PHARMACEUTICAL ABSTRACTS

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CHEMISTRY

ORGANIC

Unclassified (Continued)

Dinitrodiazoamino Compounds—Normal and Acid Forms of. When magnesium hydroxide is precipitated in the presence of certain diazoamino compounds, with a nitro group in the ortho or para position, a brilliantly colored lake forms, which is suitable for the detection of traces of magnesium. In order to substantiate the claim that such lake formation was due to the nitrodiazoamino compound and not to impurities invariably present in these compounds, a method of purification was devised whereby the impurities were absorbed specifically on cadmium hydroxide. In this way it was shown that the nitrodiazoamino compounds did actually produce the lake. In the present investigation certain anomalies observed in the purification of certain dinitro compounds—notably a change of color of the diazoamino compound itself from yellow to red or purple after purification—have been examined. It is now shown that certain pure dinitrodiazoamino compounds can exist in two forms—one yellow, which is the true diazoamino form, and the other red, or purple, which is the isonitro acid form. It is this latter form which is involved in the magnesium hydroxide lake formation. The preparation and properties of the above two forms of several dinitrodiazoamino compounds are described.—F. P. DWYER. *J. Soc. Chem. Ind.*, 57 (1938), 351–357. (E. G. V.)

Ethyl Benzoate Compounds—Aralkyl Ethers of Hydroxy-Substituted. Compounds which may be used as intermediates for the manufacture of pharmaceutical compounds are made by treating alkali metal salts of hydroxy-substituted benzoic acid ester compounds directly with an aralkyl halide. Indications are given for the production of a number of such compounds.—SHAILER L. BASS and EDWARD M. VAN DUZEE, assignors to DOW CHEMICAL CO. U. S. pat. 2,128,901, Sept. 6, 1938. (A. P.-C.)

Halomethanesulfonic Acids and Their Salts—Mercurized. Compounds suitable for combatting plant pests and for use as intermediates in making therapeutic compounds, and which are mercurized halomethanesulfonic acids and salts of the group consisting of the alkali metal, alkaline earth metal (including magnesium) and ammonium salts of such acids in which one valency of the mercury atom is attached to the carbon atom of the halomethanesulfonic acid radical in which at the most two valencies of the carbon atom are bound to sulfonic acid groups, the remaining valencies of the carbon atom being occupied by halogen, and in which the other valency of the mercury atom is attached to a hydroxyl group or halomethanesulfonic acid group, are produced by heating a halomethanesulfonic acid salt of the group consisting of the alkali metal, alkaline earth metal (including magnesium) and ammonium salts to the carbon atom of which are linked one hydrogen atom and, at the most, two sulfonic acid groups, the remaining valencies being occupied by halogen with mercuric oxide in the presence of an aqueous alkaline solution.—ARTHUR BINZ and BOLAND HUGHES, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,129,988, Sept. 13, 1938. (A. P.-C.)

Hydroxybenzoates—Aralkyl Ethers of. Various details are given of the production of intermediates for the manufacture of pharmaceutical compounds, such as the benzyl ether of 4-chloro-2-phenyl salicylate (boils at 176° to 182° C. under 3-mm. pressure), the benzyl ether of phenyl salicylate (boils at 174° to 179° C. under 3-mm. pressure), and general mention is made of the similar preparation of the benzyl ethers of a large number of salicylic acid 4-phenylphenyl esters.—SHAILER L. BASS and EDWARD M. VAN DUZEE, assignors to THE DOW CHEMICAL CO. U. S. pat. 2,128,902, Sept. 6, 1938. (A. P.-C.)

Hydroxybenzoates—Aralkyl Ethers of. Details are given of the preparation of various benzyl and substituted benzyl ethers which may be used as intermediates for the manufacture of pharmaceutical compounds.—EDWARD M. VAN DUZEE and SHAILER L. BASS, assignors to THE DOW CHEMICAL CO. U. S. pat. 2,128,975, Sept. 6, 1938. (A. P.-C.)

***p*-Hydroxybenzoic Esters—Stability of.** Para hydroxybenzoic esters require 4 equivalents of bromine in bromometric titration. After full saponification by warming with aqueous sodium hydroxide on a water bath, they take 6 equivalents of bromine. In the first reaction a di-brom-*p*-hydroxybenzoic ester forms; in the second reaction tribromophenol forms. By aid of these reactions the degree of saponification of solutions of the esters can be followed. Titration without

saponification yielded slightly low results. On boiling the esters in water no saponification occurred. Commercial sodium salts of the esters however may often be markedly saponified, up to more than 50%. The effect is due to saponification during preservation rather than to conditions of original preparation of the sodium salts. Solutions of the sodium salts are not stable at room temperature. Keeping such solutions at room temperature, the methyl ester was 5.3% hydrolyzed in 90 days. The propyl ester was 15.8% hydrolyzed in 5 days, and 32.3% hydrolyzed in 90 days. The benzyl ester was immediately hydrolyzed 10% on solution, at 5 days it was 43.6%, at 90 days 60.1% hydrolyzed.—F. REIMERS. *Dansk Tids. Farm.*, 12 (1938), 240. (C. S. L.)

Ichthyol. Its Source and Properties. A review of the literature bearing on ichthyol, including a bibliography of 150 references. Subjects discussed are occurrence of bituminous shales, physical and chemical properties of bituminous shale in the Tyrol and of shale oil distilled therefrom, production and refining of Tyrol shale oil, description and composition of ichthyol, uses and economic considerations. The major use is for external application for skin diseases and inflammations. Various workers believe the high percentage of thiophene compounds is largely responsible for its therapeutic value.—O. C. BLADE. *U. S. Bu . Mines, Circ.*, No. 7042 (1938), 28 pp.; through *Chem. Abstr.*, 33 (1939), 1876. (F. J. S.)

Imidazols—Investigation of. II. An investigation of new methods of preparation and a chemico-pharmacological study of the following compounds: substituted 4(5)-phenylimidazols and β-naphthylimidazol; iodinated imidazols; imidazol-*N*-sulfonic acids; alkyl amides of imidazol-4(or 5)-carboxylic acid; imidazols derived from acyloins and from carbohydrates; benzimidazols. The starting point for most of these syntheses was a 1,2-hydroxy-oxo- compound, which was treated, in presence of ammoniacal copper oxide, with the appropriate aliphatic, aromatic or heterocyclic aldehyde. Good results were also obtained by using copper acetate as oxidizing agent. The iodine derivatives obtained exhibited a high toxicity, probably on account of ready liberation of iodine in the organism.—R. WEINDENHAGEN and H. WEGNER. *Z. Wirtschaftsgruppe Zuckerind.*, 87 (1937), 775–777; through *Chimie & industrie*, 40 (1938), 311. (A. P.-C.)

Insects—Combatting. An addition compound of an alkyl ester of formic acid having a boiling point not higher than 150° C. with anhydrous calcium or magnesium chloride, which double compound is decomposed by the action of water or moisture, is used as insecticide.—KARL BRODERSEN and MATTHIAS QUAEDVLIEG, assignors to WINTHROP CHEMICAL CO., INC. U. S. pat. 2,134,504, Oct. 25, 1938. (A. P.-C.)

Iodophenylphenols. In preparing iodo-*o*-phenylphenol, approximately equimolecular portions of *o*-phenylphenol and iodine may be dissolved in an organic solvent, such as carbon tetrachloride, toluene, xylene, etc. sodium hydroxide in solid form or in aqueous solution is then slowly added to the rapidly agitated reaction mixture, the temperature being regulated so as not to exceed approximately 60° C., although somewhat higher temperatures may be employed. Following addition of the sodium hydroxide, stirring and heating are continued for a sufficient time to insure complete reaction and the iodinated *o*-phenylphenol product is separated therefrom, *e. g.*, by fractional distillation. Another way in which the compound may be prepared is by diazotization of 4-amino-6-phenylphenol and decomposition of the resulting products with potassium iodide. Iodo-*o*-phenylphenol melts at about 35.2° C. and boils at 200° to 205° C. under 15-mm. pressure, and may be used as an antiseptic.—WESLEY C. STOESSER, assignor to THE DOW CHEMICAL CO. U. S. pat. 2,131,258, Sept. 27, 1938. (A. P.-C.)

Isoequilin. Equilin is converted by treatment with acid into a double-bond isomer, isoequilin A, to which the structure of a 14-epi-$\Delta^{8,9}$-equilin has been assigned. The new compound yields on catalytic hydrogenation a stereoisomer of equilenin, 14-epiequilenin, which differs from equilenin by the configuration of carbon atom 14. Isoequilin A reacts with OsO_4 forming hydroxyequilin, probably 14-epi-$\Delta^{9,11}$-8-hydroxyequilin. Spectroscopic measurements indicate that the fourth double bond does not occupy the same position as that in the diol recently isolated from urine of pregnant mares. Isoequilin A possesses about $^1/_6$ of the estrogenic potency of estrone.—H. HIRSCHMANN and O. WINTERSTEINER. *J. Biol. Chem.*, 126 (1938), 737–748; through *Chem. Abstr.*, 33 (1939), 1340. (F. J. S.)

