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PHARMACEUTICAL ABSTRACTS

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ABSTRACTORS

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CHEMISTRY

BIOCHEMISTRY (*Continued*)

Wheat Germ Oil and Vitamin E. The oil and vitamin E are discussed as to physiology, chemistry, occurrence and determination, and therapeutic preparations. Eleven references are given.—F. GETIRNER. *Deut. Apoth.-Ztg.*, 55 (1940), 298–300, 306–308. (H. M. B.)

ANALYTICAL

Absorption Spectrophotometry. Corrected data are given for diethylstilboestrol and its dipropionate, and new data are given for testosterone and testosterone propionate. In the "difference method," with oily solutions, a sample of the oil must be available; the sample should not have been sterilized by heat and the concentration of the active substance must be sufficiently high to produce a marked increase in absorption over and above that due to the oil. Figures are given for sixty samples of halibut liver oil. Absorption curves and extinction values are given for a number of alkaloidal and other drugs, including the cocaine group, solanaceous alkaloids, barbiturates, ephedra alkaloids, morphine and related compounds, emetine, strychnine and plant hormones. The influence of solvents and p_H on these have been investigated so that the data may be adopted for analytical purposes.—W. F. ELVIDGE. *Pharm. J.*, 144 (1940), 366. (W. B. B.)

Acetanilide—Test for Aniline Salts in. Preliminary observations indicate that the U. S. P. XI test for aniline salts is falsely positive. The problem undertaken was to establish the conditions which would avoid hydrolysis of the acetanilide and would permit a true determination of the aniline salts. Using the U. S. P. XI procedure and carrying out hydrolysis at three temperatures—0° to 5° C., 25° C. and 50° C., four collaborating laboratories found that test samples of acetanilide gave a positive aniline salts test at 25° C. and an even more positive test at 50° C. The following aniline salts test under acetanilide U. S. P. XI is recommended: Shake 1 Gm. of acetanilide with 20 cc. of distilled water for two minutes and filter; the filtrate is neutral to litmus paper. Add 5 drops of ferric chloride T.S. to 5 cc. of the filtrate which has been previously cooled to 0–5° C. and the color noted after one minute; the color of the liquid does not differ from that produced by adding 5 drops of ferric chloride T.S. to 5 cc. of distilled water (*aniline salts*).—REPORT OF THE SUBCOMMITTEE ON CHEMICAL TESTS AND STANDARDS. *Proceedings, American Drug Manufacturers Association, Twenty-ninth Annual Meeting*, May (1940), 137–138. (N. L.)

Arsanilic Acid—Estimation of Small Quantities of, in Tryparsamide. The following method is recommended. *Reagents:* (1) A 4% aqueous solution of sodium nitrite. (2) Dilute hydrochloric acid B. P. (3) Solution of *beta*-naphthol B. P. *Procedure:* Weigh accurately 0.5 Gm. and 1.0 Gm. of tryparsamide into two test-tubes and dissolve in 6 cc. of distilled water. Cool each tube below 5° in an ice bath and add 2.5 cc. of 4% *w/v* sodium nitrite solution followed by 5 cc. of dilute hydrochloric acid. The solutions are mixed after each addition of reagent. Pour the contents of each tube into 10 cc. of previously cooled solution of *beta*-naphthol. Mix the diazotized solution and alkaline *beta*-naphthol by pouring from one tube to the other and place in the 1-cm. cell of the Lovibond tintometer. Match the color and record the red units. The quantity of arsanilic acid present is determined by reference to a graph prepared by plotting the red units obtained with standard solutions of pure atoxyl. The Pharmacopœial limit test for arsanilic acid in tryparsamide is satisfactory provided that the sample contains mere traces of arsanilic acid. When a sample of tryparsamide contains more than traces of arsanilic acid, it is not possible, by the official test alone, to determine whether the sample may be said to satisfy the requirements of the Pharmacopœia or to be very much over the limit.—C. A. MACDONALD and J. G. REYNOLDS. *Quart. J. Pharm. Pharmacol.*, 12 (1939), 534–540. (S. W. G.)

Arsenic—Cerimetric Determination of. A procedure has been developed according to which arsenic from its solutions in the tri- or quinquevalent form is reduced to the element by calcium hypophosphite in about 6*N* hydrochloric acid. The arsenic is dissolved in an excess of standard ceric sulfate and the excess back-titrated with arsenic trioxide. Satisfactory results have been obtained with amounts of arsenic varying between 2 and 0.1 mg. Tin and antimony do not interfere.—I. M. KOLTHOFF and E. AMDUR. *Ind. Eng. Chem., Anal. Ed.*, 12 (1940), 177–179. (E. G. V.)

Assay Methods for Some N. F. Ointments—Adaptation of. VIII. Compound Ointment of Sulfur. The following procedure is recommended: *Determination of the Precipitated Calcium Carbonate* (a modification of the N. F. VI method of assay of Tablets of Calcium Carbonate).—Place in a separator about 0.8 Gm. of the ointment accurately weighed. Add 70 cc. of warm toluene and shake until the base is dissolved. Add 40 cc. diluted hydrochloric acid and shake. Repeat the shaking out process with two 30 cc. portions of diluted acid to completely extract the calcium carbonate. Combine the acidulated aqueous portions in a large beaker. Reserve the toluene solution in a 400-cc. Erlenmeyer flask for the determination of the sulfur. To the combined aqueous portions add with stirring, an excess of hot ammonium oxalate test solution and make alkaline with ammonia test solution; heat the mixture on a water bath for 1 hour. Filter and wash the precipitate on the filter until the last washing shows no turbidity with calcium chloride solution. Discard the aqueous washings. Continue washing the precipitate with approximately 30 cc. of a mixture containing equal parts of toluene, chloroform and ether; discard this washing. Transfer the filter and precipitate to a beaker, add 100 cc. water and 10 cc. sulfuric acid. Heat the mixture to about 70° C. and titrate with 0.1*N* potassium permanganate. Each cc. of 0.1 *N* $KMnO_4$ = 0.005004 Gm. $CaCO_3$. *Determination of Sublimed Sulfur.*—Carefully evaporate on a water bath the toluene solution obtained above. Add to the residue in the flask 1 Gm. anhydrous sodium sulfite and approximately 35 cc. water and reflux the mixture for about 45 minutes. Then filter the mixture hot, washing twice with hot water, and combine the washings with the filtrate. Add to the combined filtrate and washings about 2 Gm. activated charcoal and carefully bring to a boil while stirring. Then cool the mixture and filter through a Büchner funnel. Wash the filter several times with cold distilled water and add the washings to the filtrate. Add to the combined filtrate and washings sufficient water to bring the volume to approximately 150 cc., add 8 cc. of formaldehyde solution and 10 cc. acetic acid. Titrate with 0.1*N* iodine using starch as the indicator. Each cc. 0.1*N* iodine = 0.003206 Gm. S. The following standard for this ointment is recommended: Compound Ointment of Sulfur contains not less than 9.2% and not more than 10.8% $CaCO_3$ and not less than 13% and not more than 17% S.—WM. B. BAKER and MARCEL RADEMACHER. *Pharm. Arch.*, 11 (1940), 38–42. (H. M. B.)

Assay Methods for Some N. F. VI Ointments—Adaptation of. VII. Ointment of Coal Tar. The following adaptation of the U. S. P. XI method for zinc oxide is used for the determination of this compound in the ointment: Place about 2 Gm. of the ointment, accurately weighed, in a crucible (30 cc.). Heat the crucible and contents gently over a Bunsen flame until the ointment is liquefied. Gradually increase the temperature and ignite until the ointment is completely carbonized. Digest the residue remaining in the crucible after ignition with 50 cc. *N* sulfuric acid until solution is complete. Then titrate the excess acid with *N* sodium hydroxide, using methyl orange as an indicator. Each cc. of *N* H_2SO_4 = 0.04069 Gm. ZnO. The following standard for this ointment is recommended: Ointment of Coal Tar contains not less than 21.75% and not more than 25.75% ZnO.—WM. B. BAKER and DOROTHY I. KUTZLY. *Pharm. Arch.*, 11 (1940), 19–21. (H. M. B.)

Assay Methods for Some N. F. Ointments—Adaptation of. VI. Ointment of Red Mercuric Oxide. The following adaptation of the N. F. VI assay method for red mercuric oxide is used for the ointment: Accurately weigh about 2 Gm. of the ointment and place in a 250-cc. separatory funnel containing 50 cc. chloroform. Add 75 cc. of water and 5 cc. nitric acid and shake vigorously until the ointment base has been dissolved. Draw off the chloroformic solution, repeat the shaking out process with two 20 cc. portions of chloroform. Combine the chloroformic solutions, then wash the chloroformic mixture with several 5 cc. portions of water until free from acid. Discard the chloroformic mixture. Combine the aqueous washings with the original acidified aqueous solution. Then add 2 cc. of ferric ammonium sulfate test solution and titrate with 0.1*N* ammonium thiocyanate. Each cc. 0.1*N* NH_4CNS = 0.01083 Gm. HgO. The following standard for the N. F. ointment is recommended: Ointment of Red Mercuric Oxide contains not less than 9.2% and not more than 10.8% HgO.—WM. B. BAKER and CLAIR E. KEITH. *Pharm. Arch.*, 11 (1940), 17–19. (H. M. B.)

Belladonna and Stramonium—Rapid Colorimetric Assay of. The following method is proposed: Introduce 1 Gm. of powdered belladonna leaf or root, accurately weighed, into a beaker of 50 cc. capacity, add 1 cc. of 95% alcohol and 0.1 cc. of 10% *w/w* solution of ammonia and mix until the drug is evenly wetted. Add about 5 cc. of chloroform, heat to boiling and transfer as much of the drug as possible to a dry miniature percolator previously plugged with about 0.02 Gm. of cotton and suspended within a stoppered measuring cylinder of 100 cc. capacity. If necessary, compress the drug very gently with a small glass rod so that the chloroform percolates at the rate of about one drop a second. Add more chloroform to the beaker and complete the transfer of the drug to the percolator; continue the extraction of the drug until the volume of the percolate is 31 cc. Add to the percolate sufficient 6% acetic acid (made with approximately 5% alcohol) to bring the level of the liquid to the 80-cc. mark, stopper the cylinder and shake gently for about fifteen seconds. Allow to stand until the immiscible liquids have separated or until the upper part of the aqueous layer is free from colored chloroform, then pipette off about 5 cc. of the upper layer and filter through a dry filter paper. Transfer exactly 1 cc. of the filtrate to an evaporating dish (5 cc. diameter), evaporate just to dryness on a boiling water bath and immediately add from a dropping pippette 0.2 cc. of fuming nitric acid (sp. gr. 1.5). Ensure that the acid makes contact with the whole of the alkaloidal residue, and evaporate to dryness leaving the dish on the boiling water bath for three minutes altogether. Add about 3 cc. of acetone, stir to dissolve the residue and transfer to a standard stoppered measuring cylinder of 10 cc. capacity; wash the dish with further small quantities of acetone and transfer them to the cylinder until the latter contains exactly 10 cc. of solvent. Allow the contents of the cylinder to cool, if necessary adjust the volume to 10 cc. with acetone, add 0.1 cc. of a 3% solution of potassium hydroxide in methyl alcohol (prepared within the last 20 days), insert the stopper, invert the cylinder once and allow to stand exactly five minutes. Transfer a portion of the purple liquid to a 1-cm. cell and immediately match the color by means of a Lovibond tintometer. Correlate the value obtained for the red component of the color with the amount of alkaloid present in the portion of the acetic acid extract taken for the color test by means of a table or graph prepared with solutions of known concentrations of hyoscyamine. The variations of the procedure required to apply the method to the following preparations are given: Stramonium leaf, powdered belladonna leaf, Tincture of Belladonna, B. P. and Tincture of Stramonium B. P., Liniment of Belladonna B. P. and Chloroform of Belladonna B. P. C., Liquid Extract of Belladonna B. P., Liquid Extract of Stramonium B. P., Glycerin of Belladonna B. P. C., Green Extract of Belladonna B. P. C. and Extract of Stramonium B. P. C., Dry Extract of Belladonna B. P., Dry Extract of Stramonium B. P., Ointment of Belladonna B. P. C. The assay can be completed within an hour, or less, and the results compare favorable with those obtained by the official methods.—N. L. ALLPORT and E. S. WILSON. *Quart. J. Pharm. Pharmacol.*, 12 (1939), 399–408. (S. W. G.)

Benzyl Chloride—Analysis of. To 20 cc. of water is added 0.5 Gm. of CH_2PhCl (I), the solution is made neutral (phenolphthalein) with 0.03*N* potassium hydroxide, 1 cc. of 0.05 quinol is added and the suspension hydrolyzed under reflux (2.75 hours). Total acidity, chlorine content and benzaldehyde content of the hydrolyzate are determined, and the (I), $CHPhCl_2$ and $CPhCl_3$ contents of the sample are calculated therefrom.—G. S. TZIPIN and A. I. TSCHEKALINA. *Prom. Org. Chim.*, 6 (1939), 504; through *J. Soc. Chem. Ind.*, 59 (1940), 59. (E. G. V.)

Betanaphthol—Identification and Determination of. The color reaction is applied to the identification of betanaphthol as follows: Dissolve an amount of the sample in 30% alcohol to give a concentration of 0.72 Gm. to 0.0144 Gm. per 100 cc. To 1 cc. of the prepared solution add sodium nitrite solution (0.69%), 1 drop to 2 cc. according to the suspected naphthol concentration, then add a volume of normal hydrochloric acid equal to the volume of sodium nitrite solution added. Make the final volume up to 10 cc. with distilled water. The color developed varies from rose to currant-red depending upon the amount of betanaphthol present. The maximum intensity is observed in a few seconds for higher concentrations to a few minutes for lower concentrations, but the color produced in the latter cases is more stable. The rose color is perceptible with 0.001*M* betanaphthol solutions. If one drop of the betanaphthol solution is mixed with 1 drop of 0.1*M* sodium nitrite and 1 drop of 1*N* hydrochloric acid on a porcelain plate, a red color develops. A 0.0001*M* solution of betanaphthol will give a rose color after ten minutes. By comparison with a series of colors obtained with known amounts (0.1 to 5.0 cc. of 0.01*M*) of betanaphthol the above procedure may be used to determine the amount of betanaphthol present in the sample. A preliminary test is necessary to obtain an estimate of the concentration of the unknown.—J. A. GAUTIER. *J. pharm. chim.*, 30 (1939), 70–76. (S. W. G.)

Bismuth and Antimony—Microcrystalline Reactions of Free or Combined. *Free Bismuth.* Place several very fine particles of bismuth (a small fraction of a mg.) near the end of a glass slide and add a drop of a 10% solution of iodine in alcohol and mix with a fine stirring rod. Hold the slide over a small flame and move the slide with a circular motion. The alcohol evaporates, leaving a deep red layer from which the iodine gradually volatilizes. The grayish residue, which usually has a slight reddish tint around the borders, is examined under a magnification of 130–200 ×, noting particularly the needles in the gray portions. The reddish color is caused by the formation of some oxyiodide. On exposure to ammonia vapors the gray bismuth iodide forms the orange to yellow bismuth ammonia iodide, which reacts with hydrochloric acid vapors to liberate the iodide in the form of brown needles. *Free Antimony.* The procedure is the same as for free bismuth and yields a reddish residue of antimony tri-iodide in the form of small yellow to orange hexahedra and pointed rhombs of the same color. On exposure to ammonia vapors the colorless antimony ammonia iodide is formed, and the latter reacts with hydrochloric acid vapors to liberate the orange antimony tri-iodide. *Combined Bismuth or Antimony.* Place several small particles of the substance on a glass slide, add a drop of hydrochloric acid and carefully evaporate to dryness over a very small flame. Treat the residue as above for free bismuth. The hydrochloric acid treatment may be eliminated by treating the sample with solution of hydriodic acid. Crystals of bismuth triiodide, bismuth ammonia iodide and antimony triiodide are illustrated.—G. DENIGES. *Bull. trav. soc. pharm. Bordeaux*, 77 (1939), 65–73. (S. W. G.)

Bismuth—Glycerite of, Determination of Bismuth in. A study of the assay for the bismuth content of solutions of bismuth dissolved in acid by the phosphate and sulfide method by various laboratories is given. The following method is recommended for the determination of bismuth in glycerite of bismuth, N. F.: Fill a 50-cc. volumetric flask exactly to the mark with glycerite of bismuth and transfer the solution so measured, quantitatively, to a 500-cc. volumetric flask, washing thoroughly with distilled water. Transfer 25 cc. of the diluted solution to a 400-cc. beaker and dilute to about 150 cc. with water. Add nitric acid carefully, until the precipitate which forms, just redissolves, then add 2 cc. nitric acid in excess. Heat to gentle boiling and add 40 cc. of di-ammonium phosphate solution, 10 Gm. per 100 cc., the first few cc., one drop at a time, with continuous stirring. Allow to stand on a steam bath for from one to two hours and decant through a prepared Gooch crucible which has been previously ignited and weighed. Wash several times by decantation with a 3% solution of ammonium nitrate to which have been added five drops of nitric acid per 100 cc. Transfer the precipitate to the crucible and wash completely with more of the ammonium nitrate solution. Dry at about 100° C. for thirty minutes and ignite at dull redness to constant weight ($BiPO_4 \times 0.7664 = Bi_2O_3$).—REPORT OF THE SUBCOMMITTEE ON ANALYTICAL ASSAY METHODS. *Proceedings, American Drug Manufacturers Association, Twenty-ninth Annual Meeting*, May (1940), 125–129. (N. L.)

Carbon and Hydrogen Determinations—Simplified Combustion Tube Filling for. The elimination of lead chromate for combustion tube fillings had no influence whatsoever upon the carbon and hydrogen results. Metallic silver, at a temperature of 400° C. and above, appears capable of absorbing, quantitatively, the oxides of sulfur with the formation of silver sulfate. Thus further independent experimental verification of the fact that lead chromate is not necessary in micro combustions, when metallic silver is present, has been offered.—JOSEPH B. NIEDERL and VICTOR NIEDERL. *Mikrochemie*, 26 (1939), 28. (R. H. B.)

Carbon Dioxide—Estimation of Small Quantities of, in the Air by the Absorption of Infra-Red Radiations. An investigation was made to determine the possibility of measuring amounts of carbon dioxide, of the order of that present in ordinary air, by the absorption of infra-red radiations. The method was sensitive, accurate and simple. The principle is applied for the first time in a superior form, in that the whole of the transmitted radiation is measured instead of that at the maximum of a particular absorption band. The use of a spectrometer is unnecessary and the disturbing influence of temperature variations is eliminated. The water vapor of the air under examination must be removed.—H. DINGLE and A. W. PRYCE. *Proc. Roy. Soc. London B*, 129 (1940), S 51. (W. T. S.)

Carbon Disulfide—Determination of. Carbon disulfide reacts with piperazine to give an additive compound, $C_4H_{10}N_2.CS_2$, which can be used for its determination. To a solution of carbon disulfide in strong alcohol an excess of piperazine dissolved in a small quantity of alcohol (95%) is added, the mixture is well shaken and allowed to stand for about half an hour. The precipitate is filtered off, washed with alcohol and then with ether, and dried at 105°. The carbon disulfide may be dissolved in other solvents such as benzene, toluene, acetone, decaline and ether. Hydrogen sulfide and thiophene do not interfere with the test. About four or five times as much piperazine as carbon disulfide is necessary. Carbon disulfide vapor mixed with air or other gases can be determined by bubbling the gas through an alcoholic solution of piperazine.—A. CASTIGLIONI. *Ann. chim. appl. Roma*, 29 (1939), 196; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 610. (S. W. G.)

Carbon—Gas-Volumetric Semimicrodetermination of. The wet oxidation method has been applied to cyclic compounds with low oxygen content.—E. BERL and W. KOEBER. *Ind. Eng. Chem., Anal. Ed.*, 12 (1940), 245–246. (E. G. V.)

Carbon—Microtitrimetric Dry Combustion Method for. The method combines Lindner's titrimetric method for the determination of carbon with the method of Niederl and Roth for the dry combustion of organic compounds. A new absorption vessel is described which facilitates operation and determination. Investigations as to the possibility of devising a semimicro method along similar principles were discontinued, since it became apparent that such a method would offer no advantages over existing gravimetric semimicro combustion procedures.—R. H. NAGEL. *Mikrochemie*, 26 (1939), 21–24. (R. H. B.)

Catalpa Ovata—Constituents of. About 5.7 Kg. of the bark of the roots of *Catalpa ovata* G. Don (*Bigoniaceæ*) was boiled for a short time in water to destroy enzymes. The mixture was filtered and the residue soaked in methanol for several days and then filtered. The solvent was recovered and the residue remaining was combined with the aqueous extract and then extracted with ether. The ethereal solution was then shaken with 5% sodium carbonate solution and then with 1% potassium hydroxide solution. The two alkaline extracts were separately acidified with 10% hydrochloric acid and extracted with ether. The ether-soluble extractive obtained from the sodium carbonate solution was recrystallized from hot water. The yield of colorless needles, decomposing at 228°, was 0.1 Gm. Analysis showed a formula of $C_{10}H_{10}O_4$; a mixed melting-point determination showed the substance to be identical with iso-ferulic acid prepared synthetically. Sitosterin,

melting point 114°, was also isolated from the ether extractives (after treatment with the sodium carbonate and potassium hydroxide solutions). About 0.8 Kg. of the leaves of *Catalpa ovata* was extracted with boiling sodium bicarbonate. The extract was acidified with 10% hydrochloric acid and then extracted with ether. The residue obtained after evaporation of the solvent was recrystallized from hot water. The yield of crystals melting at 202–203° was 0.15 Gm. These crystals were found to be identical with *p*-coumaric acid, $C_9H_8O_3$, prepared synthetically. About 3 Kg. of the bark of the trunk of *Catalpa ovata* were soaked in methanol for several days and the mixture filtered. The filtrate was concentrated and the waxy substance which separated was filtered off. The filtrate was further concentrated until most of the methanol was recovered and the liquid remaining was extracted with ether. After applying the extraction procedure described under the bark of the roots, a yield of 0.1 Gm. of *p*-coumaric acid was obtained. The aqueous solution remaining after the ether extraction was heated with 10% hydrochloric acid, extracted with ether and the ethereal solution was shaken with sodium bicarbonate solution and then acidified. After evaporation of the ether, the residue remaining was recrystallized from hot water. The product, $C_{10}H_{10}O_4$, forming colorless needles, melting at 171°, was shown to be identical with ferulic acid prepared synthetically.—MINORU HIRAMOTO and KAZUE WATANABE. *J. Pharm. Soc. Japan*, 59 (1939), 261–264 (Transactions, in English).
(N. L.)

Cheeses—Analysis of Blended. Procedures for determining the following are given: water, fat, mineral matter, salt, ash minus salt, phosphates, citric acid, alkalinity of the ash. Results are interpreted in the light of the legal requirements.—G. DESTREE. *J. pharm. Belg.*, 21 (1939), 999–1004.
(S. W. G.)

Chlorides in Toilet Soaps. The importance of ensuring no excessive amount of chloride in a soap base intended for conversion into a milled toilet soap is now recognized. The maximum amount of chloride which may be regarded as safe, if danger of cracking and difficulty of compression are to be avoided, varies with the nature of the soap, but, generally speaking, it should not exceed 0.3% to 0.4%. Obviously, in determining such small amounts, which may be the subject of dispute between buyer and seller, it is important that the method of analysis should be reliable, and it is satisfactory to note that the International Commission for the Study of Fats, which concerns itself also with international methods for analysis of soaps, has now abandoned the method of ashing the soap and determination of chloride in the ash, in favor of some other method such as precipitating the soap by addition of calcium nitrate and determining the chloride in the supernatant liquid. In ashing the soap, there is always a danger of volatilization and loss of chloride, so that low results may be obtained.—ANON. *Perfumer. Essent. Oil Record*, 31 (1940), 106. (A. C. DeD.)

Choline—Detection and Determination of, in Invertebrates. Choline may be identified in the acetone extracts of organs from invertebrates by formation of its acetic ester. The method utilizing the Florence reaction (formation of crystalline choline iodide from periodide) gives negative results with invertebrates. Biological and chemical studies lead the author to believe that the acetone extracts from the organs of marine invertebrates contain a substance which inhibits the Florence reaction. There also seems to be present another substance which inhibits the action of acetylcholine on the muscle of the leech.—A. CARAYON-GENTIL. *Bull. soc. chim. biol.*, (April, 1939); through *J. pharm. Belg.*, 21 (1939), 696. (S. W. G.)

Clematis Angustifolia Jacquin—Chemical Studies of the Roots of. Upon steam distillation the alcoholic extract of the roots yields a volatile oil (0.72%) with the following constants: sp. gr. (25°) 0.9766; solidifying point −10 to −11° C.; index of refraction (26° C.) 1.4705; optical rotation 0.00; acid value 109.58; saponification value 216.27; unsaponifiable matter 37.05%. The non-volatile portion of the alcoholic extract which was insoluble in water yielded an unidentified sterol, $C_5H_{10}O$, sitosterol, an unidentified acid, $C_{16}H_{23}COOH$, m. 74–75° C., myristic acid, α- and β-linoleic acids and oleic acid. The water-soluble portion of the alcoholic extract contained unidentified alkaloidal substances which could be extracted from alkaline solutions with ether and chloroform, a pentose and a methylpentose and a ketohexose (phenylhydrazone m. 198–199°).—T. H. TANG and Y. S. CHAO. *Pharm. Arch.*, 11 (1940), 60–64. (H. M. B.)

Chromatographic Adsorption. The principle of the method is as follows: Fill a glass tube with a powder, tamp it well and filter a solution of the pigments through the adsorbent column thus formed. The different pigments are adsorbed in colored zones which, after the filtration, are divided and the adsorbed bodies evaluated. The different tubes and adsorbents are reviewed. The choice of absorbent is most important and, although preliminary tests are usually necessary, the following general rules are helpful. Basic bodies adsorb compounds with acid properties, but also very unsaturated hydrocarbons, alcohols and ethers. Acid adsorbents fix only basic bodies. Weak adsorbents are indicated for the adsorption of very unsaturated substances having multiple chemical functions and which would be too strongly fixed by other adsorbents. Chromatographic analysis of colorless compounds may be carried out with the aid of fluorescent indicators. The author reviews results obtained with carotenoids, aliphatic, aromatic, alicyclic and heterocyclic compounds and with alkaloids and vitamins.—E. LEDERER. *Bull. soc. chim. France*, (1939), 897; through *J. pharm. Belg.*, 21 (1939), 836.
(S. W. G.)

Citric Acid—Determination of, in Food Products. A modification of the A. O. A. C. pentabromacetone method is described.—K. RUNDELL. *Soc. Chem. Ind. Victoria*, 39 (1939), 183–188; through *J. Soc. Chem. Ind.* 58 (1939), 1287. (E. G. V.)

