preparation of emulsions of pure Norwegian cod liver oil for pharmaceutical purposes several interesting cases of antagonism of emulsifiers were observed. Both bile salts and gum acacia when present alone produce stable emulsions; but when these are present together no emulsion forms. With turkey-red oil, lecithin and sodium oleate, it was found that when mixed with gum acacia, the emulsion formed liberates oil slowly at the top although when gum acacia is present alone, no such separation is observed. Gelatin, egg albumin, saponin, Irish moss, agar-agar and gum tragacanth when mixed with gum acacia, instead of causing separation of oil, stabilize the emulsion to that effect. The author classifies emulsifiers into 3 groups: (1) emulsifiers with low internal and superficial viscosity like sodium oleate; (2) emulsifiers with low internal and high superficial viscosity like saponin; and (3) emulsifiers with high internal and superficial viscosity like gum acacia. A general conclusion is drawn from the experimental study that emulsifiers of group (1) antagonize with those of the other groups and cause liberation of the oil at the top. Emulsifiers of groups (2) and (3) do not have mutually antagonistic action. If, however, a large amount of gum acacia is used with group (3) emulsifiers, the emulsions lose consistency, become thin, and water separates at the bottom quickly.—N. CHATTERJEE. *J. Indian Chem. Soc.*, 13 (1936), 563–570; through *Chimie & Industrie*, 39 (1938), 720. (A. P.-C.)

Drug Extraction XIX. Effect of Pressure and Vacuum on Efficiency of Extraction. Historical review covers hydrostatic pressure of liquid, air pressure applied on the surface of the menstruum, vacuum applied to the receiver, percolator or macerating vessel, extraction apparatus based on the Soxhlet extractor, mulcolation, evacolation, mechanical pressure applied to the menstruum and to the drug. Experimental work is reported in detail and results are discussed. The following conclusions were reached: A review of the literature indicates that pressure and vacuum have been used in various ways in drug extraction for more than one hundred and twenty years. Various writers have presumed that vacuum maceration increases the penetration of menstruum into the drug. Quantitative determinations carried out in the present study indicate that moderately coarsely powdered belladonna root does not imbide any more menstruum in vacuum maceration than in ordinary maceration. Experiments show conclusively that the application of vacuum in different ways does not increase the efficiency of extraction of belladonna root in a maceration process.—WILLIAM J. HUSA and GEORGE R. JONES. *J. Am. Pharm. Assoc.*, 27 (1938), 852. (Z. M. C.)

Drug Extraction XX. Effect of Vacuum on the Percolation of Belladonna Root. Research on extraction of belladonna root was continued. Experimental work is reported in detail. Results indicate that vacuum maceration preparatory to ordinary percolation gives less efficient ex-

traction than when ordinary maceration is used. It was found that a full strength fluidextract of belladonna root can be prepared by ordinary percolation in a cylindrical tube without collecting weak percolate or resorting to fractional percolation.—WILLIAM J. HUSA and GEORGE R. JONES. *J. Am. Pharm. Assoc.*, 27 (1938), 859. (Z. M. C.)

Drug Extraction XXI. Effect of Vacuum in Extraction of Cinchona. This continues the study of the effect of vacuum on extraction and led to similar conclusions. Application of vacuum is of no general advantage in drug extraction and disadvantages are greater loss of menstruum and the cost of operating the vacuum pumps.—WILLIAM J. HUSA and GEORGE R. JONES. *J. Am. Pharm. Assoc.*, 27 (1938), 862. (Z. M. C.)

Emulsions—New. A review dealing with methods and new emulsifying agents.—A. FOULON. *Riechstoff-Ind. u. Kosmetik*, 13 (1938), 166–167. (H. M. B.)

Emulsions—Study of. General discussion of types of emulsions and of four theories for the behavior of the phases constitutes the introductory part of the paper. Experimental work was on Emulsion of Cod Liver Oil, U. S. P. XI made in four ways: homogenizer, mortar, milk-shake mixer and mix-master. Emulsions were administered to adults and to children and report is made on palatibility, regurgitation and miscibility. Only the homogenized emulsion was satisfactory on all points. From stand point of time of manufacture and stability, the emulsions place in the following order: (1) homogenized, (2) mix-master mixed, (3) mortar and pestle.—P. T. REES. *J. Am. Pharm. Assoc.*, 27 (1938), 607. (Z. M. C.)

Extractum Liquiritiæ. One part of fine root is percolated with cold water, concentrated to half the volume, filtered through flannel, concentrated again, dissolved in four parts of water with ammonium hydroxide and concentrated to the required consistency.—Y. POVOLOTSKII. *Farm. Zhur.*, 11, No. 1 (1938), 35; through *Chem. Abstr.*, 33 (1939), 316. (F. J. S.)

Luminal—Solubility of, in Alkali and Stability of Sodium Luminal Solutions. Luminal dissolves readily when triturated with the equivalent amount of *N*/2 sodium hydroxide to form the sodium derivative. Addition of sodium bicarbonate stabilizes the solution which may serve as a stock pharmaceutical solution, which may be used when luminal is called for in liquid preparations. —PIERRE MESNARD. *Bull. trav. soc. pharm. Bordeaux*, 76 (1938), 144–148. (S. W. G.)

Medicinal Capsules or Coated Pills. A method of making capsules with preformed centers, for example, of hexylresorcinol, is claimed.—SHARP & DOHME, INC. Brit. pat. 474,409; through *J. Soc. Chem. Ind.*, 57 (1938), 732. (E. G. V.)

Mercury Oxycyanide and Thymol—An Interesting Reaction Between, in Alkaline Solution. In alkaline solution mercury oxycyanide reacts with thymol with mercuration of the latter: $C_6H_4(OH)CH_3 + 2HOHgCN \rightleftharpoons C_6H_4HgOH(OH)CH_3 + Hg(CN)_2 + H_2O$. This reaction confirms that mercury oxycyanide in aqueous solution forms an unstable basic salt having the structure HO-Hg-CN.—C. V. BORDEIANU. *Bul. Soc. Stiinte Farm. Roumania*, 2 (1937), No. 2, 39–44; through *Chimie & Industrie*, 39 (1938), 929. (A. P.-C.)

Resin of Podophyllum—Preparation of. After concentration, an alcoholic extract was washed with petroleum ether to remove oily material. Extract was then poured into acidulated water previously cooled to 10°. After washing and drying the product did not coalesce or agglutinate. It answered U. S. P. XI requirements.—A. H. UHL. *J. Am. Pharm. Assoc.*, 27 (1938), 595. (Z. M. C.)

Sodium Bicarbonate—Injectable Solution of. Modification of the official method of preparation, which requires introduction of carbon dioxide into the sodium bicarbonate solution is recommended as follows: Pour the prepared sodium bicarbonate solution into a vessel containing 0.6 cc. *N* sulfuric acid, mix and place in ampuls of neutral glass. The small amount of sodium sulfate which is formed is negligible.—J.-A. LABAT. *Bull. trav. soc. pharm. Bordeaux*, 76 (1938), 148–149. (S. W. G.)

Tincture of Sweet Orange and of Lemon—Proposal for an Alternative Permissible Process for the Manufacture of. The official process is expensive and wasteful of time and labor in a large laboratory. The following method gives products undistinguishable by physical senses from the official preparations in which they are used: *Tincture of Sweet Orange or of Lemon:* oil of orange or of lemon 50.0 cc., water 190.0 cc., tartrazine certified food color q. s., purified talc q. s., alcohol q. s. 1000.0 cc. Dissolve the oil in 750 cc. of alcohol add the water and sufficient alcohol to make 1,000 cc. Add the purified talc, shake well and filter until clear. Add traces of

the tartrazine cautiously until the desired color is obtained.—EDWARD M. GERSTENZANG. *J. Am. Pharm. Assoc.*, 27 (1938), 657. (Z. M. C.)

Tinctures—Physical Study of Preparation of, by Maceration. The extraction of kola and jaborandi with 60% alcohol by maceration in glass-stoppered carboys was studied. The temperature ranged between 15° and 18°, and the carboys were shaken four or five times a day during the eleven days of extraction. After each 24 hours, the mixtures were well shaken and 100 cc. of suspension was removed, filtered and the filtrate studied. The following determinations were made on each sample at 15° and under approximately the same conditions: (1) Density by pycnometer compared to water. (2) Absolute viscosity. (3) Refractive index. (4) Dry extract obtained by evaporation of 10 cc. of filtrate in a quartz dish in an oven at 90° for 10 hours. (5) Critical temperature of solution in a closed tube using 1 Gm. of trichlorethylene to 5 Gm. of tincture of kola and 1 Gm. to 7 Gm. of tincture of jaborandi. (6) Apparent molecular weight, using urethane as solvent, adding 2% of tincture, and applying the equation: $\frac{P}{C} \times K = P.M.$ (K = 51.4). (7) Molecular refraction based on the Lorentz formula: $\frac{N2 - I \times P.M.}{(N2 + 2) \times d} = M.R.$ The results are given in graphic form.—P. CHARBONNIERE. *J. pharm. chim.*, 27 (1938), 479–487. (S. W. G.)

PHARMACEUTICAL HISTORY

Apothecaries in Sweden—Development of. Historical.—ANON. *Pharm. Post*, 71 (1938), 140–141. (H. M. B.)

Apothecary of Lambach (Upper Austria)—History of.—ANON. *Pharm. Post*, 71 (1938), 79–80. (H. M. B.)

Biological Pharmacy and Organotherapy. A historical review.—FRIDO KORDON. *Pharm. Post*, 71 (1938), 1–5, 17–20, 37–41. (H. M. B.)

Cosmetics with the Change of Time. Historical review.—ANON. *Pharm. Post*, 71 (1938), 126–129. (H. M. B.)

DeButts—Elisha. Physician, Chemist, Teacher, Dean and Delegate to the 1820 United States Pharmacopœial Convention. A biographical sketch of the "first prominent physician-chemist of the State of Maryland.—LYMAN F. KEBLER. *J. Am. Pharm. Assoc.*, 27 (1938), 813. (Z. M. C.)

Drug Stores—Past and Present Observations in. The author contrasts the present day drug store with those of the past. "No other type of store," he says, "could compete with the old-time drug store in human interest."—MATTHIAS NOLL. *J. Am. Pharm. Assoc.*, 27 (1938), 812. (Z. M. C.)

Herbals—Two Famous Old. The work of H. Bock (1556) and of Matthiolus (1563) and its revision by Dr. Joachimus Camerarius (1590) are described in detail.—OSWALD KOFLER. *Pharm. Post*, 71 (1938), 153–159. (H. M. B.)

Lutteroth (Lutterodt, Lutterot)—Fifteen Owners or Apothecaries in the Family of, from 1581–1917. Conclusion of a series.—WILHELMUS FRANCISCUS DAEMS. *Deut. Apoth. Ztg.*, 53 (1938), 956–959. (H. M. B.)

160 Apothecaries in the District of Wiesbaden—History of. A continuation with twelve references.—C. DÖNGES. *Deut. Apoth. Ztg.*, 53 (1938), 1008–1009, 1050–1051. (H. M. B.)

Pharmacy—Idea and the Tasks of the History of. The author discusses in some detail a proper definition of pharmacy and what should be included in a history of pharmacy. In conclusion he submits the following outline: (1) *Materia Medica:* The general development of the Materia Medica; Pharmacopœias, antidotaries, dispensatories, herbals; specialties, proprietary remedies, "Quack" medicines; by-roads of medicine. (2) *Profession of Pharmacy:* The laws concerning pharmacy; the management of the pharmacies and the trade with remedies within the pharmacies; the commercial trade within the pharmacies; the trade with remedies outside the pharmacies; hospital pharmacy; pharmaceutical education and the colleges of pharmacy; the employees in the pharmacies; the relations of the pharmacists to the physicians; the pharmaceutical associations; pharmacists in the service of their state; the pharmaceutical journals and newspapers; pharmaceutical literature. (3) *Pharmaceutical Technique:* Pharmaceutical appa-

ratus, utensils and processes; weights, balances and measures. (4) *Pharmaceutical Industry and Wholesale:* Pharmaceutical industry; pharmaceutical wholesale. (5) *Pharmacy and Civic Life:* Remarkable pharmaceutical buildings, interiors, furniture and utensils; the pharmacist as artist and poet and as the subject of art and poetry; the pharmacist as a citizen. (6) *Pharmaceutical Biographies:* Famous pharmaceutical practitioners; pharmaceutical teachers; pharmacists famous for non-pharmaceutical accomplishment.—GEORGE URDANG. *J. Am. Pharm. Assoc.*, 27 (1938), 909. (Z. M. C.)

Pharmacy—Progress of, in China. A history which includes the present status of pharmacy in China.—E. N. MEUSER. *Can. Pharm. J.*, 71 (1938), 534, 536, 538, 540; through *Chem. Abstr.*, 32 (1938), 8699. (F. J. S.)

Saponis Artificium—Account of a Manuscript Entitled. The manuscript was found in a bound volume containing other papers of Sir Theodore deDaux (1666). It gives details of the preparation of several kinds of soap, just as they might have been received directly from a soap-boiler. Mention is made of the use of salt to help the soap to separate from the leis, the first mention of the salting-out process to be found in literature.—F. W. GIBBS. *Chemistry and Industry*, 57 (1938), 877. (E. G. V.)

200 Year Old University Apothecary at Göttingen. Historical discussion with four illustrations.—ERNST KELTERBORN. *Pharm. Post*, 71 (1938) 105–109. (H. M. B.)

PHARMACEUTICAL EDUCATION

Apothecarii—Ex Arts, Nova et Vetera. Highlights of the past are reviewed. The dangers of self-medication and the degradation of the healing art by the practice of quackery are discussed. Vistas that are opening up before the pharmacist of to-day are sketched. The pharmacist of the future must be an ancillary to the physician; he must be familiar with the newer synthetic drugs and must be able to supply the practitioner with authoritative information. He could perform a useful service by undertaking pathological tests on urine, pus, saliva, etc., make blood counts, and carry out aids to diagnosis.—A. L. DAVIDSON. *Chemistry and Industry*, 57 (1938), 333–339. (E. G. V.)

Drug Gardens—Educational Value of. The author suggests a few plants that can be cultivated most anywhere in the temperate regions and enumerates a number of reasons why such work has educational value.—VICTOR LEWITUS. *J. Am. Pharm. Assoc.*, 27 (1938), 899. (Z. M. C.)

Examinations in Chemistry. The author submitted a series of state board examination questions for discussion. He pointed out some generally accepted ideas: that some memory work is necessary but memorizing should not be substituted for acquiring knowledge by observing and doing; an excellent test of whether an individual is safe is his ability to read the pharmacopœia intelligently; supplementing knowledge gained in college by knowledge of its application in industry is important. Failure to apply reasoning is responsible for much failure in education.—EDWARD KREMERS. *J. Am. Pharm. Assoc.*, 27 (1938), 794. (Z. M. C.)

Hospital Pharmacy—Better. The author points out some of the most important things that need to be done to raise the standard of service of hospital pharmacy.—MEBEL C. STARR. *J. Am. Pharm. Assoc.*, 27 (1938), 890. (Z. M. C.)

Hospital Pharmacy Standards Dependent on Organization. The author points out that educators in pharmacy and board members have had to take too much responsibility in the matter of standards for hospital pharmacy. She enumerates some of the things included in minimum standards in the latest manual of Hospital Standardization and emphasizes the importance of serious work by the Subsection on Hospital Pharmacy.—HAZEL E. LANDEEN. *J. Am. Pharm. Assoc.*, 27 (1938), 888. (Z. M. C.)