Mercury Compounds—Oil-Soluble Therapeutic. By bringing together in a non-aqueous liquid (such as an oil) a relatively oil-insoluble benzenoid organo-mercury compound having acidic properties (such as a compound as described in U. S. pat. 1,672,615 containing an oxygen atom which is capable of combining with hydrogen or with a basic atom or radical) and a long-chain

alkyl amine having a substituent radical containing 6 to 18 carbon atoms, oil-soluble compounds are obtained having the general formula $(R—Hg—R_{Ac}O)NHR^1R^2$ in which R represents lower alkyl, hydroxyl or halogen, $R_{Ac}O$ represents a nonmetal benzenoid radical that has an oxygen atom by which it is capable of combining with hydrogen or with a basic atom or radical, R^1 represents an alkyl radical having between 6 and 18 carbon atoms, and each R^2 represent hydrogen or a lower alkyl radical. Various examples with details and modifications of procedure are given. —MORRIS S. KHARASCH, assignor to ELI LILLY AND CO. U. S. pat. 2,129,376, Sept. 6, 1938. (A. P.-C.)

Mercury Compounds—Organic, Manufacture of. The interaction of polyhydric phenols having *o*-$(OH)_2$ and no substituents other than OH, *m*-$(OH)_2$ and a side chain, with arylmercuric hydroxides gives compounds having free phenolic hydroxyl groups. Examples are the compounds of mercuric phenol with catechol (1:1) melting point 161°, 2:4:1-$(OH)_2C_6H_3.[CH_2]$.Ph (1:), melting point 145° and 1:2:3-$C_6H_3(OH)_3$ (2:1).—FAHLBERG-LIST A.-G. CHEM. FABR. Brit. pat. 488,306; through *J. Soc. Chem. Ind.*, 11 (1938), 1366. (E. G. V.)

Methenamine—Constitution of Some Organic Salts of. Compounds of hexamethylenetetramine with salicylic, citric, methylene-citric and benzoic acids and diethylmalonylurea were prepared and analyzed. The results indicate that two types of salts were formed: those prepared by reaction in alcohol (80%) at temperatures below 40° are salts of hexamethylene amine; while those prepared in aqueous media at higher temperatures are ammonium and hexamethylenetetramine salts.—P. BOUCHEREAU. *J. pharm. chim.*, 28 (1938), 484–489. (S. W. G.)

Mucinous Substances—Preparing. Seed hulls containing relatively large amounts of mucinous substances are separated from the seeds; they are disintegrated to loosen the mucinous substances from the cellulose, fiber, etc., and are then subjected to flotation in a halogenated hydrocarbon liquid which does not cause the mucinous substances to swell or dissolve and which is of proper density to cause separation of the mucinous substances from the cellulose, etc. The purified mucinous material is suitable for use in the treatment of diseases of the digestive tract.—PHILIP A. KOBER, assignor to G. D. SEARLE AND CO. U. S. pat. 2,132,484, Oct. 11, 1938. (A. P.-C.)

Nirvanol—Synthesis of Colored Derivatives of. Investigators have produced derivatives of barbituric acid containing a chromophoric group It seemed of interest, therefore, to attempt to convert nirvanol into azo dyes whose pharmacological properties might be studied subsequently. Nirvanol was nitrated and yielded a material whose behavior during recrystallization indicated it to be a mixture, and a pure mononitro derivative was not obtained after ten recrystallizations.—J. J. SPURLOCK and H. R. HENZE. *J. Am. Chem. Soc.*, 60 (1938), 3005. (E. B. S.)

Nitrogen—New Method for the Determination of Organic. Nitrogen is determined in organic compounds such as calcium cyanamide, thiourea, uric acid and caffeine by heating the compound under pressure with concentrated sodium hydroxide or potassium hydroxide in an autoclave. The gas evolved is absorbed in a system consisting of an Erlenmeyer flask containing water, and, beyond, a condenser system to absorb all evolved ammonia. The method is suitable for control work, and results within 1% are obtained, a complete run requiring 35–40 minutes.—G. ROCCHI and R. DEL MONTE. *Chimica e industria* (Italy), 20 (1938), 546–547; through *Chem. Abstr.*, 33 (1939), 1237. (E. G. V.)

Organic Compound—Therapeutic, Process for the Manufacture of a. Ferrous carbonate is made to react with malic acid, and the product made to react with an iodine compound. A proteinized iodine salt is then added.—HERMAN E. BROWN. U. S. pat. 2,135,031, Nov. 1, 1938. (A. P.-C.)

Organic Extracts—Process of Producing and Refining. Liver extract is lixiviated with a fluid comprising essentially a phenol; the resultant phenolic solution is mixed with a volatile organic solvent immiscible with water, and the mixture is extracted with aqueous liquid.—PER LALAND and AAGE KLEM, assignors to NYEGAARD AND CO. U. S. pat. 2,134,256, Oct. 25, 1938. (A. P.-C.)

Osones—New Procedure for the Preparation of. The osones of monosaccharides have of late achieved importance for the industrial preparation of vitamin C and its isomers. The value of these syntheses depends upon the obtainable yield of the osones, for the preparation of which resort is had to the splitting of the osazone with either fuming hydrochloric acid and benzaldehyde, or the direct oxidation of monosaccharides for which, among other reagents, copper acetate is

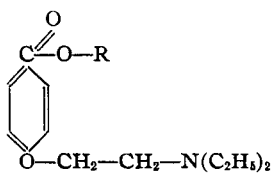
used. The osone yield with this reagent, under the heretofore known conditions, is very low and its separation from the other oxidation products is difficult. The author again investigated this reaction and found that osone formation can be made the main reaction if, in place of water or dilute alcohol as solvent, concentrated ethanol or methanol, preferably the latter, is used, and in place of a great excess of copper acetate, at most only 100% of the theoretical amount is allowed to react and that only for a short time. In this manner 60% yields of *l*-sorbosone and *l*-xylosone, important for the synthesis of vitamin C, can be obtained in a state of high purity by the direct oxidation of *l*-sorbose or *l*-xylose. With other hexoses, yields of only 40% were obtained but the same yield was obtained from galactose from which previous investigators were unable to obtain the osone. The procedure for preparing *l*-xylosone and *l*-sorbosone and vitamin C is described. —R. WEIDENHAGEN. *Z. Wirtschaftsgruppe Zuckerind.*, 87 (1937), 711-715; through *Chimie & industrie*, 40 (1938), 311. (A. P.-C.)

p-Oxypropenylbenzol—Polymerization Products of. Batches of anol spontaneously polymerized are fully active in a dosage between 14 and 20γ. A dimeride of anol was isolated as a benzol derivative, but was inactive in a comparatively high dosage. Anol treated with formic acid gives a higher polymeride, which shows no biological activity. Probably, the high active substance resulting from the alteration process of anol is a dimeride rather than a product of higher molecular weight. That substance, however, must have a peculiar constitution in order to have a high activity. Of the dimerides of anol tested (free compounds, benzoyl and acetyl derivatives), the only one which shows a very high activity is the 4:4-dihydroxy-α:β-diethylstilbene, synthesized and tested by the mentioned authors. It is however not yet proved that this substance is formed during the alteration process of anol.—A. SEMPRONJ, E. MORELLI, A. DANSI. *Biochem. terap. sper.*, 16 (1938), 153. (A. C. DeD.)

Petroleum White Oil Stock. A process is described in which the stock is continuously and intimately mixed with a sulfuric acid capable of effecting removal of unsaturated constituents and other impurities, the succession of mixing and centrifuging steps is repeated until an oil is produced from which the unsaturated constituents have been removed, promptly thereafter the resulting sludge is continuously centrifugally separated from the oil, which is again intimately mixed with a further quantity of sulfuric acid, and the refined oil from the sludge resulting from the further mixing operation by gravity subsidence is separated.—NATHANIEL BREWER, assignor to SHARPLES SPECIALTY CO. U. S. pat. 2,126,867, Aug. 16, 1938. (A. P.-C.)

Phenanthrene Series—Studies in. XXI. Morpholino Alcohols Derived from Phenanthrene. The synthesis of a series of morpholino alcohols from 2-acetylphenanthrene, 3-acetylphenanthrene, 3-methoxy-9-acetylphenanthrene, 1-keto-tetrahydrophenanthrene and 4-keto-tetrahydrophenanthrene is described. All of the alcohols tested showed only low analgesic action or none at all.—ERICH MOSETTIG, FORREST W. SHAVER and ALFRED BURGER. *J. Am. Chem. Soc.*, 60 (1938), 2464. (E. B. S.)

Phenol-Benzoic Acid Esters—Aminoethers of. Compounds having the general formula of:



were prepared in which R was varied as follows: Methyl, m. p. 146°; ethyl, m. p. 154°; propyl, m. p. 103°; isopropyl, m. p. 146°; butyl, m. p. 74°; isobutyl, m. p. 92°; allyl, m. p. 176.5° and the propyl ether of *p*-hydroxypropylbenzoate, an oil. The anesthetic activity was determined on the frog foot and tabulated. The melting points fall off with increasing molecular weight in both the normal and the iso-series with the exception of the methyl ester. The allyl ester had only a weak activity. These compounds may be expected to have some sympathomimetic action and they will be investigated more carefully in the future. All of the above compounds are less active than the isomers in which the carboxyl is esterified with diethylamino-ethanol and the R on the ether group varied as stated above. The propyl ether of *p*-propylbenzoate had no anesthetic activity. The presence of nitrogen is essential to the anesthetic action of these com-

pounds. When the nitrogen is in the ester group, the action is stronger than if it is in the ether grouping. While the isopropyl ester is more active than the normal propyl ester, the reverse is true in the case of the corresponding ethers. Details of the procedure for the preparation of the above compounds are given.—C. ROHMANN and A. KOCH. *Arch. Pharm.*, 276 (1938), 154. (M. F. W. D.)