Color of Solid and Liquid Substances—Methods of Measuring the. A review of theories.—FRANZ ZARIBNICKY. *Scientia Pharm.*, 11 (1940), 17–18.
(H. M. B.)

Coloring Agents—Pharmaceutical. The following summary is given: (1) Sixteen dyestuffs have been examined in detail for suitability for coloring pharmaceuticals, and the effects of acid, alkali, salt concentration, heavy metals and alkaloids upon all sixteen dyestuffs have been ascertained. (2) Six dyestuffs were selected and the effects upon them of oxidizing and reducing systems determined. Also their characteristic color reactions with concentrated sulfuric acid and their relative tinctorial values have been determined. (3) Their suitability for use in those preparations of the National Health Insurance Formulary, and the British Pharmacopœia and the British Pharmaceutical Codex, which are artificially colored have been examined, and suggestions have been made. (4) The keeping properties of Liquor Azorubri have been examined and an alternative formula allowing the use of different coloring agents and numbering the resultant solutions is suggested. (5) It has been shown that the dyes can be extracted from acid aqueous solutions (and from acidified pharmaceuticals) by amyl alco-

hol, and a scheme of analysis is recommended as follows: To 50 cc. of the sample add 10 cc. of concentrated hydrochloric acid and 60 cc. of amyl alcohol, shake the mixture and allow to separate. The partition coefficients are given as follows: acid magenta, 1; amaranth, 5; benzyl Bordeaux B, complete extraction; Bordeaux B, complete extraction; Carmoisin, complete extraction; lissamin red 6BS, 4; water red, almost complete extraction. Three extractions were necessary for the acid magenta and amaranth. The amyl alcohol solutions are reëxtracted with water, adding just sufficient solid sodium bicarbonate to neutralize the acidity, and the necessary tests are applied to the aqueous solutions. (6) No satisfactory method has been found for the quantitative determination of dyestuffs in pharmaceuticals.—C. L. M. BROWN. *Quart. J. Pharm. Pharmacol.*, 12 (1939), 332–346.
(S. W. G.)

Drugs—Review of Analyses of. Results of analyses of drug preparations tested in the Birmingham (England) laboratory over a long period of time are discussed. Variations and standards are reviewed in the light of old and new laws.—J. F. LIVERSEEGE. *Quart. J. Pharm. Pharmacol.*, 12 (1939), 468–77.
(S. W. G.)

Ephedrine Spray and Compound Ephedrine Spray—Assay of. Weigh accurately into a small tared beaker 5–10 Gm. of the sample; transfer to a small separator, rinsing the beaker several times with 5 cc. portions of ether until the inhalant is completely transferred. Add 10 cc. of aqueous solution of sulfuric acid (1–50) and shake gently. Transfer the acid layer to a second separator, shake the oily residue with four 10 cc. portions of the acid. Test for the complete removal of the alkaloid. Neutralize the combined acid solutions with ammonia T.S. and add 5 cc. in excess. Extract the alkaline solution with 30 cc. of washed ether. Wash the etheral extract with 1 cc. of water, adding the washing to the main aqueous solution. Filter the etheral extract into a 250-cc. Erlenmeyer flask through a pledget of cotton wet with ether and inserted in a small funnel. Repeat the extraction with four 30 cc. portions of washed ether. Test for complete removal of the alkaloid. Each of the ethereal extracts is washed with 1 cc. of water. Evaporate the ether to a volume of about 5 cc. on a water bath, so adjusted that the temperature of the ether will not rise above 30° C. Remove from the bath, add 50 cc. of $N/50$ sulfuric acid and heat further on the bath to completely dissolve the alkaloid and evaporate the remainder of the ether. Titrate the excess acid with $N/50$ sodium hydroxide using bromthymol blue T.S. as indicator. Each cc. $N/50$ H_2SO_4 = 0.0033 Gm. of ephedrine.—CHARLES O. WILSON. *Bull. Natl. Formulary Committee*, 8 (1940), 166–167.
(H. M. B.)

Ergot—Chemical Assay of Powdered. The following conclusions are given: (1) The Pharmacopœia Lab. method (employing a single five-hour extraction) does not take out the whole of the alkaloid, even if the amount of ammonia is increased or dilute ammonia is used, although this factor certainly does influence the results. In our results on the six samples examined the efficiency of their method ranged from 63% to 87% and averaged 78%. Omitting the results on one sample which was not finely powdered, the average efficiency was 81%. (2) The B. P. 1932 method (single half-hour shaking at room temperature) also did not take out the whole of the alkaloid from any of the six samples. The efficiency of this method was greatly increased by mechanical shaking, when it ranged from 74% to 84% and averaged 80%, or 81% on the finely powdered samples. It was still further increased in high potency ergots by decreasing the drug/menstruum ratio. (3) No clear evidence was obtained that the efficiency of the B. P. 1932 method depended on the alkaloidal content of the ergot. The efficiency of Hampshire and Page's method, on the other hand, was definitely higher with low potency ergots, in which it exceeded the efficiency of the B. P. method. These results explained the discrepancy between H. and P.'s finding (with a low potency ergot) that their method was more efficient than the B. P. method and Allport and Porter's finding (with a high potency ergot) that H. and P.'s method is less efficient than the B. P. method. (4) The low efficiency of both methods is due to incomplete extraction, since it was always found possible to obtain more alkaloid by reëxtraction of their marcs. When reëxtraction was carried to exhaustion the B. P. method usually gave slightly higher results than H. and P.'s method. It is suggested that this difference is due to destruction of some of the alkaloid by heat. Support for this suggestion was afforded by the results of direct experiments on the effect of heat on ethereal solutions of ergot alkaloids. (5) The authors extracted the powdered ergot with acetone and ammonia for half an hour at room temperature. This procedure when applied to the six samples showed an average efficiency of 93%. Reëxtraction of the marcs yielded total figures for the assays agreeing within the limits of experimental error with the total figures obtained by continuing the B. P. 1932 method to exhaustion, and it was concluded that both methods when carried to exhaustion by a single reëxtraction measure the total alkaloids completely.—C. DAGLISH and F. WOKES. *Quart. J. Pharm. Pharmacol.*, 12 (1939), 451–467. (S. W. G.)

Formaldehyde—Determination of Small Amounts of, in Broth. The iodometric, the dimedone and the colorimetric methods are the three generally used for accurately determining small amounts of fomaldehyde in broth. These three methods are described and a comparison given of the results obtained thereby. By using chrome-sulfuric acid to oxidize the aldomedone of formaldehyde and then employing iodometry, it was possible to accurately determine any amount of formaldehyde over 0.1 mg. With the use of this method to follow the fate of formalin in crude toxin during the process of toxoid formation, the relationship between the concentration of formalin and the degree of its fixation has been determined.—DANJI MATSUKAWA. *Kitasato Arch. Exp. Med.*, 17 (1940), 95–105. (W. T. S.)

Ginger—Study of the Assay of. Objections to the U. S. P. XI method are given and the history of assay methods is reviewed. Experimental work included the assay of a number of samples by the U. S. P. XI method, the effect of water bath temperature on ether-soluble extractive, volatility of ether-soluble extractive, determination of nonvolatile ether-soluble extractive, Wirth's method for the determination of the amount of volatile constituents, shake-out method for the determination of gingerol, qualitative tests for ginger extracts, Clevenger's method for the determination of the volatile oil and a new method for the determination of ether-soluble extractive. The authors conclude that failure of operators to get concordant results is mainly because of impossibility of telling when odor of ether is gone. Part of the ether-soluble extractive is volatile. Longer exposure to heat causes greater loss of weight. Ginger should be stored in airtight containers in a cool place. The pungent material is either volatilized or oxidized at temperatures around 100° C. Clevenger's method for determination of the volatile oil content is satisfactory, but his methods for other constants necessitate special equipment. Ginger extracts give a specific color reaction. The method found satisfactory involves

extraction for two hours in a Soxhlet apparatus. Details of procedure are given.—ROBERT TZUCKER and C. B. JORDAN. *Jour. A. Ph. A.*, 29 (1940), 265. (Z. M. C.)

Humic Acids—Investigation on Soil and Peat. I. Isolation and Purification of the Acids. Two humic acids isolated from two Assam tea soils have been compared with two commercial humic acids isolated from peat in regard to the content of C, H, N, OMe, acetyl and furfural and formaldehyde-yielding groups.—G. C. ESH and S. S. GUHA-SIRCAR. *J. Indian Chem. Soc.*, 17 (1940), 326. (F. J. S.)

Hydrocyanic Acid—Comparison of Methods for Determining Small Quantities of. Plant material undergoing autolysis in rubber-stoppered flasks may be transferred to the distillation apparatus without appreciable loss of hydrogen cyanide. Tin condensers are satisfactory for distillation of aqueous hydrogen cyanide. The Prussian blue method for determining hydrogen cyanide is of limited applicability. Alkali titration of whole distillates instead of aliquots leads to more accurate results than does the cyanate ion colorimetric method.—O. H. COLEMAN and R. GARDNER. *Soil Sci.*, 47 (1939), 409–413; through *J. Soc. Chem. Ind.*, 58 (1939), 1163. (E. G. V.)

Hydrogen Sulfide in Acetone Solution—Use of. The authors tried different solvents for hydrogen sulfide and found acetone to be the best from the practical standpoint. The hydrogen sulfide was dried and bubbled into the solvent until the solution was saturated (22.4 Gm. of hydrogen sulfide per liter of acetone). The solution is miscible with water and organic solvents, and it is stable for a period of six months. After a year the solution forms a turbid mixture with water because of the formation of water-insoluble thioketones. The acetone solution may be used in place of the aqueous solution of hydrogen sulfide.—M. PERONNET and R. H. REMY. *J. pharm. chim.*, 30 (1939), 170–172. (S. W. G.)

Indicators—New Oxidation-Reduction. If in the oxido-reduction system ferrous-ferric, a sensitive reagent, is added which reacts with one of the ions the product is an oxido-reduction indicator. A good indicator should be reversible and should require a negligible concentration to be recognized. The author particularly studied ferrous dimethylglyoxime, which is a good indicator in weakly alkaline medium. It functions equally well with thioglycolic acid, formaldoxime, salicylic acid, hydroxyquinoline, pyrocatechin and pyramidon.—G. CHARLOT. *Bull. soc. chim. France* (1939), 970; through *J. pharm. Belg.*, 21 (1939), 941. (S. W. G.)

Iodoform—Volumetric Determination of. Two methods are described: (*a*) iodoform (0.5 Gm.) absolute ethyl alcohol (30 cc.) and potassium hydroxide (5 Gm.) are gently boiled for 2 hours, cooled and diluted with water; 50 cc. of nitric acid are added and the iodine is determined by Volhard's method. (*b*) To iodoform (0.5 Gm.) dissolved in ethyl ether-ethyl alcohol (1:3; 10 cc.) are added 0.1*N* silver nitrate (50 cc.) and then nitric acid (*d* 1.42, 1 cc.). The mixture is gently heated until the odor of nitric acid disappears and after addition of water (100 cc.) is titrated with 0.1 *N* potassium cyanate (ferric alum as indicator).—E. FUNCK. *Suddeut. Apoth.-Ztg.*, 79 (1939), 622; through *J. Soc. Chem. Ind.*, 58 (1939), 1097. (E. G. V.)

Iron—Microdetermination of, with the Silver Reductor. The hydrogen peroxide interference of iron in the microdetermination of iron with the silver reductor can be avoided by using a considerably smaller reductor column. A simplified procedure is presented for the microdetermination of iron.—S. M. EDMONDS and N. BIRNBAUM. *Ind. Eng. Chem., Anal. Ed.*, 12 (1940), 60–61. (E. G. V.)

Isacene—Identification Reactions of. The presence of the phenol and the acetyl groups may be used for the identification of isacene (diacetyldioxyphenylisatine). The phenol group can be demonstrated with Ehrlich's reagent as upon the addition of sodium nitrite and sulfanilic acid to the alcoholic solution previously made alkaline by the addition of a few drops of sodium hydroxide solution a beautiful orange-red color develops. After acidifying with sulfuric acid, when the color changes to yellow, the odor of ethyl acetate is easily perceptible; thus the presence of the acetyl group is also demonstrated. The author discusses and recommends the following tests: (1) When 10 mg. of diacetyldioxyphenylisatine are dissolved in 1 cc. of strong alcohol (with the aid of heat), 1 cc. of *N*/10 alkali is added and the whole heated to boiling, a light violet liquid results, which, after cooling, turns to dark blue upon the addition of one drop *N*/2 bromine water. When this solution is shaken with chloroform, the chloroform layer assumes a blue color and the aqueous layer a violet color. (2) When 10 mg. of diacetyldioxyphenylisatine are dissolved in 1 cc. of strong alcohol and a few drops of alkali and 0.5% nitrite solution are added, the liquid will assume an orange-red color with the diazo reagent of Ehrlich *A*. If the liquid is then made acid with sulfuric acid, the color becomes yellow, and upon boiling the odor of ethyl acetate becomes perceptible. (3) The solution of 10 mg. of diacetyldioxyphenylisatine in 1 cc. of sulfuric acid is colored purple.—H. J. A. TER WEE. *Pharm. Weekblad*, 76 (1939), 1256. (E. H. W.)

Kjeldahl Determination of Organic Nitrogen—Review of. A critical review of the literature on the Kjeldahl determination of organic nitrogen. The discussion is divided into the following: (I) Introduction; the origin and history of the Kjeldahl method are given. (II) Digestion media; the use of sulfuric acid as the digestion medium and the effect of added substances such as sodium sulfate, potassium sulfate, sodium pyrophosphate and phosphoric acid are discussed. (III) Oxidizing agents; methods of increasing the oxidizing power of sulfuric acid by the addition of potassium permanganate, hydrogen peroxide and perchloric acid are considered. (IV) Catalysts; the search for catalysts to increase the velocity of the reaction is reviewed. (V) Distillation and determination of ammonia; the steam distillation, aeration and heat distillation methods for removing the ammonia evolved on basifying the digestion mixture are discussed. The determination of ammonia by the boric acid method, "formol titration," Kjeldahl's original iodometric determination and other methods are compared with the one most widely used at present. (VI) Application of the method to the more complicated compounds; modified methods of the Kjeldahl determination to be applied to nitrates, nitro, nitroso, azo compounds and compounds containing ring nitrogen (which do not lose nitrogen readily on digestion) are discussed. (VII) The relation of microchemistry to organic nitrogen; the micro-Kjeldahl determination does not differ in principle from the macro-method, and accordingly the same precautions apply here.—R. B. BRADSTREET. *Chem. Rev.*, 27 (1940), 331–350. (N. L.)

Lead Chromate—Colorimetric Determination of, by Diphenylcarbazide. After ashing biological material, lead is precipitated as lead potassium chromate by addition of potassium chromate to a solution of the ash containing chloride, citrate, acetate and ammonium ions at p_H 6.6 to 7.4. The precipitation is accomplished in a centrifuge tube and the double chromate is separated and washed by centri-

fuging. Lead is determined colorimetrically by means of the red color formed by diphenylcarbazide with chromate. Preliminary separation of lead is omitted. Absence of interference by other metals has been demonstrated.—T. V. LETENOFF and J. G. REINHOLD. *Ind. Eng. Chem., Anal. Ed.*, 12 (1940), 280–284. (E. G. V.)

Lead-Dithizone System—Photelometric Study of. Using the A. O. A. C. procedure spreads obtained between 0 and 50 micrograms of standard lead solution are almost doubled when a filter having a maximum transmission at 610 millimicrons is substituted for the blue-green filter.—C. L. GUETTEL. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 639–640. (E. G. V.)

Lead, Thorium and Uranium—Determination of, in Zircon. A method is given for the determination of lead, thorium and uranium in zircon (and its variety cyrtolite), one gram of mineral being required for the determination of these three elements in one weighed portion of material. The procedure is of value in measuring geological time by the so-called "lead method" and is satisfactory when applied to artificial mixtures of known composition.—F. HECHT and F. KORKISCH. *Mikrochemie*, 28 (1939), 30–63 (R. H. B.)

Litharge and Minium—Analysis of. Qualitative Test for Litharge. Place about 2 Gm. of the sample in a 250-cc. conical flask, add 20 cc. of sodium hydroxide solution (*d* 1.33), mix and add 50 cc. of distilled water. Heat to boiling over a small flame and boil for 10 minutes. Cool, add 100 cc. of distilled water and mix. With best quality litharge the solution is complete and the liquid is as clear and colorless as water. Insoluble matter, if present, may be collected on a tared porous glass filter. *Quantitative Analysis of Litharge.* Proceed as above, using sample of 0.25 Gm. of litharge, collecting the filtrate in a 250-cc. flask. Wash the first flask and filter with distilled water, adding the washings to the filtrate. Mix, insert a strip of pure electrolytic zinc, let stand for 24 hours, then add another strip of zinc and let stand for another 24 hours. Transfer the zinc and the precipitated lead into a 250-cc. porcelain dish. Grasp the strips with a small pair of brass tweezers and remove the metallic lead. Convert the lead into lead nitrate, then precipitate it as lead sulfate which is collected and weighed. *Qualitative Test for Minium.* Place 5 Gm. of the sample in a 125-cc. conical flask, add 50 cc. of distilled water, mix, then add 50 Gm. of sugar and 10 cc. of nitric acid. Heat the mixture over a small flame. If the minium is pure it dissolves completely when the temperature reaches about 75°. Collect any insoluble matter on a tared porous glass filter. The insoluble matter should not exceed 5%. *Quantitative Analysis of Minium. Lead Dioxide.* Place a weighed sample (about 1.50 Gm.) in a 125-cc. conical flask, add 50 cc. of water and 5 cc. of nitric acid, then heat on a boiling water bath for one hour with frequent shaking. Decant the liquid through a tared No. 4 Schott filter, collecting the filtrate in a 200-cc. volumetric flask, and again treat the residue with water and nitric acid. Decant the liquid through the filter, completely transfer the lead dioxide to the filter and wash the flask and the filter with water, combining the filtrates and washings. Make up the volume in the volumetric flask to 200 cc. with water. Dry the filter and residue of lead dioxide at 100°, cool and weigh. *Lead Monoxide.* Transfer 100 cc. of the solution in the 200-cc. volumetric flask to a 250-cc. conical flask, slowly add a slight excess of diluted sulfuric acid, recover the precipitate on a tared No. 4 Schott filter, dry at 100°, cool and weigh.—M. FRANCOIS and L. SEGUIN. *J. pharm. chim.*, 30 (1939), 97–105. (S. W. G.)

Lobelia—Alkaloidal Assay of, and Its Preparations. The following procedure is recommended: Mix 10 Gm. of the powdered drug with 50 cc. of ether-alcohol (4:1), shake for a few minutes, add 2 cc. of diluted solution of ammonia, shake, allow to stand for 30 minutes, then percolate with the ether-alcohol mixture until the alkaloids are removed completely. Transfer the percolate to a separator and extract with successive portions of 2% sulfuric acid until washings do not give a precipitate with Mayer's reagent. Wash the combined acid extracts with 15 cc. of ether, wash the ether with 10 cc. of *N*/10 sulfuric acid and add the aqueous layer to the combined acid extracts. Make the acid aqueous solution alkaline with dilute solution of ammonia and extract with chloroform until all the alkaloids are removed, washing each portion of chloroform extract with the same 5 cc. portion of water. Remove the chloroform by distillation until the volume is reduced to about 2 cc., add 5 cc. of absolute alcohol and evaporate to dryness at a low temperature. Add two further portions of absolute alcohol followed by evaporation and dry the residue at 80°. Add 10 cc. of *N*/50 sulfuric acid, allow to stand for several hours, then titrate the excess of acid with *N*/50 sodium hydroxide, using methyl red or cochineal as indicator. The number of cc. of acid required multiplied by 0.00674 gives the weight of alkaloid, calculated as lobeline, in the quantity of drug taken. *Tinctures.* Acidify 50 cc. of the tincture with 1 cc. of diluted acetic acid, add 25 cc. of distilled water and evaporate the mixture in a porcelain dish to a volume of about 20 cc. Filter the liquid through a small pledget of cotton into a separator, washing the residue in the dish with successive small portions of water acidulated with acetic acid until all alkaloids are removed. Make the combined solutions alkaline with dilute solution of ammonia and proceed as under the powdered drug starting with the extraction of the alkaline solution with chloroform.—H. A. CAULKIN. *Quart. J. Pharm. Pharmacol.*, 12 (1939), 438–445. (S. W. G.)

Magnesium—Colorimetric Microdetermination of. Magnesium is precipitated as magnesium hydroxyquinolinate. The precipitate is dissolved in hydrochloric acid and made to volume and an aliquot is buffered with sodium acetate and then treated with ferric chloride. The green-black pigment, formed by the reaction of ferric iron with hydroxyquinoline, is extracted with chloroform, made to volume with butyl alcohol and compared against a standard in the colorimeter.—C. P. SIDERIS. *Ind. Eng. Chem., Anal. Ed.*, 12 (1940), 232–233. (E. G. V.)

Magnesium Sulfate U. S. P. and Ampuls of Magnesium Sulfate N. F.—Assay of. It is recommended that the U. S. P. assay for magnesium sulfate be revised as follows: Weigh accurately about 0.25 Gm. of ignited magnesium sulfate and dissolve in 100 cc. of water. Add 1 cc. of hydrochloric acid and 20 cc. of ammonium phosphate T.S. Then add ammonia drop by drop with constant stirring until a slight precipitate forms. Continue stirring until the crystalline precipitate is well formed and resume the addition of ammonia, drop by drop, with stirring until there is no further precipitation. Then add 20 cc. of stronger ammonia and allow to stand over night. Transfer the precipitate to a Gooch crucible, previously ignited and weighed, washing with 2.5% ammonia, until the washings are free from sulfate. Add a few crystals of ammonium nitrate to the crucible and dry at about 100° C. Ignite carefully, starting with a very low heat and gradually increasing to bright redness, until constant weight is obtained ($Mg_2P_2O_7 \times 1.081 = MgSO_4$). The assay procedure recommended for ampuls of magnesium sulfate N. F. is: Transfer an accurately measured

volume of the ampul solution, containing about 0.25 Gm. of anhydrous magnesium sulfate, to a beaker with 100 cc. of distilled water and 1 cc. of hydrochloric acid. Add 20 cc. of ammonium phosphate T.S. and ammonia water, drop by drop, with constant stirring until a slight precipitate forms and proceed as directed above.—REPORT OF THE SUBCOMMITTEE ON ANALYTICAL ASSAY METHODS. *Proceedings, American Drug Manufacturers Association, Twenty-ninth Annual Meeting*, May (1940), 120–121. (N. L.)

Medicaments—Examination of Some. The analyses of 47 commercial products are reported.—G. DULTZ. *Deut. Apoth.-Ztg.*, 55 (1940), 149–150, 284–285. (H. M. B.)

Mercurial Ointments—Assay of Some. *Oleated Mercury, B. P.* This preparation should contain between 19% and 21% of yellow mercuric oxide and is assayed by Allport's method (*Quart. J. Pharm. Pharmacol.*, 1 (1928), 23) of precipitation of the mercury as mercuric sulfide from a solution of the substance in a mixture of benzene, glacial acetic acid and alcohol. It may also be assayed by the method suggested for the assay of strong ointment of mercuric nitrate (Ferrey, *Quart. J. Pharm. Pharmacol.*, 11 (1938), 431). The small proportion of liquid paraffin present does not interfere in any way and saponification with aqueous-alcoholic potash is rapid. *Ointment of Red Mercuric Iodide, B. P. C.* Treat 2 to 3 Gm. of the ointment in a 250-cc. conical flask with 2 Gm. of zinc filings, 5 Gm. of potassium hydroxide pellets and 50 cc. of ethyleneglycol monoethylether. Boil under a reflux condenser for ten minutes, add 50 cc. of water through the condenser, boil for a further ten minutes, add through the condenser 3 cc. of solution of formaldehyde. Allow to cool, filter through a paper pulp filter, wash the amalgam with warm 5% potassium hydroxide solution, washing the filter with a little alcohol if necessary, transfer the paper pulp to the flask, connect to the condenser, add 20 cc. of water followed cautiously by 20 cc. of nitric acid. When the zinc has dissolved, heat to dissolve the mercury and remove nitrous fumes, cool, oxidize with permanganate, decolorize with a drop of hydrogen peroxide solution and titrate with $N/50$ thiocyanate. *Dilute Ointment of Mercuric Nitrate, B. P.* Treat 2 Gm. of the ointment in a 250-cc. conical flask with 2 Gm. of zinc dust, or preferably filings, 5 Gm. of potassium hydroxide pellets and 50 cc. of ethyleneglycol monoethylether. Boil under a reflux condenser for ten minutes, allow to cool somewhat, pour through the condenser 50 cc. of water and boil for a further ten minutes. Allow to cool for a few minutes; remove the flask from the condenser and add 50 cc. of toluene. Filter through a paper pulp filter, washing the amalgam by decantation with alternate portions of 5% potassium hydroxide solution and of toluene. Transfer the paper pulp to the flask, connect the latter to the condenser and complete the assay as for Ointment of Red Mercuric Iodide, using $N/50$ thiocyanate for the titration. *Ointment of Oleated Mercury, B. P.* The Ointment may be assayed by the method described for Dilute Ointment of Mercuric Nitrate.—G. J. W. FERREY. *Quart. J. Pharm. Pharmacol.*, 12 (1939), 413–419. (S. W. G.)

Mercurochrome—Determination of Mercury in. The B. P. C. method for determining mercury in mercurochrome is carried out in acid solution and a large proportion of alcohol is required to keep the dibromohydroxymercurifluorescein formed in solution; the results may be low and erratic. The following method gives consistent results:—Half to 1 Gm. of the mercurochrome is weighed out into a 250-cc. conical flask and dissolved in 20 cc. of water; 5 Gm. of KOH pellets and 2 Gm. of zinc filings are added and the mixture boiled under reflux for at least fifteen minutes; the flame is removed and the condenser washed well with water, and the contents are dissolved in a mixture of 20 cc. of nitric acid with 20 cc. of water. After gently boiling off the nitrous fumes, the solution is cooled, treated with a slight excess of $KMnO_4$, decolorized with a drop of solution of H_2O_2 and titrated with $N/10$ ammonium thiocyanate. Assays can be carried out in an hour and the method also gives accurate results with mercuric chloride.—G. J. W. FERREY. *Pharm. J.*, 144 (1940), 366. (W. B. B.)