Microphotographic Reproductions—Projection and Filing of. Suggestions for mounting cut sections of 35 mm. film, for projection and for filing both cut and continuous strips are given.—J. F. AUSTIN and H. P. BROWN. *J. Chem. Educ.*, 15 (1938), 24. (E. G. V.)

Teaching—Old Timer Looks at. The author points some fundamentals, stressing especially the importance of the personal relation between teacher and student. An employer has many questions other than the grades a graduate may have had when considering his employment. Educators should not mislead; graduation should not be followed by disillusionment. Those who take up pharmacy should know that knowledge acquired in school is only the beginning of an

education. "No college of pharmacy is better than those who compose its faculty." The greatest asset of a pharmacist is in the type of people with which he has surrounded himself.—H. S. NOEL. *J. Am. Pharm. Assoc.*, 27 (1938), 893. (Z. M. C.)

What's in a Name? A summation of the pronunciations and derivations of the names of the 92 elements.—M. A. EWING. *J. Chem. Educ.*, 15 (1938), 123–126. (E. G. V.)

PHARMACEUTICAL LEGISLATION

Chemistry and Patents in Denmark.—ANON. *Riechstoff. Ind. Kosmetik*, 13 (1938), 183–185. (H. M. B.)

Chemistry and Patents in Norway.—ANON. *Riechstoff Ind. Kosmetik*, 13 (1938), 182–183. (H. M. B.)

Drug Adulteration—Control of, in India. In a study of 53 pharmacopœial preparations, marked adulteration was detected. Excessive impurities were observed and many alkaloidal drugs were deficient 50 to 100% in active products. Many bioassayed drugs were heavily adulterated. A law covering the control of imports into India is required.—B. MUKHERJI. *Calcutta Med. J.*, 34 (July 1938), 4–16; through *Chem. Abstr.*, 32 (1938), 9395. (F. J. S.)

Food, Drug and Cosmetic Act and Its Relation to Pharmaceutical Legislation—Newly Enacted. Enactment of the Federal law necessitates changes in State food and drug laws. The new law probably offers opportunity for extension of authority of pharmacy laws. Pharmacy laws have to do with drugs but few attempt to define the term. The author quotes the definition of "drug" as it appears in the original act of 1906 and in the new act and then contrasts the new one with what some of the States say, and he adds some interesting comments.—ROBERT L. SWAIN. *J. Am. Pharm. Assoc.*, 27 (1938), 801. (Z. M. C.)

PHARMACEUTICAL ECONOMICS

Accounting Records Necessary in an Individually Owned Drug Store. The first necessary record is that of purchases made from him on credit and next a daily check of cash received and paid out. Other necessary records are a day by day and month by month tabulation of sales, divided into cash sales and charge sales and another for money received on account. The matter of charge sales is discussed in some detail. Merchandise purchases must be recorded; most important is a cumulative record of accounts payable, and a cumulative record of notes payable. Work involved in separating merchandise purchases into departments is justified. Annual inventories are necessary and if volume is large inventory should show totals for departments. Records of operating expenses by classes is necessary. Finally the author gives a common form for a profit and loss statement.—PAUL C. OLSEN. *J. Am. Pharm. Assoc.*, 27 (1938), 901. (Z. M. C.)

Color in the Drug Store—Some Uses for. The purpose of the paper was to point out some facts about color and give methods for utilization of color to increase sales volume and good will. The author lists and explains ten key facts about color and discusses specific uses under these heads: color and cosmetic sales, color in the prescription department, other uses for color.—GEORGE F. ARCHAMBAULT. *J. Am. Pharm. Assoc.*, 27 (1938), 809. (Z. M. C.)

Hospital Pharmacies—Public Health and Some. The author discusses the thesis that it is "economically, morally and ethically unsound for any hospital to permit unlicensed pharmacists and others to attend to drug dispensing" and concludes with several recommendations.—MORRIS DAUER. *J. Am. Pharm. Assoc.*, 27 (1938), 791. (Z. M. C.)

Hospital Pharmacy. The author shows the need of a modern pharmacy in charge of a competent pharmacist within the hospital itself. He discusses location and equipment, the opportunity for women pharmacists, the pharmacist's responsibility for the hospital formulary and various other phases of the subject.—HAROLD A. GRIMM. *J. Am. Pharm. Assoc.*, 27 (1938), 787. (Z. M. C.)

Hospital Pharmacy—Manufacturing in. The author states that interest on the part of superintendents may be increased by comparing the cost of commercial preparations with the cost of those manufactured in the hospital pharmacy. He gives a number of concrete examples.—I. T. REAMER. *J. Am. Pharm. Assoc.*, 27 (1938), 789. (Z. M. C.)

Leeches on Industry. Necessity of stocking substitutes and imitations dissipates working capital. The author believes there is no reason why medicinal products of various types might

not be handled as biological products through the National Institute of Health.—ROLAND J. LAKEY. *J. Am. Pharm. Assoc.*, 27 (1938), 899. (Z. M. C.)

Official Products—Problems Encountered in Promoting the Use of. The author discusses the difficulties that may be encountered under the following heads: the selection of a committee, financing the program, methods of promoting prescription writing, scientific displays, written propaganda. Discussion is in the light of actual experience and should be helpful to any groups wishing to undertake such work.—MARVIN J. ANDREWS. *J. Am. Pharm. Assoc.*, 27 (1938), 778. (Z. M. C.)

Patent and Proprietary Medicines—Economic Effects of Their Present Legal Status. The author discusses the subject under the following heads: statutory provisions, paradox illustrated, exemptions illogical, revision necessary, economic effects, recent court decisions, must act now. The author believes if the present status continues the value of pharmacy laws as health measure will be lost. A way must be found to control the sale of all medicine whether it be a patent or a proprietary or not.—SAMUEL SHKOLNIK. *J. Am. Pharm. Assoc.*, 27 (1938), 904. (Z. M. C.)

Pharmacist—Value of the Hospital to. The author discusses this subject from the standpoint of a pharmacist outside the hospital, but who works in coöperation with physicians and nurses in the hospital.—DON A. BROOKE. *J. Am. Pharm. Assoc.*, 27 (1938), 785. (Z. M. C.)

Pharmacy Student and Employment. The author points out that experience in a store prepares an individual to deal with the public. The author has made a survey of a group of students. Tabulation covers type of employment, hours weekly, instructors rating and final general standing. Consideration of the results leads the author to conclude that "colleges must deal with the individual student in determining the point at which employment interferes with study."—C. W. BALLARD. *J. Am. Pharm. Assoc.*, 27 (1938), 895. (Z. M. C.)

Prescription Promotion. The author explains how he would promote a prescription business.—T. D. HALLIDAY. *J. Am. Pharm. Assoc.*, 27 (1938), 875. (Z. M. C.)

Prescription—Value of. Whatever the system of pricing may be, cost of ingredients has first consideration. Shall cost in 15-gr. vials or a five-ounce package be the basis? Can a pharmacist have a fixed compounding fee regardless of simplicity or difficulty of the task? Use of the prescription, number of doses, ability of patient to pay, the attitude of the physician and numerous other things need consideration.—DENNY BRANN. *J. Am. Pharm. Assoc.*, 27 (1938), 877. (Z. M. C.)

Prescriptions—Must One Keep Open at Night to Compound? The author takes some facts from the report of the National Drug Store Survey to show when the greatest volume of prescriptions comes and concludes that long hours are for "commercial gain not because of professional responsibilities."—FRANK A. DELGADO. *J. Am. Pharm. Assoc.*, 27 (1938), 805. (Z. M. C.)

Price Problem with Physicians. Some phases of physician-pharmacist relation are discussed. Constant detailing of N. F. and U. S. P. preparations is proposed.—EMMET WEAVER. *J. Am. Pharm. Assoc.*, 27 (1938), 605. (Z. M. C.)

Professional Display in a Pharmacy—Place of. The author shows how and why frequent professional displays should be used in pharmacies.—M. MEDFORD COOPER. *J. Am. Pharm. Assoc.*, 27 (1938), 807. (Z. M. C.)

Statistics of Interest to Pharmacy. The authors point out that census reports contain much valuable information of commercial and economic interest but of little value in deciding the number of pharmacists needed. Study of the states indicated that no two are alike but there seems to be constant adjustment of supply and demand which probably serves better than any device that might be set up. So long as reciprocity functions smoothly redistribution causes little delay. N. A. B. P. studies show that the number of people registered annually is close to the estimated replacement requirement. Adequately trained men seem to be needed. Only about one-half of those registered annually are graduates. In other words there are too many exemptions to the laws.—H. C. CHRISTENSEN and LILLIAN H. BOWEN. *J. Am. Pharm. Assoc.*, 27 (1938), 797. (Z. M. C.)

MISCELLANEOUS

Black Tea. Indian, Ceylon, Java and China teas differ but slightly in composition. Quality differences depend on size of leaf and the aroma of the essential oils. Prolonged extraction

yields extracts rich in tannins and caffeine.—A. AZADIAN. *J. Egyptian Med. Assoc.*, 19 (1936), 72–81; through *J. Soc. Chem. Ind.*, 57 (1938), 723. (E. G. V.)

Detergents—Development of Chemical Tests for, in the Years 1936–38. The standard methods of the International Commission for the analysis of soaps are criticized in the light of work done by the *Deutsche Gesellschaft für Fettforschung*, and some notes on the German standard methods with proposed modifications (for example, in the determination of borates and phosphates) are appended.—K. BURGDORF. *Fette u. Seifen*, 45 (1938), 379–382; through *J. Soc. Chem. Ind.*, 57 (1938), 1187. (E. G. V.)

Drug Standards—Scientific Development of. An address with portrait of author.—G. D BEAL. *Addresses, Dedication Research Bldg., Abbott Labs., Chicago* (1938), 37–41; through *Chem. Abstr.*, 33 (1939), 315. (F. J. S.)

Emulsions Such as Those of Cosmetics, Etc. Emulsification of materials such as cosmetic cream ingredients is effected with use of higher fatty acid esters of sugars such as fructose mooestearate, or sugar alcohols such as mannitol oı sorbitol, containing at least one unesterfied sugar or sugar alcohol hydroxl group.—BEMJAMIN R. HARRIS. U. S. pat. 2,114,490, April 19, 1938. (A. P.-C.)

Facial Masks—Composition of. These products are reported to have an astringent action, to increase the circulation of the blood, to have absorption powers, to remove secretions and dirt, to prevent skin eruptions, to reduce the activity of the sebaceous glands and give to the user the illusion of an immediate feeling of well-being. Also, the mass must be firm but easy to spread; there should be no separation of water, and drying should occur as quickly as possible. There should be no irritants present and the dried film should be easily removed. Ten formulæ are offered.—EKMANN. *Reichstoff-Ind. u. Kosmetik*, 13 (1938), 142–146. (H. M. B.)

Filter Aids—Action of. Although filter aids such as kieselguhr are widely used to assist in difficult filtrations, it is not generally realized that a filter aid is properly effective only if correctly proportioned in the filter cake. This study is concerned with the effect of the proportion of the filter aid and of the pressure of filtration on the permeability of filter cakes. Filter aids give cakes of more open texture, which allow higher rates of flow, greater rigidity, and higher pressures of filtration. If too much filter aid is used, the increased thickness of cake tends to counterbalance these advantages. The properties of filter aids are discussed.—P. C. CARMAN. *Ind. Eng. Chem.*, 30 (1938), 1163–1167. (E. G. V.)

Fruit Juices—Concentration of, by Freezing. A comparison of the advantages of the evaporation and freezing methods for the concentration of solutions. The freezing method more nearly approaches the ideal for fruit juices, though concentration can not be taken beyond the eutectic point.—P. BILHAM. *Chemistry and Industry*, 57 (1938), 589–593. (E. G. V.)

Homeopathic Triturations—Dependence of Turbidity Values of, on the Triturated Amount of Substance. Results obtained in a series of experiments of selenium, sulfur, vegetable carbon, etc., are reported.—K. KOCH. *Suddeut. Apoth.-Ztg.*, 78 (1938), 825–827; through *Chem. Abstr.*, 33 (1939), 314. (F. J. S.)

Human Hair—Waving. The hair is heated while treated with a primary aliphatic amine containing 2 to 6 carbon atoms, such as ethylamine, having a boiling point below 100° C. and which in a 1.5 to 5% aqueous solution has a p_H of about 11.6 to 12.2, the treated hair being heated to above the boiling point of the amine. Ammonia also may be used.—JAMES C. BROWN, assignor to E. FREDERICS, INC. U. S. pat. 2,115,156, April 26, 1938. (A.P.-C.)

Human Hair—Waving. The hair is coiled about a rod and subjected to the successive action of the vapors of a number of different amino compounds containing 2 to 6 carbon atom, such as ethylamine and diethylamine, with which ammonia also may be used.—ERNEST O. FREDERICS and JAMES C. BROWN, BROWN, assignor to FREDERICS. U. S. pat. 2,115,161, April 26, 1938. (A. P.-C.)

Insecticide. Red spider is controlled by spraying with a mixture of a solution of selenium 3 ounces, in aqueous calcium polysulfide 1 U. S. gallon, with 700–800 gallons of 0.33% mineral oil emulsion.—C. B. GNADINGER. U. S. pat. 2,068,742; through *J. Soc. Chem. Ind.*, 57 (1938), 1088. (E. G. V.)

Insecticides Based on Rotenone. A review.—F. LEVALLOIS. *Compt. rend. XVII Cong. Chim. Ind.*, (1937), 559–561; through *J. Soc. Chem. Ind.*, 57 (1938), 829. (E. G. V.)

Insecticides—Mineral Oils as. A review.—J. CARROLL. *Econ. Proc. Roy. Dublin Soc.*, 3 (1938), 63–74; through *J. Soc. Chem. Ind.*, 57 (1938), 1209. (E. G. V.)

Insecticides—Organic Compounds as. Among numerous compounds examined, the following exhibited toxicity approaching that of arsenicals: coördinated chromium salts (piperidinium tetrathiocyanatodiamminochromium), and thiocarbamates (repellent to chewing insects). Numerous toxicity trials and effects of these substances on plants are recorded.—H. G. GUY. *Delaware Agric.Exp. Sta. Bull.*, No. 206 (1937), 60 pp.; through *J. Soc. Chem. Ind.*, 57 (1938), 1209. (E. G. V.)

Liquid Oil Preparations. Oils are discussed under the following classifications: (1) those of benefit in skin functionings, (2) weakly drying oils, (3) purifying oils, (4) hair oils and (5) suntan and sunburn oils. Ten formulæ.—AUGUSTIN. *Reichstoff Ind. Kosmetik*, 13 (1938), 168–173. (H. M. B.)

Medical Product—Production of Porous Absorbent. A porous, spongy mass suitable for use as a tampon is obtained by swelling animal sinews etc., consisting of elastin or collagenous matter, in, for example, an acid medium, teasing the product into fibers, inflating it with gas (air, carbon dioxide), and then shrinking it by means of, for example, gaseous ammonia, which may be mixed with the inert gas for convenience. Excess of liquid is then decanted and the product sterilized. The products when used as tampons, suppositories, etc., are readily resorbed.—N. V. KONINKLIJKE. *Pharmaceut. Fabr. v./h. Brocades-Stheeman and Pharmacia.* Brit. pat. 487,660; through *J. Soc. Chem. Ind.*, 57 (1938), 1232. (E. G. V.)

Mixing Equipment—Performance of. The paper presents the general methods for testing and evaluating mixing equipment and indicates the application of the results to the operation of the equipment in the most efficient manner and to the selection of the proper agitator for a given mixing problem.—R. C. GUNNESS and J. G. BAKER. *Ind. Eng. Chem.*, 30 (1938), 497–500. (E. G. V.)