Pinewood—Results of Some Important Extractions from. The pinewood was mixed with benzyl chloride and 35% sodium hydroxide and the temperature was maintained at 90–100°. The yield resembled benzyl cellulose. Using a mixture of alcohol and benzol or acetic acid as the solvent, the resultant mixture consisted of a soluble and an insoluble portion. The soluble portion was examined and was found to contain no carbohydrates. The authors concluded that the lignin did not occur in a chemical form but that the derivatives of the benzylated pinewood are of a high molecular weight and have specific properties unlike those of cellulose. A portion of the benzylated pinewood was mixed with concentrated hydrochloric acid and $^1/_3$ of the material went into solution; the residue was examined and was found not to have the properties of benzyl lignin. The addition of hydrochloric acid to benzylated and non-benzylated pinewood proves that the products split off during the reactions are only reactionary products and not original constituents. Other investigators claim that there is no definite proof of a great difference between an alkali and an acid lignin; in fact, the authors state that the benzyl derivatives of both lignins behave entirely different toward concentrated hydrochloric acid.—R. S. HILPERT and O. PETERS. *Ber.*, 70 (1937), 108; through *Chem. Zentr.*, 108 (1937), 1944. (G. B.)

Piperazine—Preparation of. A liquid mixture containing free diethylene triamine is heated in presence of one of its partial hydrochlorides, and the piperazine is distilled from the mixture.—ALEXANDER L. WILSON, assignor to CARBIDE AND CARBON CHEMICALS CORP. U. S. pat. 2,136,094, Nov. 8, 1938. (A. P.-C.)

Proteinogenic Alkylalkamines. Reduction of the *dl*-leucine methyl ester (I) in absolute alcohol by hydrogen at 3000-lb. pressure per sq. in. and 175° for 7 hours with copper chromite gave *N*-diethyl-*dl*-leucinol, b_{15} 105–107°; picrate melting point 79–80°. Similarly, *dl*-phenylanaline methyl ester in absolute methyl alcohol gave *N*-dimethyl-*dl*-phenylalaninol, $b_{0.4}$ 110°. I in propyl alcohol gave *N*-propyl-*dl*-leucinol, melting point 52–53°; hydrochloric acid salt melting point 117–118°; the syrupy mother liquor probably contained the *N*-di-propyl compound since by increasing the temperature to 250° for twelve hours the product was *N*-dipropyl-*dl*-leucinol; hydrochloric acid salt, melting point 130–131°. I in iso-propyl alcohol gave *N*-isopropl-*dl*-leucinol; hydrochloric acid salt, melting point 92–93°. I in butyl alcohol and in iso-butyl alcohol gave, respectively, *N*-butyl-*dl*-leucinol (hydrochloric acid salt melting point 148–149°), and *N*-isobutyl-*dl*-leucinol (hydrochloric acid salt melting point 151–152°).—C. C. CHRISTMAN and P. A. LEVENE. *J. Biol. Chem.*, 125 (1938), 709–714; through *Chem. Abstr.*, 33 (1939), 534. (F. J. S.)

Resorcinol—Preparation of, from the Dry Salt from Neutralization of Alkali Melt. The material is heated at 105° in a stream of air at 105–108°, when pure resorcinol is obtained as a sublimate. The yield is not greater than that given by extraction methods, but the process is cheaper, although slower.—G. K. HAUSER and I. V. SMIRNOV-ZAMKOV. *Mem. Inst. Chem. Ukrain. Acad. Sci.*, 9 (1938), 127–134; through *J. Soc. Chem. Ind.*, 11 (1938), 1265. (E. G. V.)

Spinastanol and Its Identity with Fucostanol and Stigmastanol. The physical constants of a series of derivatives of spinastanol from spinach indicate that this saturated sterol is identical with fucostanol and stigmastanol.—C. DONALD LARSEN. *J. Am. Chem. Soc.*, 60 (1938), 2431. (E. B. S.)

Sterols. XLIV. Pregnanone-3 and Related Compounds. The preparations of pregnanone-3 and the isomeric 3-pregnanols are given.—RUSSELL E. MARKER and ELMER J. LAWSON. *J. Am. Chem. Soc.*, 60 (1938), 2438. (E. B. S.)

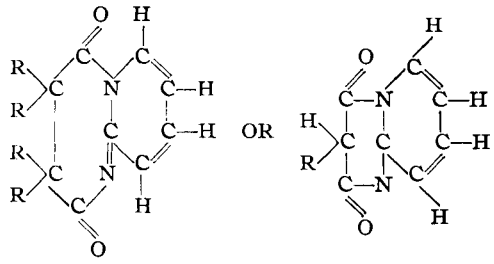
Sulfanilamides—Structure of. The structure, effect and theory of action is given for sulfanilamide, M and B 693 (Dagenam), M and B 125 (Proseptasine), M and B 137 (Soluseptasine), ambesid solubile, prontosil, rubrum, rubiazol, uleron, albucis and sulfanilamide-quinine salts.—ANON. *Chemist and Druggist*, 130 (1939), 273. (A. C. DeD.)

Sulfosalicylic Acid—Production of. A suspension of barium carbonate is added to the product of sulfonation of salicylic acid, the solution filtered, and the filtrate freed from barium by adding the theoretical amount of sulfuric acid. Pure sulfosalicylic acid is obtained by concen-

trating the resulting solution.—P. PARCHOMENKO. *Chem. Listy*, 32 (1938), 292–293; through *J. Soc. Chem. Ind.*, 11 (1938), 1265. (E. G. V.)

Terpenes—Synthesis of, from Acetylene. Preliminary communication. $Me_2C(OH)CH{:}CH_2$ (I) was prepared in 95% yield by electrolysis of $Me_2C(OH)C{:}CH$ (II) in sodium carbonate solution. II resulted in 80–90% yield from acetylene and dimethyl ketone with powdered potassium hydroxide. The action of 20% sulfuric acid on I at room temperature for 4–5 days gave a complex mixture of products soluble and insoluble in water. The products identified in the insoluble layer were isoprene, unaltered I, $Me_2C{:}CHCH_2OH$, linalool and traces of geraniol. The aqueous layer gave $Me_2C(OH)CH_2CH_2OH$ and terpine hydrate.—A. E. FAVORSKII and A. I. LEBEDEVA. *J. Gen. Chem.* (U. S. S. R.), 8 (1938), 879–883; through *Chem. Abstr.*, 33 (1939), 1298. (E. G. V.)

Tetraalkylsuccinic Acids—Substituted Imides of, and Their Physiological Action. A large number of imide-substituted tetraalkylsuccinic acids were prepared and tested for physiological activity. When tetraalkysuccinic acid anhydrides are fused with alpha-aminopyridine, there are obtained crystalline substances having the following general formula:



if alkyl malonic esters are used. The relation to the barbiturates is clear and the compounds have hypnotic activity. The following were prepared: tetramethylsuccin-alpha-aminopyridide, b. $p._{15}$ 197°, m. p. 85°, pronounced hypnotic properties; sym. dimethyldiethylsuccin-alpha-aminopyridide, b. $p._{10}$ 207°; tetraethylsuccin-alpha-amino-pyridide, b. $p._{0.1}$ 189°, m. p. 89°, hypnotic properties weak on higher animals; tetraethylsuccin-alpha-alpha'-diaminopyridide, b. $p._{0.1}$ 230°, m. p. 118°; tetraethylsuccin-alpha'-amino-nicotide, b. $p._{0.1}$ 235°, m. p. 105°; tetramethylsuccin-diethyl-aminoethylimide, b. $p._{16}$ 159°, has analeptic but no hypnotic action; tetramethylsuccin-2,3-tetramethyl-1,4-butanediimide, m. p. 187°, some analeptic action and causes a fall in blood pressure; tetramethylsuccinimino-*N*-acetic acid, m. p. 87° having a caffeine-like action; and tetraethylsuccinimino-*N*-acetic acid, m. p. 90°, similar action but somewhat stronger. —ERWIN OTT and FRITZ HESS. *Arch. Pharm.*, 276 (1938), 181. (M. F. W. D.)

Theophylline-Piperazine Preparation. A preparation which may be sterilized and which is suitable for therapeutic use comprises an aqueous alkaline solution of strophanthin, glucose and theophylline containing piperazine in sufficient amount to stabilize the solution against decomposition.—KARL RIMBÖCK. U. S. pat. 2,128,851, Aug. 30, 1938. (A. P.-C.)

Ureido *N*-Diaryl Dicarboxylic Acid Halides. Ureas and thioureas containing two aryl carboxylic acid groups or one aryl and one heterocyclic carboxylic acid group are converted into the acid chlorides by treatment with thionyl chloride, phosphorus chlorides or the like. Similar compounds are also obtained by treating aryl isocyanates or isothiocyanates containing carboxylic acid groups with thionyl chloride, phosphorus chlorides or the like, combining the resulting carbimide or thiocarbimide aryl acidyl halides with aminoaryl or aminoheterocyclic carboxylic acids, and finally treating with thionyl chloride. The products of either process are converted into symmetrical and unsymmetrical urea and thiourea derivatives by treatment with 1-amino-naphthenesulfonic acids or with the products obtained by reducing the nitro compounds obtained by the action of 1-amino-naphthalenesulfonic acids or of aminoacenephthanesulfonic acids on chlorides of nitroaryl fatty acids, nitroaryl chlorides and nitroaryl sulfchlorides.—GEO. M. DYSON and ARNOLD RENSHAW, assignors to PARKE, DAVIS AND CO. U. S. pat. 2,126,180, Aug. 9, 1938. (A. P.-C.)