Mercury—Detection of, by Formation of Ring of Mercuric Iodide. The mercury is plated on a copper strip from which it is removed, after drying, by gentle heat in a dry tube in which a particle of iodine has been sublimed into a drawn-out and cooled portion. The ring of mercuric iodide is formed by direct reaction in the narrow part of the tube. The following technique is recommended: Immerse a strip of copper foil in the solution containing the mercury and let stand. Polish the ends of a piece of glass tubing 20 cm. long with an external diameter of 7–8 mm. and an internal diameter of 5 mm. Draw the tube *A* out to about one-third its length so that the drawn-out part is about 6–8 cm. long and about 1 mm. internal diameter. Support the tube with two clamps and attach to the end farther removed from the narrow part 35–40 cm. of rubber tubing. Prepare a glass tube, *T*, 15 cm. long, place one pledget of cotton in the center of this tube and another pledget of cotton at one end. Connect the free end of the rubber tube to a sulfuric acid gas bubbler with a long liberation tube of hard glass. Expel all traces of moisture from the apparatus by gently heating the tube leading to the bubbler and drawing a stream of air through the acid and the tubes by means of a moderate suction with a water pump. A safety flask may be placed between the pump and the end of tube *A*. Stop the passage of dry air after 8–10 minutes, remove the rubber tube from the bubbler and attach the glass tube *T* after placing a particle of iodine about one-fifth the size of a pinhead in the wide portion of tube *A*. Moisten a piece of filter paper 3–4 cm. wide and 10 cm. long and wrap it around a part of the drawn-out portion of tube *A*. Heat the iodine very gently and exhale gently into the free end of tube *T* to carry the iodine to the cooled tube *A* where it condenses. Allow the warmed tube to cool slightly. Remove the strip of amalgamated copper foil from the solution, wash with water, alcohol and ether to remove any trace of moisture; remove the rubber tube, then slip the foil into tube *A* so that the amalgamated end is about 1 cm. from the narrow part. Reconnect the rubber tube, heat the other end of the copper strip gently and exhale slowly into the free end of tube *T*. When the copper foil is free from mercury gently heat the tube *A* from the supports toward the cooled narrow part, rotating tube *A* during this operation. The ring of mercuric iodide will form in the cooled portion of tube *A*. With 0.05 mg. of mercury in the sample and after 24 hours' contact of the copper foil with the liquid, a distinct ring may be obtained.—R. CAMBAR. *Bull. trav. soc. pharm. Bordeaux*, 77 (1939), 207–215. (S. W. G.)

Microelementary Analysis—Principles of a. Several innovations in the determination of both carbon-hydrogen and nitrogen are reported and described. Replacement of the combination sodalime-calcium chloride by Ascarite-Drierite and the use of an electrical heated furnace instead of the gas heated long-burner is recommended. Replacement of the metal mortar by the one-piece glass mortar and the use of the combustion tube with sidearm are great improvements. The absorption tubes in their original form are preferred to all other proposed types. A method

for the combustion of explosive compounds is given. A modified Kipp apparatus for the generating air-free CO_2 for nitrogen determinations is described. Roll copper gauze is recommended to replace reduced copper in wire form. Pregl's rule concerning gas velocity need not be followed strictly.—C. TIEDCKE. *Mikrochemie*, 28 (1939), 64–81. (R. H. B.)

Moisture in Face Powders—Determination of. Various methods of determining the moisture in face powders are described.—ANON. *Perfumer. Essent. Oil Record*, 31 (1940), 157. (A. C. DeD.)

Naphthenic Acids—Analysis of. When a sample of naphthenic acid is exactly neutralized to phenolphthalein with 0.5*N* sodium hydroxide, any phenols and non-acidic materials should be removed by shaking out the solution with petroleum ether. The purified naphthenic acids are then recovered from the aqueous solution by acidification, weighed and titrated.—J. R. M. KLOTZ and E. R. LITTMANN. *Ind. Eng. Chem., Anal. Ed.*, 12 (1940), 76–77. (E. G. V.)

Nitrates—Colorimetric Microdetermination of. Place 1 to 10 cc. of the sample (according to the suspected nitrate concentration) in a porcelain dish, neutralize if necessary with 1 or 2 drops of ammonium hydroxide solution, then evaporate to dryness on a water bath or in an oven. Cool, add a drop of nitrobenzene and 15 drops of sulfuric acid, dropping the acid on the nitrobenzene to avoid direct action with the nitrate residue. Mix with a glass rod and let stand for 2–3 minutes. Add 5 cc. of acetone, mix, transfer to a glass-stoppered cylinder, rinse the dish with 5 cc. of acetone and add the rinsings to the mixture in the cylinder. Add 5 cc. of sodium hydroxide solution (*d* 1.33) diluted with an equal volume of water, stopper the cylinder and shake well for several seconds. A rose to violet color appears. Shake again and let stand for 10 minutes. Prepare a standard by the above procedure using 5 cc. of a solution of potassium nitrate containing 0.187 Gm. per liter or 0.5 mg. of nitrogen pentoxide per 5 cc. After 10 minutes, remove the colored acetone layers by means of a pipette and compare them in a Duboscq colorimeter. The quantity of nitric acid is inversely proportional to the variation of the reading on the colorimeter scale. With waters containing chlorides remove the chlorides by precipitation with 1:200 solution of silver sulfate (dissolve 1 Gm. of silver sulfate in 100 cc. of hot distilled water, cool and dilute to 200 cc.) as follows: Measure 20 cc. of the water in a cylinder, add 1–2 drops of sulfuric acid (1:5), then drop by drop the 1:200 solution of silver sulfate until a drop of the mixture gives a very pale brown color on filter paper wet with 1:20 potassium dichromate solution. Make the volume up to 22 or 24 cc., according to the volume after adding the precipitant, mix well and filter. To a volume of filtrate one-half the volume of the mixture, corresponding to 10 cc. of the water, add 2 drops of ammonium hydroxide solution, evaporate and proceed as above.—M. PESEZ. *J. pharm. chim.*, 30 (1939), 112–117. (S. W. G.)

Nitrogen—Iodometric Estimation of Small Quantities of, without Distillation. Methods for the estimation without distillation of nitrogen in samples of 0.5 to 0.005 mg. of nitrogen as protein have been described based on the reaction of ammonia with hypobromite.—MILTON LEVY and ALBERT H. PALMER. *J. Biol. Chem.*, 136 (1940), 57. (F. J. S.)

Nitroglycerin—Microdetermination of, in Pharmaceutical Preparations. Published methods of determining nitroglycerin (I) are critically reviewed. A modified U. S. P. method and its application to small amounts of (I) in pills, etc., are described.—C. TOFFOLI. *R. Ist. San. Pubbl.*, 2 (1939), 587–622; through *J. Soc. Chem. Ind.*, 59 (1940), 85. (E. G. V.)

Nux Vomica Preparations—Assay of. It has been found that samples of the tincture and fluidextract of nux vomica assayed by individual chemists using the present U. S. P. and N. F. methods give reasonably concordant results. The findings and comments of six laboratories are tabulated.—REPORT OF THE SUBCOMMITTEE ON ALKALOID AND DRUG STANDARDS. *Proceedings, American Drug Manufacturers Association, Twenty-ninth Annual Meeting*, May (1940), 120–121. (N. L.)

Oxidizing Agents—Standardization of Strong, with Potassium Iodide by the Acetone Method. A simple procedure is given for the standardization of 0.1*N* permanganate and 0.1*N* ceric sulfate by Berg's method using potassium iodide as a primary standard. The method gives 0.8–1% low results in the standardization of 0.01*N* solutions. Low results are shown to be due to a reduction of the oxidizing agent by the acetone and the iodoacetone in the close neighborhood of the end-point, this being partially overcome by fast titration close to the end-point.—I. M. KOLTHOFF and H. A. LAITINEN. *J. Am. Chem. Soc.*, 61 (1939), 1690. (E. B. S.)

Phenol Ointment—Extraction Process for Assay of. The method recommended is as follows: Dissolve about 0.5 Gm. of ointment in approximately 10 cc. of light petroleum. Extract this solution with four successive quantities of 10 cc. each of a solution of 7 cc. of hydrochloric acid and 33 cc. of water, shaking for two minutes on each extraction. Collect the extracts in an iodine flask, add 20 cc. of *N*/10 bromate-bromide and complete the analysis in the usual way. There is enough acid in the extracting liquid for the remainder of the process. Emulsions, if formed, are coarse and cause no trouble. A quantity of ointment made using a stoppered bottle gave results equivalent to 99.6% and 100.8% of the theoretical amount.—R. M. SAVAGE. *Quart. J. Pharm. Pharmacol.*, 12 (1939), 420–422. (S. W. G.)

Phenols—Microdetermination of, by the Volumo-Colorimetric Method. The basis of the procedure is as follows: Mix the phenolic solution with the phosphotungstic reagent (which is reduced) and alkalinize with 20% sodium carbonate solution. A blue coloration is formed the intensity of which is proportional to the amount of the phenol present. Then add, drop by drop with the aid of a microburette, the necessary volume of potassium ferricyanide reagent (0.1*N*) to cause the disappearance of the blue color, which passes through a yellow-green to a citron-yellow which is the end-point. The amount of phenol is calculated from the quantity of ferricyanide used. Phenol and resorcinol do not exhibit the required power to be determined by this method. Pyrocatechol, hydroquinone, pyrogallol, gallic acid and tannins were assayed and the results tabulated. Practical equivalent coefficients were established by working with pure solutions of the phenols. The end-point for pyrocatechol is a change to a rose color; for hydroquinone, a change to pale yellow; for pyrogallol and gallic acid, a change to yellow.—A. IONESCO MATIU, C. POPESCO and A. POPESCO. *J. pharm. chim.*, 30 (1939), 49–58. (S. W. G.)

Qualitative Semimicroanalysis—New Apparatus for. Apparatus described includes a lipped Pyrex test-tube, a filter tube, a funnel, vacuum-pump bulb, filter stick and hot water bath. The use of the apparatus is set forth in an abridged scheme for the analysis of Group II.—H. H. BARBER. *Ind. Eng. Chem., Anal. Ed.*, 12 (1940), 58–60. (E. G. V.)

Quantitative Drop Analysis. XI. Determination of Lactic Acid. A drop-scale modification of the common volumetric lactic acid method is described. Attempts to extract the acid with ether in a micro

Soxhlet extractor were not satisfactory. A micro distillation apparatus is given in detail and samples containing from 1.22 to 28.85 gammas of lactic acid were analyzed in simple solutions and in various blood samples. The accuracy of the method was usually about the same as in the macro procedure.—R. M. McCready, H. K. Mitchell and P. L. Kirk. *Mikrochemie*, 28 (1939), 23–29. (R. H. B.)

Saccharin—Soluble. A method for the assay of Saccharin Soluble, U. S. P. XI and revision of the official description and specifications are recommended.—Report of the Subcommittee on Chemical Tests and Standards. *Proceedings, American Drug Manufacturers Association, Twenty-ninth Annual Meeting*, May (1940), 140–142. (N. L.)

Saccharin, Insoluble, U. S. P.—Assay of. Two samples of insoluble saccharin were submitted to six laboratories and the analysts were requested to assay the samples by the following method: Accurately weigh about 3.5 Gm. of sample and transfer to a 250-cc. beaker. From a calibrated burette add 50 cc. of $N/2$ sodium hydroxide. Stir until all of the material is in solution. Add several drops of phenolphthalein indicator and neutralize the excess $N/2$ sodium hydroxide with $N/2$ hydrochloric acid. Each cc. of $N/2$ sodium hydroxide corresponds to 0.09155 Gm. of $C_7H_5O_3NS$. The results of the various assays varied from 98.42 to 100.23%. From the data obtained by the various collaborators, it was concluded that the method of assay is entirely satisfactory and it is recommended that the assay procedure be included in the U. S. P. XI under insoluble saccharin.—Report of the Subcommittee on Chemical Tests and Standards. *Proceedings, American Drug Manufacturers Association, Twenty-ninth Annual Meeting*, May (1940), 139–140. (N. L.)

Sodium Phosphate U. S. P. and Solution of Sodium Phosphate N. F.—Assay of. The following revision for the assay of sodium phosphate U. S. P. is recommended: Weigh accurately approximately 0.3 Gm. sodium phosphate previously dried to constant weight at 110° C. and transfer to a 100-cc. volumetric flask. Add distilled water to the mark and mix well. Transfer 25 cc. of the solution to a 400-cc. beaker. Add 10 Gm. of ammonium nitrate and adjust to neutrality with ammonia. Dilute to 100 cc. with water and warm to about 50° C. Add 75 cc. of ammonium molybdate T.S. with stirring and stir for fifteen minutes. Allow to settle fifteen minutes longer and decant through a Gooch crucible. Wash twice by decantation using about 30 cc. of cold distilled water each time, then transfer the precipitate to the crucible and wash with cold water until the washings are neutral. Transfer the crucible and precipitate to the precipitating beaker, or other satisfactory container, add 30 cc. of $N/2$ sodium hydroxide and agitate until all of the yellow residue has dissolved. Titrate the excess sodium hydroxide with $N/2$ sulfuric acid using five drops of phenolphthalein as indicator (1 cc. $N/2$ NaOH = 0.003088 Gm. Na_2HPO_4). The method recommended for the assay of solution of sodium phosphate N. F. is: Transfer 5 cc. of solution of sodium phosphate to a 500-cc. volumetric flask and dilute to volume with water. Mix well and transfer 15 cc. of the diluted solution to a 400-cc. beaker. Add 10 Gm. of ammonium nitrate and proceed exactly as described above.—Report of the Subcommitte on Analytical Assay Methods. *Proceedings, American Drug Manufacturers Association, Twenty-ninth Annual Meeting*, May (1940), 129–132. (N. L.)

Spot Analysis—Application of, to the Investigation of Medicaments. VIII. Aldehyde Detection with a Stable Test Paper. Malachite green, which has been decolorized by sodium sulfite, regains its color on the addition of aldehydes. The reaction is favored by the fine state of division attained by moistening the test paper with the decolorized solution, followed by subsequent drying. The solutions must be neutral, since both acids and alkalis cause changes of color. A drop of the solution to be tested if placed on the colorless, dry test paper produces a bright green spot if aldehydes are present.—O. Frehden and K. Fürst. *Mikrochemie*, 26 (1939), 39–40. (R. H. B.)

Spot Analysis—Application of, to the Investigation of Medicaments. VII. Detection of Polyoxy Compounds. Glycol, glycerin, erythritol, mannitol and other polyhydric alcohols can be oxidized to formic acid by periodic acid. The formic acid formed can be further oxidized by bromine water to carbon dioxide which is detected by the turbidity produced when collected in baryta water. The reaction, which may be carried out microchemically, renders possible the detection of polyvalent alcohols in the presence of aldehydes (except formaldehyde).—O. Frehden and K. Fürst, *Mikrochemie*, 26 (1939), 36–38. (R. H. B.)

Sulfur—Determination of, in Organic Compounds. A new method for the determination of sulfur in organic compounds is described and the inherent errors are discussed. The method applies to compounds containing no other elements than carbon, hydrogen, nitrogen, sulfur and oxygen. The method consists of two parts: (1) a reaction between the oxides of sulfur, formed during a catalytic combustion, and metallic silver with quantitative formation of silver sulfate; (2) the electrodeposition of the silver from the silver sulfate. The plating is carried out in dilute isopropyl alcohol solution. Carbon-hydrogen values may be obtained simultaneously.—E. W. D. Huffman. *Ind. Eng. Chem., Anal. Ed.*, 12 (1940), 53–58. (E. G. V.)

Tannic Acid Gauze. The following summary is given: (1) Methods of analyzing tannic solutions are discussed and some suggestions are made. (2) Tannic acid gauzes are found to be stable materials over twenty-seven months' storage, no definite deterioration having been found. (3) Adsorption of tannic acid occurs, but is about equal to that which occurs with plain gauze soaked in fresh tannic acid solution. The conditions in compresses are studied. (4) Apparent increases in gallic acid are traced mainly to differential adsorption and not to hydrolysis. (5) Methods of determining the total amount of tannic acid in gauze are developed.—R. M. Savage and W. P. Chambers. *Quart. J. Pharm. Pharmacol.*, 12 (1939), 423–437. (S. W. G.)

Tannic Acid—Purity Tests for. It was decided to examine a large number of different samples of medicinal tannic acid in order to find some test other than that of solubility to enable the pharmacist to decide speedily whether a specimen of tannic acid would prove satisfactory in dispensing. The samples were procured from retail, wholesale and hospital sources, and all passed the B. P. tests, although some appeared to dissolve more quickly in water and in alcohol than others. The density of the samples varied considerably. The following eye lotion was dispensed with each of the samples in turn: Tannic acid 15 gr.; borax 40 gr.; glycerin 180 min.; water *q. s.* 4 fl. oz. It was concluded that a sample of tannic acid may pass the B. P. tests and yet prove unsatisfactory in dispensing. The solubilities of good tannic acids varied greatly, making this test indefinite. One sample dissolved 3 in 1 of water after standing for several days at about 10° C., although the B. P. requirement is 1 in 1. The B. P. gives no time limit in its solubility test; a specimen containing the less soluble gallic acid may dissolve in due course of time. The B. P. C. potas-

sium cyanide test is too stringent for any ordinary tannic acid to pass. The lime water test will eliminate samples containing too much gallic acid. The B. P. C. states that a solution of tannic acid gives a precipitate with a solution of tartar emetic. This is true, but gallic acid also gives a similar precipitate.—F. J. JACKSON. *Pharm. J.*, 144 (1940), 340. (W. B. B.)

Theophylline Sodium Acetate. Boie's method for the determination of theobromine in theobromine sodium salicylate is not suitable for the assay of theophylline sodium acetate as phenol red is affected both by theophylline and sodium acetate. After evaporation with sulfuric acid to remove acetic acid the first end-point is poor and the results are inaccurate. Theophylline solution has a p_H of about 5; bromocresol purple gave a sharp end-point. The following method was adopted:—Weigh 0.5 Gm. of theophylline sodium acetate into a flat-bottomed porcelain dish; add about 3 cc. of 2 *N* sulfuric acid and 5 cc. of water and evaporate to dryness on a water bath. Repeat the evaporations with 5 cc. and 3 cc. of water. Transfer the residue to a beaker flask by means of about 100 cc. of water; heat to dissolve and to remove CO_2, cool to about 40°, add 1 cc. of bromocresol purple indicator and *N*/1 NaOH in very slight excess. Titrate with *N*/10 H_2SO_4 to the full yellow end-point. Add 20 cc. of *N*/10 $AgNO_3$ and titrate with *N*/10 NaOH just to the full blue end-point. This method can be used in the presence of caffeine, but not of theobromine.—G. J. W. FERREY. *Pharm. J.*, 144 (1940), 366. (W. B. B.)

Titration Blanks—Computing. It is felt that blanks evaluated by graphical or "analytical" extrapolation (or indirectly by interpolation when the relation is nonlinear) are in many cases preferable to directly determined blanks, since the former are based on data obtained under the actual conditions of the titration. Equations for graphing are developed.—F. W. GLASE. *Ind. Eng. Chem., Anal. Ed.*, 12 (1940), 14–15. (E. G. V.)

Tobacco—Citric Acid and Nicotine Content of. The author examined several samples of *Nicotiana tabacum* and *Nicotiana rustica* including many commercial types of these tobaccos. Tables are given for the citric acid and the nicotine content of each as well as the content of the various leaves (lower, middle and top) and of the veins, petiole, stem, root, flower and fruit.—N. E. FATTON. *Pharm. Weekblad*, 76 (1939), 1183. (E. H. W.)

Waters—Effect of Peat Bogs on Composition of Stream, from the Upper Fagnes. A chemical study of peat is reported. The analyses of waters, before and after their passage through peat bogs, are reported.—G. VAN BENEDEN. *J. pharm. Belg.*, 22 (1940), 1–6, 17–22, 35–40, 61–63, 80–82, 93–98, 111–115, 129–135. (S. W. G.)

Wines—Iodometric Determination of Acidity of. The wine is treated with iodide-iodate and thiosulfate, and the excess thiosulfate is titrated with iodine solution. The acidities found by this method are constantly a little higher than those determined by the touch method using litmus paper.—P. VIELES. *Bull. soc. chim. France*, (1939), 1127; through *J. pharm. Belg.*, 21 (1939), 902. (S. W. G.)

Zinc—Empirical Mercurimetric Method for. A routine method suitable for the determination of large numbers of zinc samples is described. The empirical volumetric procedure consists of precipitating the zinc as the mercuric thiocyanate, dissolving the washed precipitate in standard potassium iodide solution and titrating the apparent excess of the latter with standard mercuric nitrate solution. The relationship between the apparent iodide used and the actual amount of zinc present is represented by an equation for a straight line. Many impurities possibly present in the original sample are discarded in the filtrate from the zinc precipitate and so do not interfere.—A. C. TITUS and J. S. OLSEN. *Ind. Eng. Chem., Anal. Ed.*, 12 (1940), 133–135. (E. G. V.)

PHARMACOGNOSY

VEGETABLE DRUGS

Committee on Pharmacy and Pharmacognosy—Report of, September, 1939. Reports of subcommittees on crude drugs (new monographs are exemplified by belladonna leaves and root, cinchona and nux vomica; changes in requirements for individual drugs), on extracts, liquid extracts and tinctures (changes in menstrua), on waters, infusions, solutions, spirits and syrups (inclusion of Ringer's solution), on ointments and miscellaneous galenicals (monograph on activated carbon) and on tablets are given.—*Gen. Med. Counc., Brit. Pharm. Comm. Rept.* 13, 53 pp.; through *J. Soc. Chem. Ind.*, 59 (1940), 170. (E. G. V.)

Crude Drugs—Study of. In recent years research in pharmacognosy has proceeded along certain well-established lines: (1) the identification and description, microscopic and macroscopic, of new plant species used in medicine; (2) detailed microscopic description of commonly used drugs; (3) the examination of adulterants and substitutes on the markets in the guise of official drugs; (4) chemical characterization of active constituents and the establishment of chemical and biological tests of standardization; (5) standardization of drug purity by quantitative microscopic measurements of some tissue element present; (6) fluorescence analysis as a means of detecting impurities. The last two headings, (5) and (6), are of recent introduction and may be taken as illustrating the more recent trend in the study of crude drugs. Of the official vegetable drugs in the British Pharmacopœia, some 80% are non-alkaloidal and have no chemical assay process for standardization. In the form of the entire drug the purity is fairly evident, but if in a crushed or powdered form, then it is by no means easy to ensure the authenticity of the sample. A microscopic examination may reveal the presence of foreign elements and a system of quantitative measurements has been worked out. Although of recent introduction, and restricted use, these processes are a real contribution to the science of pharmacognosy, inasmuch as they help to establish working methods for the standardization of powdered crude drugs for which there is no chemical process.—J. M. ROWSON. *Australasian J. Pharm.*, 21 (1940), 311. (A. C. DeD.)

Datura Alba—Studies on, as Substitute for Belladonna. Graded doses of Tr. Belladonna and Tr. *Datura alba* (leaves), whose alkaloidal strength was made to conform to U. S. P. XI for belladonna, were compared. Tests were run on the authors and on some medical students. Effects were due to hyoscine in *Datura alba*. There were no toxic effects. Later in Philippine General Hospital a dose of 30–50 drops (0.6 to 1.0 cc.), three or four times daily, proved satisfactory.—AVELINO J. DAMIAN and RICARDO G. REYES. *Rev. Filipina Med. Farm.*, 30 (1939), 122. (G. S. G.)

Gentiana Scabræ—Root of. The pharmacognosy of the root of *Gentiana Scabræ* Bunge var. *Buergeri* is described. A comparison of the roots of various other species of *Gentiana* is also given. Diagrams are given in the Japanese text with their corresponding titles in the Transactions.—NAOITI FUJITA and GENZO TAKAHASHI. *J. Pharm. Soc. Japan*, 60 (1940), 373–387 (in German, 145–147). (N. L.)

Hamamelis Varieties—Pharmacognosy of the Leaves of. II. The tannic acid content (in per cent) of the various varieties of *Hamamelis* leaves investigated are: *H. obtusata* Makino, 9.47; *H. incarnata* Makino, 7.75; *H. incarnata* Makino var. *brachypetala* F. Maekawa, 6.78; *H. virginiana* L., 5.04; *H. japonica* Sieb and Zucc., 3.57; *H. flavo-purpurascen*, 2.87; *H. bitchuensis* Makino, 2.27.—YUTAKA YOSIDA. *J. Pharm. Soc. Japan.*, 59 (1939), 656–659 (in German, 246–247). (N. L.)

Histological Studies on Drugs. V. Oxalate Crystals in Leaves When Warmed with Potassium Hydroxide Solution. A study was made on the effect produced by heating the leaves of twenty different drugs with potassium hydroxide solution. Microphotographs are given in the Japanese text and their corresponding titles are listed in the Transactions.—JISUKE TAKATORI. *J. Pharm. Soc. Japan*, 59 (1939), 49–60 (in German, 217–222). (N. L.)

Lemon Oil. Oleum limonis has been added to the pharmacognosy section of the revised syllabuses of the chemist and druggist and pharmaceutical chemist qualifying examinations of the Pharmaceutical Society of Great Britain.—ANON. *Perfumer. Essent. Oil Record*, 31 (1940), 245. (A. C. DeD.)

Leucothoe Keiskei—Leaves of, Constituents of. The leaves of *Leucothoe Keiskei* Miq. (*Ericaceæ*) were extracted with ether and the ethereal solution shakened with 10% potassium hydroxide. The potassium salt of ursolic acid which separated was washed and extracted with ether in a Soxhlet to remove impurities. The insoluble residue was dissolved in absolute alcohol, the solution acidified and then poured into water to precipitate ursolic acid. The acid was dried and then further extracted with petroleum ether in a Soxhlet to further remove impurities remaining. The residue, after three recrystallizations from absolute alcohol, melted at 289–290°; $[\alpha]_D^{13} = +69.4$. Analysis showed ursolic acid to have the formula $C_{29}H_{47}O.COOH$. It gave a strongly positive Liebermann reaction; it reacted with diazomethane to give a methyl ether, $C_{29}H_{47}O.COOCH_3$, melting at 171–172°; it gave an acetate, $C_{29}H_{46}COOH(OCOCH_3)$, melting at 295–296°, which further reacted with diazomethane to form the methyl ester of acetyl-ursolic acid, $C_{29}H_{46}COOCH_3(OCOCH_3)$, melting at 246–247°. Another compound, uvaol, $C_{30}H_{50}O_2$, was isolated from the ethereal extractives. After two recrystallizations from acetone and three from methyl alcohol, it formed colorless needles, melting at 232–233°, gave a positive Liebermann reaction and, on acetylation, formed a diacetate, $C_{30}H_{48}(OCOCH_3)_2$, melting at 157–159°.—HARUYA SIMADA. *J. Pharm. Soc. Japan*, 59 (1939), 619–620 (in German, 242–244). (N. L.)

Powders—Plant, Methods of Examining. It is important to pharmacognosy that powders be carefully examined. They are usually suspended in distilled water for observation under the microscope and several methods of making this suspension are described. There is also a modification with 2 parts water to 3 parts glycerin, which has the advantage of a more homogeneous suspension while glycerin also clears the field better for microscosic study.—HENRIQUE LUIS LACOMBE. *Trib. Farm., Parana*, 7 (1939), 73. (G. S. G.)