Mothproofing Composition. The essential active ingredient is a thianthrene.—HENRY MARTIN and RUDOLF HIRT, assignors to J. R. GEIGY S. A. U. S. pat. 2,123,572, July 12, 1938. (A. P.-C.)

Musts and Wines—Change in Iron Content of, During Vinification. The iron content increases in the juice up to the beginning of fermentation owing to absorption from the crushers and must lines, but most of it is precipitated during fermentation.—E. M. MRAK and J. F. FESSLER. *Food Res.*, 3 (1938) 307–309; through *J. Soc. Chem. Ind.*, 57 (1938), 1090. (E. G. V.)

Odor—Scientific Basis of. A discussion of the physiological basis of odor perception and of the physical basis of the osmic stimulus. An odorous substance must possess the following attributes: (1) an appreciable vapor pressure; (2) a solubility in lipoid matter; (3) one or more Raman shifts between the limits 1500–3500.—G. M. DYSON. *Chemistry and Industry*, 57 (1938), 647–651. (E. G. V.)

Percolator—Automatic Continuous. A simple, compact percolater, easy to construct, is described. It will operate for long periods (48 hours) without requiring attention and with very little loss of solvent.—M. S. SCHECTER and H. L. HALLER. *Ind. Eng. Chem., Anal. Ed.*, 10 (1938), 328. (E. G. V.)

Perfumery—Resins and Their Significance in. The various resins, gums and balsams used in perfumery are reviewed.—K. BOURNOT. *Fette u. Seifen*, 45 (1938), 408–410; through *J. Soc. Chem. Ind.*, 57 (1938), 1230. (E. G. V.)

Perfumes and Processing Essential Oils—Use of Bleaching Earths in Synthesizing. The use of bleaching earths as catalysts in reactions (for example, condensations, esterifications, ring-closure by dehydration, absorptive separation of fractions such as terpenes) of interest to the perfume industry is reviewed.—C. FUCHS. *Fette u. Seifen*, 45 (1938), 410–413; through *J. Soc. Chem. Ind.*, 57 (1938), 1230. (E. G. V.)

Phytopharmacy—Review of. Research on modern parasiticides and their uses is reviewed.—M. RAUCOURT. *Ann. Agron.*, 7 (1938), 817–849; through *J. Soc. Chem. Ind.*, 57 (1938), 829. (E. G. V.)

Prescription Case Construction. The author attempts to convey an idea of some original features for a compounding unit keeping in mind maximum efficiency, economical but durable construction and eye appeal. The case which is described in detail can be built for $200.00.—EMIL C. HORN. *J. Am. Pharm. Assoc.*, 27 (1938), 873. (Z. M. C.)

Soap Manufacture and Fat Research—Developments in.—J. MULLER. *Fette u. Seifen*, 45 (1938), 378–379; through *J. Soc. Chem. Ind.*, 57 (1938), 1187. (E. G. V.)

Sodium Lauryl Sulfate—Commercial Possibilities of a New Detergent, and Some Related Lauryl Compounds. The kernel fats and oils from the seeds of several varieties of *Lauraceæ* contain 70–96% of trilaurin, and could be used as a commercial source of sodium lauryl sulfate. A summary of the properties and uses of this substance and of other lauryl compounds is given.—S. V. PUNTAMBEKER. *J. Indian Chem. Soc., Indust. Ed.*, 1 (1938), 19–24; through *J. Soc. Chem. Ind.*, 57 (1938), 1070. (E. G. V.)

Soft Soaps—Detergent Qualities of. Relative efficiency of soft soaps made from common fixed oils was studied. Detergency is dependent on numerous factors, chief of which are wetting ability and emulsifying power. Surface tension, measurements were taken, starting with 16.8% anhydrous soap. It reached its lowest point at 0.2%. The ability to emulsify mineral oil was judged by the aqueous liquid which separated from the emulsion. Twelve per cent of soap showed least separation probably because of increased viscosity but emulsification seemed no more complete than with 1.6%. A single oil is desirable because chemical and physical constants for a mixture admit of too many variations without representing the particular formula decided upon. Advantages of one oil over another oil or of a mixture is questionable from the standpoint of detergency. Three formulæ are submitted: Sapo Mollis, Sapo Mollis Popularis and Liquor Cresolis Saponatus.—EDWIN J. RATHBUN and EDWARD D. DAVY. *J. Am. Pharm. Assoc.*, 27 (1938), 836. (Z. M. C.)

Surgical Sutures—Dyeing of. Dyeing with vegetable or animal coloring matter is not satisfactory; the color is either too weak or destroyed during sterilization. Methylene violet is objectionable; acid fuchsin, malachite green, toluidine blue and chrysoidine can be used provided the excess of dye is removed by extensive washing.—A. GORIS and H. MÜHLEMANN. *Bull. Sci. Pharmacol.*, 43 (1936), 689–694; through *Chimie & Industrie*, 39 (1938), 931–932. (A. P.-C.)

Toilet Cream Containing Colloidal Gold. A toilet cream of the oil- and water-emulsion type contains a small quantity of colloidal gold and an emulsifying agent homogeneously incorporated, the colloidal gold being in suspension in the aqueous phase of the emulsion.—THOMAS GOVETT. U. S. pat. 2,111,912, March 22, 1938. (A. P.-C.)

Tooth Paste Developments. II. Flavors, sweetening agents, antiseptics, special ingredients such as tartar removers, bleaches and acid neutralizers and notes on manufacture are included.—JOSEPH M. VALLANCE. *Drug Cosmetic Ind.*, 43 (1938), 293–294. (H. M. B.)

PHARMACOLOGY, TOXICOLOGY AND THERAPUTICS

PHARMACOLOGY

Acetanilid—Relation of, and Other Drugs to Analgesia in Monkeys. Methods have been adapted for studying in monkeys the effects of analgesics by their ability to increase the alternating current voltage or the weight on a needle required to produce a sudden respiratory change probably associated with pain. In so far as these methods are criteria of pain, acetanilid in a dose of 100 mg. per Kg. and morphine, in a dose of 10 mg. per Kg., have been demonstrated to be effective analgesics in monkeys. With respect to both time of maximum intensity and duration, analgesia and antipyresis were coincident. In the case of acetanilid, the analgesia is prevented by caffeine but uninfluenced by sodium bicarbonate.—PAUL K. SMITH. *J. Pharmacol.*, 62 (April, 1938), 473. (H. B. H.)

Acocanthera Abyssinica—Cardiac Activity of. Fluidextract of *Acocanthera abyssinica* was diluted with water and its cardiac activity determined. The smallest dose affecting the beat of the heart of frogs was 0.01 cc. per Kg. and the certain lethal dose was 0.25 cc. per Kg. On cats by the Hatcher-Brody (cf. *C. A.*, 4, 3279) method, 1 cc. contained 17.21 cat units. By the emetic pigeon method, 0.0185 cc. intravenously produces emesis in 70% of the test birds, corresponding to a potency of 54 pigeon units per cc. Attempts to isolate the active principle are being continued.—A. BORIANI. *Rass. fisiopat.*, 9 (1937), 106–118; through *Chem Abstr.*, 32 (1938), 9395 (F. J. S.)

Adrenaline—Inactivation of, by Succinic Acid. Upon addition of succinic acid (p_H 2.5) to adrenaline the solution immediately becomes red. Reduction of physiological activity parallels

the intensity of color. The effect is inhibited by ascorbic acid.—P. MARQUARDT. *Klin. Wochschr.* 17 (1938), 1445–1446; through *Chem. Abstr.*, 33 (1939), 186. (F. J. S.)

Adrenaline—Inhibiting Effects of, New Interpretation of. The inhibiting action of adrenaline is apparently due to the presence in the smooth muscle cells of a phenolase which oxidizes adrenaline to adrenoxine, a powerful inhibiting substance. This conclusion does not apply to the intestine.—Z. M. BACQ and P. HEIRMAN. *Ann. physiol. physicochim. biol.*, 14 (1938), 476–479; through *Chem. Abstr.*, 33 (1939), 181. (F. J. S.)

Adrenaline—Inhibition of the Oxidation of. The oxidation of adrenaline was studied in the presence of the following inhibitors: Cu^{++}, Fe^{+++}, Mn^{++} and Co^{++} ions, glycine, guanidine carbonate, synthalin B, phenylurea, phenylalanine, hydroquinone, dimethylaminophenol, *l*-ascorbic acid, barbituric acid, barbital, chloretone, mercaptoacetic acid, α-mercaptopropionic acid, cysteine-hydrochloride, *l*-cystine and sodium sulfite. Inhibition was effective at concentrations as low as 1 in 10^6 A reciprocal inhibition which had been previously predicted was found in mixtures of $CuCl = FeCl_3$ and $FeCl_2 = CuSO_4$.—E. BAUR and M. OBRECHT. *Z. physik. Chem.*, B41 (1938), 167–178; through *Chem. Abstr.*, 33 (1939), 659. (F. J. S.)

Anesthetics—Local, Bioassay of. A discussion on the methods of bioassay of local anesthetic agents.—G. E. WAKERLIN. *Anesthesia and Analgesia*, 17 (1938), 232–233; through *Chem. Abstr.*, 33 (1939), 316. (F. J. S.)

Antipyretics—Antioxidizing Properties of Drugs Used as. The experiments covered about 30 compounds of the group of phenols, arylamines, semicarbazide, pyrazolone and alkaloids, which are ordinarily used as antipyretics or which contain groups generally recognized to have febrifuge properties. Observations were made on the oxidation of benzaldehyde and ferrous su fate and on the decolorization of methylene blue by liver tissue. Most of the antipyretics act as negative catalysts either in oxidations produced by free oxygen or in more complex oxidation-reduction systems.—A. BOUTARIC and J. A. GAUTIER. *Bull. Soc. Chim. Biol.*, 19 (1937), 938–949; through *Chimie & Industrie*, 39 (1938), 1153. (A. P.-C.)

Barbiturates—Investigation of Acquired Tolerance to Certain Short-Acting. Literature on matter of tolerance to short-acting barbiturates is in disagreement. Study of pentobarbital, pernoston, amytal, ortal and evipal is reported. The following conclusions were reached: Using sleeping time as the criterion, acquired tolerance to amytal, pentobarbital, ortal, pernoston and evipal was investigated in rabbits. It was found that upon daily administration of ortal and evipal there was no significant change in the sleeping time. Tolerance to a certain degree was developed for pentobarbital, pernoston and amytal as evidenced by a significant decrease in sleep. The tolerance developed almost immediately following the first injection, and reached its limits in four to seven days. It was found that the acquired tolerance disappeared rapidly after the ending of the daily injections and within 3 or 4 days the animal responded to the barbiturate in practically the same way as it had done to the first dose. The destruction of amytal as determined by its rate of disappearance from the blood, liver and muscle appears to take place somewhat more rapidly in tolerant than in nontolerant rabbits.—MINORU MASUDA, RICHARD N. BUDDE and JAMES M. DILLE. *J. Am. Pharm. Assoc.*, 27 (1938), 830. (Z. M. C.)

Barbituric Acid Derivatives—Crotyl Substituted. Reference is made to previous work which has established the relationship between pharmacological action and chemical structure of some barbituric acid derivatives. The study dealt with crotyl (3-methyl-allyl) derivatives. A number of these derivatives were synthesized and studied pharmacologically and it was found that duration of action is distinctly shortened.—EDWARD E. SWANSON and WILLIAM E. FRY. *J. Am. Pharm. Assoc.*, 27 (1938), 776. (Z. M. C.)

Bismuth—Excretion of, After Intramuscular Injection of Sobisminol. The urinary and fecal excretion of bismuth after intramuscular injection of sobisminol solution in doses of therapeutic range in animals and patients was found to be similar to that of water-soluble products of bismuth, in general. The greater portion of injected sobisminol, or about 60 to 70%, was left unaccounted for in the bodies of both animals and patients, this body bismuth to be excreted presumably in minute traces for long periods.—P. J. HANZLIK, A. J. LEHMAN and A. P. RICHARDSON. *J. Pharmacol.*, 62 (April, 1938), 412. (H. B. H.)

Bismuth Trimethyl—Pharmacology of. Trimethyl bismuth, $Bi(CH_3)_3$, may be administered by mouth, skin, inhalation and vein uncomplicated by flocculation and other adventitious reactions. The effects have been studied on animals from protozoa to mammals, and in excised

organs. The acute and subacute poisoning shows striking phenomena not revealed by ordinary bismuth compounds, and which places the pharmacology of bismuth between Pb and Sb-As in accordance with its position in the periodic table.—TORALD SOLLMANN and JOSEPH SEIFTER. *J. Pharmacol.*, 63 (May, 1938), 36. (H. B. H.)

B_1 Avitaminosis and the Quantitative Response to Ouabain in the Pigeon. Studies have been made on pigeons as to the influence of B_1 avitaminosis on the lethal dose of ouabain as determined by slow intravenous injection. The values obtained with the beriberi pigeons did not differ from those with the control animals maintained on the same food intake supplemented by an adequate amount of vitamin B_1.—H. B. HAAG and K. J. CHERRY. *J. Pharmacol.*, 63 (May, 1938), 14. (H. B. H.)

Calcium Chloride—Protective Effects of, Against Procaine Convulsions in Guinea Pigs. In protecting animals against convulsions from high doses of procaine hydrochloride, addition of $CaCl_2$ was found effective. Guinea pigs are more suitable for such studies than rabbits, which were formerly used by Beutner, Prussmack and Miller; rabbits almost invariably die from convulsions, but guinea pigs can be repeatedly injected with convulsant doses. This is important since statistical studies are necessary in this type of work. In order to obtain the average convulsant dose of procaine-HCl, over one hundred guinea pigs were injected with doses ranging from 25 to 300 mg./-Kg. Convulsions appeared in 81% of those pigs which were injected intramuscularly with 100 mg./Kg. 61% of the same guinea pigs then received injection of 100 mg. procaine-HCl plus 100 mg. $CaCl_2$ per Kg; only 6 convulsions occurred; an incidence of 9.8%. When fresh guinea pigs were injected with the same mixture, convulsions occurred with an incidence of 40%; the loss in protective effect of $CaCl_2$ is probably due to the omission of previous injections with straight procaine. But it is evident in both cases that $CaCl_2$ counteracts procaine convulsions. In our experiments, rats did not develop convulsions after procaine injection.—R. BEUTNER and G. T. MILEY. *J. Pharmacol.*, 63 (May, 1938), 2. (H. B. H.)

Chloral Hydrate—Fate in the Body of. Comparative pharmacological study of chloral and bromal hydrates, trichlor- and tribomethanol indicates that these alcohols are not formed in the body from the corresponding aldehyde hydrates, contrary to general opinion, and that these alcohols play no part in the pharmacological action of the hydrates. Trichlorethanol has much greater hypnotic potency and duration of action than has chloral hydrate. Bromal hydrate causes a prolonged intoxication in doses which, if reduction to tribromethanol occurred, would be without effect. A smaller part of administered chloral hydrate is recovered as urochloralic acid than with trichlorethanol.—G. LEHMANN. *J. Pharmacol.*, 63 (May, 1938), 21. (H. B. H.)

Digitalis—Four-Hour Frog Assay of. The minimum systolic doses, after subcutaneous injections in frogs, were determined for digitalis leaves, a digitalis preparation and digitoxin, in mg. per Kg.; 30 minutes 480, 420 and 3.4; one-hour 360, 680 and 2; two-hour 240, 680 and 2; and four-hour 240, 680 and 2. The one-hour period is long enough for digitoxin and the two-hour for digitalis-leaf preparations. After intravenous injections of the same samples, the minimum systolic doses in mg. per Kg. were: 10 minutes—, 180 and —; 20 minutes 120, — and 0.8; 30 minutes 180, 320 and 0.8; one-hour 200, 360 and 0.8; and two-hour 200, 360 and 0.8, respectively. The four-hour period of assay is too long for testing digitalis-leaf preparations.—B. NUKI. *Japan. J. Med. Sci. IV Pharmacol.*, 10 No. $^2/_3$; through *Chem. Abstr.*, 32 (1938), 8697. (F. J. S.)