Urethanes as Local Anesthetics. IV. Alkyl *N*-(*p*-Aminobenzyl)-Carbamates. A series of alkyl *N*-(*p*-aminobenzyl)-carbamates was synthesized. They produced some local anesthesia

when injected intracutaneously but were not active when applied topically. All were irritating. —R. L. SHRINER and JAMES M. CROSS. *J. Am. Chem. Soc.*, 60 (1938), 2338. (E. B. S.)

Urotropin—Simplification of the Method of Preparation of. Chemically pure urotropin is obtained directly by passing gaseous formaldehyde and ammonia gas into distilled water and concentrating the solution under vacuum on the water bath at not over 40° C. until the urotropin crystallizes. In this method, the formaldehyde can be replaced by a solution of paraldehyde.—S. M. WELLER and M. M. GRIFORIAN. *Oukr. Khem. J.*, 12 (1937), 439–441; through *Chimie & industrie*, 40 (1938), 311. (A. P.-C.)

BIOCHEMISTRY

Amino Acids—Ninhydrin Reaction in the Determination of.—A. I. VIRTANEN and T. LAINE. *Nature*, 142 (1938), 754; through *Chem. Abstr.*, 33 (1939), 1237. (E. G. V.)

Amino Groups—Determination of, in Hemoglobin and the Proteins of Human Serum. Blood proteins treated with formaldehyde yield the same quantities of nitrogen with nitrous acid as the untreated proteins. Human serum proteins contain 6.35 mg. of amino nitrogen per Gm. of dry protein by the Sörensen titration method and about 12 mg. of amino nitrogen per Gm. determined by the nitrous acid method in the Van Slyke apparatus. Very pure human hemoglobin gives 6.2 mg. of amino nitrogen per Gm. by the Sörensen method and about 11 mg. by the nitrous acid method.—W. L. DULIÈRE. *Compt. rend. soc. biol.*, 126 (1937), 442–444; through *Chimie & industrie*, 40 (1938), 242. (A. P.-C.)

Androgens—Isolation of, from Normal Female Urine. Androsterone and *trans*-dehydroandrosterone, previously isolated from normal male urine, have now been isolated as oximes from the urine of normal women. Collected from seven patients over a period of seven days, 75 liters of urine was hydrolyzed, extracted, evaporated and found to yield 8.2 mg. per liter of "sterone," when estimated by the authors' modification of Zimmermann's colorimetric method. Details are given for the subsequent (*a*) separation by Girard's reagent of a purified ketonic fraction having a sterone content of 75%, (*b*) the isolation from this fraction of a high-vacuum distillate yielding an oxime, which after successive recrystallizations and conversion to benzoate had m. p. 172° to 175° C., and was identified as androsterone benzoate; (*c*) the separation from pyridine of a benzoate which finally melted at 238° to 248° C., and, by mixed melting point determinations, was proved to be *trans*-dehydroandrosterone. These processes carried out in parallel on normal male and female urines gave yields of 0.2 and 0.4 mg. of androsterone, figures which are not significantly different in view of the complexity of the methods employed. The importance of the work, it is therefore claimed, lies in the demonstration that the two androgens isolated are not specific products of the male organism.—N. H. CALLOW and R. K. CALLOW. *Biochem. J.*, 32 (1938), 1759; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 132. (F. J. S.)

Ascorbic Acid Content of Rose Hips. Figures are given which indicate that rose hips are rich in ascorbic acid, and they compare favorably with other fruits used as a source of this vitamin. There is a loss of ascorbic acid on drying and storage; drying at 40° C. resulted in a loss of about 80–90%, but by drying at 60° C., and thereby inhibiting enzyme action, the loss was only about 50%. The seeds contain no ascorbic acid.—W. GOLDBERG and E. O'F. WALSH. *Pharm. J.*, 141 (1938), 551. (W. B. B.)

Ascorbic Acid (Crystalline Vitamin C)—Simplified Method of Preparing. Crystalline ascorbic acid can easily be obtained from concentrated extracts having a high antiscorbutic activity (1 cc. = 600 to 1000 cc. of thousandth-normal dichlorophenolindophenol solution) without making use of lead salts, using instead small quantities of alcohol and ether (or acetone). By this method 14.8 kilos of dog-rose fruit yielded 52.24 Gm. of commercial ascorbic acid, melting at 170° to 172° C., which was 31.6% of the available acid (reducing substance) in the plant.—A. A. SCHMIDT and K. Z. TOULTCHINSKAIA. *Bull. soc. chim. biol.*, 19 (1937), 1200–1208; through *Chimie & industrie*, 40 (1938), 309. (A. P.-C.)

Azo Dyes and Immuno-Biology. Suppression of Hypersensitiveness to Anaphylactic Shock, Produced by Azoproteins, by Means of Azo Dyes Derived from *p*-Phenylarsonic Acid. Azoproteins, formed *in vivo* or *in vitro*, all contain the —N=N— group. To suppress their anaphylactic hypersensitiveness it is necessary to use a dye containing the same azo group as the azoprotein which produces this hypersensitiveness. The azo dye derived from 4-amino-phenylarsonic acid and α-naphthol lends itself to this effect, existing under two tautomeric forms as

naphthoquinone-hydrazone (—NH—N=) and as azonaphthol (—N=N—). This azo group can be fixed by substituting the phenolic hydrogen of the dye with a methyl group by alkali methylation using excess of dimethyl sulfate.—H. E. FIERZ, W. JADASSOHN and W. G. STOLL. *Helv. Chim. Acta*, 20 (1937), 1059–1077; through *Chimie & industrie*, 40 (1938), 112. (A. P.-C.)

Barbiturates—Determination of, in Urine. The following procedure is recommended: Acidify 20 cc. of urine with acetic acid (1:10) using litmus indicator. Add anhydrous sodium sulfate in 35-Gm. portions until a dry mixture that can be powdered in a mortar is obtained. Place the powder in an extractor 250 x 30 mm. Place a small pledget of absorbent cotton in the tube of the extractor and add layers of active vegetable charcoal 0.2 Gm., powdered magnesium 0.2 Gm. and anhydrous sodium sulfate 2.0 Gm. in the order given. The mixture is extracted with 30 cc. of ether and the percolate is received and evaporated in a tube 100 x 10 mm. which has been placed in a slightly larger tube containing a little water. The tubes may be inserted in a flask containing boiling water which serves as a water bath. The barbiturates in the residue may be detected by reaction with cobalt nitrate and diethylamine in absolute alcohol. A stable violet color is obtained if a barbiturate is present. The method requires about 20 minutes and permits the recovery of 0.2 mg. of barbiturate from 20 cc. of urine. The residue is quite pure and may be used for a melting-point determination.—H. GRIFFON and R. LEBRETON. *Documentation sci.* (1938), 127; through *J. pharm. Belg.*, 21 (1939), 129. (S. W. G.)

Benzidine Test for Blood—Effect of Cevitamic Acid on. Prompted by observations on the urine of experimental animals, the authors investigated the inhibiting action of cevitamic acid upon the benzidine test for blood in the urine. They found that moderate amounts of cevitamic acid, such as have been found in the urine during "saturation" tests or intensive vitamin C administration, are able to inhibit the tests for blood. Cevitamic acid solution, added to the ingredients of a tube showing a positive test, is able to cause disappearance of the characteristic blue color. This interference may be avoided by a preliminary extraction with ether of urine to be tested; hemoglobin passes into the ether layer, leaving the cevitamic acid behind. The blue color in the benzidine test is due to the presence of an oxidation product of benzidine; the mechanism of interference by cevitamic acid is due to its reducing properties.—R. KOHN and R. M. WATROUS. *J. Biol. Chem.*, 124 (1938), 163; through *Abbott Abstract Service*, (1938), No. 335. (F. J. S.)

Bile—Secretion of, Effect of Surgery on the Liver on. It has been previously demonstrated that a liver injured by the presence of biliary tract disease is unable to excrete bile acids in as concentrated a form as the uninjured liver. Thus, normal bile contains from 2000 to 3000 mg. of bile acids per 100 cc., but bile from the injured liver contains only 500 mg. per 100 cc. A study was made on a number of cases of operation on the biliary tract, and a constant diminution in the bile acid content of the bile following the operation was observed. This seemed to be due to the surgical manipulation rather than to any specific mediation or anesthetic; the administration of glucose was not able to remedy the condition after it had appeared. This inability of the liver to concentrate bile may be looked upon as a manifestation of temporary injury; it is found most pronounced in cases showing a strong febrile reaction postoperatively. Even after free flow of bile into the intestine is established in obstructive cases, the amount of the bile acids may remain temporarily below normal.—H. K. GRAY, W. L. BUTSCH and J. M. MCGOWAN. *Surgery*, 37 (1938), 607; through *Abbott Abstract Service*, (1939), No. 427. (F. J. S.)

Bile Acids—Content of, in Extractum Fellis Bovis, Swiss Pharmacopœia V. After a general review of history, structure and properties of bile acids, the author has adapted a colorimetric method proposed by Cuny for pure bile acids, for the determination of the bile acids in bile using as a standard for comparison the color obtained with a solution of 0.10 Gm. of pure cholalic acid in 100 cc. of 80% alcohol and the reagents. The following is the procedure: To 1 cc. of the solution to be tested is added 0.5 cc. of a solution of 1% furfurol in absolute alcohol and then 3.5 cc. of 84% phosphoric acid and the material mixed vigorously. The uniform mixture is immersed in a boiling water bath for 5 minutes, cooled for 5 minutes in co'd water, diluted with concentrated acetic acid to 10 cc. and mixed. After several minutes the color is compared with the standard. The presence of lactose in the extract of the Pharmacopœia is shown not to interfere. The bile acids may be determined in the extract with an accuracy of ±1%. The generality of the assay for all types of bile has not been proved.—R. FREUDWEILER. *Pharm. Acta Helv.*, 13 (1938), 176. (M. F. W. D.)