Psithacanthus Dichrous Mart.—Pharmacognostic Study of. The search for a Brazilian plant similar to mistletoe led to a study of *Psithacanthus dichrous* Mart. Its chemical composition, beauty of flowers and production of intense evaporation recommend its cultivation not only for medicinal use but also for ornament and for the drying of marshy places. Its chemical composition is similar to that of mistletoe, including pyrogallic acid, tannins and phlorglucin.—O. ALMEIDA COSTA. *Rev. Brasil. Farm.*, 20 (1939), 55; through *Anales farm. bioquim. (Sup.)*, 10 (1939), 36. (G. S. G.)

Pyracantha Angustifolia—Fruit of, Constituents of. Extraction of the fruit of *Pyracantha angustifolia* Schneid (*Rosaceæ*) with hot water and concentration of the extractives gives a syrup. When this is treated with 50% sulfuric acid and benzaldehyde, a benzal derivative precipitates. The product is then hydrolyzed with 5% sulfuric acid and the benzaldehyde is recovered by steam distillation. After neutralization of the acid with barium carbonate and concentration of the solution, sorbit separates out as colorless needles, melting at 73°. It forms a hexacetate and a triformal derivative. Glucose (1.2%) is also isolated from the fruit.—HARUYA SIMADA and TAKEKAZU KANO. *J. Pharm. Soc. Japan*, 59 (1939), 621–623 (in German, 255–256). (N. L.)

Rosemary. It is indigenous in the Mediterranean littoral at moderate altitudes and in dry areas. In Portugual it is found commonly in dry rocky coastal elevations. The essence is distilled by steam and has been known for centuries, being mentioned by the alchemists of the middle ages. Chemical analysis dates from the 19th century. The essences of rosemary which were analyzed were light liquids, pale yellow and with a slightly camphorous odor. They were fractionated and the physical constants noted. Variations are due to the habitat of the plant and to the parts used for extraction of the essence. It can be cultivated on arid land unfit for other agriculture. It has a definite use in the perfume and soap industry.—ALOISIO FERNANDES COSTA. *Noticias farm.*, 5 (1939), 317. (G. S. G.)

PHARMACY

GALENICAL

Adrenaline Hydrochloride Solutions—Stability of. The following summary is given: (1) Liquor Adrenalinæ Hydrochloridi B. P. has been shown to retain its full potency for sixteen months when stored under carbon dioxide at laboratory temperature. At 37.5° about half the potency was lost in eight months. (2) The addition of 0.1% of sodium metabisulfite or the substitution of hydrochloric acid by sulfurous acid in the preparation has little influence on the maintenance or loss of potency under these conditions of storage, but preserves the color of the solution for a longer period. (3) The color of a solution of adrenaline hydrochloride is not an indication of its potency. Clear, colorless solutions have been shown to have lost 50% of their potency, while colored solutions may retain their full activity. (4) The addition of 0.1% of sodium metabisulfite improves the keeping qualities of adrenaline hydrochloride solution.—H. R. ROWLINSON and S. W. F. UNDERHILL. *Quart. J. Pharm. Pharmacol.*, 12 (1939), 392–398. (S. W. G.)

Ampul-Filling Apparatus—Simple, Automatic Measuring. The author has developed a convenient new apparatus for filling ampuls. The apparatus is available from two manufacturers in Switzerland and is described completely. Diagrams included.—A. KLÄIN. *Schweiz. Apoth.-Ztg.*, 77 (1939) 453–456. (M. F. W. D.)

Calcium Gluconate Preparations—Effect of p_H on Stability of Therapeutic. The stability of 10% calcium gluconate increases with p_H over the range 6.8–7.8. At p_H more than 7.6, however, heating to 100° produces a white precipitate. Hence p_H 7.6 is a suitable reaction for therapeutic preparations of calcium gluconate.—E. DURIO. *Ann. chim. applicata*, 29 (1939), 463–466; through *J. Soc. Chem. Ind.*, 59 (1940), 169. (E. G. V.)

Calcium Salt Solutions—Preparation of Stable and Injectable Organic. In the preparation of stable solutions of calcium salts of organic acids ($OH.CHMe.CO_2H$) for parenteral (intramuscular) injection malic acid or its sodium salts are added to the hot solution.—G. A. R. VON WULFING and E. M. H. ROSSKOTHEN. Brit. pat. 510,118; through *J. Soc. Chem. Ind.*, 58 (1939), 1292. (E. G. V.)

Calcium Sodium Lactate Solutions—Production of Stable, Suitable for Injection. Stable solutions containing up to 7.5% of the salt (I) are obtained by adding an alkaline-earth (calcium) or alkali (sodium) gluconate and sufficient acid (*e. g.*, gluconic acid) to maintain the solution at p_H 6.2–6.6; *e. g.*, I (6.5) and calcium gluconate (5.4) are dissolved in hot water (60 Gm.) and made up to 100 cc., sterilized and filled into ampuls.—G. A. R. VON WULFING and E. M. H. ROSSKOTHEN. Brit. pat. 512,203; through *J. Soc. Chem. Ind.*, 58 (1939), 1293. (E. G. V.)

Easton's Syrup—Examination of Changes Occurring during Storage of. The following modified formula is suggested: Iron 8.6 Gm., phosphoric acid 35.0 cc., strychnine hydrochloride 0.3 Gm., quinine hydrochloride 13.3 Gm., dilute hydrochloric acid 50.0 cc., syrup 660.0 cc., glycerin 140.0 cc., distilled water to 1000.0 cc. Dilute the phosphoric acid with 70 cc. of distilled water; add it to the iron in a flask of suitable size, and heat on a water bath until the iron is dissolved; add to this a solution of the strychnine hydrochloride and quinine hydrochloride in the 50 cc. of dilute hydrochloric acid; filter it into the syrup and glycerin previously mixed and pass sufficient distilled water through the filter to produce the required volume. The improved preparation showed improved keeping properties over any previously suggested formula, in respect of both color and precipitation, and the taste is but slightly altered.—W. T. WING. *Quart. J. Pharm. Pharmacol.*, 12 (1939), 563–572. (S. W. G.)

Hydrogen Peroxide—Stabilization of. Methods and Reactions. A general review of hydrogen peroxide stabilizers is given, with special reference, in connection with pharmacy and surgery, to the inactivation of catalase by the stabilizers. Additive products formed by hydrogen peroxide are discussed.—S. M. TRITTON. *Ind. Chem.*, 15 (1939), 446–449; through *J. Soc. Chem. Ind.*, 59 (1940), 128. (E. G. V.)

Hydrogen Peroxide Solutions—Stabilization of, for Pharmaceutical Purposes. The author finds that urea is a very suitable stabilizer of hydrogen peroxide solutions for pharmaceutical purposes and that phenazone is a good second choice. Hexamine is also satisfactory but the solution must be assayed by a method other than the permanganate method. He states that in view of the fact that most commercial solutions of hydrogen peroxide which have good keeping qualities are stabilized with organic compounds and not with sulfuric acid which does inhibit catalase, it seems that it would be advisable to discourage the stabilization of the solution with sulfuric acid by reducing the pharmacopœial limit of acidity. Tests show that the efficacy of hydrogen peroxide solution is markedly reduced by the presence of sulfuric acid.—S. M. TRITTON. *Quart. J. Pharm. Pharmacol.*, 12 (1939), 446–450. (S. W. G.)

***Novocaine* Hydrochloride Solution—Behavior of on Sterilization.** The solutions become opalescent on boiling with 1 cc. of *N* sodium hydroxide, and 10 cc. produce a precipitate which is flocculent in presence of microörganisms. Confusion with mercuric cyanide and mercuric oxide is unlikely except with precipitations due to the use of a soapy vessel.—G. LILJESTRAND and H. NILSSON. *Svensk. Farm. Tids.*, 40 (1936), 540–542; through *J. Soc. Chem. Ind.*, 58 (1939), 1292. (E. G. V.)

Paraldehyde—Preservation of Pharmacopœial. The following summary is given: Experiments have been carried out to show that freshly prepared paraldehyde decomposes on storage. It has been demonstrated that the addition of small amounts of phenolic bodies retards decomposition.—J. S. TOAL. *Quart. J. Pharm. Pharmacol.*, 12 (1939), 573–579. (S. W. G.)

Sodium Bicarbonate Solutions—Autoclaving. Autoclaving solutions of sodium bicarbonate is difficult in the ordinary autoclave. The following method is proposed for making sterile isotonic solutions: The solution is placed in half liter, patent soda water bottles the closure of which is capable of standing the pressure created. The rubber closure-washer of this bottle is boiled in 2% sodium carbonate solution and autoclaved in water. If the bottle is later kept tightly closed with the patent closure the washer can be used repeatedly. The solution is made from dried sodium bicarbonate (Dan. Phar. 1933), free from lumps, and from sterile or fresh distilled water at 10–15° C. In filtering large volumes of the solution, ordinary hygroscopic cotton was useful. It was held in place with a glass spatula and slowly moistened. The first filtrates were returned through the filter a few times until the filtrate was clear. Into each half liter bottle were added 450 Gm. of the solution. The autoclave was filled with water colored red with 0.1% fuchsin (to test failure of sealing of the bottles) and the bottle were set in, bottom up. The time of autoclaving was calculated from the time the solution in the bottles reached 120° C. After treatment the autoclave was not opened until the temperature of the bottles had reached 50° C. They were then removed and the outlet aseptically covered with cellophane or with a rubber cap. Any bottle with decreased volume of fluid or with fluid colored red was discarded. The pressure arising during autoclaving was determined. A 1.3% solution at 80° C. gave 0.2 atm., at 100° C. gave 1.2 atm., at 120° C. gave 2.2 atm. A 5% solution at 80° C. gave 0.75 atm., at 100° C. gave 1.8 atm., at 120° C. gave 2.8 atm. If a half liter bottle was filled with 1.3% solution to 500 Gm. (total capacity 512 Gm.) the pressure would reach 14.5 atm., hence the amount placed in the bottle was of importance. As to the time, when the interior of the bottles reached 120° C., if the autoclave contained 20 liters of water and 20 of the half liter bottles, the autoclave thermometer reached 120° C. in 7 minutes but the water in the autoclave was only at 100° C. and the bicarbonate solution only reached 100° C. after the first 20 minutes. After 5 minutes, the outer water had reached 120° C. but the bicarbonate solution reached this temperature 40 minutes after the start of autoclaving. Owing to the pressure created, bicarbonate solutions cannot be autoclaved in ordinary rubber-capped injection bottles and sealed-glass ampuls are necessary. Use of a 5-liter metal container (a "maelke-junge") as autoclave is described.—E. P. NIELSEN. *Arch. Pharm. Chemi*, 47 (1940), 420. (C. S. L.)

Tablet Triturates—Preparation of, for Use in Hypodermic Injections. The following summary is given: Details of the preparation of some types of tablet triturates commonly in demand have been described, together with the variations observed in the properties of such triturates when proportion and strength of alcohol, temperature of drying and quantity and nature of the active medicament vary.—G. W. G. SMITHERS. *Quart. J. Pharm. Pharmacol.*, 12 (1939), 478–488. (S. W. G.)

DISPENSING

Bleach Ointment. The following method of heating the ingredients of bleach ointment under standard conditions is put forward by the authors as a measure of reactivity in the manufacture of the ointment:—Equal parts, 5 Gm., of bleaching powder and soft paraffin are accurately weighed and the base intimately mixed with the finely powdered bleaching powder in a mortar. The ointment is transferred to a glass tube 2.5 cm. diameter, corked and placed in water at 15°. After five minutes the tube is wiped and transferred to a glass-fronted steam oven placed on a layer of sand in a bath on a sheet of asbestos 0.7 cm. thick. The temperature of the oven at the region of the ointment is maintained at 95° and a thermometer is introduced into the ointment, the bulk being completely immersed. When the temperature reaches 23° a stop-watch is started and the time taken as one minute, which is an average. The thermometer is read at one-minute intervals for fifteen minutes. The following precautions should be observed to prevent the spontaneous overheating of bleach ointment during, or soon after, manufacture: A soft paraffin of low reactivity should be used; no heat should be utilized; after preparation the ointment should be rapidly filled into small receptacles which should be freely exposed to the cooling effect of the air; if it is inconvenient to divide the bulk of the ointment it should be prepared in, or transferred to, a shallow uncovered container for one or two days to encourage the dissipation of any heat which is developed.—H. BRINDLE and L. V. ROSSER. *Pharm. J.*, 144 (1940), 336. (W. B. B.)

Digitalis Powder—Dispensing Containers for. The Swiss Pharmacopœia V requires digitalis powder to be stored over lime. However, this precaution is of little value when physicians prescribe 50 digitalis powders, since they soon absorb moisture and become inactivated. The author has devised a dispensing container which will maintain a dry atmosphere until all of the powders have been taken. An illustration accompanies the article.—R. MAEDER. *Schweiz. Apoth.-Ztg.*, 77 (1939), 214. (M. F. W. D.)

Disabling Liquid Suitable for Temporary Blinding. Ammonium carbonate is used with aqueous ammonia solution, alcohol, essential oils such as those of lemon, lavender and myristica, and oil of trefle which serves to prevent burning or blistering of tissue in the eye socket.—CHARLES E. HOWETT, assignor to HOWETT LABORATORIES. U. S. pat. 2,171,071, Sept. 5, 1939. (A. P.-C.)

Emulsifying Efficiencies. The apparatus and procedure for a new method, based on turbidity measurement, of determining emulsifying efficiency are described, together with a convenient standard emulsion. The new method is compared with microscopic examination and with the measurement of the time of creaming of the emulsions. Results on a colloid mill, a homogenizer and a new type of emulsifier are presented. A bibliography on methods of particle size applicable to the study of emulsions and suspensions is included.—L. H. COHAN and N. HACKERMAN. *Ind. Eng. Chem., Anal. Ed.*, 12 (1940), 210–213. (E. G. V.)

Enteric Coating for Medicaments. Use is made of a cellulose derivative containing free carboxyl groups, such as a cellulose acetate-pthalate, which is substantially insoluble in acid stomach secretions but soluble in alkaline intestinal fluids.—GORDON D. HIATT, assignor to EASTMAN KODAK CO. U. S. pat. 2,196,768, April 9, 1940. (A. P.-C.)

Gum Arabic—Replacement of, in Preparation of Emulsions. Galactose and pectin are satisfactory. Casein gives good emulsions but does not keep well.—F. V. IVANLV and G. A. KLEIBS. *Sovet. Farm.*, 5 (1934), 27–30; through *J. Soc. Chem. Ind* 58 (1939), 1290. (E. G. V.)

Insulin Suppositories. Rectal administration of insulin is difficult since the insulin is destroyed by the tryptic ferments of the intestine. It has been demonstrated in experiments on rabbits and humans that suppositories composed of insulin and cacao butter are inactive. The addition of acids to such suppositories, however, seems to protect the activity of the insulin. The most appropriate was a mixture of lactic and palmitic acids. Inasmuch as the latter melts at 60°, a mixture with cacao butter 15:85 was used. This mixture melts at about 33°. In order to hasten resorption, saponin is added in addition, to raise the surface tension. Of the various saponins investigated, that from *Saponaria* was found to be toxic upon rectal administration, but those from *Guaiacum* and *Aesculus hippocastanum* as well as glycyrrhizin, were harmless.—B. BRAHN and T. LANGER. *Nederland. Tijdschr. Geneeskunde*, (1939), 3784; through *Pharm. Weekblad*, 76 (1939), 1168. (E. H. W.)

Iodine Ointment—Non-Staining. The following methods of preparation of non-staining iodine ointment are recommended. (1) The ointment may be prepared with little loss of iodine and without formation of sludge by dissolving the iodine, without the aid of heat, in the arachis oil, allowing to stand in a closed vessel until the brown color disappears, and then adding the melted soft paraffin and mixing. This method requires about two months to give a non-staining ointment. (2) The very finely powdered iodine is stirred with the cold arachis oil in a wide-mouthed stoppered bottle until dissolved. The stopper is replaced and tied in position and the bottle is heated, with occasional shaking, until the brown color is replaced by a bright green. It is desirable that the temperature of the oil should not be allowed to get excessively high at this stage. Melted soft paraffin is then added and the whole stirred thoroughly. The following summary is given: (1) Large variations in results are obtained in the assay of commercial samples of non-staining iodine ointment. (2) It is suggested that the B. P. Codex adopt a standard for total iodine content of not less than 4%. (3) It is shown that during the action of iodine alone on fatty oils, partial hydrolysis of the glycerides occurs. (4) In the presence of iodine the glycerides of the unsaturated acids form pungent-smelling substances. (5) A resin-like sticky sludge occurs when undissolved iodine is kept in contact with the fatty oils and with oleic acid. (6) Iodine in solution in fatty oils does not deposit a resin-like sludge. (7) It is indicated that the effect of heat upon the compounded ointment is to produce resin-like deposits.—C. PENMAN. *Quart. J. Pharm. Pharmacol.*, 12 (1939), 380–391. (S. W. G.)

Lecithin—Rendering, Dispersible in Water. Ethyl lactate is used with lecithin as a solvent and dispersing agent.—STROUD JORDAN. U. S. pat. 2,193,873, March 19, 1940. (A. P.-C.)

Ointments and Emulsions—Apparatus for Technical Preparation of, Containing Radium Emanation, Perfumes and Pharmaceuticals. The apparatus for the preparation of ointments and salves containing radon and the method of working are described, the principle being that the vaseline or other base in a highly dispersed state is emulsified with an aqueous solution of radon. The apparatus can be modified so that perfumes and pharmaceuticals can be incorporated in ointments. The emulsifying process, suitably modified, can also be used for monopolarization of electrically charged particles.—B. RAJEKSKY and E. BURKHARDT. *Kolloid-Z.*, 89 (1939), 320–324; through *J. Soc. Chem. Ind.*, 59 (1940), 323. (E. G. V.)

Ointments with Base of Cod Liver Oil. Recipes for ointments of cod liver oil with wax, vaseline, lanolin, triethanolamine stearate, etc., are given and their application is discussed.—A. FERRARIS. *Boll. chim.-farm.*, 78 (1939), 379–381; through *J. Soc. Chem. Ind.*, 58 (1939), 1175. (E. G. V.)

Solutions of Gum Acacia—Preparation of, for Intravenous Injection. The quality of the gum acacia used for the preparation of solutions for intravenous injection is discussed. The following method is recommended for the preparation of a fourfold concentrated solution and a 6% solution of acacia-saline: Dissolve 187.5 Gm. of sodium chloride in 5 liters of boiling distilled water, add 1250 Gm. of gum acacia (in tears) and stir until dissolved. Adjust to p_H 7.0–7.2, cover the container with parchment and autoclave at 15 lbs. pressure for 90 minutes. Add 200 Gm. of purified kiesulguhr to the autocalved solution and filter through Büchner funnels, using a coarse filter paper and good suction on the receiving flask. Rinse the autoclaving vessel with a small quantity of distilled water and filter the washings through the kiesulguhr bed left in the funnel. Mix the clear filtrates and allow to cool, dilute a small quantity and determine the sodium chloride content. Determine the dilution figure and dilute the concentrated solution to contain 0.9% of sodium chloride. The resulting solution is readjusted to p_H 7.0–7.2 and filtered through an ordinary 50 Whatmann filter paper and distributed into suitable containers. These are then autoclaved at 5 lbs pressure for 45 minutes, or 10 lbs. pressure for 30 minutes. Neutralization beyond p_H 7.2 results in discoloration of the solution. When tested physiologically, on rabbits and mice, the solutions were satisfactory.—H. GARTSIDE. *Quart. J. Pharm. Pharmacol.*, 12 (1939), 550–562. (S. W. G.)

Tablets—Disintegration of. The following summary is given: (1) The present position with regard to the standardization of tablets and the methods used by various workers to determine the disintegration of tablets has been outlined. (2) A new form of apparatus for testing tablets has been described and details given of experiments performed with it. (3) The experiments performed include: (*a*) experiments to show the effect of compression; (*b*) experiments to show the effect of three different disintegrants, potato starch, gelonide and magnesium peroxide; (*c*) an examination of a number of commercial tablets; and (*d*) experiments to show the effect upon disintegration of medicaments exhibited in "granular" form. (4) Three new terms are applied to tablets: (*a*) dry breaking weight—weight added to a suspended pan on the beam which raises the suspended breaking arm passing through a slot in which the tablet is placed, the operation being carried in room atmosphere; (*b*) wet breaking weight—the tablet is placed in the slot submerged in water or digestion liquid at 37°; (*c*) disintegration ratio—ratio of the first value to the second value. (5) Purely as a guide to other workers tentative values have been assigned to each of the three terms.—C. L. M. BROWN. *Quart. J. Pharm. Pharmacol.*, 12 (1939), 489–500. (S. W. G.)

PHARMACEUTICAL HISTORY

American Patent Anniversary. Two editorials on the 150th anniversary of the founding of the U. S. patent system.—ANON. *Ind. Eng. Chem.*, 32 (1940), 447, 598. (E. G. V.)

Anthelmintic Prescription in Chinese Medicine—Examples of. For historical reasons and in order to show a comparison of Chinese and Western medicine the writer gives about 100 anthelmintic prescriptions covering the period 217 A. D. to the present. The Chinese character along with its English equivalent is given for each drug named in the prescriptions. Many of the prescriptions are individually discussed. Evidences of native superstition and scientific medication are found in the prescriptions. Six photographs. Eighteen references, mostly to the original Chinese source.—C. S. CHAO. *Chinese Med. J.*, 57 (1940), 251–289. (W. T. S.)

Bartholomeo Biasoletto (1793–1859). Bibliography.—A. RISMONDO. *Il farm. ital.*, 7 (1939), 571. (A. C. DeD.)

Drug Supply for the Army. The author gives a historical review of pharmacy in the army, the organization of army pharmacists and lists their duties as examining and testing medicaments according to existing standards, the dispensing and proper care and storage of pharmaceuticals.—J. THOMANN. *Schweiz. Apoth.-Ztg.*, 77 (1939), 137–141, 157–160, 173–176. (M. F. W. D.)

Elements—Historical and Industrial Discovery of. Copper, lead, tin, iron, mercury, carbon, sulfur, oxygen, nitrogen, hydrogen, deuterium, argon, helium, krypton, neon, xenon and radon are discussed.—J. N. FRIEND. *Chemistry and Industry*, 59 (1940), 24–26, 227–232. (E. G. V.)

Friedrich Emich. A life history of the pioneer and founder of the science of microchemistry.—A. A. BENEDETTI-PICHLER. *Ind. Eng. Chem., Anal. Ed.*, 12 (1940), 226–229. (E. G. V.)

Government Storehouse for Medicaments in Amsterdam—Fiftieth Anniversary of. The history of these stores is described at length, the article being illustrated with 16 photographs.—J. ROZEBOOM. *Pharm. Weekblad*, 76 (1939), 1164. (E. H. W.)

Hieronymus Harder's Hand Herbarium. More than 500 herbs are listed in this herbarium which dates back to the sixteenth century.—WALTHER ZIMMERMANN. *Arch. pharm.*, 278 (1940), 7–34. (L. K.)

Military Medicine and Pharmacy—Tenth International Congress of. A short review of the 7 topics reported on at this Congress is given along with the names and nationalities of the reporters. The fourth topic, "Organization and Function of the Military Chemico-Pharmaceutical Services," is the most important to pharmacists.—*J. Trop. Med. Hyg.*, 43 (1940), 82–87. (W. T. S.)

Military Pharmacy in the Netherlands—History of. The fifth of a series of historical articles on this subject.—E. I. VAN ITALLIE. *Pharm. Weekblad*, 76 (1939), 1149. (E. H. W.)

Pharmacy in China in 1938. A review.—JOHN CAMERON. *Indian and Eastern Chemist*, 20 (1939), 136. (A. C. DeD.)

Urbain, Georges. Biography.—A. S. RUSSELL. *Chemistry and Industry*, 59 (1940), 343–344. (E. G. V.)

Voluntary Hospital—Birth of the. Notes on the history and work of the hospital of Westminister, London.—F. G. HOBART. *Indian and Eastern Chemist*, 20 (1939), 139. (A. C. DeD.)

Zurich Pharmacists—Pictures of Three. A brief historical sketch is given of three prominent, early Zurich pharmacists: Hans Schneeberger, 1467–1537; Hans Ulrich Wolf, 1559–1624; and Mathias Lavater, 1709–1775.—EMIL EIDENBENZ. *Schweiz. Apoth.-Ztg.*, 77 (1939), 553–559. (M. F. W. D.)

PHARMACEUTICAL EDUCATION

Hyphens and Commas. A plea for more careful placing or elimination of these marks. Thus, write

sal ammoniac, boiling point, the "Avogadro number," etc.—G. N. COPLEY. *Chemistry and Industry*, 59 (1940), 330–332. (E. G. V.)

Pharmacy—Important Schools of, in America, 1938. A discussion and a list is given.—ANON. *Indian and Eastern Chemist*, 20 (1939), 145. (A. C. DeD.)

Pharmacy in India. The authors describe the Benares Hindu University and its pharmacy course. Pictures of some of the equipment are included.—C. A. ROTHENHEIM and M. D. BOOVARIWALA. *Schweiz. Apoth.-Ztg.*, 77 (1939), 417–419. (M. F. W. D.)

PHARMACEUTICAL LEGISLATION

Anti-Gas Products in France Are Medicaments. A decree of the French government provides for a more strict control of the manufacture and sale of products intended to neutralize war gases or to cure lesions produced by gas. Such products, whatever their nature or their method of use, are declared to be medicaments, therefore only to be made and sold by licensed pharmacists. Before the product may be offered for sale its formula must be registered with the National Laboratory for the Control of Medicaments and be approved by the military authorities. A further provision is that the words "passive defense," "war gas" or any other expression that suggests that the product is intended as a protection against gas, or as a cure, may not be used.—ANON. *Journal Officiel*, January 19, 1940, 530; through *Chemist and Druggist*, 132 (1940), 117. (A. C. DeD.)

College of Pharmacists—Law Providing for, in Puerto Rico. This is an organization with the rights and privileges of the profession to uphold professional ethics and protect its members. Any pharmacist admitted by law to the practice of the profession is eligible. Annual dues may be not less than $6 or more than $10. The penalty for practicing without a license shall be a fine of $100 or two months' imprisonment.—ANON. *Rev. farm.* (Puerto Rico), 4 (1939), 127. (G. S. G.)

Food and Drug Law for Puerto Rico. This is a decree of the Legislative Assembly of Puerto Rico for the regulation of foods, drugs and cosmetics, using the U. S. P. and N. F. as references. It forbids the adulteration and fraudulent labeling of any food, drug, cosmetic or artefact offered for sale. It provides for an injunction and penalty for any person or persons infringing on these regulations. It also provides for inspection, sampling and assaying of foods, drugs and cosmetics. The definition given for adulteration is the addition of poisons, or substances detrimental to health, or decayed or insanitary products, or the omission of essential ingredients from a product. Fraudulent labeling is defined as using an incorrect or misleading name or designation or description on a product to be dispensed, and forbids false therapeutic claims. It requires a statement of any narcotic or perservative if one is used in a compound.—ANON. *Rev. farm.* (Puerto Rico), 4 (1939), 139. (G. S. G.)