Digitalis Standard—Further Evidence of the Strong and Variable Action on the U. S. P. XI. Reference is made to previous reports concerning the strength of the U. S. P. XI standard. Report is made of extensive experiments. Tables cover tests by the one-hour method, the M. L. D. frog method, U. S. P. XI potency, comparison of digitalis standards. Previous reports found U. S. P. XI 35% more active than the International by the official one-hour method; the present work shows it 31% higher. The most important fact in the present report is the marked influence which the presence or absence of alcohol in the test dilutions of the U. S. P. XI standard tincture has upon the experimental M. S. D. of the standard—the difference being relatively greater than that in extracts of commercial drug. It is suggested that either the glucosides are absorbed relatively faster in the presence of alcohol than those of the commercial drug, or relatively slower in the absence of alcohol in each. The variable action is not apparent in similar tests by the M. L. D. method. Preference of International authorities for a lethal dose method and the adoption of such a method by the B. P. of 1932 and the 1934 Canadian regulations are

in line with the data presented. The official method and the correction factor of the U. S. P. XI digitalis standard powder should be changed by interim revision so that U. S. P. tincture will conform in potency to the International Standard.—L. W. ROWE. *J. Am. Pharm. Assoc.*, 27 (1938), 844. (Z. M. C.)

Epinephrine—Factors Controlling the Vasomotor Reversal to. Experimental analysis of the vasomotor reversal to epinephrine following the administration of ergotamine or ergotoxine resulted in establishing the following facts: (1) The type of anesthesia is a primary factor in the elicitation of the reversal. Ergotamine or ergotoxin (0.2 to 1.0 mg. per Kg.) produced vasomotor reversal in cats and dogs narcotized with urethane. Under barbiturate anesthesia, however, similar doses did not reverse but enhanced the typical action of epinephrine; and large doses (up to 13 mg. per Kg.) did not reverse its action. (2) Ergotamine sensitizes mechanism of the cardiac and blood pressure effects produced by stimulation of the peripheral and central vagi. (3) The vasomotor reversal and vagotropic effects of ergotamine can be diminished or abolished by atropine and (4) are sensitized by physostigmin. Conversely, ergotamine pontentiates the parasympathetic effect of physostigmine. (5) There is no correlation between the establishment of the vasomotor reversal to epinephrine and abolition of ocular reactions to cervical sympathetic stimulation. The above results do not suggest a sympatholytic action of ergot alkaloids.—ROBERT P. HERWICK, CHARLES R. LINEGAR and THEODORE KOPPANYI. *J. Pharmacol.*, 63 (May, 1938), 15. (H. B. H.)

Ergot-Derived Product—Manufacture of. Ergot is extracted with liquid ammonia and the extract may be evaporated or extracted with ether and this extract treated with a dilute acid solution which is then extracted with ether in the presence of alkali. The base so obtained has similar general physiological characteristics to the known ergot alkaloids, but in many vital respects it differs both chemically and clinically.—E. H. STUART, assignor to E. LILLY & Co. U. S. pat. 2,067,866; through *J. Soc. Chem. Ind.*, 57 (1938), 1231. (E. G. V.)

Faurea Macnaughtonii Phillips—Chemical Composition and Effects of the Bark of. The following have been isolated: 0.9551% of non-toxic glucoside (m. p. 134.5°, crystallizing in needles in rosette formation), 14% catechol tannin, acetic acid, citric acid, tartaric acid, phytosterols and phlobaphenes. The bark is not toxic. The effects recorded on the frog are due to tannin, as likewise the emetic effects on the cat. The glucoside is without effect.—F. V. STEPHEN-LEWIS. *S. African J. Med. Sci.*, 3 (1938), 63–65; through *Chem. Abstr.*, 33 (1939), 810. (F. J. S.)

Glucose—Influence of, on Tissue Respiration in Vitro. Influence of glucose upon the tissue respiration of kidney cortex of rabbit was investigated by Warburg's methods. Tissue respiration in Ringer's solution without glucose and in serum dialyzed with the same Ringer's solution was measured with the tissue perfused with non-glucose-Ringer's before removal of the organ in one case, and not perfused in the other case. The values obtained agreed well with one another. Tissue respirations in the normal serum and in dialyzed serum without glucose were compared. It was shown that the values in the normal serum were greater than those in the dialyzed serum. Tissue respiration in Ringer's solution containing 0.1%, 0.3% and 0.5% glucose was measured with the tissue perfused with 0.2% glucose, and it was found that the differences of the values among the cases with different glucose concentrations were small and negligible. Values of the respiration of the tissue perfused with non-glucose-Ringer's solution were much smaller than those in cases with glucose.—H. YAMAMOTO. *Tôhoku J. Exp. Med.*, 33 (1938), 525. (A. C. DeD.)

Histamine—Formation of, from Histidine by Animal Tissues. II. A histidine-decarboxylase is found in various animal tissues, especially in the kidney. The enzyme solutions are not very stable; the preparation is rather difficult. Pure glycerol does not extract the enzyme and even 86% glycerol removes only small amounts. Digestion with papain quickly destroys the activity, apparently by destroying the colloidal protein bearer. The enzyme is completely inhibited even by 0.001 *M* potassium cyanide; it is inhibited by cysteine, hydrogen sulfide, glutathione or ascorbic acid. Cysteine has a slight inhibitory action, while $Na_4P_2O_7$ has no effect.—E. WERLE and K. KRAUTZUN. *Biochem. Z.*, 296 (1938), 315-324; through *Chem. Abstr.*, 33 (1939), 186. (F. J. S.)

Infusions—Permeability of, of Medicinal Plants. By determining sulfur before and after dialysis of infusions through the intestinal membrane of the pig at 37° C., a distinct passage of active principles is noted. Besides, it is shown by determining reducing sugars in the dialyzates,

addition of 3% infusions of valerian, chamomile, polygala, absinth, mint, and to a less extent coriander and quassia, augment the permeability of a 5% *d*-glucose solution. This indicates the importance of infusions of medicinal plants in the intestinal resorption of *d*-glucose and medicinal substances.—L. I. WEBER and LUCE LEGOIX. *J. pharm. chim.*, 24 (1936), 563–569; through *Chimie & Industrie*, 39 (1938), 932. (A. P.-C.)

Local Anesthetics—Clinical Tests of Some New. Of twenty-four local anesthetics, extensively tested on laboratory animals, five were selected for clinical trial. Four of these were used for injection anesthesia and one for topical application. The compounds are respectively β-diethylamino-4-ethoxy benzoate, β-diethylamino-α-ethyl cinnamate, β-diethylaminoethyl-3-amino-4-ethoxy benzoate, β-diethylamino-2-hydroxy-3-methyl benzoate, and β-(N-ethyl-N-β-hydroxyethylamino) ethyl-4-N-butoxy benzoate. The first of these compounds appears to be completely free from irritating effects and is so rapid in action that practically no pain is felt at the moment of injection. The second compound is less free from irritating qualities but is less toxic than the first compound and has an anesthetic index of 8 relative to procain. The third compound appears to be non-irritating and has an index of 1.7. The fourth compound is somewhat less toxic than procain and is non-irritating. Its index is 21.5. The fifth compound is in use as a surface anesthetic. It is approximately three times as effective per unit of toxicity as cocain. It is not a mydriatic. A total of approximately 450 minor surgical operations, including about 100 dental cases have been performed with β-diethylamino ethyl-4-ethoxy benzoate. No immediate or delayed toxic actions have been observed. The highest dose so far has been 35 cc. of a 1 per cent solution. Tests with the other compounds have been less extensive but no untoward effects have been observed. It is concluded that these five compounds are worthy of further careful clinical evaluation.—R. F. SIEVERS and A. R. MCINTYRE. *J. Pharmacol.*, 63 (May, 1938), 34. (H. B. H.)

Nicotine—Effect of, upon Epinephrine Secretion. Influence of nicotine upon the epinephrine output rate, the mean arterial blood pressure and the blood sugar concentration were determined in the dogs, non-fastened, non-anesthetized, without evolving pain. Although the epinephrine output was measured by Watanabe in the dogs, under physiological conditions as normal as possible, other than nicotine poisoning, the short interval of time just after injection was regrettably omitted there, owing to difficulties of managing the animal in the intoxication period. But this time is, in fact, just that betraying a maximally accelerated secretion of epinephrine, judging from the experiments undertaken under narcosis. The blood samples, from the suprarenals, collected 30 seconds after the injection (1 mg. nicotine per kilo intravenously), showed the maximum acceleration. The absolute value was 0.01–0.0007 mg. per kilo per minute from the one gland. That in the second, or subsequent 30 seconds period, was about two-thirds of the preceding period, then afterward it diminished quickly. The period of the largest acceleration in the epinephrine liberation corresponds to the period during which the blood pressure fell abruptly. At the end of the first 30-second period, the pressure started to rise, and in 60 seconds, the elevation reached its maximum. Thus, the maximum acceleration in the epinephrine discharge occurs almost simultaneously with the blood pressure fall and precedes the blood pressure elevation. The changes in the blood sugar concentration occurred more slowly than those in the arterial pressure. The denervation of the suprarenal gland caused some diminution in the acceleration of the epinephrine output rate. This might be explained by assuming some action of nicotine on the nervous mechanism for regulating the epinephrine liberation, besides that on the suprarenal medulla.—M. WADA, T. HIRANO and M. TIBA. *Tôhoku J. Exp. Med.*, 33 (1938), 189. (A. C. DeD.)

Nicotinic Acid—Toxicity and Certain Pharmacologic Actions of. The toxicity of nicotinic acid was investigated in rats and rabbits. Solutions having a p_H of 3.4 and 7.4 were used. Half grown rats were injected intraperitoneally with doses ranging from 0.05 to 0.2 mg. per Gm. of rat, daily for 24 days. Rabbits received 20 to 60 mg. per Kg., either intravenously or subcutaneously, daily for 10 days. Controls received equivalent quantities of physiological saline. No evidence of toxic reactions was observed in either group of animals, treated and control groups gaining weight at practically the same rate as uninjected litter mates. Cats were anesthetized with pentobarbital sodium, or with urethane. Nicotinic acid was injected intravenously in doses of 0.5 to 5.0 mg. per Kg. Blood pressure was raised with all doses used, the spleen contracted, heart rate was practically unchanged, and respiration altered slightly, or not at all. In animals re-

ceiving several doses of nicotinic acid over a three-hour period, the blood pressure was in most cases considerably higher at the end than at the beginning of the experiment. Following a single dose blood pressure often remained elevated for 20 minutes or more. The terminal pressure was not particularly elevated in dogs, otherwise similar results were obtained as in cats.—F. D. McCrea. *J. Pharmacol.*, 63 (May, 1938), 25. (H. B. H.)

Physiologically Active Preparation (Callikrein)—Manufacture of. Aqueous concentrates of the active principal prepared from urine or pancreas, and preferably free from albumin, are treated with acetone in the presence of a non-alkaline electrolyte, for example, 0.1% aqueous sodium chloride, at a low temperature and the precipitate is isolated and dried. It contains about 12% nitrogen, causes simultaneous decrease of the blood pressure and increase of the blood circulation in the lungs, brain, skin and muscles, and is stable on storage.—F. Schultz, assignor to Winthrop Chem. Co., Inc. U. S. pat. 2,069,019; through *J. Soc. Chem. Ind.*, 57 (1938), 1231. (E. G. V.)

Picrotoxin—Studies on the Elimination of. In the determination of the essential elimination of picrotoxin the convulsive dose was determined in rabbits by the infusion of a 0.005% solution intravenously at the rate of 0.02 mg. per Kg. per minute. After at least two days the elimination was again determined in the following way: Seventy-five per cent of the convulsive amount was injected in a single dose and after various intervals of time had elapsed the intravenous infusion was started as above and the convulsive dose again determined. The difference between the two was taken as the elimination over the elapsed time interval, approximately 10% of a convulsive dose being eliminated in ten minutes. In another type of experiment the intravenous infusion was begun and continued until convulsions occurred. After various time intervals the infusion was begun again and continued until convulsions appeared a second time. The amount injected in the second infusion was assumed to be equal to the amount destroyed during the interval between convulsions. After one hour it was necessary to infuse the original amount a second time in order to produce convulsions. Violent convulsions frequently occurred and were relieved by nembutal. These studies indicate that picrotoxin administered in convulsive dose is detoxicated or rendered physiologically inactive in about one hour. To measure the excretion in the urine a quantitative biological test for picrotoxin was devised wherein the drug is suitably extracted from the urine and injected into the cranial cavities of a series of frogs and determined as picrotoxin by reference to a previously prepared Trevan curve. Total urinary excretion amounts to not more than 10% of an intravenously administered convulsive dose and occurs during the first twenty-four hours after administration.—J. M. Dille. *J. Pharmacol.*, 63 (May, 1938), 7. (H. B. H.)

Posterior Pituitary Assay—New Method for. A satisfactory quantitative estimation of the oxytocic activity of pituitary solutions has been obtained by a method based on the fall in blood pressure following intravenous injection of posterior pituitary extracts in a chicken anesthetized with phenobarbital. The blood pressure is recorded from the cannulated femoral artery and the injections are made into the femoral vein. The fall in blood pressure after small doses is proportional to the oxytocic potency of the pituitary solution administered, and is apparently independent, within limits, of the accompanying pressor activity. Responses may be elicited with doses of less than 0.005 mg. Standard Pituitary Powder. By this method assays of pituitary extracts of unknown strength have checked consistently with assays by the official guinea pig uterus method. Fluctuations in irritability are slight over a period of four to five hours during which moderate doses are given at intervals of five to ten minutes. The fall in blood pressure is rapid and transitory, the pressure returning to normal in one to two minutes, and is probably due to a peripheral dilatation. The advantages of this method are: the simplicity of the technic and equipment required, the sensitivity and constancy of the test object, and the rapidity with which assays may be obtained.—Julius M. Coon. *J. Pharmacol.*, 63 (May, 1938), 5. (H. B. H.)

Prostigmin and Atropine—Effects of, on the Human Stomach. The inhibitory action of atropine on the human stomach is made motor by prostigmin. Prostigmin is usually inhibitory to the stomach and constantly motor to the colon. Atropine increases the infrequent gastric motor effect of prostigmin, or changes its inhibitory effect to a marked motor reaction. On the contrary, atropine counteracts the motor effect of prostigmin on the colon, but not completely with ordinary doses. Atropine and prostigmin act on the same structure, probably the receptive

substance of Langley.—H. O. VEACH, B. R. LAUER and A. G. JAMES. *J. Pharmacol.*, 62 (April, 1938), 428. (H. B. H.)