Blood—Life Span of the Red Corpuscles of. Statements in the literature as to the length of life of red blood cells vary considerably. While the red cell is supposed to live 30 days in man, there is evidence indicating that the life of the cell may be only 15 days, or may be as much as 100 days. Certain errors inherent in experiments which have previously been devised to measure the span are pointed out. The authors used dogs in their work, and each dog had a bile fistula. It was shown that the daily output of bile pigment from such animals was quite constant when the diet was suitably controlled. This bile pigment was considered to come largely from broken-down red cells. By subjecting the dogs to severe hemorrhage, the animals were forced to produce large quantities of new red cells, so that the majority of the circulating cells were of recent formation. The output of pigment declined, only to rise after 124 days. Thus 124 days are considered as the life-span of red cells in the dog.—W. B. HAWKINS and G. H. WHIPPLE. *Am. J. Physiology*, 122 (1938), 418; through *Abbott Abstract Service*, (1938), No. 347. (F. J. S.)

Bromide—Determination of, in Tissues and Biological Fluids. For tissues, 200 mg. or less are mixed with 3 Gm. of sodium hydroxide pellets in a nickel crucible placed on a layer of sand in a larger nickel crucible, and heated gently to avoid foaming; a few mg. of potassium nitrate are added when the reaction has subsided, this addition being continued until no further bubbles appear. The solution of the melt in 15 cc. of water is cooled, diluted to about 30 cc., cautiously acidified with concentrated sulfuric acid (2.3 cc.) and then made slightly alkaline with sodium bicarbonate; 2 Gm. of sodium dihydrogen phosphate and 6 cc. of $N/1$ sodium hypochlorite are added and the solution heated in a boiling water bath for ten minutes. The hypochlorite is destroyed by adding 5 cc. of 50% solution of sodium formate and reheating for five minutes, the whole is then cooled and diluted to 160 cc. To the solution are added 10 Gm. of sodium dihydrogen phosphate and 40 cc. of $6N$ sulfuric acid, the whole is cooled to 10° C. and 3 drops of 10% solution of ammonium molybdate and 1 Gm. of potassium iodide are added. As soon as the potassium iodide is dissolved the liberated iodine is titrated with $0.005N$ sodium thiosulfate, using starch as indicator. A blank determination must be performed, substituting water for the bromine solution; 1 cc. of $0.005N$ sodium thiosulfate is equivalent to 66.6γ of bromine. The sodium thiosulfate should be standardized under conditions which obtain in this determination. To a $N/100$ bromate solution are added 5 cc. of 50% sodium formate solution, 12 Gm. of sodium dihydrogen phosphate and 40 cc. of $6N$ sulfuric acid; the whole is adjusted to 200 cc. with water, cooled and the liberated iodine titrated after the addition of 1 Gm. of potassium iodide. The titration end-point is best observed in artificial light. In analyzing fluids an amount up to 1 cc. of blood or 3 cc. of serum, urine or saliva is pipetted into the crucible, a pellet of alkali is added and the whole dried in the oven; thereafter the procedure is as described. The average recovery of bromine is of the order of 99% but losses result if an indicator is used to show neutralization of the alkali by acid, probably due to bromination of the indicator oxidation products. The method is applicable to the determination of amounts of 0.060 to 2.0 mg. of bromine.—B. B. BRODIE and M. M. FRIEDMAN. *J. Biol. Chem.*, 124 (1938), 511; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 138. (F. J. S.)

Calcium—Determination of, in Biological Materials with Ceric Sulfate. To 2 cc. of the serum or an aliquot part of liquid containing between 0.1 and 0.4 mg. of calcium are added 2 cc. of water and 1 cc. of saturated ammonium oxalate solution. The whole is allowed to stand for two hours, first neutralizing to the blue-green color of bromocresol green with potassium or ammonium hydroxide solution if a trichloracetic acid filtrate of blood serum or an acid extract of ashed tissue is being used. The whole is then filtered through a microfilter and the precipitate washed twice with 3-cc. quantities of 2% solution of ammonium hydroxide. The calcium oxalate precipitate is dissolved on the filter with three 1-cc. quantities of hot $2N$ sulfuric acid, the solution being allowed to run back into the precipitation tube, and the residue being washed out with two quantities of 2 to 3 cc. of water. To the solution thus obtained are added 2 cc. of $M/100$ ceric sulfate, and the whole allowed to stand for thirty minutes, 2 drops of neutralized phenanthroline are added, and the whole back-titrated with $0.005M$ ferrous ammonium sulfate. The color change of the indicator is purple → blue-green → blue → salmon, the change from blue to salmon at the end-point being sharp. The indicator is prepared by dissolving 0.695 Gm. of hydrated ferrous sulfate and 1.485 Gm. of *o*-phenanthroline monohydrate in 100 cc. of water, 1 cc. being titrated to the neutral point (purple) with ceric sulfate solution just before use. The titration is carried out at room temperature and no blank is necessary if the indicator is neutralized as described before being

used.—C. E. LARSON and D. M. GREENBERG. *J. Biol. Chem.*, 123 (1938), 199; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 138. (F. J. S.)

Cardiovascular System—Disturbance of, in Nutritional Deficiency. Both deficiencies and excesses of food can lead to disturbance of circulation. Deficiency of one may become pathogenic, when combined with excess of another. Prolonged undernutrition causes wasting of muscle, but is not known to cause cardiovascular disease. Chronic protein deficiency leads to edema harmful to circulation, as is deficiency of carbohydrates. Dehydration and salt depletion contribute to circulatory collapse and shock. Iron deficiency and anemia contribute to cardiac enlargement. Of vitamin deficiencies, beriberi has cardiac complications often aggravated by alcoholism. Vitamin C is related to capillary fragility. Relation of lack of other vitamins to cardial involvement is not yet established. Deficiencies do not directly affect heart, but long-continued influence changes by intermediary metabolism. Functional state of organs may be as important as intake of extrinsic factors in conditioning clinical nutritional deficiencies.—SOMA WEISS and ROBERT W. WILKINS. *J. Am. Med. Assoc.*, 110 (1938), 786. (G. S. G.)

Alpha- and Beta-Carotenes—Determination of, by Means of the Spectrophotometer and the Photoelectric Photometer. The carotenes can be determined with an accuracy of about 1% with the photoelectric photometer or the spectrophotometer. The variation in the error is greater with the spectrophotometer. The use of heptane rather than a petroleum ether of low boiling point as a solvent reduces the change in concentration of the solutions through evaporation during examination. Alpha-carotene in heptane exhibits minimum absorption of light at 447.5 and 475 mμ, beta-carotene at 455 and 480 mμ. Spectrophotometric readings at these wave bands are made without difficulty, using the 1000-watt incandescent lamp as a light source. Specific absorption coefficients have been calculated for alpha- and beta-carotenes at various concentrations for use with the photoelectric photometer and the spectrophotometer at specified settings of slit widths.—C. L. SHREWSBURY, H. R. KRAYBILL and R. B. WITHROW. *Ind. Eng. Chem., Anal. Ed.*, 30 (1938), 253–256. (E. G. V.)

Carotinoids and Vitamin A—Chromatographic Separation of. Various previously described methods of separating carotinoids and vitamin A are reviewed. Neither by chromatography with aluminum oxide nor by partition into two different fluid phases have quantitative results been obtained, and the methods are long and difficult. It was demonstrated that, if mixtures of carotinoids and vitamin A are dissolved in chloroform, neutral oils added and subjected to chromatography through a Hydraffin K_4 (active carbon) column, the carotinoids are more strongly adsorbed than the vitamin A, so that a more or less quantitative analysis is possible. The method was tested on human serum. It was noted that if the Carr-Price reaction is used for determination of vitamin A in serum, there is no biologically tested conversion factor for translating values of $E^{1\%}_{1\ cm.}$ to Interna ional units. For exact determinations in serum it would be necessary to isolate the vitamin from a large quantity of serum and determine the biological value by rat assay, then relate this to the Carr-Price values obtained.—E. MARCUSSEN. *Dansk Tids. Farm.*, 12 (1938), 217. (C. S. L.)

Cattle and Carabao Meat—Differentiation of, by Biochemical Methods. Experimental data are presented to prove the discovery of the authors that these two meats can be distinguished on the basis of the color of the ether extracts of the flesh. Evidence seems to indicate that the pigment in both animals is carotene. Extracts from cattle meat are very markedly yellow whereas from the carabao meat they are either colorless or a pale greenish yellow. The following rapid method was developed: 5 Gm. of the finely ground meat are weighed and placed in a 30-cc. wide-mouthed bottle, 10 cc. of absolute alcohol are added and the bottle stoppered with a cork wrapped in tinfoil. It is frequently shaken for 5 minutes. The water abstracted from the tissues reduces the alcohol to about 75% strength. Then, without decanting the alcohol, 8 cc. of a fat solvent (2 volumes anhydrous ether, 1 volume low boiling benzin) are added and shaken from 1 to 3 minutes. The ethyl ether portion mixes with the alcohol and the reduced strength of the alcohol allows the petroleum benzin to separate as a layer on the top, carrying with it the pigment extracted by the resulting ether-ethyl alcohol mixture. The coloration of the petroleum benzin layer at the top is the basis of differentiation by this method.—RAMON A. ACEVEDO and TEODULO TOPACIO. *Philippine J. Sci.*, 66 (1938), 281. (P. A. F.)