German Medicinal Products Restricted. In order to conserve supplies of imported medicinal substances, the German authorities are encouraging the use of substitutes in manufacturing processes and are authorizing deviations from the German pharmacopœial requirements. Boric acid and iodine are among the products affected.—ANON. *Chemist and Druggist*, 133 (1940), 101. (A. C. DeD.)

Indian Pharmaceutical Associations' Recommendations and Resolutions on the Drugs Bill of 1940. Resolutions passed at a meeting of the Council of the Indian Pharmaceutical Association held on March 5, 1940, are given.—ANON. *Indian and Eastern Chemist*, 21 (1940), 134. (A. C. DeD.)

Italian Saccharin Imports Prohibited. According to a law published on May 1st and effective from that date, importation of saccharin into Italy is prohibited. The domestic production of saccharin for pharmaceutical and other permitted uses may be authorized by the appropriate department.—ANON. *Chemist and Druggist*, 133 (1940), 101. (A. C. DeD.)

Sulfanilamide Control—Australian. The sale of sulfanilamides, allied drugs and their derivatives has been brought under uniform control by the Medical Equipment Regulations promulgated under the National Security Act. Under the regulations sulfanilamides, allied drugs and their derivatives may not be sold retail except on the written prescription or order of a registered medical practitioner, veterinary surgeon or dentist.—ANON. *Chemist and Druggist*, 133 (1940), 125. (A. C. DeD.)

Synthetic Resins—German Restrictions on. Notice No. 13 of the Reich Chemical Board which became effective on July 1st places further restrictions on the use of synthetic resins and plastics for molding. Synthetic resins derived from phenol, cresol or urea, except synthetic resins for the lacquer industry and plastics for molding containing such resins, must not be used for the manufacture of containers, except caps and lids for tubes and other containers. Manufacturers of synthetic resins and thermoplastics require special permits for the use or sale of these materials.—ANON. *Chemist and Druggist*, 133 (1940), 101. (A. C. DeD.)

PHARMACEUTICAL ECONOMICS

Chemical Foreign Trade in 1939. Imports in all classes of medicinals were higher than for 1938, except menthol and preparations in capsules, pills, tablets, etc. All items but vaccines for human use, remedies for malaria chills and fever, and digestive preparations shared in the general gain of exports.—O. WILSON. *Ind. Eng. Chem.*, 32 (1940), 421–423. (E. G. V.)

Cosmetic Factory Devices—Improved. A number of improvements made in the layout of plant and apparatus used in the production of perfumery and cosmetic goods is discussed. These improvements relate to speeding up the general system of manufacture, so that both time and labor will be saved.—ANON. *Perfumer. Essent. Oil Record*, 31 (1940), 196. (A. C. DeD.)

Cosmetics Industry and War. Economical factors are discussed.—H. S. REDGROVE. *Chemistry and Industry*, 59 (1940), 293–295. (E. G. V.)

Drugs in the War. In an editorial, attention was called to the recent increase in price of bismuth, iodine and mercurial compounds. It was anticipated that calomel and perchloride will soon show an advance. However, profiting from experiences gained in the Great War regarding salvarsan, British chemists are now manufacturing evipan and atebrin under license, and in the case of "693" the price has actually diminished. Little difficulty is anticipated in obtaining coal-tar drugs in England, but since vegetable drugs must be imported, prices of these are bound to rise. Quinine salts have already increased owing to the change of value of the Dutch florin in terms of sterling. Drug stocks, it was pointed out, must be conserved.—*East African Medical Journal*, 16 (1939), 9; through *J. Trop. Med. Hyg.*, 43 (1940), 138. (W. T. S.)

Emulsions—Progress in the Field of. A patent review, discussing chiefly German patents.—A. FOULON. *Tech. Blätter*, 29 (1939), 42–43; through *Chem. Abstr.*, 33 (1939), 7430. (E. G. V.)

Food Science in the Future. Principles of the food problem are discussed.—J. B. ORR *Chemistry and Industry*, 59 (1940), 356–359. (E. G. V.)

Glycerin from Japanese Sardine Oil. Glycerin is produced in Japan from hardened sardine oil. The annual output of hardened oil in the Japanese Empire, about 90,000 tons, or 48%, is produced in Chosen Province. Sixty-two per cent of the total hardened oil production in Japan is stated to be used for the manufacture of soap, 17% for stearin, olein and paraffin wax, and 21% for manufacturing glycerin. Chosen is reported to be capable of producing approximately 15,000 tons of glycerin yearly, and Japan can now meet its whole demand for glycerin from domestic output.—ANON. *Chemist and Druggist*, 133 (1940), 125. (A. C. DeD.)

Patents—Nature of. The paper discusses the relation between invention and discovery, manner of manufacture, examination of application and sufficiency.—S. I. LEVY. *Chemistry and Industry*, 59 (1940), 159–162. (E. G. V.)

Pharmacy in India. A review of the progress of pharmacy in India.—C. A. ROTHENHEIM. *Schweiz. Apoth.-Ztg.*, 77 (1939), 73–78. (M. F. W. D.)

Product Development. An address on the art of placing a new product on the market.—W. J. S. NAUNTON. *Chemistry and Industry*, 59 (1940), 21–23. (E. G. V.)

Quinine Tablets—Note on the Manufacture and Retail Sale of, in the Rural Areas of the United Provinces.—The magnitude of the rural malaria problem, as judged by the available, though crude statistics, in a vast province such as the United Provinces of Agra and Oudh has been discussed. The potential demand for the cinchona products has been calculated and the discrepancy between this and their known consumption from all available sources are indicated. The methods by which an attempt was made to increase the consumption of the cinchona products have been discussed. It has been shown that under the existing handicaps imposed by the world prices of cinchona products and Indian rural conditions, the line of action open to workers in this field should be, first, to reduce the manufacturing cost of tablet making (since it is principally in the tablet form that cinchona products can be utilized in rural areas for mass distribution); second, to improve the quality and composition of tablets so as to make them more effective and attractive; and third, to offer sufficient incentive by way of commission to sales agents. One of the ways of reducing the cost of tablet making is to employ modern power-driven machinery and to carry out this manufacture on scientific lines. The manufacturing processes and the machinery used at each stage in the conversion of quinine and cinchona powders into their respective tablets are described in detail. The scheme of sale of quinine sulfate tablets in rural areas in one anna greased paper plackets on a commission basis as it operates in the United Provinces is explained and the nature of the attempts to enlarge this agency pointed out. The capital and running expenses of a factory such as exists in the United Provinces are detailed and the business basis of the scheme outlined.—A. C. BANERJEA. *Jour. Malaria Inst. India*, 2 (1940), 377. (A. C. DeD.)

Tooth Pastes—Handling and Packing of. A review of factory layout of the modern tooth paste maker reveals that every effort is made not only to speed up production, but to make provision for future expansion, in order to cope with increased demands. A further innovation is the setting up of plant-making commodities similar to dental creams in the same area, so that should one of these greatly exceed what is actually required, an alternative use of the plant and conveying system is made available.—ANON. *Perfumer. Essent. Oil Record*, 31 (1940), 96. (A. C. DeD.)

MISCELLANEOUS

Adhesives—Manufacture of. A paste of an aqueous solution of a hardenable liquid artificial resin ("Kaurite glue") with a powdered hardened synthetic resin is applied to one part to be united and a hardening agent to the other.—H. KLEMM. Brit. pat. 514,313; through *J. Soc. Chem. Ind.*, 59 (1940), 71. (E. G. V.)

Antiseptic Mouthwashes and Gargles. Antiseptic mouthwashes are discussed.—ANON. *Indian and Eastern Chemist*, 21 (1940), 160. (A. C. DeD.)

Barium in Cosmetic Colorings. A report on the coloring substances used in lipsticks, rouges and other cosmetics is discussed. The method of analysis which may be modified by different collaborators is also given in full.—E. W. CAMPBELL AND COLLABORATORS. *Perfumer. Essent. Oil Record*, 31 (1940), 99. (A. C. DeD.)

Capsules for Cosmetic Purposes—Water-Soluble. Capsules for holding volatile products such as perfumes for use in bath water are made by forming urea into the shape of a capsule and then subjecting it to a pressure of at least 1000 kilos per sq. cm. to render the urea impervious to passage of the volatile products without destroying the solubility of the capsule in water.—KARL W. SCHMIDT. U. S. pat. 2,170,253, Aug. 22, 1939. (A. P.-C.)

Containers and Tubes Comprising Organic Thermoplastic Material—Manufacture of.—CELLULOID CORP. Brit. pat. 511,844; through *J. Soc. Chem. Ind.*, 58 (1939), 1151. (E. G. V.)

Cosmetic Creams—Irradiating. A method of irradiating a mixture of lanolin and maize oil or other cosmetic cream base, producing active oxygen from peroxidic compounds present, involves heating the base to approximately 180° F., flowing the base into a revolving disk effective to cause the drops thrown therefrom to impinge upon a rough surface from which they trickel in a thin uniform film approximately 0.0015 mm. in thickness over an area in proximity, and so as to be exposed, to ultraviolet light radiation from a quartz mercury vapor lamp in an atmosphere of a temperature below 200° F., while the base in such thin film passes over a tapered conical plane surface, and then removing the base from such tapered surface.—CHANDLER HOLT, assignor to BOURJOIS, INC. U. S. pat. 2,199,796, May 7, 1940. (A. P.-C.)

Cosmetic Manufacture—Some Difficulties of, Solved. Some of the more important topics are as follows: face and body powders, rouges, bath salts, lipsticks, dental creams, deodorant lotions, emulsifying agents, cold cream, glycerin creams, hair creams, special creams, lotions and foot preparations.—ANON. *Perfumer. Essent. Oil Record, Annual Special Number*, (1940), 41. (A. C. DeD.)

Drug Manufacture—Unit Operations in. Small versatile operating units, easy to handle and clean, and the adaptation to various processing requirements are described. The advantages of a continuous method over the batch process for manufacturing milk of magnesia include a saving of space, equipment, steam, water and labor.—G. W. BENGERT. *Ind. Eng. Chem.*, 32 (1940), 461–464. (E. G. V.)

Emulsifying Agent—Selecting an. A general guide to the fundamental constitution of face creams, hair creams, complexion milks and other cosmetic emulsions is given.—S. P. JANNAWAY. *Perfumer. Essent. Oil Record*, 31 (1940), 81. (A. C. DeD.)

Face Powders, Etc.—Preparing a Composition Suitable for Use in. A method of reducing natural silk to an impalpable powder suitable for use in cosmetics, etc., involves freeing the silk from foreign and deleterious matter and degumming, subjecting the resulting purified silk to the action of an aqueous solution of an alkali metal hydroxide so as to soften the silk but without dissolving it, neutralizing the resultant product by means of an inorganic acid, water washing the neutralized product, drying the washed product and grinding the dried product to an impalpable powder.—REGINALD W. LAWSON. U. S. pat. 2,194,858, March 26, 1940. (A. P.-C.)

Filtration Contrivances for Soap, Perfumery and Cosmetic Products. A discussion.—ADOLF MEYER. *Seifensieder-Ztg.*, 67 (1940), 225. (L. K.)

Fingernail Cleaning Composition. Water is used, together with about 1% to 10% of pale blown castor oil or a sulfonated oil emulsified with the water, about 0.5% to 5% of bentonite clay emulsified with the water, about 15% to 40% of a solvent for cellulose nitrate such as acetone and butyl acetate which is effective in the presence of the water, sufficient sodium hydroxide to give the emulsion a p_H of about 7.5 to about 10.5, and about 0.5 to 1.5% of liquid petrolatum.—HORACE M. CARTER. U. S. pat. 2,197,630, April 16, 1940. (A. P.-C.)

Fungicide. 2,4-Diaminodiphenylamine is used (suitably with lime or bentonite, etc.).—MARION C. GOLDSWORTHY, dedicated to the free use of people in the territory of the United States. U. S. pat. 2,203,431, June 4, 1940. (A. P.-C.)

Hand Preparations Are Also Topical. The author discusses the various cleansing and protective preparations, hand creams, lotions, jellies and nail polishes.—S. P. JANNAWAY. *Perfumer. Essent. Oil Record*, 31 (1940), 186. (A. C. DeD.)

Insecticidal Sprays. For decreasing the tendency for a light oil spray to be absorbed by plant leaves, there is added to the oil about 1% to 5% of an oil-soluble aluminum soap such as aluminum stearate or the like.—WM. B. PARKER, assignor to CALIFORNIA SPRAY-CHEMICAL CORP. U. S. pat. 2,171,598, Sept 5, 1939. (A. P.-C.)

Insecticide. Phthalonitrile is used (suitably in dusts or sprays).—MILTON S. SCHECHTER and HERBERT L. J. HALLER, assignors to THE SECRETARY OF AGRICULTURE OF THE U. S. A. U. S. pat. 2,200,564, May 14, 1940. (A. P.-C.)

Insecticide and Larvicide. An insecticide and mosquito larvicide is formed from a petroleum oil, an extract of pyrethrum, a small proportion of a thiodiarylamine such as thiodiphenylamine, together with water and an emulsifier such as sodium lauryl sulfate (the thiodiarylamine used having a synergistic action with the extract of pyrethrum).—JOS. M. GINSBURG, assignor to ENDOWMENT FOUNDATION. U. S. pat. 2,202,148, May 28, 1940. (A. P.-C.)

Insecticides. Insecticides suitable for combating the Japanese beetle contain an aqueous solution of a soap of a drying oil fat acid such as the potassium soap of linseed oil fat acids (suitably together with about 0.007% of rotenone).—TIFFANY LIND, assignor to LIN-TOX CORP. U. S. pat. 2,173,849, Sept. 26, 1939. (A. P.-C.)

Insecticides. In insecticidal powders or spray, use is made of *N*-ethyl-*N*-benzoylcyclohexylamine or other compound of the general formula $RN(X)\text{-}COY$, in which R is a univalent monocyclic hexahydrogenated aromatic hydrocarbon radical and X and Y are univalent hydrocarbon radicals.—THOS. S. CARSWELL, assignor to MONSANTO CHEMICAL CO. U. S. pat. 2,192,894, March, 12 1940. (A. P.-C.)

Insecticides. Insecticides suitable for sprays are produced by heating a dichloroethyl ether to above 100° C. with an organic cyanate or with an *N,N*-alkylacylcyclohexylamine.—HOMER E. WHITMIRE, assignor to SHELL OIL CO. U. S. pat. 2,204,197, June 11, 1940. (A. P.-C.)

Insecticides and Fungicides. Use is made of compounds of the general formula $3CuAs_2O_4 \cdot CuORS_x$, in which RS_x is the anhydride of a sulfurized unsaturated monocarboxylic acid containing from 2 to 4 atoms of sulfur in the acid molecule.—FREDERICK E. DEARBORN, dedicated to the free use of the People in the territory of the United States. U. S. pat. 2,201,103, May 14, 1940. (A. P.-C.)

Insecticides and Insect Repellants. Compositions are formed containing as an active ingredient formamidinesulfinic acid or other compound of the general formula $HN{:}C(NH_2)SO_nX$, in which n is 2 or 3 and X is hydrogen or a metal such as sodium, potassium, calcium, magnesium, zinc, iron, copper, lead or mercury, or ammonium.—WM. P. TER HORST and ROBERT W. ELDRIDGE, assignors to U. S. RUBBER PRODUCTS, INC. U. S. pat. 2,197,624, April 16, 1940. (A. P.-C.)

Lactones Suitable for Use in Perfumes. Lactones such as those of the monoethers of diethylene glycol and 11-hydroxyundecanoic acid, trimethylene glycol and 11-hydroxyundecanoic acid, and 1,3-butylene glycol and 11-hydroxyundecanoic acid are prepared by a process which involves slowly adding the ether to the reflux of a benzene solution of benzenesulfonic acid, distilling off the water-benzene mixture which forms, washing the solution with water and an alkali, distilling off the benzene in a vacuum, extracting the lactone from the residues by a solvent such as pentane, and rectifying the lactone by vacuum distillation.—ROGER FIRMENICH, assignor to FIRMENICH & CIE. U. S. pat. 2,202,448, May 28, 1940. (A. P.-C.)

Larvicides—Action of Certain Assamese Plants as. Duranta, xanthoxylum, gardenia and tephrosia are valuable for their larvicidal action and can be used with success in water where there is no high velocity of flow and in ponds and swamps. These plants all grow in Assam in profusion, and can be used as auxiliary larvicides to oil and Paris green in suitable situations. The larvicidal action of acetone dilutions of the seeds of *Tephrosia vogelii* is very marked and is due to degueline, an isomer of rotenone.—D. MANSON. *J. Malaria Inst. India*, 2 (1939), 85. (A. C. DeD.)

Liquid Soaps. The use of these appears to be increasing, but a serious disadvantage is that in cold weather they are liable to thicken considerably or even become solid. The presence of alcohol or glycerin helps to keep the soap fluid, as does also a small amount of white mineral oil. Various mineral salts have been used to serve the same purpose, as ammonium thiosulfate, potassium acetate and potassium lactate. A recent U. S. patent (No. 2,089,305) claims that the addition to the liquid soap of about 10% of the reaction product of a dicarboxylic acid, such as malic or adipic acid, together with an alcohol, such as methyl or ethyl alcohol or glycol, and caustic potash or ammonia, *e. g.*, potassium methyl adipate, maintains fluid a liquid potassium-olein soap containing 40% fatty acids.—ANON. *Perfumer. Essent. Oil Record*, 31 (1940), 72. (A. C. DeD.)

Masticatory Suitable for Carrying Medicinal Substances. Glycerol is used in mixture with at least partially hydrolyzed glue or the like which does not swell upon solution in water.—FERDINAND A. KERTESS. U. S. pat. 2,203,436, June 4, 1940. (A. P.-C.)

Methyl Cellulose in Shaving and Other Soaps. The addition of various materials (*e. g.*, gum tragacanth) to shaving soaps has been proposed from time to time with the object of increasing the lather and rendering it more stable. One of the most recent of these is methyl cellulose (tylose) which appears to have been gaining favor in Germany just prior to the outbreak of war. The material gives a thick viscous solution with water, which has a useful cleansing effect on the skin, and when added to a soap it is claimed to produce a creamier and more stable lather, as well as giving the soap a milder action on the skin. In Germany the material has also been employed in household soaps. Although originally of German origin, it is interesting to know that methyl cellulose is now being manufactured in England.—ANON. *Perfumer. Essent. Oil Record*, 31 (1940), 106. (A. C. DeD.)

Nebulizer for Inhalation Experiments. The nebulizer described was used to produce a fine mist of various solutions for inhalation by experimental animals.—R. J. MAIN. *Ind. Eng. Chem., Anal. Ed.*, 12 (1940), 117. (E. G. V.)

Nicotine Compounds (Stable) Suitable for Insecticidal or Fungicidal Use. A substantially stable composition contains nicotine and copper hydroxide combined with casein or albumin and formaldehyde (the degree of stability being determined by the formaldehyde content).—GROVER D. TURNBOW. U. S. pat. 2,175,980, Oct. 10, 1939. (A. P.-C.)

Nursery Preparations. A review.—S. P. JANNAWAY. *Perfumer. Essent. Oil Record*, 31 (1940), 289. (A. C. DeD.)

Parasiticides. A copper fungicidal compound such as copper sulfate is used with sodium zeolite or other alkali or alkaline earth metal zeolite, which prevents caking of dusting compositions or creaming or breaking of oleaginous compositions containing the specified ingredients together with an oil.—JAMES F. ADAMS and ALEXANDER A. NIKITIN, assignors to trustees for the CROP PROTECTION INSTITUTE. U. S. pat. 2,172,314, Sept. 5, 1939. (A. P.-C.)

Perfumes Containing Ketals, Etc. Various perfume mixtures are described, which have an odor similar to geranium oil, rose, jasmine or honey, and which contain ketals having 6 to 9 carbon atoms in the ketone residue, such as di-isopropylpyrocatechol ketal, methylamylpyrocatechol ketal or diisobutylpyrocatechol ketal, in mixture with various other compounds.—ALBERT WEISSENBORN, assignor to WINTHROP CHEMICAL CO. U. S. pat. 2,169,984, Aug. 15, 1939. (A. P.-C.)

Shaving Cream—Brushless. A mixture is used comprising about 5% to 30% of an oleaginous material such as stearic acid, palmitic acid, paraffin fatty acids or hydrogenated cocoanut oil fatty acid, about 50% to 80% of water, together with about 0.5% to 10% of the butyl ester of sulfonated oleic acid or other chemical compound having oleophilic and hydrophilic groups in the molecule and having the general formula $(R—CO—O)_n—X$ (where R is a hydrocarbon radical with at least 7 carbon atoms, its hydroxy and sulfonic substitution products, and sulfuric and phosphoric acid esters; n is an integer and stands for 1, 2 or 3; and X is hydrogen, an alkyl, alkylol or alkylene group, the oxy, hydroxy and sulfonic acid substitution products and their sulfuric and phosphoric acids esters, the compound as a whole having at least one inorganic oxygenated acid radical).—WOLF KRITCHEVSKY, assignor to RIT PRODUCTS CORP. U. S. pat. 2,195,713, April 2, 1940. (A. P.-C.)

Sun Tan Creams. A number of formulas for these creams is given.—G. DELFINI. *Il farm. ital.* 7 (1939), 651. (A. C.De D.)

Superfatting in Practical Toilet and Shaving Soap Manufacture. The advantages of superfatting are discussed, both in general and with separate consideration of various common superfatting agents (lanolin, lecithin, oils, etc.).—J. GLENN. *Soap*, 15 (1939), No. 9, 21–24, 70; through *J. Soc. Chem. Ind.*, 58 (1939), 1144. (E. G. V.)

Surgical Dressings, Etc.—Wettable Materials Suitable for. Articles such as absorbent pads comprise a resilient, soft, absorbent fibrous material consisting of an aggregation of fibers of the class consisting of cotton, wool, linen or silk, which of themselves contain natural water repellent constituents to an extent rendering them difficultly wettable by water, the fibers having on their surfaces a dried, adherent coating of a hydrophilic wetting agent which also includes in the molecule a hydrophobic group, the agent being present in quantity sufficient to impart to the fibrous material the property of capillary absorbency of water. The material has a sinking time (as defined) of less than 2 minutes.—WARNER EUSTIS and ALAN W. VINT, assignors to KENDALL CO. U. S. pat. 2,168,286, Aug. 1, 1939. (A. P.-C.)

Toilet Soap—Liquid Antiseptic. Soap and water are used with about 33% or less, by volume, of a hardwood oil boiling from 180° to 240° C. and with a blending agent such as ethanol or various other alcohols, ethers, esters or ketones.—LOUIS J. FIGG, JR., assignor to EASTMAN KODAK CO. U. S. pat. 2,196,763, April 9, 1940. (A. P.-C.)

Toilet Soaps—Insoluble Silicates in. Many insoluble silicates possess very distinct detergent properties, partly because of their power of adsorbing grease or dirt, and their addition to toilet soap is therefore quite advantageous. Bentonite (or wilkinite as some of its varieties are termed) particles when moistened with water have the peculiar property of first swelling, due to the absorption of water, and then a mucilaginous paste is formed which, on further dilution, becomes a thin stable suspension. This suspension is capable of suspending other solid matter.—ANON. *Perfumer. Essent. Oil Record*, 31 (1940), 73. (A. C. DeD.)

Tooth Powder. A dentifrice is formed in small, discrete granules consisting of a major proportion of an extremely finely divided polishing agent such as calcium carbonate or sulfate, or di- or tri-calcium phosphate, with a binder, such as gelatin, pectin or gum arabic, adapted to impart to the granules sufficient strength and rigidity to withstand ordinary handling without disintegration, together with a detergent such as a soap and other usual dentifrice ingredients.—ROBERT F. HEALD and ROBERT J. MEHAFFEY, assignors to COLGATE-PALMOLIVE-PEET CO. U. S. pat. 2,196,150, April 2, 1940. (A. P.-C.)

PHARMACOLOGY, TOXICOLOGY AND THERAPEUTICS

PHARMACOLOGY

Adrenalectomized Rats—Survival of. Completely adrenalectomized rats weighing from 50–65 Gm. survive the operation longer when fed a low potassium diet with sodium chloride, and especially sodium citrate. Older and larger rats survive longer than younger and smaller ones. Corticosterone butyrate, desoxycorticosterone acetate and a "substance M" were useful to prolong the survival of the rats.—L. WATERMAN. *Arch. intern. pharmacodynamie*, 64 (1940), 46. (W. H. H.)

Adrenaline and Respiration. The respiratory inhibition by adrenaline, adrenaline apnea, is suppressed and sometimes replaced by adrenalinic hyperpnea, in the dog non-anesthetized or anes-

thetized with chloralosane and deprived of the presso-receptors, cardio-aortic and carotid-sino reflex nerves. Adrenaline does not have a direct inhibitory action upon the respiratory center. Arterial hypotension, respiratory depression or administration of morphine creates an experimental condition such that the intravenous injection of adrenaline may produce a new respiratory inhibition in the dog deprived of its presso-receptor nerves. Respiratory inhibition produced by adrenaline in certain experimental conditions in the dog deprived of its presso-receptor reflex nerves is probably due to the modifications of blood irrigation determined at the level of the respiratory center by adrenaline arterial hypertension.—R. MARRI and W. HAUSS. *Arch. intern. pharmacodynamie*, 63 (1939), 469. (W. H. H.)

Adrenaline Preparations Sold in India—Quality of. Using biological methods and a proper reference standard, workers in a government laboratory examined 30 samples of adrenaline solutions manufactured in 5 leading European countries and sold in India. Only 9 samples were of the claimed potency and two were practically inert. This unsatisfactory condition was attributed, in part, to the alkalinity of the glass containers holding the drug. The vital dependence placed in this drug increases the gravity of the problem.—ANON. *Indian Med. Gaz.*, 75 (1940), 294–295. (W. T. S.)

Adrianol (M-Sympatol) and Cardiovascular System. The action of adrianol upon the arterial pressure and upon the volume of cardiac contraction has been studied in the anesthetized dog. It mean doses of 0.001 mg. per Kg., adrianol produced a moderate increase of the variable cardiac debt by augmentation of the mass of venous blood which removed the peripheral vasoconstriction; the substance did not possess cardiotonic properties. In larger doses and notably in mean doses of 0.02 and 0.01 mg. per Kg., adrianol is toxic to the heart. The properties of adrianol upon the heart are less favorable than similar substances, namely sympatol, neosynephrin and ephedrine.—R. CHARLIER. *Arch. intern. pharmacodynamie*, 63 (1939), 428. (W. H. H.)