Pyridine-Beta-Carbonic Acid Diethylamide (Coramine)—Action of, against Ether and Chloroform Overdose. The minimal amount of ether for 10 dogs and of chloroform for 19 dogs required to produce respiratory arrest in at least two of three consecutive experiments was determined by the method previously described. An attempt was then made to antidote these drugs by the intravenous injection of coramine in a dosage of 0.15 cc./Kg. of the 25% solution late in the surgical stage or early in the toxic stage of anesthesia. Results: Poisoning by chloroform proceeded to respiratory arrest in 89% of 64 control experiments. The administration of the same dose of chloroform followed by coramine produced respiratory arrest in 90% of 50 experiments. The administration of ether produced respiratory arrest in 78% of 36 control experiments and the same dose of ether followed by coramine produced arrest in 75% of 28 experiments. Resuscitation by means of artificial respiration and the administration of oxygen from the respiratory arrest induced by chloroform was unsuccessful in 7% of 57 attempts. Following the administration of coramine resuscitation from chloroform was unsuccessful in 11% of 45 attempts. There were no failures in 53 attempts to resuscitate from the respiratory arrest produced by ether. Our experiments did not indicate that coramine is capable of preventing the onset of respiratory arrest following an overdose of either chloroform or ether. Nor did they yield any evidence that coramine increases the ease and certainty of resuscitation from an overdose of chloroform.—R. W. WHITEHEAD and W. B. DRAPER. *J. Pharmacol.*, 63 (May, 1938), 39. (H. B. H.)

Sobisminol—Toxicity, Tolerance and Irritation of, According to Different Channels of Administration. The toxic and fatal doses of sobisminol, a soluble bismuth product for intramuscular and oral uses in antisyphilitic treatment, have been determined for different channels of administration and in different species of animals. The fatal dose of sobisminol, for rats was found to be: intravenously—100% fatal 17.5 mg. x Kg., 60% fatal 8.0 mg.; intramuscularly—100% fatal 175 mg., 60% fatal 91 mg.; orally—100% fatal 504 mg., 50% fatal 294 mg. The highest tolerated dose for rats was found to be 35 mg. x Kg. intramuscularly, 7 mg. intravenously, and 121 mg. orally. The toxicity and tolerance of sobisminol compare favorably with those of several other soluble compounds of bismuth. The non-bismuth constituents, in sobisminol solution, are, for all practical purposes, non-toxic. The margin of safety for both intramuscular and gastric administrations of sobisminol in clinical uses is ample. The fact that toxicity and fatalities can be demonstrated with gastric administration of sobisminol in animals is proof of systemic absorption of this bismuth and agrees with positive urinary excretion and systemic distribution of bismuth described previously. Pathological tissue changes in important viscera are minor, negligible, or non-existent after acute toxic and sometimes fatal doses in animals, except for damage to renal tubules after surely fatal doses.—P. J. HANZLIK, A. J. LEHMAN and A. P. RICHARDSON. *J. Pharmacol.*, 62 (April, 1938), 387. (H. B. H.)

Sodium Pentobarbital—Studies on the Detoxification of, under Various Conditions. To determine animal variation and individual M. L. D. the barbiturate was infused constantly into the ear vein of unanesthetized rabbits. Thirty per cent variation from the arithmetical average occurred with "Nembutal" and other barbiturates. The M. L. D. for "Nembutal" was 44.7 mg./Kg. if 4 mg./Kg./min. were given, apparently a timeless M. L. D., as it agrees with the M. L. D. of the literature. The rate of functional detoxification of "Nembutal" was found by infusing different amounts per Kg./min. for $^1/_3$ hours. The additional dose necessary to kill at the end of this period allows the determination of the detoxification. A dose of 7 mg./Kg./hr. was almost completely detoxified. If 30 mg./Kg./hr. were infused, 11.1 mg./Kg./hr. were detoxified. Further, rabbits were injected with 30 or 40 mg./Kg. "Nembutal" intravenously. At intervals of $^1/_2$, 1 or $1^1/_2$ hours, the amount necessary to kill the animals was determined. 14.1 mg./Kg. for $^1/_2$ hour, 23–28 mg./Kg. for 1 hour and 40.0 mg./Kg. for $1^1/_2$ hours were the rates of detoxification found; these being considerably greater than if 30 mg./Kg./hr. were given as a constant infusion. Further experiments verified this rate, which is not influenced by prolonged light anesthesia.—RICHARD KOHN and CLYDE GRIMES. *J. Pharmacol.*, 63 (May, 1938), 18. (H. B. H.)

Syntropan and Atropine—Comparative Study of, on Excised Intestinal Segments and on the Duodenum of Non-Anesthetized Dogs. Further evidence for the mechanism of action of

syntropan (phosphoric acid salt of the tropic acid ester of 2, 2-dimethyl-3-diethylamino propanol) as compared to atropine was obtained on excised intestinal segments. Fifty times as much syntropan as atropine was required to antagonize acetylcholine. Syntropan was a better antagonist of barium chloride and histamine. Small doses of syntropan antagonized only acetylcholine, while larger doses also antagonized barium chloride. Syntropan produced muscular relaxation after apocodeine when atropine was ineffective. The evidence obtained supports the conclusion that syntropan has both a parasympatholytic and direct muscular depressant action. The action of syntropan and atropine on the duodenum of non-anesthetized dogs was compared with their effect on the heart rate, pupil and salivary secretions. Both drugs produced about the same depression of intestinal tone. Syntropan produced a graded response on rhythmical and persitaltic activity; while atropine appeared to have an all or none effect. The duration of action was shorter with syntropan. Syntropan produeed less tachycardia than equivalent doses of atropine, and showed no significant effect at all on the pupil and salivary secretion.—B. B. CLARK and E. B. S. SHIRES, JR. *J. Pharmacol.*, 63 (May, 1938), 5. (H. B. H.)

Theophylline—Influence of, on the Reaction of Mercurial Diuretics at the Site of Injection. The type and severity of the local reaction produced by the subcutaneous and intracutaneous injection of mercurial diuretics—Novasurol, Salyrgan, Mercupurin, Neptal, and "440" Abbott (experimental)—was studied in 40 rabbits. With the exception of Novasurol, all preparations were examined with and without theophylline. The presence of theophylline in combination with a mercurial diuretic in every case prevents or diminishes the degree of the local lesion. Evidence is presented to show that the "protective" influence of theophylline is probably due to its chemical combination with the mercury of the diuretic. Such factors, as p_H of the solution and basic chemical structure of the preparation play a minor part in the type and severity of the local lesion. The mercurial content of the drug and the vasodilating properties of theophylline are unimportant factors. The influence of theophylline upon the local reaction closely parellels its influence on the diuretic efficiency and on the absorption of mercurial diuretics from muscle.—ARTHUR G. DEGRAFF, ROBERT C. LEHMAN and ELTON YASUNA. *J. Pharmacol.*, 63 (May, 1938), 7. (H. B. H.)

Ustilago—Pharmacological Study of. Ustilago has been studied by several pharmacological methods for the purpose of determining whether the drug possessed activity. The literature is briefly reviewed. Experimental details are discussed under the following subtitles: effect on the blood pressure of the cat, action on cockscomb, effect on pregnancy in cats, effect on isolated rabbit uterus, effect on isolated rabbit intestine, effect on the perfused leg vessels of the frog, toxicity. The following conclusions were reached: (1) Intravenous administration of an aqueous suspension of a hydro-alcoholic fluidextract produced a depressor effect upon the carotid blood pressure of the cat and dog without significantly inhibiting pressor activity of epinephrine; (2) Ripe and mature unripe samples showed equal activity; (3) No active alkaloid was found; (4) By the U. S. P. Cock's Comb method for ergot, ustilago, in relatively large doses, caused cyanosis but differed from that caused by ergot; (5) It caused abortion in cats but quantitatively is weaker than ergot; (6) The active substance is not of an acetylcholine or histamine-like nature; (7) It causes contractions of the pregnant and puerperal cat uterus *in situ;* (8) It stimulates contractions of the isolated guinea pig and the rabbit uterus; (9) It inhibits the movements of isolated rabbit intestine as well as the stimulation induced by histamine phosphate; (10) The greater portion of the activity resides in the resinous oily-like fraction after fractional separation of alcoholic fluidextracts. Petroleum ether extracts have the same activity as alcoholic ones; (11) Its preparations eause constriction of leg vessels of frogs; (12) Subcutaneously or intramuscularly doses equivalent to 500 Gm. of drug are neeessary to kill but intraperitoneal doses need only equal 75 Gm. of drug; (13) Fed to mature non-pregnant rats it showed no significant activity.—WILLIAM H. HUNT and MARVIN R. THOMPSON. *J. Am. Pharm. Assoc.*, 27 (1938), 740. (Z. M. C.)

Vitamin B_1 Deficiency—Influence of Administration of Thyroid upon Hunger and. Administration of thyroid while feeding a ration deficient in vitamin B_1 either retards or prevents the development of bradycardia and subnormal temperature. Therefore, thyroxin and vitamin B_1 are synergistic, not antagonistic.—G. W. PARADE. *Z. Vitaminforsch.*, 7 (1938), 40–45; through *Chimie & Industrie*, 39 (1938), 1156. (A. P.-C.)

Vitamin B_1—Influence of, on the Activity of Acetylcholine. Vitamin B_1 presents biological

properties seemingly identical with those of the sensitizing substance of the excited nerve trunk.—B. MINZ and R. AGID. *Compt. Rend. Acad. Sci.*, 205 (1937), 576–577; through *Chimie & Industrie*, 39 (1938), 939. (A. P.-C.)

TOXICOLOGY

Antidotes for Poisons. Arsenic antidote, hydrogen sulfide water, sodium thiosulate (intravenously) etc. are discussed.—ANON. *Deut. Apoth. Ztg.*, 53 (1938), 1005–1006. (H. M. B.)

Bee Venom—Phenomenon Observed in Workers Handling. The phenomenon consists in characteristic hypersensitiveness which reveals itself after a few weeks' or a few months' work handling of bee venom and which manifests itself by an abundant nasal secretion, symptoms of head cold and watering of the eyes. These symptoms disappear without treatment after a few days' rest, but return immediately work is resumed. The cause of this allergic disease seems to be due to the presence in the venom of a volatile, strongly irritant substance that is soluble in ether.—K. A. FORSTER. *Arch. Gewerbepath.*, 8 (1937), 117–119; through *Chimie & Industrie*, 39 (1938), 889. (A. P.-C.)

Carbon Disulfide—Affections Produced by, in the Production of Olive Oil in Andalusia. Carbon disulfide is absorbed through the respiratory organs and the skin. Modifications in the blood, sight troubles and vertigo soon appear in the workers. Experiments on dogs and rabbits showed that in chronic intoxication (exposure for 5 minutes per day to an atmosphere containing 148 mg. of carbon disulfide per liter) lymphocytosis appears as early as the 5th day after contact with the solvent. Animals which eat meat seem to be more affected than those which are vegetarian. There is subsequently observed a decrease in the color value and a falling off in visual acuity. The impurities of carbon disulfide are apparently without effect.—J. D. GALLEGO. *Arch. Gewerbepath.*, 8 (1937), 124–138; through *Chimie & Industrie*, 39 (1938), 889. (A. P.-C.)

Castor Bean—Toxic Principle of. The toxic substance contained in the castor bean was prepared from the oil-free flour by extraction with 10% sodium chloride solution, dialysis and salting out with ammonium sulfate. It was dissolved in water, dialyzed and concentrated under reduced pressure; the yield was 2.5%. Conclusion: the toxic substance is a protein. Coagulation of blood corpuscles with ricin takes place only at p_H 5.6 to 5.8 and 8.9 to 9.1. The least dissociation takes place at the isoelectric point (5.4 to 5.6). The minimum quantity of ricin either for the toxic effect or coagulation without reference to the p_H of solution has no physiological meaning.—S. INOUE. *J. Soc. Chem. Ind. Japan*, 40 (1937), 122B–123B; through *Chimie & Industrie*, 39 (1938), 1151. (A. P.-C.)

Chronic Benzene Poisoning—Diagnosis and Treatment of. In workers affected with benzene poisoning, the vitamin C content of the blood is lowered to an extent depending on the severity of the affection. In other workers there is no appreciable reduction in the vitamin content of the urine per 24 hours. After addition of vitamin C to the ration, the rabbit exhibits increased resistance to benzene than when fed normally, but intoxication cannot be prevented. Treatment with vitamin C of a patient suffering from benzene poisoning improved the clinical picture.—G. BORMANN. *Arch. Gewerbepath.*, 8 (1937), 194–205; through *Chimie & Industrie*, 39 (1938), 889. (A. P.-C.)

Circulatory Versus Respiratory Deaths from Pentothal Sodium. Experiments with dogs and cats showed that moderate overdosage of sodium 5-ethyl-5-α-methylbutyl-2-thiobarbiturate (Pentothal Sodium) is first manifested by cessation of respiration. With continuous administration of small amounts, only enough to maintain light anesthesia, signs of heart muscle poisoning appear. The longer the administration is continued, the more does the danger seem to shift to the circulatory side.—CHAPMAN REYNOLDS and J. R. VEAL. *South. M. J.*, 31 (1938), 650; through *Squibb Abstr. Bull.*, 11 (1938), A-1199. (F. J. S.)

Cocaine Hydrochloride—Effects of Heating and Ageing on the Toxicity of Solutions of. Solutions of cocaine hydrochloride which have been heated 15 to 60 minutes at 120° C. or which have been aged at room temperature for from 6 months to several years are more toxic for the roots of white lupine seedlings than fresh solutions.—J. RÉGNIER, R. David and R. Joriot. *Compt. Rend. Soc. Biol.*, 125 (1937), 1012–1013; through *Chimie & Industrie*, 39 (1938), 1150. (A. P.-C.)

Colchicine Poisoning—Blood Changes in. In dogs the intramuscular injection of a fatal dose (1 mg. per Kg.) of colchicine caused a 38% increase in red corpuslces and hemoglobin in 13 hours. The corpuscle volume increased 56%. F. SANTAVY. *Compt. Rend. Soc. Biol.*, 126 (1937), 629–632; through *Chimie & Industrie*, 39 (1938), 1154. (A. P.-C.)

Colloidal Solutions Used against Parasites—Preparation of. By mixing aqueous copper sulfate and aqueous sodium carbonate in a spraying machine while spraying, a suspension is obtained in which the particle size is less than that of a similar spray prepared 15–20 minutes before application.—P. BARY and C. CORNU. *Compt. rend. Acad. Agric. France*, 24 (1938), 304–307; through *J. Soc. Chem. Ind.*, 57 (1938), 1087. (E. G. V.)

Copper Oxychlorides Used as Anticryptogamic Products. A discussion of their merits, confirmed by experimental data.—M. DESRUE. *Compt. Rend. 17me Congr. Chim. Ind., Paris*, (Sept.-Oct. 1937), 246–251. (A. P.-C.)

Diethylene Glycol and Sulfanilamide—Toxicity of. A general survey of the effects of the oral administration of diethylene glycol and sulfanilamide, singly and in combination, in amounts corresponding to 1 cc. and 1 gr., also 4 cc. and 4 gr. for each pound of body weight in a group of 10 dogs during a period of 7 weeks. The following observations were made: weight, rectal temperature, heart rate, general symptoms, carbon dioxide combining power of the blood, non-protein nitrogen, urea and creatinine of blood, urinalysis, phenolsulfonephthalein excretion, and bromsulfalein retention. Also examinations of the formed elements of the blood, biopsies of the liver and kidneys and necropsies. Sulfanilamide in a single large dose produced only temporary generalized excitement. To some extent it modified the toxicity of diethylene glycol when given in conjunction with it. Sulfanilamide in repeated daily doses for 31 days produced no significant symptoms. Its administration for this length of time, however, was followed by definite although mild organic reactions in the liver and kidneys, with subsequent recovery which was incomplete. Single large doses of diethylene glycol produced either slight histological damage to the kidneys and liver, essentially without symptoms, or moderate damage accompanied by marked symptoms, alteration in blood chemistry, and in values test of renal function, with apparently complete recovery. The same total dosage of diethylene glycol fractionated into from three to five doses at daily intervals was invariably fatal, with profound symptoms, functional impairment and organic lesions referable to the liver and kidneys.—ROBERT M. ISENBERGER, JUNE DUFFIN and M. C. CARROLL. *J. Pharmacol.*, 63 (May, 1938), 16. (H. B. H.)