Citrus Fruit Juices—Preservation of. Various processes for preservation and concentration are reviewed, with special reference to the Krause method of concentration by freezing.—

M. A. TEMPANY. *Bull. Imp. Inst.*, 36 (1938), 344–349; through *J. Soc. Chem. Ind.*, 11 (1938). 1358. (E. G. V.)

Creatinine—Red Compounds of, with Picric Acid and Sodium Hydroxide. Creatinine, sodium hydroxide and picric acid in molecular proportions give yellow sodium picrate and colorless creatinine. Additional sodium hydroxide produces red coumponds, four of which have been isolated and analyzed. They differ in composition according to the amount of alkali used. The compound which represents the limit of saturation of the red form of creatinine picrate with sodium hydroxide, having the formula $\{[C_4H_7ON_3—C_6H_3O_7N_3(3NaOH)]_2(NaOH)\}4H_2O$, is considered to be responsible for the deep red color given in Jaffé's reaction for creatinine in which a strongly alkaline picric acid solution is used.—A. BOLLIGER. *J. Roy. Soc. N. S. W.*, 71 (1937), 60; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 296. (S. W. G.)

7-Dehydrocholesterin—Some Interesting Reactions and Properties of. This compound proved to be a powerful antirachitic vitamin only when it was exposed to the ultraviolet rays. The properties of this compound were carefully observed and its action compared with ergosterin and 22-dihydroergosterin. The addition of malic acid anhydride had no effect on the compound; consequently it behaves similarly to ergosterin. When irradiated in direct sunlight in the presence of eosin but in the absence of oxygen, a "pinakon" resulted which finally yielded the diacetate. 7-Dehydrocholesterin pinakon was converted to an alcohol when heated, with the result that a methane group was split from the molecule. The derivative was named noresterin and possessed the same absorption spectrum as neoergosterin. A peroxide was obtained when the compound was irradiated with oxygen in the presence of eosin; with zinc dust and alkali it was converted to cholestentriol. During the hydration process, the compound 7-dehydrocholesterin reacted not like ergosterin but more like 22-dihydroergosterin. When hydrochloric acid was added to the main product, an isomer was obtained which was named dehydrocholesterin B_3 and which somewhat resembled ergosterin B_3.—F. SCHENCK, K. BUCHHOLZ and O. WIESE. *Ber. deut. keram. Ges.* 69(1936), 2696; through *Chem. Zentr.*, 108 (1937), 1698. (G. B.)

Diabetes—Modern Treatment of. The principles of treatment may be thus enumerated: (1) *Weight.* Maintain the patient at or slightly below the ideal body weight. (2) *Number of Feedings.* Divide the day's food allowance into three meals and three supplementary feedings. This will reduce the frequency of insulin reactions. Even diabetic patients who do not require insulin do better on frequent feedings. With protamine insulin, the bedtime feeding is especially necessary. (3) *Protein Requirements.* Provide one Gm. of protein per Kg. of body weight per twenty-four hours for adults and from two to three Gm. for children during their rapidly growing periods. (4) *Carbohydrate Requirements.* Provide carbohydrate somewhere in the middle range 120 to 200 Gm. per twenty-four hours. (5) *Fat Requirements.* Restrict fat to the least possible amount consistent with the maintenance of an ideal body weight. For the purpose of reducing an obese diabetic, the fat should be limited to 50 or 60 Gm. per twenty-four hours and for normal weights should not exceed half the carbohydrate. If the patient is undernourished the fat can exceed this figure. (6) *Vitamin Requirements.* The deficiency in fat-soluble vitamins inherent in the low fat diets should be overcome by adding vitamin concentrates to the diet. (7) *Insulin Requirements.* Give enough insulin to keep the urine sugar-free without reactions. That means not more than an occasional trace of sugar. (8) *Urinanalyses.* Control the insulin dosage by means of four separate daily urinanalyses, not by a single specimen or a twenty-four hour specimen. (9) *Blood Tests.* Blood tests are unnecessary for the control of glycosuria, but are necessary to detect a developing hypoglycemia. (10) *Infections.* Infections are particularly hazardous to a diabetic. Therefore avoid acute infections and eliminate sources of chronic infection. These principles constitute a guide for the treatment of diabetes.—J. R. SCOTT. *Bull. N. Y. Acad. Med.*, 14 (1938), 480. (A. C. DeD.)

Eclamptic Blood—Toxins Not Demonstrable in. Theories have been advanced attempting to explain some of the symptomatology of eclampsia on the basis of toxins which were assumed to circulate in the blood, and others have proposed that a hormone from the posterior portion of the pituitary body circulated in the blood of the eclamptic, producing an anti-diuretic effect. The author first demonstrated that it was possible to detect very small amounts of posterior pituitary secretion in a suitably prepared human subject, and then showed that there is a small amount of this substance in normal human blood. Transfusion of 400 cc. of blood from an eclamptic patient, however, did not produce any of these anti-diuretic actions in the normal recipient,

nor did it result in any rise in blood pressure or other untoward manifestation. The author concludes that this experiment indicates the improbability of the presence of any large amount of circulating toxin in the blood stream of the eclamptic patient.—E. W. PAGE. *J. Clin. Invest.*, 17 (1938), 207; through *Abbott Abstract Service*, (1938), No. 338. (F. J. S.)

Endocrine Compounds. The Islets of Langerhans. A discussion.—A. RICHARD BLISS, JR. *Drug and Cosmetic Ind.*, 43 (1938), 540–541. (H. M. B.)

Estrogenic Compounds—Some Synthetic. The discovery that certain simple diphenols such as 4:4′dihydroxydiphenyl possessed estrogenic activity led D. *et al.*, to prepare some dihydroxystilbenes with a view toward obtaining compounds having estrogenic activity. The activity of dihydroxy-α-β-diethylstilbene, which resembles estradiol in structure, was found comparable to that of the natural hormone. A sterioisomeride of dihydroxydiethylstilbene was found to be less powerful than the latter compound but the reduction product of the pseudo-derivative was said to be one of the most powerful estrogenic substances known. Of a series of pinacols the one prepared from *p*-hydroxy-propiophenone possessed the maximum activity while the diene obtained from this pinacol on dehydration was particularly effective when administered orally. D. *et al.*, also examined *trans*-dihydroxyhexahydrochrysene and certain naphthalene derivatives but the estrogenic activity of these compounds did not compare to that of the dihydroxystilbenes.—E. C. DODD, L. GOLDBERG, W. LAWSON and SIR ROBERT ROBINSON. *Proc. Roy. Soc.* (London), B., 127 (1939), S15. (W. T. S.)

Estrogens —Clinical Use of. In contrast to the old ovarian extracts, the use of which goes back at least twenty years, a number of interesting compounds are now available which have a definite action on certain organs. The estrogenic substances appear under a variety of names and in many forms. The definite indications for their use are: (1) Atrophic changes in the vulva and vagina following castration or the menopause. (2) Gonorrheal vaginitis. (3) Vasomotor disturbances following the artificial or natural menopause. (4) Atrophic rhinitis. Other indications based on less certain grounds are functional amenorrhea and primary dysmenorrhea. The former use is not based on sound physiological grounds, since the medication supplies only part of the normal cyclical mechanism of the ovary. The latter use has yielded success in some cases, but the results are difficult to evaluate. Abnormal uterine hemorrhage is a definite contraindication, since estrogens tend to stimulate the growth of the endometrium.—C. F. FLUHMANN. *California and Western Medicine*, 49 (1938), 362; through *Abbott Abstract Service*, (1938), No. 437. (F. J. S.)

Fat—Effect of, on Rate of Availability of Orally Ingested Carbohydrate. The addition of cream to carbohydrate as a test meal in patients receiving protamine zinc insulin led to a slower rise in blood sugar followed by a more gradual descent proving that the absorption of sugar was delayed.—HERBERT POLLACK and HENRY DOLGER. *Proc. Soc. Exptl. Biol. Med.*, 39 (1938), 239. (A. E. M.)

Ghee—Vitamin A Study of. V. Effect of Heat and Air on Vitamin A. The vitamin A content (determined by the antimony chloride method on the unsaponifiable fraction) of ghee (preparation is described) is scarcely altered in 10 hours at 100°, but, once started, destruction of vitamin A goes rapidly to completion. At 125° half of the vitamin A is lost in 5 hours, and at 175° complete destruction occurs in 30 minutes. At 100° oxygen does not markedly accelerate the rate of destruction. Temperature of 100° for 5 hours or of 125° for one-half hour does not induce autocatalytic destruction of vitamin A. The process of frying in ghee completely destroys its vitamin in 10 minutes. Ghee prepared from the butter of the cow is more resistant to heat than that of the buffalo.—B. N. BANERJEE and N. N. DASTUR. *Agr. Live-stock India*, 7 (1937), 24–34; through *J. Soc. Chem. Ind.*, 57 (1938), 1222. (E. G. V.)

Glucose—Blood, Determination of. The method used is based upon the reduction of alkaline ferricyanide solution and titration of the ferrocyanide formed with standard cerium sulfate solution to a phenanthroline-ferrous sulfate end-point. The sample, containing 1 to 12γ of glucose, is pipetted into a small test-tube of 3-mm. inside diameter and 36 mm. long. To the diluted sample are added about 0.04 cc. of 14% sodium carbonate solution and the same volume of 1.5% potassium ferricyanide solution. The tube is filled to the calibration mark with water and the contents heated in boiling water for 5 minutes. The solution is then transferred to a dish and, after adding some sulfuric acid, it is titrated with cerium sulfate. The precision is satisfactory but the mean of 54 analyses shows that the previous factor used for computing the result was

about 8% in error.—KATHRYN HECK, W. H. BROWN and P. L. KIRK. *Mikrochem.*, 22 (1937), 306–314; through *Chimie & industrie*, 40 (1938), 40. (A. P.-C.)