Aloes. A Study of the Plant and the Drug. A review.—JULIO LAZO. *Escuela Farm.*, 2 (1939), 66. (G. S. G.)

Aminopyridinecarboxylic Acids—Anesthetic Esters of. Details are given of the production of relatively non-toxic anesthetic compounds, whose salts, such as the mono- or di-hydrochlorides or benzoates, may be used in aqueous solution while the bases themselves can be dissolved in oil of sweet almond or other suitable oil for injections or for incorporation in ointments.—RAEMER R. RENSHAW and PAUL F. DREISBACH, assignors to PYRIDIUM CORP. U. S. pat. 2,194,567, March 26, 1940. (A. P.-C.)

Analgesics in Obstetrics—Comparison of. From a total of 958 deliveries, in which 610 patients received some type of analgesia, these conclusions were drawn regarding the comparative value of the compounds or mixtures. Pentobarbital-hyoscine-pantopon and pentobarbital-hyoscine gave satisfactory amnesia in 80% to 85% of cases. Hyoscine-sodium amytal was effective in 77%, morphine-hyoscine and sigmodal in 65% and 64%, respectively. Sigmodal was safer for the baby and caused least restlessness in labor. The combinations pentobarbital-hyoscine, morphine-hyoscine, pentobarbital-hyoscine-pantopon and sodium amytal-hyoscine were not dangerous, with the first being the safest. These combinations can be started earlier than "twilight sleep" and are, therefore, more useful in multiparas. "Twilight sleep" may be harmful in toxic patients. The method for employing these drugs was outlined. Some information concerning the cases was given.—DONALD M. PATTON. *Southern Med. J.*, 33 (1940), 626–632. (W. T. S.)

Anesthetic. A procaine butyrate is used in various mixtures suitable for swabbing or injection, as in dental work.—GERALD F. RORER, assignor to WM. F. RORER, INC. U. S. pat. 2,175,782, Oct. 10, 1939. (A. P.-C.)

Anesthetics—Intravenous, Effect of, on Autonomic Response. It is well known that the barbiturates as a group have effects on the autonomic nervous system. Most of these drugs have an action which takes the form of suppression of the sympathetic reactions. Pentothal Sodium, a thiobarbiturate of the ultra-short acting group, is an exception to this general rule, since it seems to potentiate sympathetic reactions. This was demonstrated in animals by noting the reaction to a dose of acetylcholine in the presence or absence of pentothal. When decapitated cats were given acetylcholine while under the influence of pentothal, the drop in blood pressure was more marked than in animals under the influence of other barbiturates. The depressant action of histamine, however, was not enhanced by pentothal. The potentiation of the acetylcholine effect could be abolished by a preliminary injection of atropine. These pharmacological findings seem to indicate that atropinization is advisable prior to pentothal anesthesia.—R. KOHN-RICHARDS and C. GRIMES. *Anesthesia and Analgesia*, 19 (1940), 31; through *Abbott Abstract Service* (1940), No. 689. (F. J. S.)

Anesthetics—Local, Synthesis of. IV. Some piperidino- and diethylamino-acetyl and propionyl aminea have been prepared and their local anesthetic properties studied.—K. N. GAIND, JNANENDRA NATH RAY and JAYANT N. YAJNIK. *J. Indian Chem. Soc.*, 17 (1940), 400. (F. J. S.)

Anterior Pituitary Extracts—Influence of, on the Detoxication Mechanism of the Dog. Normally one-fourth of the benzoic acid administered to a dog is excreted as hippuric acid, three-fourths as benzoyl-glycuronic acid. Previous experiments have shown that in pancreatectomized dogs the excretion of benzoic acid as glycuronic acid is not affected. However, urinary glucose decreased, the D:N ratio fell, and the D+ glycuronic-acid:N ratio was near the D:N ratio of the pancreatectomized animal prior to benzoic acid administration. Thus, in these animals glucose and glycuronic acid must come from tissue protein. Ennor reports a study by which it was shown that in dogs, receiving injections of anterior pituitary gland, the appearance of benzoyl-glycuronic acid in the urine is accompanied by a marked excretion of glucose.—A. H. ENNOR. *Australian J. Exp. Biol. Med. Sci.*, 18 (1940), 164–169. (W. T. S.)

Antianemic Preparations—Action of, on Bone Marrow in Vitro. A method for the standardization of antianemic preparations is described. It is based on the augmented migration of cells out of an explant of animal bone marrow after the addition of an optimal dilution of antianemic preparations. The results are given of the evaluation of the potency of a number of active and inactive extracts, proving that the method is reliable in a qualitative as well as in a quantitative sense. Other substances, present in liver, are inactive; the digestion product of beef by gastric juice acts like liver extract. Explants from non-hemopoietic material showed at best an indication of migration after the addition of active liver extract. Ablation of the thyroid in the animals furnished the necessary bone marrow and plasma and resulted in a refractoriness to liver extract. No migration was observed out of explants of bone marrow from pa-

tients with pernicious anemia. After the addition of an active dilution of liver extract, a distinct migration occurred. Increased migration is not accompanied by an increased oxygen consumption.—P. J. GAILLARD, G. A. OVERBEEK and T. H. YAM. *Arch. intern. pharmacodynamie*, 64 (1940), 33. (W. H. H.)

Ascorbic Acid Content of Different Tissues of the Guinea Pig—Effect of the Injection of Cobra Venom on the. Injection of cobra venom into guinea pigs has been found to cause a depletion in the ascorbic acid content of brain, liver, adrenal, kidney and small intestine of guinea pigs. The spleen is unaffected.—A. C. MAJUMDAR. *J. Indian Chem. Soc.*, 17 (1940), 332. (F. J. S.)

Atropine—Relation of, to Adrenaline and the Sympathetic System. Experiments on the perfused dog leg and rabbit ear and on the nictitating membrane and the blood pressure of the spinal cat showed that atropine was antagonistic to the action of epinephrine. In explaining these effects, the author points out the chemical relationship of atropine to cocaine, feeling that the action of atropine in antagonizing epinephrine resembles that produced by high concentrations of cocaine.—L. J. J. BUSSELL. *J. Pharmacol.*, 69 (1940), 128. (H. B. H.)

Bactericidal Product. A bactericidal product suitable for use on the skin is produced by heating equal amounts of *m*-dihydroxybenzene and gum camphor to the boiling point and continuing boiling for 5 minutes.—MEYER S. GLAUSER. U. S. pat. 2,174,976, Oct. 3, 1939. (A. P.-C.)

Barbituric Acid Derivatives. Relation between Hemolytic Action and Chemical Structure. A relationship between pharmacological action and chemical structure of some barbituric acid derivatives. In the primary or secondary alkyl-substituted compounds, with an increase in the number of C-atoms in the alkyl group, both the minimal anesthetic dose and the minimum lethal dose grow relatively smaller, but when the alkyl radical is longer than 5 C-atoms, the amount required to produce anesthesia or death in rats again increases. As the alkyl chain lengthens, the therapeutic ratio between M. L. D. and M. A. D. appears to be gradually greater and in general the duration of action is shorter when the alkyl group becomes lengthened. The present report deals with a series of primary and secondary alkylsubstituted barbituric acid and thio-barbituric acid derivatives. Hemolytic action on sheep's blood was studied, the time decreasing as the number of C-atoms increases in the substituted alkyl radical.—HENRY M. LEE and EDWARD E. SWANSON. *Jour. A. Ph. A.*, 29 (1940), 340. (Z. M. C.)

Blood Pressure—Substance for Lowering the. Hypophysis, especially the posterior lobe, is extracted with dilute or concentrated acetic acid and treated with ether and petroleum ether, either successively or together. The precipitate is filtered off and the filtrate is neutralized. The resulting precipitate is separated and used as a blood pressure reducing agent.—ERNST WOLLHEIM. U. S. pat. 2,175,334, Oct. 10, 1939. (A. P.-C.)

Bromides—Anticonvulsant Effects of. The effect of various bromides (NaBr, KBr, NH_4Br, $CaBr_2$, $MgBr_2$) upon the convulsive reactivity of rabbits was compared by a quantitative method of electrical stimulation. None of these bromides was able to produce a higher ratio M/A (maximum threshold after bromide application: mean convulsion threshold before injection) than did NaBr, indicating that in the combination of the bromine with the cations so far studied, the specific sedative action of the bromine ion overshadows that of the cation so that the latter's anticonvulsant effect does not become manifested.—E. SPIEGEL. *Arch. intern. pharmacodynamie*, 63 (1939), 464. (W. H. H.)

Caffeine Withdrawal Headache—Experimental. Since many migrainous subjects get headaches with relaxation and habitual coffee drinkers may develop a headache if they miss their morning cup of coffee, it was thought that withdrawal of caffeine from habituated subjects might be a means of producing experimental headaches which would be more physiological than experimental histamine or nitrite headaches. Accordingly, subjects abstained from caffeine-containing beverages, so that control blood samples could be obtained on the non-habituated subject. The subjects were then given enough caffeine in capsules, so that with their usual intake, the daily dose, was about 10–12 grains of caffeine. This dosage was maintained for one week, and then withdrawn completely. In almost all individuals a moderate to severe headache occurred on the day of withdrawal, while in migrainous individuals typical migraine syndromes ensued. Blood pressure, pulse and blood samples were taken before caffeine was started, during the administration period, after withdrawal and after relief of the headache. Hematocrit determinations were made on all blood samples and serum potassium, calcium, protein and inorganic phosphorus were determined. The data indicate that a change in blood electrolytes accompanies the headache.—ROBERT H. DREISBACH. *J. Pharmacol.*, 69 (1940), 283. (H. B. H.)

Central Nervous System—Chemical Mediation in. Experiments, conducted to observe the effect of acetylcholine and eserine on the motor cortex of dogs are described. The results cannot only be explained by the theory of acetylcholine mediation, but other alternatives can be offered as explanations too. Direct attempts of assaying acetylcholine in the blood leaving the brain of dogs proved unsuccessful. Corresponding investigations on the isolated spinal cord of the frog yielded the same negative result. A substance given off by the spinal cord, and having positive ionotropic effects on the isolated frog heart, was found.—H. ROSENBAUM. *Arch. intern. pharmacodynamie*, 63 (1939), 417. (W. H. H.)

Chlorogenic Acid—Pharmacology of an Important Constituent of Coffee. A summary of data on the chemical and physiological properties, without references.—K. SCHUBEL. *Sitzber. physik.-med. Sozietat Erlangen*, 70 (1938), 115–116; through *Chem. Abstr.*, 33 (1939), 8314. (F. J. S.)

Cholinesterase—Variation of, in the Brain and in the Marrow of Tetanized Animals. The cholinesterase content is increased in the spinal marrow and to a greater degree in the cortical part of the brain of animals poisoned with tetanus toxin.—G. PIGHINI. *Biochim. terap. sper.*, 26 (1939), 226. (A. C. DeD.)

Cholinesterase—Variation of, in the Brain of Beriberi Pigeons. A decrease of cholinesterase content takes place in the cortical part of the brain and in the cerebellum of beriberi pigeons.—G. PIGHINI. *Biochim. terap. sper.*, 26 (1939), 260. (A. C. DeD.)

Cineol and Phellandrene—Pharmacological Examination of. The following summary is given: (1) The dietary habits of the Koala directed attention to the study of cineol and phellandrene. (2) The oral toxicities of these compounds were determined for rats. (3) Utilizing the method of the cross-over test, devised for testing antipyretics, several comparisons were made on groups of rats for pyretic and antipyretic activity. The compounds were completely without activity. (4) The effects of the compounds on the blood pressure,

respiration and central nervous system of the decerebrate cat are described.—G. BROWNLEE. *Quart. J. Pharm. Pharmacol.*, 13 (1940), 130–137. (S. W. G.)

Citrates of Procaine. Local anesthetic compounds which are suitable for use with adrenaline or its substitutes comprise citrates of procaine, such as triprocaine citrate, which may be formed by reaction of citric acid and procaine in water heated to the boiling point.—DAVID CURTIS. U. S. pat. 2,193,165, March 12, 1940. (A. P.-C.)

Cobra Venom—Studies on the Hemolysin of. The author reports a study in which he determined the power of certain chemicals to restore the hemolytic activity of cobra venom which had been inactivated in part or completely by one of the following chemicals: I, H_2O_2, $K_3Fe(CN)_6$, benzoquinone, Cu_2O and phenyl-mercuric chloride.—S. S. DE. *Indian J. Med. Research*, 27 (1940) 807–817. (W. T. S.)

Crataegus Oxyacantha—Actions of. The following summary is given: (1) The specific active principle of hawthorn (*C. oxyacantha*) has not been isolated. The contention of Baechler (*Botan. Central.*, 2 (1927), 337) in this respect is suspect. (2) Crataegus has a paralysant action on the respiratory center when given intravenously, and is toxic to the heart. Chronic poisoning causes necrosis of the liver. (3) The frog heart is inhibited by crataegus; arrest in diastole occurs more frequently than arrest in systole. (4) The mammalian heart *in situ* or during perfusion is at first slowed (this is inhibited by atropine) and strengthened by crataegus, but later passes into auricular fibrillation and heart block. (5) The contention of Martini (*Biochim. terap. sper.*, 19 (1932), 289) that the carotid blood pressure of mammals is depressed by crataegus is confirmed: the coronary and pulmonary vessels and bronchi are constricted. (6) The uterus is inhibited and the motor gradient of the gut *in vitro* tends to be reversed; *in vivo* this is not so.—J. D. P. GRAHAM. *Quart. J. Pharm. Pharmacol.*, 13 (1940), 49–56. (S. W. G.)

Digitalis—Assay of. II. Absorption as Influenced by the Site of Injection. In the administration of digitalis to frogs *via* the ventral lymph space, the bioassayist has the choice of two sites by virtue of the division of this space by the pectoral girdle into the pectoral and abdominal lymph sacs. Determinations have been made of the apparent potencies of the same digitalis preparations following injection of these intramuscularly or into the pectoral or the abdominal lymph sacs. The findings support the conclusion that in one hour under the conditions of the U. S. P. XI Assay of Digitalis, the effective absorption, as judged by the apparent potency, is considerably more nearly complete from the pectoral than from the abdominal lymph sac. In eighteen hours, the effective absorption is more nearly the same from the two sites. The effective absorption from the pectoral lymph sac is about the same as that following intramuscular injection regardless of the period of observation.—LLOYD C. MILLER and HERBERT A. BRAUN. *J. Pharmacol.*, 69 (1940), 295. (H. B. H.)

Digitalis Assay Study—Progress Report on the U. S. P. (1939–1940). The author summarizes the results of a collaborative study of the assay of digitalis, using frogs. The first comparison was designed to determine the relative merits of the one- and eighteen-hour methods and the practicability of diluting a standard powder with exhausted marc. As a result the eighteen-hour method showed certain unmistakable advantages which are indicated in a tabulation. The second comparison was planned to supply data on the reproducibility of a hot extraction procedure as compared with cold extraction. The assumption that a perfectly uniform liquid preparation could be prepared by all collaborators by the maceration technique was not valid so a sample of tincture was provided as a standard. Principal features of data are the remarkable uniformity in potency of macerates prepared in different laboratories and the low error in the eighteen-hour method.—LLOYD C. MILLER. *Jour. A. Ph. A.*, 29 (1940), 339. (Z. M. C.)

Digitalis—Comparison of the One- and Eighteen-Hour Frog Method for the Assay of. Seven laboratories collaborated in a study of problems involved in the biological assay of digitalis. Details of the experiments are reported and findings are discussed. Good agreement was found by one-hour and eighteen-hour methods. The U. S. P. reference powder possesses 152.5% of the potency of the 1936 International Standard when the latter is considered to possess an activity of one International Unit per 0.08 Gm.—C. W. CHAPMAN. *Jour. A. Ph. A.*, 29 (1940), 337. (Z. M. C.)

Digitalis Glucosides—Relative Potency of, by Various Assay Methods. From a practical standpoint it is essential that the bioassay method employed in the standardization of digitalis give values paralleling therapeutic potency. In the assay of digitalis leaf and its galenicals this requirement seems to have been reasonably well fulfilled by the official frog method and the Hatcher-Brody cat technique. However, when the relative values for digitalis and purified glucosides obtained by such assay methods are applied to man wide discrepancies become apparent, of which there are several examples in the literature. The authors compared a number of pure principles—Ouabain, Digitaline (Nativelle), Digitoxin (Merck), Digilanid C (Sandoz)—with regard to their action on isolated cardiac muscle, their average lethal cat dose and their effectiveness in the relief of clinical heart failure. Expressed in cat units, ouabain has about 1/4 the activity of digitoxin and about 4 times that of Digilanid C in augmenting the contraction of the isolated papillary muscle. In the relief of clinical heart failure approximately 10 cat units of Digilanid C correspond in potency to one cat unit of digitoxin. The cat method of assay as well as the official frog method, even though they may parallel the therapeutic potency in the case of a single digitalis compound, lose practical significance as guides to dosage when applied generally to the digitalis glucosides.—MCKEEN CATTELL and HARRY GOLD. *J. Pharmacol.*, 69 (1940), 278. (H. B. H.)

Digitalis Leaf and Digitoxin (Digitaline Cristallisée (Nativelle)—Comparison of the Potency of, in Man. Digitoxin (Digitaline Cristallisée (Nativelle)) was compared with digitalis leaf in 30 selected patients with heart disease. The preparation used was that made by the Laboratoire Nativelle, Paris, France. The results differ from others in the literature on the clinical potency of digitoxin. The cat unit of the material the authors used was found to be from 6 to 12 times as potent for man as the cat unit of digitalis leaf when both were administered orally. The same order of difference was found with the frog method of assay. The average full therapeutic dose given by mouth at one time is approximately 1.25 mg. A daily dose of 0.2 mg. produces full digitalization in a week or two, and may be continued for many weeks. About 1 of 10 patients ultimately develops minor toxic effects with this dose. A large proportion of patients receiving 0.42 mg. daily for several days developed minor toxic effects. The daily maintenance dose lies between 0.1 and 0.2 mg. The above fully digitalizing single dose given orally is practically identical with that of ouabain given intravenously, namely, about 1 to 1.25 mg., and this amount repre-

sents about 10 cat units of ouabain, but only about 3 cat units of digitoxin (Digitaline Cristallisée (Nativelle)). The explanation of this difference is considered.—HARRY GOLD and NATHANIEL T. KWIT. *J. Pharmacol.*, 69 (1940), 287. (H. B. H.)

Diphenylhydantoin—Pharmacology of. Confirming Putnam *et al.*, using the same technique of electrical stimulation of the brain in intact cats, diphenylhydantoin is found to have an anticonvulsant action. Intraperitoneal injection of 5 mg. per Kg., about one-fiftieth of the fatal dose, may raise the convulsive threshold by fifty per cent; the threshold remains elevated for more than six hours. Larger doses raise the threshold higher and for a longer time. Diphenylhydantoin augments spinal reflexes in the whole and spinal animal; convulsions followed by prolonged extensor rigidity may occur after large doses. Diphenylhydantoin does not prevent the convulsions caused by cocaine and strychnine. It is not excreted as such in detectable amounts in the urine of dogs and rabbits within one week.—P. K. KNOEFEL. *J. Pharmacol.*, 69 (1940), 291. (H. B. H.)

Diuretics -Response of Plasma Volume to. Digoxin causes initially a slight increase in plasma volume, which is soon substituted by a considerable reduction as the diuretic effect sets in. Salyrgan diuresis comes largely from the plasma during the first 8 to 12 hours. After that time the diuresis drops and the plasma volume is partially restored. The administration of 0.48 Gm. aminophylline intravenously results in an augmentation of the plasma volume by 400 to 1200 cc. The first rise coincides with the time of maximal diuresis. The plasma volume drops only slightly during the rapid urine flow, but rises again as the diuretic effect abates. After 6 hours a drop sets in, probably by a return of fluid to the tissues.—D. B. CALVIN, GEORGE DECHERD and GEORGE HERRMANN. *Proc. Soc. Exptl. Biol. Med.*, 44 (1940), 529. (A. E. M.)

Dolantine. New Type of Spasmolytic and Analgesic. The chemical and pharmacological properties of 1-methyl-4-phenyl-piperidine-4-carboxylic acid-ethyl ester-hydrochloride (dolantine) are described. In this compound there was observed for the first time the union of the spasmolytic properties of atropine and papaverine with an analgesic activity of morphine-like character.—O. EISLEB and O. SCHAUMANN. *Deut. Med. Wochschr.*, 65 (1939), 967-968. (L. K.)

Drugs—Action of, on Cells. The broad physicochemical principle of Le Chatelier has been applied to the action of drugs on cells. This application of the principle of Le Chatelier gives an understandable hypothesis for teaching purposes in a terminology with which the average student of applied pharmacology is familiar.—J. C. KRANTZ, JR. *Arch. intern. pharmadynamie*, 64 (1940), 115. (W. H. H.)

Emulsions—Injectable. Oil of turpentine, which has a harsh action on muscle tissue when injected as such, was well tolerated in the form of a 10% emulsion containing 1% of sodium laurylsulfate when 2 cc. were injected into the paw of a 3-Kg. rabbit. With a 25% emulsion sclerosis of the muscle tissue was noted 10 days after the injection. Terpineol, eucalyptol and thiophene in the form of 10% emulsions were well tolerated. A 20% emulsion of eucalyptol was also well tolerated by the rabbit. A slight sclerosis was noted after injection of a 10% emulsion of oil of peppermint. Chloroform and benzinc emulsions cause loss of motility in the injected member. Camphor gives a tolerable emulsion, but guaiacol does not. Intravenous injection of a 20% emulsion of eucalyptol caused rapid death in the rabbit, but intramuscular injections were well tolerated. The emulsions should be prepared with as little emulsifying agent as possible.—M. PICON. *J. pharm. chim.*, 1 (1940), 49–55. (S. W. G.)

Ergot—Assay of. The U. S. P. method which measures total active alkaloids by the Cock's Comb method is inadequate because ergonovine is stronger in uterine-stimulating action than the ergotoxine group. Similar objections hold for other methods. The ratio of ergonovine to other active alkaloids is not constant. To get therapeutic activity of galenical preparations requires modification of old methods of devising new ones. Separation of ergonovine prior to assay has been tried by various methods. The author points out some of the difficulties that will be encountered in any attempt to apply biological methods to fractions of ergot. Suggestions are made about further types of research which might be undertaken. The useful alkaloids are now available in pure form. They satisfy therapeutic requirements, question of assay and stability is simpler than for the fluidextract. Feasibility of dropping ergot and the fluidextract of ergot from the U. S. P. should have consideration.—RALPH G. SMITH. *Jour. A. Ph. A.*, 29 (1940), 385. (Z. M. C.)

Flavone Glucoside on the Heart—Actions of a. A crystalline substance which produces augmentation of the heart has been isolated from the fruit of the Osage orange. It crystallizes in fine, faintly yellow needles and after being boiled with hydrochloric acid, was found to reduce copper solutions. Tests for the flavone group were positive. When perfused through the isolated frog's heart in a concentration of only 1 in 20,000,000,000, it produced definite augmentation. There was an increase in both systole and diastole. The rate of the heart was not changed, and any existing irregularities were seen to disappear. There was a definite latent period between the application of the drug and the onset of the characteristic effects. The exposed rabbit's heart showed the same augmentation as was seen in the perfused frog's heart; the concentration of the drug required in the blood stream, however, appeared to be much greater than that in the perfusion fluid. Toxic doses produced depression and temporary cessation of the heart beat; normal contractions, however, were soon resumed and were followed by the characteristic augmentation.—RUSSELL A. WAUD. *J. Pharmacol.*, 69 (1940), 309. (H. B. H.)

Histaminase—Pharmacologic Influences on the Activity of. The action of histaminase is inhibited by prostigmine, KI, KCl, vitamin C, ergotamine and $CaCl_2$. Its action is increased by sympatol, $MgCl_2$, $BaCl_2$, sodium arsenate, $FeCl_2$ and atropine.—ED. KEESER. *Deut. Med. Wochschr.* 65 (1939), 94. (L. K.)

Hormonal Suppression of Superfluous Milk Secretion. Several peroral doses of estradiol were successful in causing a suppression of superfluous milk secretion. In most of the cases, $1/2$–4 mg. of progynon C in tablet form was used. However, the same results were obtained with stilbestrol and with progynon B in pill form.—GUNTHER LEHMANN. *Deut. Med. Wochschr.*, 65 (1939), 911–913. (L. K.)

Hypophysis and Blood Picture. The reticulopenia in the rat, occurring after hypophysectomy is only temporary. Four to six weeks after the operation normal values are regained. The fragility of erythrocytes six weeks and more after hypophysectomy is not altered. These results are shown to be in full agreement with the authors' destruction theory, though no experimental evidence can as yet be given. In the hypophysectomized rat the excretion of urobilin appears to be less than normal.

After the injection of reticulocytogenic pituitary extracts the excretion is about the same as in normal rats.—P. RUITINGA, JR., J. H. GAARENSTROOM and G. A. OVERBEEK. *Arch. intern. pharmacodynamie*, 64 (1940), 109. (W. H. H.)

Indian Hemp—Chemical Investigation of the Medicinally Useful Constituents of. I. Water Soluble Constituents of the Drug. An attempt was made to clear up the question concerning the hypnotically active constituents in the water-soluble part of *Cannabis sativa* var. *indica*. Along with ubiquitous substances like malic acid, oxalic acid and pectin were found the quaternary bases choline and trigonelline, as well as a terpene-free odoriferous compound combined with glucose. In one instance coumarin was shown, microanalytically, to be present in the latter compound. This substance is present in too minute quantities to affect the action of the drug. This is also true for traces of still another substance which has alkaloidal properties. In the water-soluble part of the German drug, no hypnotically active substances are recovered. Probably the active principles are in the resin.—K. W. MERZ and K. G. BERGNER. *Arch. pharm.*, 278 (1940), 49–70. (L. K.)

Kalmia Angustifolia (Lambkill)—Action of. The author studied the effects of an extract of *Kalmia angustifolia* (Lambkill) on various animals and isolated tissues. In intact animals the preparation produced drousiness, defecation, vomiting, blindness, tremors, convulsive seizures and death. The rabbit uterus and intestine were stimulated, while the rat's uterus and the frog's heart were inhibited.—RUSSELL A. WAUD. *J. Pharmacol.*, 69 (1940), 103. (H. B. H.)

Manganese—Use of the Radioactive Isotope of, to Follow Its Absorption and Elimination. A study is reported whereby the authors determined that radioactive manganese, Mn^{54}, is suitable for tracing the absorption and elimination of this vitally important element. The method for preparing Mn^{54} is given and the procedure by which it was administered to rats is outlined. Rats excreted some 90% of the element within 75 hours following oral or intraperitoneal administration. Most of the Mn was eliminated in the feces while that retained was found principally in the liver, bone and muscle.—DAVID M. GREENBERG and W. WESLEY CAMPBELL. *Proc. Nat. Acad. Sci. U. S.*, 26 (1940), 448–452. (W. T. S.)