Fatty Acids and Soaps—Alimentary Disburbance Produced by. Castor oil at 22% instead of 50% of a certain deficient diet for pigeons will not prevent limited recovery after vitamin B (brewers' yeast) is added to the daily ration. Other oils, *e. g.*, olive oil at 50% will permit such recovery. But the use of 22% of castor oil fatty acids, either free or as potassium soap, or with 2% of added glycerol, causes death in 4 to 12 days even when brewer's yeast has been added. With olive oil fatty acids replacing those of castor oil, the time of survival is 17 to 30 days; with an arbitrary mixture of fatty acids melting at 55° to 57° C., that is, solid at body temperature and therefore more slowly resorbable, 25 to 40 days. The corresponding potassium soaps have the same effects as to time of survival. Addition of glycerol to each set of fatty acids decidedly prolongs survival (30 to 50 days in both cases); it is doubled when 3 Gm. of brewers' yeast is added to the daily ration.—R. LECOQ. *J. Pharm. Chim.*, 26 (1937), 56–62; through *Chimie & Industrie*, 39 (1938), 938. (A. P.-C.)

Fluorides—Toxicology of. Dogs were given 0.4 to 0.5 Gm. of sodium fluoride, mixed with their food, every day for 6 to 8 weeks. At the end of this time the first signs of intoxication appeared consisting in pain of the carpus joint; at this stage all the bones had lost their polish and showed protruberances. At the end of 1 year of this treatment the bones contained (on the dry, fat-free basis) 3.56% of calcium fluoride, which is 10 times the normal content; the teeth became covered with chalky or cementitious deposits, decayed, broke or fell out; they contained 2.64% of calcium fluoride. These reactions on the bones cannot be compared to those of oxalic acid and its salts. The prohibition of the use of fluorine preservatives in foods is therefore justified.—E. ROST. *Arch. Gewerbepath.*, 8 (1937), 256–265; through *Chimie & Industrie*, 39 (1938), 1100. (A. P.-C.)

Glutathione—Antitoxic Action of. Investigation on Tetanus Toxin. Reduced glutathione can *in vitro* reduce the toxicity of a surely fatal dose of tetanus toxin, but this can be effected only under certain conditions of neutralization. In order to obtain this effect there must be added from

12 to 20 mg. of sodium bicarbonate per 20 mg. of glutathione or 20 to 40 mg. of sodium bicarbonate per 40 mg. of glutathione. Guinea pigs which were injected with such mixtures and tetanus toxin gave indications of tetanus, localized at the site of the injection; but these symptoms were mild and had completely disappeared in a month. Glutathione mixed with smaller or larger amounts of sodium bicarbonate had no appreciable influence on the toxicity of the tetanus toxin.—L. BINET, C. JAULMES and G. WELLER. *Compt. Rend. Acad. Sci.*, 204 (1937), 1761–1762; through *Chimie & Industrie*, 39 (1938), 936. (A. P.-C.)

Haplophyton Cimicidum—Toxicity of, to Fruit Flies. Extracts of the leaves probably contain an alkaloid which is toxic to fruit flies. Extracts slowly lose their activity on storage.—C. C. PLUMMER. *U. S. Dept. Agric. Circ.*, No. 455 (1938), 10 pp.; through *J. Soc. Chem. Ind.*, 57 (1938), 1210. (E. G. V.)

"Hausbock" Bettle—Combatting the. The habits of this insect are described and methods of extermination discussed are (1) liquid paints which penetrate and protect the wood, (2) poisonous gases especially hydrocyanic acid and (3) hot air.—W. MADEL. *Deut. Apoth. Ztg.*, 53 (1938), 983–984. (H. M. B.)

Histamine—Distribution of, in the Honey Bee (Apis Mellifera) and Its Venom. All parts of the bee contain appreciable amounts of histamine. The "blood" contains 0.07γ and the venom 5.7γ per mg. The venom owes its toxic action principally to substances other than histamine.—I. MARCOU and A. M. DEREVICI. *Compt. Rend. Soc. Biol.*, 126 (1937), 726–728; through *Chimie & Industrie*, 39 (1938), 1154. (A. P.-C.)

Menthylsuccinic Acid and Its Heavy Metal Salts—Studies on the Preparation and Toxicity of. Bismuth, manganese, silver and mercury salts of menthylsuccinic acid were prepared and studied to determine whether they are soluble in vegetable oils. Bismuth and manganese salts were soluble but the other two were not. Details of experiments are reported. The bismuth compound injected intramuscularly showed a toxicity of 200 mg. of metallic bismuth per Kg. body weight.—W. M. LAUTER and V. L. VRLA. *J. Am. Pharm. Assoc.*, 27 (1938), 753. (Z. M. C.)

Mercurial Poisoning. Case reports are given of mercurial poisoning in calves, heifers and young bulls resulting from the use of mercuric ointment in attempts to control lice on the animals. The treatment was ineffective in controlling lice.—G. G. STEVENS. *Cornell Vet.*, 28 (1938), 50–52; through *Chem. Abstr.*, 32 (1938), 8696. (F. J. S.)

Mercury Compounds—Organic, Toxic Effects of. The toxic effects of organic compounds containing from 4 to 16% of mercury consist first of all of an irritant action on the skin and mucosa, followed by symptoms of general intoxication (fatigue, muscular pains, migraine, vertigo, loss of appetite), with special action on the central nervous system.—F. KOELSCH. *Arch. Gewerbepath.*, 8 (1937), 113–116; through *Chimie & Industrie*, 39 (1938), 888. (A. P.-C.)

Morphine—Toxicity of, on the New Born Rat. Using the progeny of their own rat colony kept under standardized conditions, they found new born rats to be approximately ten times as susceptible to morphine administered hypodermically as adults. The authors have completed a daily curve and find the susceptibility steadily and smoothly decreases until the twenty-first day of life. Thereafter the dose mg./Gm. has the adult value. Morphine slows the respiration of young rats, which is increased by the occurrence of convulsions. Typical respiratory slowing and paralysis is not the cause of death which seems to be associated with the convulsive causes.—O. S. GIBBS and AUDREY BOBB. *J. Pharmacol.*, 63 (May 1938), 10. (H. B. H.)

Nami—Detection of the Alkaloid of. Symptoms of poisoning produced by alkaloid of *Dioscorea hispida* similar to those produced by atropine. Distribution in viscera; and the largest percentage of almost unchanged poison is in the stomach and liver. Recovered alkaloid is identified by colorimetric comparison with the pure alkaloid.—JOSE F. LEYVA. *J. Philippine I. Med. Assoc.*, 17 (1937), 693; through *Rev. Filipina Med. Farm.*, 28 (1937), 478. (G. S. G.)

Pentothal Sodium—Cumulative Effects of. Experiments with dogs and cats revealed that the rate of recovery from anesthesia and narcosis is rapid when the minimum dose of sodium 5-ethyl-5-α-methylbutyl-2-thiobarbiturate (Pentothal Sodium) is administered. When additional doses are given there is a cumulative effect and the duration of narcosis or anesthesia is prolonged. With each additional fractional dose the margin of safety becomes less, and a lethal dose may be administered without any warning from the changes in the respiration, circulation and reflexes. It is concluded that until the ultimate disposition of the drug in the body is deter-

mined, it is not a safe agent for prolonged anesthesia.—J. R. VEAL and CHAPMAN REYNOLDS. *South. M. J.*, 31 (1938), 649; through *Squibb. Abstr. Bull.*, 11 (1938), A-1199. (F. J. S.)

Quinoline Compounds as Sources of Medicinal Products. VI. A study of the antimalarial properties of quinoline derivatives having a side chain in the 4-position. The compounds substituted in the 4-position are very different from the corresponding compounds substituted in the 8-position, which have a considerably higher toxicity. Introduction of a hydroxyl group in compounds which are substituted in the 8-position increases the toxicity and lowers the chemotherapeutic value, while the 4-substituted compounds have their toxicity decreased and chemotherapeutic value increased.—O. IOU MAGUIDSON and M. V. ROUBTSOV. *J. Obchtch. Khim.*, 7 (1937), 1896–1908; through *Chimie & Industrie*, 39 (1938), 1158. (A. P.-C.)

Strychnine Sulfate—Inactivation of, by Papain. A lethal dose (2.5 mg.) of strychnine sulfate is inactivated by 12.5 mg. papain (1% solution). Toxicity, however, persists above this level even if an adequate amount of papain is added. The papain does not destroy the strychnine but forms a labile compound with it, probably at the =N—CO— group.—LEON VELLUZ. *Compt. rend. soc. biol.*, 128 (1938), 291; through *Squibb. Abstr. Bull.*, 11 (1938), A-1207. (F. J. S.)

Sulfanilamide in Rats—Acute and Chronic Toxicity of. The acute toxicity of sulfanilamide was studied in 160 adult white rats after single oral administrations of acacia suspensions of the drug. No deaths occurred in doses of 3.0 Gm. or less per Kg. Doses of 4, 5, 6, 8 and 10 Gm. per Kg. led to mortality ratios of 20, 29, 36, 40 and 50 per cent, respectively. Sulfanilamide thus appears to be less toxic for rats than for mice and rabbits (Marshall, Cutting and Emerson, *J. A. M. A.*, 110 (1938), 252). To the characteristic symptoms of acute toxicity described by others may be added that of a marked drop of temperature (4° to 5° C.). Animals sacrificed 10 days after recovery from doses in the lethal range exhibited nothing unusual at postmortem examination, except enlargement of the spleen. The chronic toxicity of sulfanilamide was studied on 20 rats receiving daily oral administrations of 2 Gm. per Kg. for 5 days and then 1 Gm. per Kg. until 5 weeks had elapsed or until death occurred. Six of the animals died between the 19th and 35th day. Gradual loss of weight and fall in temperature was noted in these rats. Those that survived showed no observable symptoms. Survivors were sacrificed one week after stopping the drug. All animals at postmortem exhibited greatly enlarged spleens, averaging 2.34 Gm. in weight.—FUMIKO MURAYAMA and CHAUNCEY LEAKE. *J. Pharmacol.*, 63 (May 1938), 29. (H. B. H.)

Urotropin Mandelate—Note on. Since mandelic acid and its salts have been shown to be useful in the treatment of urinary infections, study of new combinations is important. The hexamethylenetetramine salt has been prepared and its toxicity determined on rats. Details of experimental work are reported.—H. G. KOLLOFF and J. W. NELSON. *J. Am. Pharm. Assoc.*, 27 (1938) 603. (Z. M. C.)

Verbenaloside—Toxicity and Elimination of. Absence of Action on Hemolysis and Coagulation Time of Blood. The toxicity was tested by assays on frogs, guinea pigs, rabbits and white mice. With 1.25 Gm. per Kg. of frog, clonic contractions are induced and the animal died after 5 hours. Complete paralysis was provoked by 3.75 Gm. per Kg. of frog with death in 5 hours. A female guinea pig given (subcutaneously) 0.1 Gm. the first hour, 0.2 Gm. the second hour and 0.4 Gm. the third hour showed no ill effects. Rabbits given 0.5 Gm. per Kg. by subcutaneous injection showed no ill effects. White mice given 7.5–10 Gm. per Kg. intravenously showed 50% mortality; while those given up to 7.14 Gm. per Kg. survived. The action on glucemia and uremia was studied. When injected intravenously into dogs verbenaloside has no action on the urea or the glucose in the blood. It is eliminated intact in the urine, and has no effect on hemolysis or coagulation time of blood.—J. CHEYMOL. *J. pharm. chim.*, 27 (1938), 325–339. (S. W. G.)

Vermin Such as Insects or Rats and Mice—Combatting. Use is made of an aliphatic compound with a sulfofluoride group bound in aliphatic linkage, and which contains 1 to 4 carbon atoms, such as methane-sulfofluoride.—GERHARD SCHRADER, OTTO BAYER and HANS KÜKENTHAL, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,114,577, April 19, 1938. (A. P.-C.)

Volatile Solvents as a Problem in Industrial Medicine. Numerous volatile solvents prove industrial hazard. Poisoning by inhalation is a slow process. Most plants using such solvents are equipped with ventilating systems. Some vapors, especially fat soluble ones, may be absorbed through intact skin. Coal tar hydrocarbons more toxic than petroleum hydrocarbons; all may cause dermatitis. Alcohols less toxic, except methyl alcohol. Alcohol ethers add a second toxic

agent. Esters, ketones and glycols more dangerous than formerly considered. In tests for identity of poisonous substances, samples of air of factory are analyzed; and urine and blood of workmen are examined for chronic toxicity of agent. Cleanliness and care essential; substitution of non-toxic or less toxic solvents recommended as far as practicable.—W. J. McConnell. *J. Am. Med. Assoc.*, 109 (1938), 762. (G. S. G.)

THERAPEUTICS

Asparagus Officinalis—Diuretic Action of. An aqueous extract of the leafy tops of common asparagus has a slight, irregular, diuretic action in dogs.—J. Balansard and M. Raybaud. *Compt. rend. soc. biol.*, 126 (1937), 954–956; through *Chimie & Industrie*, 39 (1938), 1154. (A. P.-C.)

Cancer Chemotherapy. A case of cancer of the nose with severe lesions of the digestive tract was successfully treated by local application of one dram benzoic acid in one ounce grain alcohol to the nose, and by oral administration of benzoic acid, at first in the form of the alcoholic solution plus hydrochloric acid, later in the form of capsules containing benzoic acid, calcium chloride and ferrous sulfate.—W. B. Guy. *Med. World*, 56 (1938), 386; through *Squibb Abstr. Bull.*, 11 (1938), A-1224. (F. J. S.)

4,10-Dimethylene-1,2-Benzanthracene—Biological Action of. This new product has a carcinogenic action. On the whole, the tumors produced by it develop more rapidly and more markedly toward necrosis than those produced by other hydrocarbons.—E. Morelli and A. Dansi. *Biochim. Terap. Sper.*, 24 (1937), 432–436; through *Chimie & Industrie*, 39 (1938), 1155. (A. P.-C.)

Endocrine Compounds. Parathyroid Glands. Methods of preparation and hypo- and hyperparathyroidisms are described.—A. Richard Bliss, Jr. *Drug Cosmetic Ind.*, 43 (1938), 290–292. (H. M. B.)

Fly Maggots As Healing Agents. A discussion.—C. A. Rothenheim. *Pharm. Post*, 71 (1938), 96–98. (H. M. B.)

Heart Treatments—Compounds for. A review of some domestic and imported compounds such as cyclopentamethylenetetrazole (metrazole), coramine, cadechol, ephedrine, sympathol, ouabain, chlorophyllin and theominal.—I. S. Zelikin. *Farm. Zhur.*, 11 (1938), 36–38; through *Chem. Abstr.*, 33 (1939), 316. (F. J. S.)

Hydrogen Sulfide-Carbon Dioxide Solution for Therapeutic Purposes. I. Experimental Plant for Preparation. II. Utilization of Dissociator Gas for Therapeutic Purposes. Water is saturated with coke oven dissociator gas to the required hydrogen sulfide content; the product may be used in balneology in place of natural mineral water of the corresponding composition.—V. S. Devekki and I. I. Oshiganov. *Koks i Khim.*, No. 12 (1937), 56–59, 59–61; through *J. Soc. Chem. Ind.*, 57 (1938), 728. (E. G. V.)

Insulin Therapy in Schzophrenia. The clinical use of hypoglucemic shock in 18 cases of schizophrenia produced 50% cures, and 50% improvement, but only in early cases. In chronic cases only 11.4% improved.—Caravedo Gutierrez Noriega. *Arch. Peru Hygiene Mental*, June 1937, 2; through *Bol. Of. Sanit. Panamericana*, 17 (1938), 138. (G. S. G.)