Glycogen Preparations—Composition of Commercial, and Its Relation to Antibody Formation. In each of four commercial preparations small amounts of nitrogen compounds, partly of a protein nature, were present. The mineral content varied from 0.238 to 3.553% and nephelometric examination showed them to be of widely different particle size.—E. REMY. *Z. Untersuch. Lebensm.*, 76 (1938), 36–39; through *J. Soc. Chem. Ind.*, 11 (1938), 1361. (E. G. V.)

Histidine-Urea as a Test of Pregnancy. Urine tests for pregnancy are reviewed. The first use of a histidine test was described by Kapeller-Adler (*Klin. Woch.*, 13 (1934), 22, 34, 1220; 15 (1936), 1728). He developed a colorimetric determination of histidine (*Biochem. Z.*, 264 (1933), 131, 232; 271 (1934), 206), based on a reaction reported by Knoop. The amino acid was found to be present from the 2nd to the 10th month of pregnancy. Nitrites were found to interfere. The most recent modification of the test eliminates the negative reaction due to presence of nitrites, by oxidizing them with permanganate. This was described by Kurt Stern (*Zentr. Gynäkol.*, 39 (1935), 2305). Kapeller-Adler has claimed a maximum error of the test in pregnancy of 3%. Reagents are: bromine, 1% in 33% acetic acid (5 cc. [15 Gm.] bromine are poured into a large cylinder, 500 cc. glacial acetic acid added, then water to 1500 cc.); ammonia-ammonium carbonate solution: 2 parts concentrate ammonia mixed with 1 part 10% ammonium carbonate solution; sulfuric acid 10%; potassium permanganate, *N*/10; KI-starch paper; Griess reagent (Ilosway's modification): (I), 0.5 Gm. sulfanic acid in 150 cc. dilute acetic acid. (II), 0.5 Gm. naphthylamine boiled in 20 cc. water, filtered into 150 cc. dilute acetic acid. I and II are mixed. Keep in glass-stoppered bottle shielded from light. This is a test reagent for nitrite. *Procedure A:* Use a 24-hour specimen (or at least a morning urine) best with sp. gr. over 1.015. Five cc. of urine are placed in a 25-cc. test-tube of 20-mm. diameter, 1 cc. of 10% sulfuric acid is added and dropwise from a burette *N*/10 potassium permanganate to weak rose color. Let stand 2–3 minutes, when solution blanches. Add, by microburette, bromine reagent with shaking till the solution is yellowish. Test a drop on starch iodide paper to determine whether there is a slight excess of bromine. If the yellow fades, add 1–2 drops more bromine reagent and test. After standing 10 minutes the solution should still give a reaction for bromine. Now add by microburette 1 cc. of the ammonia-ammonium carbonate reagent and shake. Immerse tube in a boiling water bath for exactly 40 seconds. Gravid urine gives an intense red-violet to blue-violet ring, slowly spreading. Remove from bath, shake and cool quickly. In a positive reaction the solution is red-violet or blue-violet. Rose color is negative. Histidine-free urine usually gives yellow. *Procedure B* (used only if the Griess reaction of nitrites is negative): Treat 5 cc. of the urine in test-tube with bromine reagent to citron-yellow color as before, testing as before. Add 0.5 cc. ammonia-ammonium carbonate reagent, shake and immerse in water bath exactly 30 seconds. The reaction may be tested with non-gravid urine to which is added a little histidine (for example, the preparation, Larostidine-Roche). The time of appearance of the reaction differs in different gravid women; it is usually positive in the 5th to 6th week of pregnancy; some show it sooner. The results check well with results obtained by the Aschheim-Zondek method.—E. KARLING. *Farm. Revy*, 37 (1938), 597, 619, 633. (C. S. L.)

Hyperthyroidism—Effect of Vitamin B_1 and Vitamin B_2 Complex on the Loss of Weight Produced in Rats by Experimental. Hyperthyroid rats which had lost weight and were still receiving thyroid gland regained their lost weight when both vitamin B_1 and vitamin B_2 complex were administered, but not when vitamin B_1 alone was given. A sex difference in response was present.—VICTOR A. DRILL. *Proc. Soc. Exptl. Biol. Med.*, 39 (1938), 313. (A. E. M.)

Jaundice—Cause of Bleeding Tendency in. It is well known that a tendency to bleed develops in patients with obstructive jaundice, but the reason for this has been somewhat obscure in the past. The authors believe that this uncertainty has been due largely to the lack of accurate quantitative methods for the determination of the various constituents in the blood which go to make up the clot. In previous papers the authors have described an improved technic for the quantitative determination of prothrombin; the present paper gives the results of this test as applied to a series of 27 patients suffering from obstructive jaundice. In almost all of these the prothrombin level in the blood was decreased, although the amount of this fall would not always be correlated to the duration or intensity of the jaundice. By feeding bile to these patients, the

clotting time could be reduced to normal, and this effect was greatly speeded up by the simultaneous feeding of vitamin K obtained by extracting alfalfa meal with solvents.—K. M. BRINKHOUS, H. P. SMITH and E. D. WARNER. *Am. J. Med. Sci.*, 196 (1938), 50; through *Abbott Abstract Service*, (1938), No. 348. (F. J. S.)

Karkadé—Vitamin C Content of. Titration with dichlorophenolindophenol indicated a vitamin C (ascorbic acid) content of 0.38 to 0.58% in dried flowers of karkadé, a tropical plant abundant in Eritrea; but biological tests with guinea pigs subjected to ascorbutigenic diet showed that it was devoid of any antiscorbutic action. Hungarian pimento behaves in the same way.—G. LORENZINI. *Arch. ist. biochim. ital.*, 9 (1937), 123–130; through *Chimie & industrie* 40 (1938), 309. (A. P.-C.)

Ketonic Bodies—Determination of, in Blood. One cc. of blood is defecated with sodium tungstate and sulfuric acid and the filtrate and washings are mixed with a little dilute mixture of potassium dichromate and sulfuric acid to oxidize β-hydroxybutyric acid. The mixture is then distilled in a modified Parnas apparatus, the distillate is received in a tube containing Scott-Wilson reagent (10 Gm. of mercuric cyanide, 180 Gm. of soda, 2.9 Gm. of silver nitrate, dissolved in water to 1600 cc.) and the acetone is determined nephelometrically.—C. T. RIETTI. *Compt. rend. soc. biol.*, 126 (1937), 617–619; through *Chimie & industrie*, 40 (1938), 243. (A. P.-C.)

Liver Diseases—Total Lipemia and Iodine Number of the Blood of Various. The values of total lipemia have been studied in this work, as well as the iodine number in the peripheral vein blood of normal individuals, of patients suffering with various diseases of the liver and of others with altered lipid metabolism. Because of the variations of the iodine number of the total lipids in the peripheral blood, an attempt has been made to obtain some evidence to judge the supposed desaturating function attributed to the liver in fatty acid metabolism. It appears that this concept is not confirmed.—F. CATTANEO. *Biochem. terap. sper.*, 16 (1938), 127. (A. C. DeD.)

Liver Extract—Preparation and Properties of the Charcoal Adsorbate of. The precipitation of calcium carbonate by interaction of calcium chloride and sodium carbonate is used to remove protein and the active principle is subsequently absorbed on norit. Of this extract 3 cc. are derived from 100 Gm. fresh liver. It is potent in pernicious anemia. The final product contains tyrosine.—JAROMIL SLADEK and JEAN KYER. *Proc. Soc. Expil. Biol. Med.*, 39 (1938), 227. (A. E. M.)

Nicotine—Detection of, in the Urine. Chemical methods do not suffice to detect the small quantities of nicotine in the urine present after smoking. A test capable of detecting small quantities would be valuable in cases where the patient is forbidden to smoke because of some organic disease. The test depends on the contraction of the muscle of the leech produced by minute quantities of nicotine. The leech is observed after immersing in neutral urine. In nicotine-free urine, the writing lever of the recording apparatus remains horizontal but in nicotine-containing urines it undulates more or less rapidly depending upon the concentration of nicotine. By comparison of the action with standard solutions of nicotine a quantitative estimation is possible. The author claims to be able to detect the presence of nicotine in the urine one week after the smoking of a single cigarette.—GEORGE HAUSDORF. *Kosmos* (1938), No. 4, 122; through *Schweiz. Apoth. Ztg.*, 76 (1938), 565. (M. F. W. D.)

Pentamethylenetetrazol—Detection of, in Urine and Blood. The following methods are proposed: To 50 cc. of urine add 5 cc. of a 20% solution of lead acetate; the filtrate is saturated with ammonium sulfate (30 Gm.) and shaken with 20-, 10- and 10-cc. portions of chloroform; after distilling the chloroform, the residue is taken up in 1 cc. of water and is allowed to react with the copper chloride according to the method of Zwikker (*Pharm. Weekblad* (1934), 1170) which is used to carry out the determination. Blood: The serum from 20 cc. of blood (about 8 cc.) is diluted with five times its volume of water and heated to boiling after which the solution is saturated with ammonium sulfate (about 30 Gm.) and after the addition of a few drops of diluted hydrochloric acid is filtered. The filtrate is then shaken out with chloroform and the process carried out as with urine. One milligram of pentamethylenetetrazol added to 20 cc. of blood could be detected by this method. Data concerning the detection of pentamethylenetetrazol 1, 2, 3 and 4 hours after injection are given.—M. J. SCHULTE. *Pharm. Weekblad*, 75 (1938), 386. (E. H. W.)