Mercurial Diuretics—Therapeutic Range of the. Since mercurial diuretics increase urine flow by a toxic inhibition of tubular function, it is possible to determine in dogs the range of dosage between minimal tubular inhibition and glomerular intoxication as evidenced by a decreased total chloride excretion. The therapeutic range was measured by increasing the weekly mercurial dose in a group of five bladder-extrophy dogs. The milligrams chloride excretion, which is a product of the urine volume and the urinary chlorides, was used as a measure of the pharmacological action on the kidney. Salyrgan (Mersalyl), Salyrgan with Theophylline, Mercurin, Mercupurine, the mercury salt of Esidrone, and Esidrone were studied. Of these, Mercurin and Mercupurin had the widest therapeutic range. The determination of the therapeutic range portrays better than rat toxicity studies the individual characteristics of these diuretics.—CHARLES ROBY. *J. Pharmacol.*, 69 (1940), 299. (H. B. H.)

Morphine Action Tolerance and Addiction—Some New Aspects of. Dogs receiving doses of 0.1 mg. per Kg. of prostigmin for as long as 9 months show no evidences of tolerance or addiction. They remain in good health and exhibit no symptoms except occasional muscular twitchings. When dogs are given 20 mg. per Kg. of morphine sulfate plus 0.1 mg. per Kg. of prostigmin, they do not become tolerant or addicted to morphine. They will not eat, they lose weight rapidly and usually die within 6 weeks after the drugs are started. If the dose of morphine given with the prostigmin is only 10 mg. per Kg., the animals become only partly tolerant in about 5 months. That they are not completely tolerant is evidenced by signs of morphine intolerance when the prostigmin is withdrawn. After dogs are well addicted to 20 mg. per Kg. of morphine, the addition of 0.1 mg. per Kg. of prostigmin reduces their tolerance to the morphine. Animals receiving prostigmin alone for 9 months do not become tolerant to superimposed doses of morphine. These results aid in substantiating the cholinergic effects of morphine. Investigation of the mechanism of prostigmin action in this connection as regards humans and dogs are now in progress.—DONALD SLAUGHTER. *J. Pharmacol.*, 69 (1940), 299. (H. B. H.)

Neosynephrine—Production of Bradycardia in Normal Man by. Neosynephrine injected subcutaneously into normal trained subjects in basal state produces an immediate bradycardia and rise in diastolic pressure. Systolic pressure rises later. The threshold is from 1 to 2.5 mg. and pulse rates from 30 to 45, persisting as long as 80 minutes, are produced by 5 to 10 mg. The electrocardiogram remains normal with no change in A. V. or ventricular conduction time but there is a fall in the potential of the P wave and a rise in the T wave.—ANCEL KEYS and ANTONIO VIOLANTE. *Proc. Soc. Exptl. Biol. Med.*, 44 (1940), 4. (A. E. M.)

Neosynephrine Bradycardia—Size and Stroke of the Normal Human Heart during. Doses of 3 to 10 mg. subcutaneously produce pulse rates from 30 to 50 per minute. Significant increases in diastolic heart size were found in 90% of the cases studied. This does not appear when epinephrine or sterile saline are administered. The systolic size of the heart increases to a lesser extent so that there is a definite increase in the stroke volume. The mean stroke volume before administration of neosynephrine was 57.5 cc.; between 15 and 30 minutes after treatment it was 90.1 cc.—ANCEL KEYS and ANTONIO VIOLANTE. *Proc. Soc. Exptl. Biol. Med.*, 44 (1940), 462. (A. E. M.)

Nicotine, Lobeline and Other Drugs—Effects of, on Coronary Blood Flow. Drugs were perfused through the coronary arterites of cats and rabbits by the Langendorff technique and through the circumflex branch of the left coronary artery of dogs by means of a cannula inserted into this vessel in heart-lung preparations. Coronary flow changes were also studied in the intact dog, with or without pentobarbital anesthesia, by means of the direct current thermostrohmuhr (described by Baldes and Herrick, *Proc. Soc. Exptl. Biol. Med.*, 37 (1937), 432) placed upon the circumflex branch. Nicotine increased coronary flow in all three types of experiment, except that in about one-half of the tests with the Langendorff preparations there was slight over-constriction on re-perfusion with control Locke solution and in about one-fourth of the Langendorff preparations, there was only constriction. Concentrations of from 1:10,000 to 1:2,000,000 nicotine were perfused; for the intact dog experiments, the dose of nicotine was 0.1 to 0.5 mg., given intravenously. In two experiments, dogs were caused to inhale tobacco smoke, with resulting increase in coronary blood flow. Lobeline, papaverine, epinephrine and propadrine increased coronary flow by all three methods. Coramine increased coronary flow of Langendorff preparations but not in the intact dog. Acetylcholine decreased the flow in perfused coronary vessels, mecholyl

decreased coronary flow in intact dogs.—C. H. THIENES, WILLARD J. STONE, HOWARD WILKENS and WILLIAM STEPHENSON. *J. Pharmacol.*, 69 (1940), 306. (H. B. H.)

Paraldehyde—Pulmonary and Urinary Excretion of, in Normal and Liver-Damaged Dogs. Dogs were placed in a metabolism chamber immediately following administration of varying doses of paraldehyde by stomach tube. The amount of paraldehyde in the expired air and that excreted in the urine were determined quantitatively by methods to be described elsewhere. Pulmonary elimination in normal dogs averaged 13.2% with a dose of 1.0 cc. per Kg. (7 dogs), and 22.9% with 1.5 cc. per Kg. (3 dogs). Urinary excretion was 0.2 to 2.5%. In dogs with hepatic damage produced by deep chloroform anesthesia, the pulmonary elimination averaged 25.9 % with a dose of 1.0 cc. per Kg. (4 dogs) and 28.8% with 1.5 cc. per Kg. (2 dogs). Urinary excretion was 1.9 to 3.3%. The rate of pulmonary elimination in the normal dogs was rather constant for the first seven to twelve hours, followed by a progressive decrease. Liver damage produced no marked alteration in the rate, but prolonged the time required for removal of the drug from the body. Liver damage impairs destruction of paraldehyde in the dog. It increases the amount, but does not materially affect the rate of pulmonary elimination. Urinary excretion is comparatively small both in normal and liver-damaged dogs.—HARRY LEVINE, A. J. GILBERT and M. BODANSKY. *J. Pharmacol.*, 69 (1940), 293. (H. B. H.)

Pitressin—Zinc Salts and Oil in Prolongation of Therapeutic Effect of, in Experimental Diabetes Insipidus. The presence of 0.1% zinc acetate prolonged and intensified the effect of aqueous solutions of pitressin in reducing the water exchange in experimental diabetes insipidus. The use of a preparation of pitressin suspended in oil resulted in a much more marked prolongation and intensification of the pitressin effect.—D. J. STEPHENS. *Proc. Soc. Exptl. Biol. Med.*, 44 (1940), 240. (A. E. M.)

Pituitary (Posterior Lobe) Extract—Effect of Wide Range of Doses of, on Brunn Reaction in Frogs. The authors summarize their study as follows: Using the Brunn reaction and doses of pituitrin between 10^{-10} and 5 International Units per 10 Gm. of body weight of frogs, it was found: (1) very small doses of pituitrin stimulate water loss by frogs in water; (2) larger doses stimulate water uptake by frogs in water. These results confirm the similar findings of Boyd, Garand and Livesey (*Quart. J. Pharm. Pharmacol.*, 12 (1939), 19) on the effect of different doses of pituitrin on water added by stomach tube to birds and mammals. They serve further to indicate that the effect of pituitrin on the body water of frogs is essentially similar to that on the body water of birds and mamals.—E. M. BOYD and F. M. YOUNG. *Quart. J. Pharm. Pharmacol.*, 13 (1940), 66–69. (S. W. G.)

Potentilla Anserina in Essential Dysmenorrhea. The literature has very few references to the action of *P. anserina*. An authentic specimen was obtained and an extract representing four times the concentration of the dried crude drug was prepared and tablets containing three grains were made. Toxicity experiments were made on rats, guinea pigs and rabbits. No evidence of harmful effects was found. Eight physicians coöperated and 25 patients were studied. Thirty-six per cent had complete relief from pain, 56% partial relief. Time of experimentation does not warrant any statement about possibility of cures.—A. RICHARD BLISS, JR., AND COLLABORATORS. *Jour. A. Ph. A.*, 29 (1940), 299. (Z. M. C.)

Procaine—Protecting Action of Chemicals Related to, on Ventricular Fibrillation during Cyclopropane Anesthesia. The administration of *p*-aminobenzoic acid, the calcium double salt of benzylsuccinnic and *p*-animobenzoic acids, or sodium *p*-aminobenzoate prior to test doses of epinephrine during cyclopropane anesthesia reduced the incidence of ventricular fibrillation. The intracardiac injection of procaine at the time when ventricular fibrillation developed effected a return to normal in a number of cases. Ventricular fibrillation was not ameliorated by intracardiac injections of the other three *p*-aminobenzoic acid derivatives.—B. A. MARANGONI, C. L. BURSTEIN and E. A. ROVENSTINE. *Proc. Soc. Exptl. Biol. Med.*, 44 (1940), 594. (A. E. M.)

Protamine and Allergy. Injection of protamine zinc insulin is sometimes followed by redness and swelling at the site of injection. Occasional induced sensitivity to insulin occurs as a result of the use of protamine zinc insulin. Studies were made on possibly allergic mechanism by intracutaneous tests with protamine on patients, and parenteral injections on guinea pigs. Cutaneous tests on 104 diabetic and 8 allergic non-diabetic patients all proved negative, corroborating the knowledge that protamines have no antigenic properties. Reactions were probably due to errors in technique of injection, too superficial, irritation by alcohol used in sterilizing, or infection in faulty aseptic technique. Sensitivity to insulin after a change to the protamine form is probably due to the more prolonged action of insulin in a course of slower absorption.—RICHARD A. KERN and PAUL H. LANGNER. *J. Am. Med. Assoc.*, 113 (1939), 198. (G. S. G.)

Red Squill. VIII. Further Notes on Bioassay Methods. Reference is made to prêvious studies on bioassays of red squill. The present paper shows the effects on the toxicity due to the method of preparing the bioassay bait, the concentration of red squill powder in the bait and the strain of rat used in the assay. A definite food interference was noted when small doses of squill were fed. It is satisfactory to prepare bait individually for each test animal or to blend a standard concentration bait and weigh the proper qnantity to get the dose desired. Percentage of squill in the bait is important both in regard to ultimate toxicity and the speed of action of the poison. The strain of rat does not affect the bioassay when the animals have been kept on the same diet for at least a week before the beginning of the assay. Rats should be approximately the same age when assays on two or more strains are to be compared. Up to $33^1/_3$% of animals survive more than three days though they finally die with typical red squill symptoms, hence must be counted in the assay. Often tests must be continued seven or eight days. Female rats are more than twice as susceptible as males.—JUSTUS C. WARD, D. GLEN CRABTREE and F. E. GARLOUGH. *Jour. A. Ph. A.*, 29 (1940), 354. (Z. M. C.)

Renipressin (Renin)—Bioassay of, by Yohimbine Antagonism. The hypertensive effect of renipressin (or renin), unlike that of epinephrine, is not reversed by previous administration of yohimbine. The long-enduring fall in blood pressure which is produced by yohimbine is either diminished or entirely overcome by subsequent administration of renipressin. The reciprocal relationship between the two substances is being utilized as a basis for the standardization of renipressin. A known amount of yohimbine is administered to a dog to produce a definite fall in blood pressure. After a certain time interval, sufficient renipressin is given to restore the lowered blood pressure to its original level. The potency of renipressin may thus be described in terms of milligrams of yohimbine.—

M. H. F. FRIEDMAN. *J. Pharmacol.*, 69 (1940), 287. (H. B. H.)

Salvia Officinalis—Histology of. Introduction of *Salvia officinalis* into the Sixth National Formulary made a thorough and comprehensive investigation of its histology necessary. The material used for the study was obtained from the United States Department of Agriculture and both stem and leaf were studied. Findings do not agree in every way with those reported by Youngken and Vander Wyk on material from another source. Characteristics not emphasized in previous publications include the following: occasional presence in transverse sections of the stem, medullary rays two cells in width; concentrically arranged groups of bast fibers; relative abundance of medullary rays and conducting elements in xylem areas beneath the angles of the stem as compared to their occurrence between angles. Tangential sections of the stem revealing groups of medullary rays show great variation in number of cells in height. Absence of stalkless glandular trichomes with eight-celled heads is noted. Leaves in cross section occasionally contain three rows of palisade. Numerous thickened areas in the lamina are due to a great increase in number of spongy mesophyll cells which tend to displace the palisade mesophyll and with the undulations of the lamina give the latter an irregular outline.—ELBERT VOSS and FRANK FORTUNATO. *Jour. A. Ph. A.*, 29 (1940), 281. (Z. M. C.)

Sodium Gluconate—Pharmacological Studies on. In rabbits the minimum lethal dose was 7.630 Gm. per Kg. Concentrations greater than 2.18:1000 stimulated the isolated frog heart while concentration of 2.18:10 arrested cardiac action. With the exception of very high concentrations, sodium gluconate dilated isolated veins. In rabbits it generally stimulated respiration with subsequent depression and paralysis of the respiratory function. Moderate doses slightly increased blood pressure with subsequent progressive diminution.—S. GAJATTO. *Arch. farmacol. sper.*, 68 (1939), 1–13; through *Chem. Abstr.*, 33 (1939), 8301. (F. J. S.)

Sodium Lactate—Pharmacological Studies on. The minimum lethal dose for rabbits was 5.0978 Gm. per Kg. Sodium lactate did not permanently modify the activity of the isolated heart. In low concentrations it exerted a vasodilator, and in high concentrations a vasoconstrictor action on isolated veins. In the rabbit it excited respiration with subsequent paralysis of respiratory function, and briefly stimulated blood pressure and cardiac activity.—S. GAJATTO. *Arch. farmacol. sper.*, 68 (1939), 34–52; through *Chem. Abstr.*, 33 (1939), 8301. (F. J. S.)

Sodium Pentobarbital for Repeated Anesthesia in the Guinea Pig—Use of. Materials and methods and other details of experimental work are reported and results are shown by graphs and tabulations. The following conclusions were reached: ethyl alcohol does not potentiate the action of nembutal in guinea pigs as measured by increased sleeping time unless given in amounts in excess of 0.4 Gm. per Kg. with doses of 15.6 mg. per Kg.; sleeping time of guinea pigs subjected to repeated doses of 15.6 mg. per Kg. decreases for the first several daily injections (similarly treated guinea pigs maintained on a low level of ascorbic acid sleep about 10% longer than those on adequate greens); anesthesia of 2 hours' duration every other day for six months causes increased susceptibility and seems to be associated with increased weight; sex of animals did not appear to alter sleeping time.—V. EVERETT KINSEY. *Jour. A. Ph. A.*, 29 (1940), 342. (Z. M. C.)

Sodium Pentobarbital for Repeated Anesthesia in the Rabbit—Use of. Need for an anesthetic which could be safely administered to small laboratory animals over periods of approximately a year and leave the animal in an apparently normal physiological state gave rise to the present investigation. A medium to short acting barbiturate seemed indicated. Details of the experimental work are reported. Results are shown by graphs and tabulations. It was found that several daily intraperitoneal injections of nembutal, 44 mg. per Kg. in 0.7 ml. of 0.9% sodium chloride with 10% ethyl alcohol decrease sleeping time of rabbits abruptly from $3^1/_2$ to $1^1/_4$ hours. When alcohol is omitted only first one or two sleeping periods are shortened. Use of nembutal is practical if care is used in adjusting dosage to individual animals. There is no evidence that it is habit-forming even though the period of use is more than a year. Repeated small doses are necessary if anesthesia is to last an hour or two. An average initial dose of 40–44 mg. per Kg. intraperitoneally is satisfactory. The sex of the animals does not alter sleeping time either for single or repeated doses. Liver, heart and kidney show slight but not irreparable injury.—V. EVERETT KINSEY. *Jour. A. Ph. A.*, 29 (1940), 292. (Z. M. C.)

Sodium Pentobarbital for Repeated Anesthesia in the White Rat—Use of. Comparison is made with previous studies in which rabbits and guinea pigs were the test animals. Details of experimental work are given, results are shown by tables and by means of graphs. It was found that ethyl alcohol in concentrations of 0.5 Gm. per Kg. does not potentiate the action of varying doses of nembutal in white rats as measured by increased sleeping time. Administration of 31.3 mg. per Kg. repeatedly to rats, causes an abrupt decrease in sleeping time after the first dose when given at daily intervals. The decrease is not so marked if doses are given every other day. Female rats sleep twice as long as male rats when given single doses or repeated doses. Following injection of 1 mg. of testosterone propionate into female rats average sleeping time resulting from 31.3 mg. per Kg. of nembutal is reduced from 230 to 129 minutes. Spayed rats sleep only two-thirds as long as unspayed controls.—V. EVERETT KINSEY. *Jour. A. Ph. A.*, 29 (1940), 387. (Z. M. C.)

Strontium—Pharmacology of. IV. Emetic Action and Its Mechanism. Intravenous injection of strontium chloride constantly produced vomiting in dogs.—A. BORIANI and G. BORIANI. *Arch. farmacol. sper.*, 68 (1939), 14–33; through *Chem. Abstr.*, 33 (1939), 8301. (F. J. S.)

Testosterone Propionate—Biological Investigations with. A discussion.—A. PERALTA RAMOS and E. O. COLOMBO. *Deut. Med. Wochschr.*, 65 (1939), 132–133. (L. K.)

Theophylline - Diethanolamine. Deriphylline (combination of 53.15% theophylline and 46.85% diethanolamine) is a light respiratory analeptic. It is possessive of hypotensive properties less acute than that of euphylline. The theophylline-diethanolamine association does not sensibly improve the rhythm and respiratory amplitude diminished by morphine, somnifene and sodium evipan. The analeptic action of deriphylline seems dependent upon the simultaneous action of a stimulation of the sino-carotid zones and a direct exciting action upon the respiratory center. Though possessed of more marked hypotensive properties, theophylline-ethyl enediamine possessed more marked respiratory analeptic effects than theophylline-diethanolamine.—A. IAGNOV. *Arch. intern. pharmacodynamie*, 64 (1940), 203. (W. H. H.)

Thorotrast—Elimination of Radioactive Elements in Patients Who Have Received, Intravenously.

Thorium X has been identified as predominant in the feces and thoron is definitely exhaled. Such excretion of thorium X and thoron leads to reduced radioactivity in the body even if the thorium itself remains.—WILHELM STENSTROM and IRWIN VIGNESS. *Proc. Soc. Exptl. Biol. Med.*, 44 (1940), 18. (A. E. M.)

Thyroid—Use of Orally Administered Desiccated, in Production of Traumatic Shock. Prolonged manipulation of the intestines of normal anesthetized dogs does not produce shock. However, when the dogs are fed 0.4 Gm. of desiccated thyroid per Kg. of body weight per day of a week, manipulation of the intestines for 15 to 20 minutes produces shock quite readily.—R. J. SCHACHET and J. HUNTINGTON. *Proc. Soc. Exptl. Biol. Med.*, 44 (1940), 66. (A. E. M.)

"Trasentin" and "Trasentin-6H"—Action of the Synthetic Antispasmodics. The toxicity (L. D. 50) by intraperitoneal injection in white mice of diethylaminoethyl ester of diphenyl acetic acid ("Trasentin") is 0.29 Gm. per Kg.; that of diethylaminoethyl ester of phenylcyclohexyl acetic acid ("Trasentin-6H") is 0.24 Gm. per Kg.; that of atropine sulfate is 0.325 Gm. per Kg. "Trasentin" is a convulsant and respiratory stimulant in sublethal doses. "Trasentin-6H" is a respiratory stimulant in small doses, but in lethal doses depresses respiration. "Trasentin" inhibits the normal tone and movements of the isolated intestine of the rabbit in concentrations of 1:1,000,000, and relaxes spasm caused by barium chloride and eserine salicylate. "Trasentin-6H" exerts the same effects in doses of 1:5,000,000 and is a more powerful spasmolytic. In the intact rabbit anesthetized with ether, and in the spinal cat, the tone and movements of the intestine are inhibited by 0.01 to 0.02 mg. per Kg. "Trasentin-6H" and 0.1 mg. per Kg. "Trasentin." The stomach and bladder of the cat are relaxed by 0.05 mg. per Kg. "Trasentin-6H." "Trasentin-6H" in doses which are effective on the tone of the gastro-intestinal tract has very little effect on salivation produced by pilocarpine nitrate, on heart rate or action, on size of the pupil, on respiration or on the parasympathetic nerve supply to the cardiovascular system, as compared with atropine sulfate. "Trasentin-6H" is about 25% more toxic than atropine sulfate but has a proportionately greater spasmolytic action. In antagonizing the action of muscular stimulants like barium it is almost as potent as papaverine. As it is relatively free from "side-effects" it seems worthy of clinical trial. —J. D. F. GRAHAM and S. LAZARUS. *J. Pharmacol.*, 69 (1940), 331. (H. B. H.)

Veritol—Pharmacodynamic Action of. According to its structure veritol is a sympathomimetic oxy-ephedrine. Its particular properties are as follows: strong vasoconstrictor action upon the veins; arterial vasoconstrictor action, much weaker than that of other substances of the same series; regulating and chronotropic action upon the heart and is valuable in cases of collapse. Under its influence the blood which comes from the periphery going to the heart is augmented as is the volume of blood in the arteries, without modifying the venous pressure. There is no capillary constriction. The compound is rapidly absorbed from intramuscular injection.—R. GARAN. *Tedavi klinigi ve laborat. dergisi*, 8 (1939), 186; through *Presse méd.*, 13–14 (1940), 24. (W. H. H.)

Vitamin E Deficient Adult Rats—Occurrence of Tremors and Incoördination in. Rats grown and maintained on a highly purified vitamin E deficient diet developed paralysis of the rear legs, incoördination and tremor of the forelegs and the head. Although cures could not be obtained, the administration of vitamin E concentrate arrested the development of these symptoms and stimulated growth.—C. G. MACKENZIE, JULIA B. MACKENZIE and E. V. MCCOLLUM. *Proc. Soc. Exptl. Biol. Med.*, 44 (1940), 95. (A. E. M.)

TOXICOLOGY

4-Alkylaminoazobenzene-4′-Arsonic Acids—Study of. In order to prepare lipophilic chemotherapeuticals a series of dyes, $R—NH—C_6H_4—N:N—C_6H_4—AsO_3H_2$ (where $R=CH_3$ to $C_{18}H_{37}$), were synthesized by coupling diazotized *p*-arsanilic acid with a solution of the substituted aniline. The lower members of the series were toxic to mice and the higher members, while low in toxicity, were only slightly effective against various strains of trypanosomes.—S. ADLER, L. HASKELBERG and F. BERGMANN. *J. Chem. Soc.*, (1940), 576–578. (W. T. S.)

6-Aminonicotinic Acid—Anesthetic Esters of. The ethyl, isopropyl, diethylaminoethyl and butyl esters of 6-aminonicotinic acid are of low toxicity, and their salts such as the mono- or di-hydrochlorides and benzoates can be used for injection, dissolved in oil of sweet almond or the like, and can be incorporated in ointments.—RAEMER R. RENSHAW and PAUL F. DREISBACH, assignors to PYRIDIUM CO. U. S. pat. 2,198,839, May 7, 1940. (A. P.-C.)

Argemone Oil—a Dangerous Adulterant in Mustard Seed Oil. Compare *Phar. Abstr.*, 6 (1940), 169. Using mustard oil adulterated with argemone oil in cooking has been responsible for previous outbreaks of epidemic dropsy according to five earlier reports. These reports are confirmed by the following observations. Fifteen out of 27 persons eating food cooked in mustard oil containing 3% to 5% of argemone oil developed the symptoms of epidemic dropsy. In a group of 100 persons eating the same food, except for this particular mustard oil, none were affected. No new cases were observed after the adulterated oil was removed.—R. N. CHOPRA, C. L. PASRICHA and K. BANERJEE. *Indian Med. Gaz.*, 75 (1940), 261–262. (W. T. S.)

Caffeine—Injurious Effect of, on Organs. Caffeine 0.1 Gm. per Kg. in rabbits causes degenerative changes in the genital glands and placenta, litters are smaller and less resistant, and fatty degeneration of the liver occurs in pregnancy.—H. STIEVE. *Z. mikroskop.-anat. Forsch.*, 43 (1938), 509–557; through *Chem. Abstr.*, 33 (1939), 8297. (F. J. S.)

Cancer-Forming Agents in Various Tobacco Tars. Tobacco tars possess a definite cancer-forming action. The substance responsible for cancer formation is found not in the nicotine, but in the smoke.—A. H. ROFFO. *Deut. Med. Wochschr.*, 65 (1939), 963–967. (L. K.)

Carbon Monoxide Poisoning—Treatment of, with Blood Transfusions. Blood transfusions will rapidly supply O_2 in cases of CO poisoning when circulatory stimulants, venesection and the inhalation of O_2 and CO_2 have failed. Two patients, deeply unconscious for many hours from CO poisoning, were saved by this treatment supplemented by the administration of stimulants and O_2.—K. G. KOCH. *Munch. med. Wochschr.*, 86 (1939), 126; through *Chinese Med. J.*, 57 (1940), 297. (W. T. S.)

Chronic Morphine and Like Poisoning—Production of Pharmaceutical Preparations for Treatment of. A preparation of turpentine, molasses, gum arabic and starch is claimed.—T. OKUBO. Brit. pat. 512,215; through *J. Soc. Chem. Ind.*, 58 (1939), 1296. (E. G. V.)

Datura Stramonium—Intoxication by. The author and his collaborators report a case of intoxication by *Datura stramonium*. The case, a young man 25 years old, blacksmith, who had treated a pyo-

dermic eczema by the vaporization and poultices of a decoction of leaves and fruits of wild laurel. The treatment was repeated four days later. The sickness was characterized by violent local pains, a very strong humming of the ears, excitement, palpitations, stiffness, congestion and visual trouble. The sickness is accompanied with hallucinations and fear. The condition after a terrifying night calms for a period of forty-eight hours and then renews more vigorously than before. The authors report this case because of the rarity of intoxication by the transcutaneous route.—G. IONESCO, P. CONSTANTINESCO, I. STOIAN and MAVACINE-SOARE. *Soc. Med. Hospitaux Bucarest*, 21 (1939); through *Presse méd.*, 3–4 (1940), 7. (W. H. H.)