Insulin—Use of, in Mental Disease. Of 14 dementia præcox cases treated with insulin shocks, 9 showed improvement. In 1 of the cases the psychotic manifestations disappeared dramatically after a prolonged coma due to the insulin.—Jas. A. Shield. *Southern Med. and Surg.*, 100 (1938), 269; through *Squibb Abstr. Bull.*, 11 (1938), A-1201. (F. J. S.)

Intestinal Assimilation—Medicinal Compound for. An oil, for example, sandalwood, is mixed with a resin acid, for example, abietic, which is capable of emulsifying with the alkaline secretions of the intestinal tract. Extract of licorice, light magnesium oxide and glycerin may be added and the mass covered with gelatin.—E. C. Moore. U. S. pat. 2,066,572; through *J. Soc. Chem. Ind.*, 57 (1938), 1232. (E. G. V.)

Iron Ascorbate in the Treatment of Anemia. Iron ascorbate, a deep bluish purple powder made by combining an atom of iron with the ascorbic acid molecule, contains 20% iron, is readily soluble in water, has a p_H of 7.0 and when sealed with nitrogen in the dried state is stable for at least three months. Patients with anemia following hemorrhage, malarial treatment, infection, dietary deficiency, purpura simplex, rheumatic fever, uremia, nephritis, lymphomatosis and of unknown etiology were given iron ascorbate in an endeavor to study its therapeutic effect. Doses

up to 50 mg. of iron a day were given without reaction. Oral doses equivalent to 180 mg. of iron a day were given to those in whom there was no indication for parenteral administration. In one patient who could not take other forms of iron therapy without getting a diarrhœa, iron ascorbate was given with a resultant remarkable improvement in her anemia and without any diarrhœa or nausea. Iron ascorbate was found to be as effective as other forms of iron medication. It also possesses the desirable properties of easy solubility, ability to be given intravenously without reaction in fairly large doses, while at the same time it retains a considerable percentage of the antiscorbutic action of the vitamin C molecule.—DALE G. FRIEND. *J. Pharmacol.*, 63 (May, 1938), 9. (H. B. H.)

Iron—Therapeutic Preparation of. Heat malt extract on the water bath to remove air, cool to 40–45°, add the required amount of aqueous solution of purest $FeSO_4.7H_2O$ (traces of copper and manganese salts also may be added), remove air bubbles by allowing to stand for some hours, and store the air-free solution with exclusion of air in suitable glass containers. A content of 400 mg. ferrous iron per Kg. is proposed.—K. BUDAI. *Vegyi Ipar*, 37 (1938), 4; through *Chem. Abstr.*, 32 (1938), 8696. (F J. S.)

Mercurial Suppository—Use of, as a Diuretic. Sodium N-[β-methoxy-γ-(hydroxymercuri)-propyl]-1,2,2-trimethylcyclopentane-1,3-dicarboxylic acid monoamide suppositories (Mercurin suppositories) have been used on one or more occasions in twelve cases of edema. Of these twelve cases, the edema was due to congestive heart failure in ten, while cirrhosis of the liver was considered to be the causative factor in the other two. In the ten cases of cardiac decompensation the suppositories were used in conjunction with the routine treatment. In 85%, a diuresis ranging from 1,950–8,750 cc. in twenty-four hours resulted from the use of the suppositories. In one of the failures the diuresis was delayed following the suppository administration until the third day of ammonium chloride therapy. The other two failures were obtained in a case which showed renal complications. In the two cases of hepatic cirrhosis the suppositories did not seem to be the best form of mercury administration because of the rectal discomfort and the lack of consistent increase in urinary output.—J. FLEXNER. *Ann. Internal Med.*, 11 (1938), 1962; through *Squibb Abstr. Bull.*, 11 (1938), A-1217. (F. J. S.)

Mercurials—Effect of Diuresis by. Treatment of edema of congestive heart disease by mercurial diuretic listed as successful in literature, especially use of salyrgan and mercuperin. Mercury completely eliminated from body in 24 hours, and cumulative action not feared. But after disappearance of edema, uremia appeared and from the study of series of cases, the following recommendations evolved: (1) Salyrgan used only when rest, digitalis and xanthine diuretics fail to produce diuretic response. (2) Preliminary tests of blood chloride, urea, carbon dioxide-combining power and phenol. If abnormal, drug is not given. (3) Frequent examinations to detect onset of uremia. Harmful effects from mercurial diuretics probably result from rapid removal of quantity of edematous fluid, rather than from mercurial damage to kidneys.—LAURENCE E. HINES. *J. Am. Med. Assoc.*, 110 (1938), 202. (G. S. G.)

Nicotinic Acid—Failure of, in the Treatment of Anemia. Nicotinic acid, in daily intramuscular and intraveneous doses of 60 mg. for six to eleven days, had no effect on the anemia or clinical course in three cases of Addison-Biermer anemia, one case of hyperchromic anemia and liver disease, one case of idiopathic hypochromic anemia, and two cases of myeloid leukemia. The injections caused a fall in the bone marrow white-cell count in all cases, not mirrored in the white count or in the Schilling hemogram of the peripheral blood.—O. C. HANSEN-PRUSS, *New Engl. J. Med.*, 218 (1938), 1050; through *Squibb Abstr. Bull.*, 11 (1938), A-1223. (F. J. S.)

Prophylaxis—Immediate Chemical, a Formula for. An ointment for use on the skin consists of 67 Gm. base ointment (98 Gm. petrolatum and 2 Gm. cholesterol) with 33 Gm. "colloidal" calomel and 0.125 Gm. $Hg(CN)_2$.—H. W. SMITH. *U. S. Naval Med. Bull.*, 36 (1938), 522–524; through *Chem. Abstr.*, 33 (1939), 807. (F. J. S.)

Raigan—New Anthelmintic. Experimental data with different intestinal parasites with this old forgotten but recently revived remedy by Ryoda. *Omphalia lapidescens*, is a fungus living on bamboo roots which effectively destroys tapeworms, but is not a nematocide.—K. HIYEDA. *J. Oriental Med.*, 28 (1938), 597–614; through *Chem. Abstr.*, 33 (1939), 318. (F. J. S.)

Raigan—New Anthelmintic, Active Principle of, in Teniasis and Its Mode of Action. The active principle of Raigan is insoluble in ether, alcohol and Me_2CO but soluble in water and glycerol. It loses the activity after boiling one hour. It has a strong proteolytic power, optimum

p_H being 8. Anthelmintic action of this remedy must be due to its proteolytic action on the tapeworm.—B. TERADA and S. RYO. *J. Oriental Med.*, 28 (1938), 1181–1184 (English abstr. 91); through *Chem. Abstr.*, 33 (1939), 811. (F. J. S.)

Sprue—Ashford's Bibliography of. The author lists the Ashford bibliography of sprue and also some additions to this bibliography.—F. M. HANES. *Puerto Rico J. Pub. Health and Trop. Med.*, 13 (1938), 427. (A. C. DeD.)

Sprue—Tropical, Stomach in. In 28 cases of the syndrome of tropical sprue investigated by means of the gastroscope, the author found that the predominant lesion is one form of atrophic gastritis, sometimes generalized and at other times affecting limited areas. This gastritis has a tendency to be less intense than that seen in pernicious anemia. It seems as if the intensity of the syndrome and of the anemia had a certain relation to the degree of atrophy of the mucosa. The atrophy of the gastric mucosa develops secondarily to the syndrome of sprue and to the anemia. The atrophy of the gastric mucosa seen in the syndrome of tropical sprue may be cured or greatly improved by liver therapy in much the same manner as has been found true for pernicious anemia, according to the literature on the subject.—A. R. OLLERS. *Puerto Rico J. Pub. Health and Trop. Med.*, 13 (1938), 503. (A. C. DeD.)

Sulfanilamide. A review covering history, chemistry, therapeutic and clinical applications, dosage and toxic manifestations of sulfanilamide.—L. RUDOLPH. *Can. Pharm. J.*, 71 (1938), 530–532; through *Chem. Abstr.*, 32 (1938), 8699. (F. J. S.)

Sulfanilamide—Effect of, on the Oxygen Capacity of the Blood. Report of a case; woman delivered under ether, with morphine and scopolamine during labor. Abdominal pain, purulent lochia developed, patient isolated and sulfanilamide given for three days. Cyanosis developed, oxygen content and capacity of blood fell. Sulfanilamide discontinued, blood transfusions given, patient made uneventful recovery. Necessary to increase capacity of blood for oxygen as well as to give oxygen.—J. W. MULL and J. T. SMITH. *J. Am. Med. Assoc.* 110 (1938), 439. (G. S. G.)

Sulfanilamide—Experience with Derivatives of, in Malaria. Used prontosil soluble and prontosil white, on hospitalized patients. Observation was made on three subjects infected with plasmodium vivax terciana. Treated two with prontosil 6 tablets, (1.8 Gm.), in 24 hours; it was diminished later to 3 tablets per day. Third patient received prontosil album in the same dosage. Prontosil soluble was reserved for intramuscular injection in case of vomiting. Parasites disappeared promptly in first case, but persisted in second and third, though diminished. First case presented symptoms of latent infection, however. It was concluded that sulfanilamide has no specific antimalarial action.—HECTOR READ and J. OLIVER PINO. *Bol. Oficiana Sanit. Panamericana*, 17 (1938), 122. (G. S. G.)

Sulfonamide Compounds—Summary of Recent Reports of. The success of sulfanilamide therapy is due to the drug possessing marked bactericidal action *in vivo* without any accompanying dangers such as those which are associated with antiseptics, the activity of which depends upon the presence of one of the heavy metals, often mercury. Reports on the use of sulfanilamide are found in the literature to show its usefulness in such diseases as follows: abortus fever, actinomycosis, bubo, chancroid infection, genito-urinary infections, gonorrhea, meningococcal meningitis, otitis media, rhemumatic fever; in dentistry and in obstetrics.—ANON. *Pharm. J.*, 140 (1938), 665. (W. B. B.)

Syphilis—Non-Specific, Treatment of. Dissatisfaction with results of chemotherapy led to other experiments as fever therapy and shock therapy. Fever therapy of two kinds, malaria and electric fever-producing machines. Artificially induced malaria has proved effective in dementia paralytica but less so in tabes dorsalis. But malaria is more effective than fever machines. Typhoid vaccines and hot baths more useful in milder forms of syphilis. Non-specifics of greater use in later stages of disease, and in acquired syphilis. Chemotherapy still the best treatment for congenital and early syphilis. Non-specifics should be used only by trained and experienced attendants. Course is still experimental.—PAUL A. O'LEARY. *J. Am. Med. Assoc.*, 110 (1938), 42. (G. S. G.)

Tung Oil—Dermatitic Properties of. A case of dermatitis contracted by an individual having an allergic sensitivity to tung oil is described. Dilute solutions of a part of the distillate from raw tung oil was dissolved in olive oil and injected into the subject's hips at various intervals. A tremendous increase in the dermatitic condition followed, but the irritation subsided and disappeared after a few injections of increasing concentration. Exposure to vapors of tung oil a year

later caused the dermatitis to reappear after twelve hours, but it disappeared unaided within ten days. The agent responsible for tung oil dermatitis has not yet been revealed.—M. W. SWANEY. *Ind. Eng. Chem.*, 30 (1938), 514–515. (E. G. V.)

Vaginal Trichomoniasis Therapies—Evaluation of, by Controlled Series. Observation of the use of three arsenical (one silver picrate, and two lactose) preparations; controls received preparation minus medicament. Standard of cure was two consecutive menstrual periods without treatment, freedom from symptoms and negative clinical or laboratory findings. Majority are benefitted by more than one therapeutic material. Foci of infection should be eliminated from patients's rectum, bladder, etc. Physiologic restoration of vagina is of paramount importance. Adequate control is necessary to evaluate any procedure.—H. CLOSE HESSELTINE. *J. Am. Med. Assoc.*, 109 (1938), 768. (G. S. G.)

Venoms—Therapeutic. Uses are discussed. Twenty-four references are given. M. A. LESSER. *Drug Cosmetic Ind.*, 43 (1938), 286–289, 294–295. (H. M. B.)

Vitamin B_1 Deficiency, Bradycardia and Subnormal Temperature. Bradycardia and subnormal temperature in B_1 avitaminosis are due to the inanition resulting from loss of appetite. Subcutaneous injection of vitamin B_1 increases the appetite and metabolism and causes disappearance of bradycardia and return to normal temperature.—G. W. PARADE. *Z. Vitaminforsch.*, 7 (1938), 35–40; through *Chimie & Industrie*, 39 (1938), 1156. (A. P.-C.)

Zinc Oxide and Gelatin Bandage on the Arm. A zinc oxide and gelatin bandage has been devised for use on the arm after removal of the plaster of Paris cast. The bandage provides an elastic check on the arm without preventing movement. It produces hyperemia which may be beneficial.—F. G. SCHNEK. *Arzt. Prax.*, (1938), 2; through *Chem. Abstr.*, 32 (1938), 8696. (F. J. S.)

NEW REMEDIES

SYNTHESIS

Carbantren (Ciba A. G., Berlin-Wilmersdorf) consists of bismuth iodo-chloroöxyquinine 10 parts, pelstin 20 parts and carbon 70 parts. It is recommended in the treatment of acute enteriditis.—*Pharm. Zentralhalle*, 79 (1938), 646. (N. L.)

Dilantin (Parke, Davis and Co., London and Sydney) is the sodium salt of 5,5-diphenylhydantoin. It is a marked anticonvulsant action in epilepsy; relatively little hypnotic effect. The dose for all cases of epilepsy over six years, one capsule before each of three regular meals. It is marketed in bottles of 100 x $1^1/_2$ gr. capsules.—*Australasian J. Pharm.*, 20 (1939), 220. (A. C. DeD.)

Elastonon (Nordmark-Werke, Hamburg) is racemic beta-phenylisopropylamine. It is recommended as a pressor.—*Pharm. Zentralhalle*, 79 (1938), 449. (N. L.)

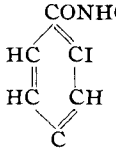
Jodarin (I. D. Riedel, I. de Haën, A. G., Berlin-Britz) consists of a 27.5% solution of methyltriethanol-ammonium iodide, each cc. representing 0.135 Gm. iodine. It is recommended for hypodermic iodine therapy.—*Pharm. Zentralhalle*, 79 (1938), 577. (N. L.)

Magnesium-Resorpta (Gehe & Co., A. G., Dresden-N) is an organic magnesium compound in combination with saponin-substances.—*Pharm. Zentralhalle*, 79 (1938), 595. (N. L.)

Medobis Suppositories (Sanabo-Chinoin, G. m. b. H., Wien) contain in each suppository 45 mg. bismuth as the bismuth salt of heptadiene-carboxylic acid. It is recommended in the treatment of various forms of angina.—*Pharm. Zentralhalle*, 79 (1938), 449. (N. L.)

Neo-Oestranol-I Crookes' (The Crookes Laboratories, London) is 4-4'-dihydroxy-α,β-diethyl stilbene. It is used in cases of menopause, delayed onset of puberty and generally where a stimulant action of the female organism is necessary. It is given as injections or orally, as physician directs. It is supplied in ampuls, $^1/_2$, 1 and 5 mg., in $^1/_2$, 1 and 1 cc., respectively, of sterile, oily medium (boxes of 6). Oral tablets, each containing 1 and 5 mg. (tube of 25). Tablets easy to divide for part-doses.—*Australasian J. Pharm.*, 20 (1939), 220. (A. C. DeD.)

Neophoturon (N. V. Orgachemia at Oss) is the sodium salt of *o*-iodohippuric acid:



Like uroselectan and abrodil it is a proved medium for pyelography. Orthoiodohippuric acid is a crystalline compound containing 38.8% of iodine and melting at 171–174°. The sodium salt is readily soluble in water and can be sterilized without particular precaution. It is not toxic and is quickly eliminated by the kidneys (60–66% in the first hour, 80% in two hours and 90–95% within 8 hours). The solution, previously brought to body temperature is slowly injected; and the first photograph is taken after 5–8 minutes and the second after 15 minutes. The dose for adults is 12 Gm. in 20 cc. of a 10% glucose solution: for children half of this quantity. The preparation may also be taken orally, dissolved in simple syrup. The photographs are then taken after 5 minutes, $1^1/_2$ hours and after $2^1/_2$ hours.—*Pharm. Weekblad*, 75 (1938), 399. (E. H. W.)

Neurinase (laboratories A. Genevrier, Neuilly-Paris) is a combination of stabilized fresh valerian with a small dose of diethylobarbituric acid, which is found on the market in drops and in tablets. One coffeespoon or one tablet contains 0.15 Gm. diethylbarbituric acid. The dose is one coffeespoonful or one tablet, morning and evening in insomnia and nervous disorders.—*Pharm. Weekblad*, 75 (1938), 649. (E. H. W.)

Noribrom Tablets (Noris, Zahn & Cie, Prag.) contain phenobarbital, sodium bromide and dimethylaminopyrazolon. It is indicated in the treatment of neuroses, neurasthenia, etc.—*Pharm. Zentralhalle*, 79 (1938), 563. (N. L.)

Photobiline is a contrast substance for the biliary ducts made by N. V. Orgachemia at Oss. Photobiline is the sodium salt of tetraiodophenolphthalein, a blue, water-soluble substance that can be used intravenously or orally. As it is excreted into the gall bladder through the liver cells it is used when an X-ray picture of the gall bladder is desired. One uses a sterilized solution of 3–4 Gm. in 50 cc. which is slowly injected intravenously. Cachets are also supplied for oral use in which case the dose is 4–6 Gm.—*Pharm. Weekblad*. 75 (1938), 399. (E. H. W.)

Rodilone is a French preparation for internal use in gonorrhea. It is di-*p*-acetylaminophenylsulfon and is given in doses of 2.4–4.8 Gm.—*Pharm. Weekblad*, 75 (1938), 604 and 649. (E. H. W.)

Rubrophen (Sanabo-Chinoin, G. m. b. H., Wien) is a dye of the triphenylmethane series and is marketed as a tablet, salve and in the form of ampuls. It is recommended in the treatment of tuberculosis.—*Pharm. Zentralhalle*, 79 (1938), 449. (N. L.)

Septazine (Curta & Co. G. m. b. H., Berlin.) is *p*-benzylaminophenylsulfonamide, found on the market in 0.5 Gm. tablets and used in the treatment of septic and localized streptococcus and staphylococcus infections and the conditions caused by these infections such as erysipelas, puerperalsepsis, angina, etc.—*Pharm. Weekblad*, 75 (1938), 400. (E. H. W.)

Targophagm (Goedecke & Co., Berlin) is a mixture of Targesin (colloidal complex diacetyltanninsilveralbuminate) with *p*-butylaminobenzoyldimethylethanolhydrochloride and *p*-aminobenzoic acid-ethyl ester, in tablet form. The tablets are used in inflamation of the mouth and throat, angina, etc.—*Pharm. Weekblad*, 75 (1938), 650. (E. H. W.)

SPECIALTIES

Alasphin is the name given by the Netherlands Arsphenamine Company "Nedars" at Delft to the Dutch Neo-Arsphenamine. It is found on the market in the customary doses from 150 to 900 mg. per ampul; in boxes containing one ampul and ten ampuls.—*Pharm. Weekblad*, 75 (1938), 648. (E. H. W.)

Alepsal (Genevrier Laboratories at Neuilly-Paris) is a combination of phenylethylbarbituric acid with belladonna and caffeine, found on the market in tablets containing phenylethylbarbituric acid in three different doses, *i. e.*, 0.100 Gm., 0.050 Gm. and 0.015 Gm. per tablet. They are used in epilepsy.—*Pharm. Weekblad*, 75 (1938), 648. (E. H. W.)

Anichthol Suppositories and **Anichthol Salve** (Cordes Hermanni & Co., Hamburg) contain besides leukichthol (light ichthyol), bismuth gallate, balsam of Peru, menthol, extract of valerian and extract of lupulin. They are used in hemorrhoids and anal fissure.—*Pharm. Weekblad*, 75 (1938), 648. (E. H. W.)

Antizestot-Simple (Chem. Fabrik, Carl Kramer, Köln, Höhenberg) consists chiefly of a 3% solution of oil of chenopodium in castor oil together with methylisopropylphenol. It is intended as a parasiticide and vermifuge.—*Pharm. Zentralhalle*, 79 (1938), 595. (N. L.)

Antizestot-Strong (Chem. Fabrik Carl Kramer, Köln, Höhenberg) contains castor oil 17.0 Gm., extract of aspidium 6.29 Gm. together with methylisopropylphenol and volatile oils. It is recommended as a tænifuge.—*Pharm. Zentralhalle*, 79 (1938), 595. (N. L.)

Appendilon (Ilon, Freiberg, Breisg) consists chiefly of crocus, eugenol, anethol, calamus root, chamomille, frangula, angelica and fennel seed. It is indicated in the treatment of various abdominal disorders.—*Pharm. Zentralhalle*, 79 (1938), 448. (N. L.)

Asthmeron (O. Reichel, Fabrik pharmaz. und Biolog. Erzeugnisse, Berlin-Neukölln) consists chiefly of anise, pimpinella, mentha, grindelia, ephedrin, theophyllin, lobelia and arnica. It is recommended as an antiasthmatic and expectorant.—*Pharm. Zentralhalle*, 79 (1938), 562. (N. L.)

Asthmofral, (N. V. Pharm. Products Co., Philips-vanHouten) is a mouth and nose spray used in asthmatic conditions, bronchitis, hayfever and rhinitis vasomotoria. Composition not given.—*Pharm. Weekblad*, 75 (1938), 649. (E. H. W.)

Bechomed (O. Reichel, Fabrik, pharmaz. und biolog. Erzeugnisse, Berlin-Neukölln) consists chiefly of thyme, diosera, saponins, ephedrin and sodium bromide. It is recommended as a cough remedy.—*Pharm. Zentralhalle*, 79 (1938), 562. (N. L.)

Bedermin ("Bayer," I. G. Farbenindustrie, A.-G., Leverkusen a. Rh.) is a mixture of ascaridol and a carbon tetrachloride-seretin mixture. It is marketed in capsules of 0.6 Gm. and in bottles containing 30 cc. of a 14% solution. It is recommended as a vermifuge.—*Pharm. Zentralhalle*, 79 (1938), 639. (N. L.)

Bevizym (Chem. Fabrik J. Blaes & Co., G. m. b. H., München) consists of vitamin B_1 in ampuls, each containing 1 mg. crystalline vitamin B_1 per cc. together with ferments and amino acids obtained from yeast plants. It is recommended in the treatment of beri-beri, polyneuritis, neuralgia and migrane.—*Pharm. Zentralhalle*, 79 (1938), 544. (N. L.)

Bituminol (N. V. Organon) or Sulfobituminas ammonicus is a tarry product obtained from bituminous deposits in Jugoslavia, which contain fossil fish remains. The bituminous deposits are known there as Gyrodal. Bituminol is a thick, brownish liquid which can be readily mixed with water, glycerine, alcohol and ointments. An analysis by the Rijks Institut voor Pharmacotherapeutisch Onderzoek shows it to meet the requirements of the Swiss Pharmacopœia except for a somewhat low specific gravity.—*Pharm. Weekblad*, 75 (1938), 398. (E. H. W.)

Cardiopon—Dragèes (Troponwerke, Köln-Mülheim) contains in each drageè, powdered digitalis leaves 0.017 Gm., quinine sulfate 0.033 Gm., papaverine hydrochloride 0.01 Gm., extract of valerian 0.033 Gm., and an iodine preparation 0.07 Gm. It is used as a cardiac tonic.—*Pharm. Zentralhalle*, 79 (1938), 562. (N. L.)

Choleflavin (Bayer Products Ltd., London) contains trypaflavin, papaverine, podophyllin and peppermint oil. It is used as a cholagogue, disinfectant of the biliary passages; biliary stimulant, with spasmolytic and aperient action. Indications: Cholecystitis, cholangeitis, cholelithiasis; infections of the upper intestinal tract; prophylaxis against biliary colic. The dose is two pellets three times a day, before meals, increasing dose later. It is marketed in bottles of 60 pellets.—*Australasian J. Pharm.*, 20 (1939), 220. (A. C. DeD.)

Cholomagnol (Helfenberg), is magnesium oleate, found on the market in dragèes. It is used in gall bladder affections, gall stones and liver affections.—*Pharm. Weekblad*, 75 (1938), 649. (E. H. W.)

Corphyllamin (Syngala, Wien) consists of theophyllin and ethylenediamine and is marketed in ampuls and in the form of tablets and suppositories. It is recommended as a cardo-diuretic.—*Pharm. Zentralhalle*, 79 (1938), 562. (N. L.)

Cosanyl (Parke, Davis and Co., London and Sydney) is the trade name for the original preparation, Syrup Cocillana Compound P. D. and Co. Each fluidounce contains Tincture Cocillana, 40 minums; Tincture Euphorbia Pilulifera, 120 minums; Syrup Wild Lettuce, 120 minums; Syrup Squill Compound, 24 minums; Cascarin (P. D. and Co.), 8 gr.; Diamorphine Hydrochloride, $^1/_8$ gr.; Menthol, $^8/_{100}$ gr. It is marketed in bottles of 4, 16 and 80 fl. oz.—*Australasian J. Pharm.*, 20 (1939), 220. (A. C. DeD.)

Diätosal (Chem.-pharm. A. G. Bad Homburg, Franfurt a. M.) consists of potassium, sodium and magnesium salts and is recommended as a tonic and nervine.—*Pharm. Zentralhalle*, 79 (1938), 449. (N. L.)

Dolomo-Dragèes (Labopharma, G. m. b. H., Berlin-Charlottenburg) consists of quinine, caffeine, amidopyrin, phenacetin and vitamin C. It is recommended in the treatment of dysmenorrhea, grippe, etc.—*Pharm. Zentralhalle*, 79 (1938), 563. (N. L.)

Ferræmia (Wilcox, Jozeau and Co. Ltd., London) contains ferrous sulfate (protected against oxidation), dried yeast, traces of copper and manganese (chocolate-coated tablets). It is used in cases of anemias. The dose is one or two tablets three times a day, after meals. It is marketed in bottles of 60 tablets.—*Australasian J. Pharm.*, 20 (1939), 220. (A. C. DeD.)

Helmofix (Kon. Pharm. Fabriken Brocades & Stheeman en Pharmacia) is a worm remedy put up in gelatine capsules. Information regarding the composition is not given.—*Pharm. Weekblad*, 75 (1938), 649. (E. H. W.)

Hemostra (Roche Products Ltd., Welwyn Garden City, Herts., Eng.) contains tryptophane and histidine. It is used in pernicious anemia. Injection of contents of one or two ampuls once or twice a day is given. It is supplied in ampuls containing 2.5 cc. and 5 cc. each (six in box).—*Australasian J. Pharm.*, 20 (1939), 220. (A. C. DeD.)

Javadol Soap is a neutral fatty lanolin soap, which according to the manufacturer contains 3% of sodium oxyphenolate. This phenolate is an amorphous, reddish colored powder. The soap is gray-green and disinfectant, killing *B. coli* in 10 minutes.—*Pharm. Weekblad*, 75 (1938), 649. (E. H. W.)

Lactucyl (A. G. Knoll & Co., Ludwigshafen) is a sedative used in whooping cough. Lactucyl is obtained from the latex of *Lactuca virosa* by the method of Schenck. It is a uniform powder stable and soluble in water. It is found on the market in capsules containing 0.2 Gm. of Lactucyl. —*Pharm. Weekblad*, 75 (1938), 398. (E. H. W.)

Mandicid (Sanabo-Chinoin, G. m. b. H.) is a 40% solution of ammonium mandelate and is recommended in the treatment of cystitis, pyelitils, etc.—*Pharm. Zentralhalle*, 79 (1938), 449. (N. L.)

Nadola is the name given by Parke, Davis and Co. of London to tablets containing natural vitamins A and D.—*Pharm. Weekblad*, 75 (1938), 649. (E. H. W.)

Orgaderm (Orgachemia, at Oss) is an ointment used in wounds and in dermatology. It contains cod liver oil 15%, bituminol 1.5%, aqua hamamelidus 1%, zinc oxide 20%, basic bismuth gallate 10% and ointment constituents to 100%. It is sold in tubes of 25 Gm.—*Pharm. Weekblad*, 75 (1938), 399. (E. H. W.)

Pharka-Diuret-Zäpfchen (Pharka, Fabrik pharmaz. Präparate, Berlin) consists chiefly of squill, extract of betula, apocynum, theobromine and sodium acetate. It is recommended as a diuretic.—*Pharm. Zentralhalle*, 79 (1938), 644. (N. L.)

Phytossan (Behring Works) is a vaccine designed for the prophylaxis and treatment of whooping cough; scientific researches first being published in 1936. Advantage is taken of the fact that in this vaccine the harmful action of the endotoxins is removed without harm to the immunizing properties.—*Pharm. Weekblad*, 75 (1938), 400. (E. H. W.)

Purpuraten (A. G. Knoll & Co., Ludwigshafen) are plant extracts obtained from drugs possessing a cardiac action; *Nerium oleander*, Bulbus scillæ, *Digitalis lanata*, *Convallaria majalis*, and *Adonis vernalis*.—*Pharm. Weekblad*, 75 (1938), 400. (E. H. W.)

Reductylin Dragèes (Dr. G. Henning, Chem.-pharmaz. Werk, G. m. b. H., Berlin-Tompelhof) contain in each dragèe 5 mg. muskel-adenosin-phosphoric acid and 0.1 Gm. dried thyroid gland. It is recommended as a reducing remedy.—*Pharm. Zentralhalle*, 79 (1938), 577. (N. L.)

Sedokliman Tablets (Amsterdamsche Chininefabriek) contain ovaria siccata, gland. thyroideæ, bromoisovalerianyl urea and calcium-eudiural. Dose, 1–2 tablets, three times a day in climacteric oppression.—*Pharm. Weekblad*, 75 (1938), 649. (E. H. W.)

Serenol consists of phenylethylmalonylurea 0.005, hexamethylenetetramine 0.02, peptone 0.005, extract of belladona 0.002, extract of passion flower, extract of boldo 0.02, extract of anemone 0.005 and extract of cratægus 0.05 Gm. per tablet. The remedy is recommended to physicians as a sedative in nervous hypertension. The manufacturer and data for the pharmacist are not given by the importers.—*Pharm. Weekblad*, 75 (1938), 650. (E. H. W.)

Silacan Tablets (Thymodrosin, G. m. b. H., Bad Godesberg) contains laminara, spongia and cellulose derivatives, of each 5%, ferric lactate 0.75%, sucrose 38% and calcium salts 56.25%. It is recommended as an antirachitic.—*Pharm. Zentralhalle*, 79 (1938), 467. (N. L.)

Silandin (C. F. Boehronger & Sohne, G. m. b. H., Mannheim-Waldhof) is a form of magnesium hydrosilicate having special adsorbent properties. It is used in the treatment of flatulence.—*Pharm. Zentralhalle*, 79 (1938), 577. (N. L.)