Ephedrine—Effect of, on Toxicity of Local Anesthetics. The following summary is given: (1) The lethality curves of cocaine and of procaine, alone and in combination with various constant doses of adrenaline and of ephedrine, have been determined in white mice injected subcutaneously. (2) The effect of added adrenaline on the toxicity of cocaine. Doses of adrenaline of 0.2 μg./Gm. (a concentration of 1 in 50,000 in the solution injected) or more cause a substantial increase in the toxicity of procaine, while doses of 0.066 μg./Gm. (1 in 150,000) or less are without effect. (3) A simultaneous dose of ephedrine of 10 μg./Gm. (1 in 1000) diminishes the toxicity of small doses of cocaine. (4) Neither dose of ephedrine has any effect on the toxicity of small doses of procaine. (5) The LD_{50} of cocaine injected subcutaneously in white mice is 0.156 mg./Gm. and that of procaine is 0.80 mg./Gm., so that cocaine is five times as toxic as procaine.—J. D. P. GRAHAM and M. R. GURD. *Quart. J. Pharm. Pharmacol.*, 13 (1940), 122–129. (S. W. G.)

Eucodal Poisoning. Detection of the Poison. Eucodal is very resistant to putrefaction and can be detected in parts of a cadaver after more than two years.—A. BRUNING and E. SZEP. *Samml. Vergiftungsfällen*, 8 (1937), 105–106; through *Chem. Abstr.*, 33 (1939), 7237. (F. J. S.)

Fluorides—Toxicology of the. When 0.5 Gm. of sodium fluoride is fed daily to young growing dogs, the first symptom, pain in the limbs, appears in 8–12 weeks, and with further feeding the bones begin to thicken. If the feeding is now interrupted the symptoms partly disappear and cannot be aggravated by resuming the administration of sodium fluoride when the dogs are older. The longer the feeding period, the softer and more porous the bones become. The enamel of the teeth is also affected. Ash of normal bones and teeth contains a maximum of 0.3%, usually below 0.1% of calcium fluoride, but after sodium fluoride feeding, up to 2.77% of calcium fluoride.—E. ROST. *Arch. Gewerbepath. Gewerbehyg.*, 8 (1937), 256–265; through *Chem. Abstr.*, 33 (1939), 7883. (F. J. S.)

Fungicides—Theoretical Principles Underlying Laboratory Toxicity Tests of. In toxicity tests the lethal doses for individual spores show a normal distribution when plotted against log concentrations. The utilization of such data in calculating the concentration necessary to prevent a given % germination is described. The importance of comparative observations with a standard fungicide in correlating observations made in different laboratories is emphasized.—F. WILCOXON and S. E. A. MCCALLAN. *Contrib. Boyce Thompson Inst.*, 10 (1939), 329–338; through *J. Soc. Chem. Ind.*, 59 (1940), 75. (E. G. V.)

Hydroxypyruvic Aldehyde—Alcoholate of Trimer of, as Antidote in Mercuric Chloride Poisoning. Hydroxypyruvic aldehyde in presence of disodium phosphate acted as an effective antidote against mercuric chloride poisoning in rabbits and cats.—WILLIAM ELLSWORTH EVANS, JR. *Proc. Soc. Exptl. Biol. Med.*, 44 (1940), 178. (A. E. M.)

Insecticidal Composition. Cryolite, a copper silicate complex and a petroleum sulfonate are used together (suitably in dusts or sprays).—WM. H. VOLCK, assignor to CALIFORNIA SPRAY-CHEMICAL CORP. U. S. pat. 2,196,448, April 9, 1940. (A. P.-C.)

Insecticide. A reaction product such as may be formed from nicotine, a vegetable tannin of the catechol class and an aldehyde such as formaldehyde, is suitable for various uses.—ELBERT M. SHELTON, assignor to TANNIN CORP. U. S. pat. 2,200,582, May 14, 1940. (A. P.-C.)

Insecticides—New Biological Method for the Evaluation of. I. Biological Comparison of Acetum Sabadillæ DAB VI and Acetum Veratri. Acetum prepared from rhizoma veratrum is superior to the sabadilla acetate. **II. Biological and Chemical Evaluation of Galenical Preparations of Semen Sabadillæ.** Sabadilla acetate prepared from the drug according to the directions of DAB VI is much more effective than a corresponding quantity of veratrine in water containing acetic acid with, or without, the addition of an alcohol preparation of the artificially made acetum sabadillæ. The reason for this is not known.—ROBERT JARETZKY and HEINZ JANECKE. *Arch. pharm.*, 278 (1940), 34–42, 82–90. (L. K.)

Insecticides Suitable for Use in Sprays. Use is made of thiocyanoundecyl sulfate or other compound of the general formula $GR(SCH)_x$, in which G is a water-solubilizing polar group, R is an acyclic hydrocarbon residue of at least 10 carbon atoms, and x is an integer equal to the valence of R less one.—EUCLID W. BOUSQUET, assignor to E. I. DU PONT DE NEMOURS & CO. U. S. pat. 2,194,517, March 26, 1940. (A. P.-C.)

Insects and Microörganisms—Destroying. In order to kill insects and microörganisms in a substantially closed space, hot non-poisonous gases substantially composed of a mixture of carbon dioxide, water and air is introduced in the form of a blast initially and continually directed downwardly while the gas is at its highest temperature, and circulation is produced until the entire space is substantially uniformly filled with the gas at lethal temperature.—IVAR RENNERFELT. U. S. pat. 2,171,315, Aug. 29, 1939. (A. P.-C.)

Lead Poisoning—Prevention and Treatment of. In Hungarian lead works, lead poisoning occurs in 1–200 of 10,000 workers annually. Lead accumulated within the human organism can be mobilized by modifying the calcium/phosphorus balance cautiously. This was done in clinical experiments by a diet poor in calcium and giving each second day 8–10 Gm. sodium phosphate for 3–4 weeks. Any secondary effects of phosphate can be balanced by administration of thiosulfate from time to time.—I. HELLER. *Orvosi Hetilap*, 83 (1939), 639–641; through *Chem. Abstr.*, 33 (1939), 8329. (F. J. S.)

Lead Tetraethyl Poisoning and Its Treatment. A discussion.—W. LAVES. *Deut. Med. Wochschr.*, 65 (1939), 1746–1748. (L. K.)

Menthol—Allergic Reaction toward. A case report.—WILHELM GRONEMEYER. *Deut. Med. Wochschr.*, 65 (1939), 756–757. (L. K.)

Nicotine Poisoning in Tobacco Smokers—Nicotine Excretion and the Role of Its Reabsorption from the Urinary Bladder as a Source of. In normal cats, nicotine is rapidly eliminated and doses which prove fatal if repeated at certain intervals may be innocuous if the intervals between these doses are lengthened. On the other hand, in nephrectomized cats differences in the length of time

between such doses do not conspicuously alter the total amount necessary to cause death. A very considerable part of a dose of nicotine in cats would therefore seem to depend on the kidney for its excretion. When the urine is alkalinized, the cat may be poisoned by the nicotine which has collected in its own bladder, and which in consequence of the alkalinization is now reabsorbed. Considerable quantities of nicotine accumulate in the urinary bladder of tobacco smokers. Their urine injected intravenously into cats may cause nicotine poisoning, sometimes fatal. We have calculated that these urines may contain sufficient nicotine to cause poisoning in man if we assume that the alkaloid is similarly absorbed from the human bladder when the urine is alkaline. These facts are being investigated with respect to their application in tobacco smokers.—JANET TRAVELL, OSCAR BODANSKY and HARRY GOLD. *J. Pharmacol.*, 69 (1940), 306. (H. B. H.)

Oxygen (90%)—Poisoning from, in Forty-Eight Hours. The literature dealing with the toxic effects of pure oxygen is reviewed. The authors spent several days in a gas-tight room containing 90% oxygen. The temperature and humidity and CO_2 content of the air were controlled to be within comfortable limits. During the first 24 hours neither of the experimenters experienced any discomfort. On the second day, however, both were uncomfortable. Vital capacity decreased in one subject; this was associated with fever and rapid pulse. Both noticed paresthesias in the finger tips. On the third day one man felt ill, his vital capacity continued to decrease, and that night he had dyspnea without any physical findings in the chest. The other had an attack of paroxysmal tachycardia that night. The experiment was concluded after 65 hours. X-rays of the chest showed no apparent change in either of the two subjects, but one developed all the physical signs of bronchopneumonia. Parenthesias lasted in both men for a period of 10 days.—H. BECKER-FREYSENG and H. G. CLAMANN. *Klin. Wchnschr.*, 18 (1939), 1382; through *Abbott Abstract Service*, (1940), No. 685. (F. J. S.)

Paris Green to Control Anopheles Breeding—Cheap Method of Treating Casuarina Pits with. An account is given of a cheap method of controlling the breeding of *A. culicifacies* in casuarina-pits in Southern India by the use of Paris green.—P. F. RUSSELL and V. P. JACOB. *J. Malaria Inst. India*, 2 (1939), 261. (A. C. DeD.)

Pest-Destroying Emulsion. An emulsion is used containing a poison of the group consisting of rotenone, dihydrorotenone, pyrethrins, pyrethrum- and derris-root extracts; cyclohexanone; hydrogenated naphthalene; with kerosene as a solvent; a fatty alcohol sulfonate having 8 to 10 carbon atoms in the molecule as an emulsifying agent, and water. The cyclohexanone and hydrogenated naphthalene are present in substantial proportions and sufficient to produce a clear and lasting solution.—RICHARD NEU, assignor to DEUTSCHE HYDRIERWERKE A.-G. U. S. pat. 2,194,446, March 19, 1940. (A. P.-C.)

Potassium Bismuth Saccharate. II. Toxicity, Absorption and Distribution of Bismuth Following Intramuscular Injection. The present paper reports a continuation of work previously reported. Details of experimental work and tabulation of results are given. Material is gradually absorbed and excreted. Bismuth is present in all organs within 24 hours, kidneys showing the greatest concentration. Blood bismuth levels are fairly level for 5 days.—C. W. SONDERN, A. E. PUGH, F. V. KALICH, GEORGE LANN and C. J. W. WIEGAND. *Jour. A Ph. A.*, 29 (1940), 346. (Z. M. C.)

Quinine—Injectible Solutions of, and Allergy. The author cites a case of severe allergy resulting from deep cutaneous injections of a 5% solution of quinine urethane in the treatment of hemorrhoids.—F. DUCOMMUN. *Schweiz. Apoth.-Ztg.*, 77 (1939), 493. (M. F. W. D.)

Quinine—Transformation of, into Quinotoxine. Under certain conditions quinine is converted into its toxic isomer quinotoxine with: (*a*) glycerin at a temperature of 180° C. for 4 to 5 hours; (*b*) acetic acid at a temperature of 110° C. for 30 to 40 hours; (*c*) malic, citric or tartaric acids at 130° C. for 8 to 10 hours; (*d*) urethane (ethyl carbamate) at 140° to 150° C. for 4 to 5 hours. The most common of these is urethane used to anesthetize and increase solubility when quinine hydrochloride is injected. Sterilization is very important in such cases. There is also a similar danger in oily solutions such as olive, cotton seed or almond with quinine, when subjected to the heat of the sterilizer. Each solution should be tested before using for the identification of quinotoxine.—ANTENOR MACHADO. *Rev. soc. brasil. quím.*, 8 (1939), 59. (G. S. G.)

Red Squill. VII. Influence of Altitude upon Toxicity to Albino Rats. Comparison of toxicities of red squill powder in Denver and at lower altitudes indicated the percentages of kill at Denver were consistently higher. Determinations were then made at an elevation of 14,200 feet and at 717 feet as well as at Denver, 5280 feet. Influence of altitude is shown primarily on the toxicity to male rats. The susceptibility of females is little changed. If differences in altitude are considerable, they must be taken into account in the interpretation of bioassays of red squill powder.—JUSTUS C. WARD, H. J. SPENCER, D. GLEN CRABTREE and F. E. GARLOUGH. *Jour. A. Ph. A.*, 29 (1940), 350. (Z. M. C.)

Rotenone and the Pyrethrins—Toxicity of, to Various Insects. Reasons for conflicting results of toxicity determinations are discussed. Under carefully standardized conditions pyrethrum proved superior to rotenone.—W. TRAPPMANN and G. NITSCHE. *Nachr. deut. Pflanzenschutzdienst*, 15 (1935), 6–7; through *J. Soc. Chem. Ind.*, 58 (1939), 1163. (E. G. V.)

Sodium and Potassium Permanganates—Experimental Toxicology of. Sodium and potassium permanganate solutions were administered by stomach tube to rabbits at seven-day intervals, each dose being preceded by thirty-six hours on a water diet. The animal treated with sodium permanganate appeared to remain normal in every way and gained weight during the five weeks of treatment. The animal was killed and examined. The autopsy showed no important lesions in the principal organs. The results of determinations of manganese in the various organs are tabulated. The animal treated with potassium permanganate died after three weeks, during which time it took very little nourishment. The autopsy showed large lesions in the stomach which still retained permanganate and was strongly colored and almost perforated. The results of determinations of manganese in the various organs are tabulated. Urea determinations in the blood of the animals before and after treatment showed that the concentration in the case of the first animal rose from 0.4 to 0.65 Gm. per liter, while the concentration in the case of the second animal rose from 0.5 to 1.42 Gm. per liter after the second administration. These results indicate that renal lesions were formed. The caustic action of the compounds appears to be the cause of the lesion formation.—P. CHERAMY and A. LEMOS. *J. pharm. chim.*, 30 (1939), 249–252. (S. W. G.)

Sulfanilamide—Complications Following. Symptoms of mild toxicity, malaise, lassitude, headache,

nausea, slight cyanosis, etc., are no cause for concern. Moderately severe symptoms are deep cyanosis, dyspnea, vomiting and diarrhea, distinctly lowered carbon dioxide combining power and anemia; which demand vigilance and reduction of dosage. In severe toxicity, fever, dermatitis, acute hemolytic anemia, leukopenia, psychosis or jaundice demand immediate discontinuance of the drug. To avoid toxic manifestations one should observe the patient closely, examine blood daily, avoid the use of sulfates and other drugs, and not use sulfanilamide in patients with anemia, leukopenia or hepatic damage. Treatment consists in withdrawal of the drug, bed rest, forcing fluids, transfusions and other measures as indicated, such as yellow bone marrow, pentnucleotide, liver, iron, oxygen, methylene blue, sodium lactate, Ringer's solution, dextrose and insulin.—CURTIS F. GARVIN. *J. Am. Med. Assoc.*, 113 (1939), 288. (G. S. G.)

Sulfanilamide—Fatal Hemolytic Anemia Following Administration of. Acute hemolytic anemia is a well-known complication of sulfanilamide therapy. So far only one fatal case was reported; this second was due to anemia and early hypostatic bronchopneumonia. In both fatal cases there was syphilis. It is a question whether alteration of the hematopoeitic mechanism incident to syphilis may be related to the fatal outcome. So far every instance of acute hemolytic anemia incident to the use of sulfanilamide has occurred during the first week of therapy. Prognosis is good, and prompt recovery is made on the withdrawal of the drug, forcing fluids and blood transfusion.—SIMON KOLETSKY. *J. Am. Med. Assoc.*, 113 (1939), 291. (G. S. G.)

Sulfur-Polysulfide Mixture—Colloidal, Studies on. I. Toxicity. An investigation has been made of a concentrated spring water having a p_H of 10.1 and containing 5% of sulfur, much of it colloidal. Because of alkalinity, polysulfides are present. The solution is transparent orange-red in color, with a pronounced sulfurous odor and taste and undergoes precipitation on acidification or heating above 90° C. The activity of the sulfur appears to be a function of the degree to which it may be converted to H_2S. Sulfide intoxication is briefly discussed. Experimental work covered minimal lethal dose determination, effect on circulation and respiration in the anesthetized dog, and chronic toxicity. Findings confirm evidence in the literature to the effect that colloidal sulfur is highly toxic when given intravenously and that toxicity is due to rapid conversion to H_2S. It is much less toxic when injected intraperitoneally in guinea pigs. Given by stomach tube, 35 times the intravenous minimal lethal dose was tolerated without deleterious effects by half the animals to which it was administered. Either sulfur undergoes precipitation by acid gastric contents or else it is completely absorbed and modified by passage through the liver, to be non-toxic.—HARRY GREENYARD and JEAN REA WOOLLEY. *Jour. A. Ph. A.*, 29 (1940), 289. (Z. M. C.)

Tephrosia—Toxicity of. Toxicity of Tephrosia Virginia Roots Prepared by Several Methods. Extracts from roots of "devil's shoestring" obtained by extraction with chloroform or acetone under various conditions (hot or cold, evaporation and redissolution of extract, etc.) showed no significant differences in toxicity in biological tests on flies, indicating that the various manipulations did not cause destruction of toxic principles to any degree measurable by the test method employed.—A. F. SIEVERS and W. N. SULLIVAN. *Soap*, 15 (1939), No. 9, 111, 113; through *J. Soc. Chem. Ind.*, 58 (1939), 1182. (E. G. V.)

Thallium Poisoning. A case report.—ELSBETH SCHENK. *Deut. Med. Wochschr.*, 65 (1939), 643-644. (L. K.)

Vesicants. In a series of articles the author discusses vesicants confining his discussion principally to mustard gas. Following a historical introduction its use during the World War of 1914-1918 is discussed. This is followed by its physical and chemical properties and its physiological effects together with directions for protection and treatment and methods for the removal of the gas from houses, streets, etc. The articles conclude with a brief discussion of other vesicant military gases including ethyldichlor arsine, dibromethyl sulfide, chlorvinyldichlorarsine (Lewisite) and methyl- and ethyldichlorarsine.—D. H. WESTER. *Pharm. Weekblad*, 76 (1939), 1317-1324, 1342-1362, 1378-1390, 1410-1428. (E. H. W.)

Vitamin C and Mushroom Poisoning. Capillary injury in mushroom poisoning is prevented by vitamin C.—G. HOLLAND and W. CHLOSTA. *Deut. Med. Wochschr.*, 65 (1939), 1852. (L. K.)

Vitamin K—Effect of, on Hypoprothrombinemia of Experimental Liver Injury. The hypoprothrombinemia, which develops following liver injury (chronic chloroform intoxication), is not influenced by vitamin K administration.—K. M. BRINKHOUS and E. D. WARNER. *Proc. Soc. Exptl. Biol. Med.*, 44, (1940), 609. (A. E. M.)

War Gases—Identification of. The ideal of any test is to find a sensitive reactor that is specific and practical for each gas. These gases are detected by physical, physico-chemical, chemical and biological means. Physical methods include color, odor, taste. A physico-chemical method will detect small amounts of gases in the atmosphere by means of copper impregnated cloth, with which chlorine will combine to form copper chloride, the reaction being indicated by a change in color. Electrical indicators are also in this category, the gases effecting depolarization. Chemical detection is achieved by aspirator bottles partly filled with liquids of specific reagents; and air is pumped through them by means of a rubber bulb. Chlorine, phosgene, chloropicrine, iperita, the arsenes, adansite-diphenylaminochlorarsine and levisite mixture of vinil chlorarsine may be identified by specific solutions. The more common gases may also be identified by solutions, which are specific for brombenzyl cyanate, chloroacetone, carbon monoxide, carbon dioxide and hydrocyanic acid. Biologic detection includes the use of small animals such as canaries and rats which show signs of agitation and are deserted by their peculiar insect parasites. Canaries are especially sensitive to carbon monoxide.—M. R. LIBERALLI. *Rev. quím. farm.*, 4 (1939), 49. (G. S. G.)

Qwikker Reaction—Interference in the Toxicologic Proof of the Presence of Barbitals by the. A discussion.—GERHARDT SIEWERT. *Arch. pharm.*, 278 (1940), 91-92. (L. K.)

THERAPEUTICS

Absorbent Wadding Suitable for Surgical Purposes. Wadding consisting of absorbent collagenous fibers substantially free from water is formed of fibers produced by converting animal hide material into a swollen condition in which the fibers may be mechanically isolated, shredding and treating the resulting coarse fibrous material with water-miscible organic liquids such as alcohol or acetone, and further shredding.—HANS FREUDENBERG, assignor to CARL FREUDENBERG G. M. B. H. U. S. pat. 2,169,947, Aug. 15, 1939. (A. P.-C.)

Adrenal Hormone and Vitamine C—Effect of, on Metabolic Changes in Diphtheria. Suprarenal hormone and vitamin C treatment have no influence on disturbances in the NaCl and protein metabolism in cases of poisoning by diphtheria toxin. A correctly timed treatment with hormone

and vitamin C can prevent or moderate the decrease in oxygen consumption which occurs as a result of diphtheria intoxication. Injection of thyrotropic hormone, however, also prevents the decrease in oxygen consumption. There is a correlation between the adrenals and the thyrotropic portion of the anterior pituitary and the functioning of the thyroid. Deficiency of adrenal function because of destruction by diphtheria toxin causes a diminution in the thyrotropic activity of the anterior pituitary and, consequently, a tendency toward inactivity of the thyroid.—JOSEPH DIECKHOFF. *Deut. Med. Wochschr.*, 65 (1939), 1418–1421. (L. K.)

Agranulocytosis and Vitamin C. In 6 cases of agranulocytosis or granulocytopenia, the intravenous injection of large doses of ascorbic acid resulted in an increase in leucocytes and granulocytes and, consequently, in a cure. In one of these cases in which there were recurrences of the ailment, the action of the vitamin was observed three times. In three of the cases, the injection of the ascorbic acid saved the lives of the patients. Injection of vitamin C also aids in the healing of otherwise poorly healing skin defects. In leukemias, the dispensing with of vitamin C is without effect.—H. KALK. *Deut. Med. Wochschr.*, 65 (1939), 1624–1629. (L. K.)

Aloe Vera Jell in the Treatment of Third Degree Roentgen Reactions on White Rats—Effect of Fresh. The literature contains reports of the effectiveness of fresh *Aloe vera* leaf in treatment of third degree roentgen reactions, but no experimental work in which controls were used had been reported. Hence, a study was undertaken. The experiments are described. No definite conclusions could be drawn because too few animals received treatment and the 14-day period of treatment was too short a time. However, the jell shows promise of being of value and the study is to be continued with a larger number of animals under treatment for a longer time.—TOM D. ROWE. *Jour. A. Ph. A.*, 29 (1940), 348. (Z. M. C.)

Androstanolones—Carbonic Acid Derivatives of. Therapeutic compounds are produced by reaction of saturated and unsaturated hydroxy ketones of the type of androstanolones with phosgene, halogen carbonic esters, urea halides or isocyanates. Details are given of the production and properties of a number of such compounds.—KARL MIESCHER and HANS KAEGI, assignors to SOC. POUR L'INDUSTRIE CHIMIQUE À BÂLE. U. S. pat. 2,173,423. Sept. 19, 1939. (A. P.-C.)

Antidiabetic Substance. A hot water extract of prickly pear, preferably harvested after exposure to maximum solar radiation, is specified.—C. E. GRUWELL and F. H. E. PREENE, assignors to RESEARCH AGENCY CORP. U. S. pat. 2,082,952; through *J. Soc. Chem. Ind.*, 58 (1939), 1296. (E. G. V.)

Belladonna Extracts in Encephalitis Therapy. A discussion.—FRIEDRICH SCHEIFFARTH. *Deut. Med. Wochschr.*, 66 (1940), 318–321. (L. K.)

Bismarsen—Use of, against Lichen Planus. Twenty-four cases of lichen planus are described in which the antisyphilitic drug, bismarsen, was more or less successfully used. Twelve photographs of the lesions and discussions of the treatment by four physicians are included.—ADOLPH H. CONRAD, ADOLPH H. CONRAD, JR., PAUL MAPOTHER and RICHARD S. WEISS. *Southern Med. J.*, 33 (1940), 721–729. (W. T. S.)

Blood Picture of Infantile B-Avitaminosis—Change of. An administration of vitamin B_1 brings the abnormal blood picture to normal in the cases of B-avitaminotic infants or in the cases of infantile beriberi, infantile perberiberi and infantile B-avitaminotic dyspepsia.—M. SHINDO. *Tôhoku J. Expt. Med.*, 38 (1940), 403. (A. C. DeD.)

Burns—Treatment of. A discussion.—RICHARD GOLDHAHN. *Deut. Med. Wochschr.*, 65 (1939), 1472–1474. (L. K.)

Chemotherapy—Some Aspects of. A summary.—W. H. LINNELL. *Chemistry and Industry*, 59 (1940), 359–360. (E. G. V.)

Chinese Medicine—Dragon in. Dragon's bones were considered to be sweet, bland and non-poisonous, though Chen Chu'uan of the T'and Dynasty stated they were slightly poisonous and incompatible with fish and iron utensils. Dragon's teeth were considered to be astringent, cooling and non-poisonous. These materials were prepared as medicine by first powdering and then making into pills, although some prescriptions direct that they be roasted to red heat first. According to another method, the bones are placed in wine, then fire-dried, powdered and purified by a process of elutriation. In the time of Lei Hsiao (479 A. D.) the materials were washed clean in a decoction of fragrant herbs, then after drying they were broken up and put into small silk bags. Dragon's bones were recommended in gastric conditions, for night sweats and frightening dreams and as a seminal tonic. The white bones were considered specially good in the treatment of physiological and mental disturbances. Dragon's teeth were used as a cure for convulsions, arthritis, madness, gastralgia, etc. They were found to quieten the mind and spirit and remove a feeling of depression, delirium and devil possession. The author states that the specific value of these materials as medicine can scarely be considered to be more than that of a mineral salt like calcium carbonate. In view of the fact that old therapeutics were based upon folklore and superstition, and these together with mythological ideas, induced people to believe in the therapeutic virtues of the supernatural properties of the dragon. The author also indicates that for a nation whose diet is notoriously low in calcium, calcium salts are quite effective in restoring normal functions, when various disturbances have taken place due to a lack of this element in the system.—BERNARD E. READ. *J. North China Branch, Royal Asiatic Society*, 70 (1939), 21–29. (N. L.)

Coronary Occlusion. II. Efficacy of Papaverine Hydrochloride in the Treatment of Experimental Cardiac Infarction. The daily injection of papaverine hydrochloride (5 mg. per Kg.) into cats for two weeks did not alter significantly the size of infarct resulting from the ligation of the left branch of the left anterior descending coronary artery.—ALAN LESLIE, MICHAEL G. MULINOS and WIRT S. SCOTT, JR. *Proc. Soc. Exptl. Biol. Med.*, 44 (1940), 625. (A. E. M.)

Cysteine Hydrochloride Compositions—Therapeutic. Stable, non-caking preparations suitable for dispensing in ampuls and for use with water in treating open wounds contain cysteine hydrochloride together with a buffering agent such as borax, sodium citrate or sodium phosphate to give the aqueous solution a p_H between 3 and 5 (preferably between 3.5 and 4).—FERDINAND W. NITARDY, assignor to E. R. SQUIBB & SONS. U. S. pat. 2,174,009, Sept. 26, 1939. (A. P.-C.)

Diseptals in the Treatment of Gonorrhea—Comparison of the Activity of Various. A review in which are compared the activities of uliron, neouliron, uliron C and mesudin in gonorrhea.—H. LÖHE and R. WAWERSIG. *Deut. Med. Wochschr.* 66 (1940), 283–286. (L. K.)