Pentoses—Microchemical Methods for Determining Various, in the Presence of One Another and of Hexoses. Previously described methods for determining pentoses depend on the

formation of 2-furfuraldehyde by heating with acids. Embden and Lemhartz attempted to apply the Bial color test with acid chloride and orcinol to the determination of the pentoses in muscle, but trouble was encountered through the presence of hexoses. It is now found that by properly controlling the temperature, duration of heating and concentration of the hydrochloric acid, it is possible to make use of the Bial test for determining free and combined pentoses in the presence of hexoses if the color comparison is made in the Pulfrich step photometer rather than in a colorimeter. The green color formed by heating a pentose with ferric chloride, hydrochloric acid and orcinol varies greatly with different pentoses and the effect of changes in concentration also varies from case to case. Thus it is possible to determine two pentoses present in a mixture by a relatively simple procedure. Hexoses do not interfere provided they are not present in quantities greater than are likely to occur in biological materials.—Z. DISCHE and K. SCHWARZ. *Mikrochim. Acta*, 2 (1937), 13–19; through *Chimie & industrie*, 40 (1938), 243. (A. P.-C.)

Pituitary Posterior Lobe Powder—Preparation of. The method is similar to that for the preparation of the standard powder. The glands, while still frozen, are stripped of skin and other tissue and the anterior and posterior lobes dissected. The separate lobes are dehydrated in several changes of acetone and the residual acetone is removed in a vacuum oven at a temperature not exceeding 50° C. They are then reduced to a No. 20 powder, redried for four hours in the vacuum oven and finally placed in a dry sealed container, a sample being withheld for estimation of oxytocic activity and moisture content. By adopting the above procedure a dry stable powder can be prepared from frozen imported glands of good quality. After the activity of the powder has been ascertained, the amount required for any size batch of extract can be calculated and is immediately available. Subsequent biological assays on the finished extracts not only confirm the previous tests but act as a check on the efficiency of the extraction. The authors see no justification for prohibiting the use of an acetone-dried powder for the preparation of an extract when the standard powder, which contains the whole of the activity of the posterior lobe, is prepared in this manner. In their opinion the inclusion of an acetone-dried posterior lobe powder might be considered in the next revision of the British Pharmacopœia. A moisture limit, and a note to indicate that the strength of such a preparation be given in International units per Gm., should be made.—H. GARTSIDE, J. PRITCHARD and F. E. RYMILL. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 401–406. (S. W. G.)

Pregnancy—Need for Calcium during. Recently the attention of the obstetrician has been directed to the need of calcium, phosphorus and vitamins during the antenatal period. Attention to these dietary essentials has improved prenatal care in this country, especially as the average American diet is deficient in calcium. On the other hand, many unwarranted claims for calcium, phosphorus and vitamin therapy have been advanced. The normal adult requires about 0.7 Gm. of calcium a day, and during the last trimester of pregnancy this requirement increases to about 1.5 Gm. If there is no exposure to sunlight, vitamin D is essential for the absorption of this mineral. Calcium undoubtedly relieves the muscular cramps that may occur in pregnancy, but no evidence shows that it prevents caries or influences the teeth of the fetus. Some evidence has indicated that overdoses of calcium and vitamin D may lead to premature calcification of fetal bones; therefore they should be administered with caution.—H. J. STANDARD. *Am. J. Obstet. Gynecol.*, 35 (1938), 530; through *Abbott Abstract Service*, (1938), No. 302. (F. J. S.)

Protamine Zinc Insulin—Protein as a Source of Carbohydrate for Patients Using. The ingestion of protein causes a slowly rising blood sugar curve which is not followed by a descent, as observed after sugar. The ingestion of protein as evening meal prevents nocturnal hypoglucemia.—HERBERT POLLACK and HENRY DOLGER. *Proc. Soc. Exptl. Biol. Med.*, 39 (1938), 242. (A. E. M.)

Proteins of Serum—Substances Quantitatively Carried Down with the, in Precipitation by Trichloroacetic Acid and in Ultrafiltration. Cholesterol and Bilirubin. The precipitate obtained by adding an equal volume of 10% trichloroacetic acid to serum diluted with its own volume of water is always greater than that produced by 95% alcohol. Quantitative experiments proved that trichloroacetic acid precipitates not only all the proteins, but also all the free and combined cholesterol and all the bilirubin.—W. L. DULIÈRE and R. MINNE. *Compt. rend. soc. biol.*, 126 (1937), 440–441; through *Chimie & industrie*, 40 (1938), 241. (A. P.-C.)

Sherries—Electrolytic Production of Rancid Flavor in. Oxidation is necessary for the production of the characteristic flavoring constituents of sherry wines. One of the products of this oxidation is acetaldehyde. This is formed by the activity of aerobic film-forming yeasts in the true Jerez wines of Spain and by controlled oxidation in California sherry type wines. Although acetaldehyde is one of the products of this oxidation, the flavor produced by controlled oxidation cannot be duplicated merely by the addition of acetaldehyde to new wine or by strong oxidation such as is produced by the addition of hydrogen peroxide. Using aldehyde content as an index of oxidation, it was found that electrolysis of the wine brings about a more rapid oxidation than that found in the normal sherry cooking process. The electrolytic oxidation produces flavoring constituents in the wine which closely resemble those of Spanish sherry in odor. It also brings about a rapid blending of brandy with the wine. However, the electrically treated wines lack the taste of sherries because electrolysis has but little effect on the other factors concerned in the production of sherry flavor. Decreasing the extent of electrolysis and increasing the heating period are suggested to bring about a better balance among the flavoring constituents. The wine used for sherry material must be properly selected.—M. A. JOSLYN. *Ind. Eng. Chem.*, 30 (1938), 568–577. (E. G. V.)

Sodium—Volumetric Determination of, for the Estimation of the Sodium Chlorine Ratio of Urine. The urine is first freed of phosphates by treatment with a solution of uranium acetate in acetic acid. A 2.5- to 10-cc. aliquot (according to the presumed sodium content) is treated with three times its volume of a hydroalcoholic reagent containing, per liter, 32 Gm. of crystallized uranium acetate, 100 Gm. of crystallized zinc acetate, 20 cc. of acetic acid and 500 cc. of 90% alcohol; after 30 minutes precipitation is complete. Collect the triple acetate precipitate on a sintered glass filter, wash 4 times with 3 cc. of 95% alcohol saturated with the triple salt; dissolve the precipitate in 50 cc. of distilled water, add 4 to 5 drops of 1% phenolphthalein solution, add decinormal sodium hydroxide to a pink coloration; immediately add an amount of sodium hydroxide equal to half that already added, boil 2 or 3 minutes and titrate the excess of alkali with decinormal acid, which gives the number of cc. required to decompose the triple salt.—R. SASSEIR. *Compt. rend. soc. biol.*, 126 (1937), 305–307; through *Chimie & industrie*, 40 (1938), 40. (A. P.-C.)

Sulfanilamide—Factors Concerning Blood Level and Dosage of. The author believed that not enough attention had been given to the fate of sulfanilamide in the body following oral administration, and he conducted repeated studies of the concentration of the drug in the blood and urine of a single subject following the oral ingestion of a single dose. Both the free and the conjugated forms were determined, using the procedure outlined by Marshall. It was found that the concentration of the drug in the blood rose rapidly to a peak about two or three hours after ingestion of the dose. This peak occurred slightly later after a single dose of 15 grs. than after one of 45 grs. After the peak was attained, the concentration fell rather uniformly for the next 24 hours. The curves obtained show how erroneous may be the impression given by blood analyses performed at random, without regard to the variations which must occur. The curves also indicate necessity of administering doses as often as every three hours to keep up the blood level.—C. C. LUCAS. *Can. Med. Assoc. J.*, 39 (1938), 111; through *Abbott Abstract Service*, (1938), No. 344. (F. J. S.)

Sulfanilamide—Transfer of, through the Placenta to Fetus. Barker wished to determine whether sulfanilamide given to the mother shortly before delivery would be transferred to the fetus, and in what amounts the drug would be found in the fetal circulation if it were transferred. This problem may arise frequently if the practice, more common in England, of giving prophylactic doses of sulfanilamide to the pregnant woman at term is followed. A series of 17 women at term had conditions requiring the administration of the drug, and its level in their blood was determined. Determinations of sulfanilamide were also made on the venous blood of the newborn infants. There was found to be approximately the same level in the fetal blood as in the maternal blood, the highest figure being 7.0 mg. per 100 cc. Though it is theoretically possible that high sulfanilamide levels in the maternal circulation might be toxic to the fetus, no such instance was noted.—R. H. BARKER. *New Engl. J. Med.*, 219 (1938), 41; through *Abbott Abstract Service*, (1938), No. 346. (F. J. S.)

Sulfanilamide—Transmission of, through Breast Milk. To settle the question whether sulfanilamide is excreted in human breast milk the authors made sulfanilamide determinations on

the breast milk of a series of puerperæ who were receiving twenty-five grs. of the drug daily by mouth in four divided doses. Only free sulfanilamide was tested for, determinations of the acetyl derivative not being made. It was found in every case that free sulfanilamide appeared in the breast milk within twenty-four hours after the beginning of the medication. The concentration varied from 0.55 mg. per 100 cc. to 2.17 mg. per 100 cc. The drug was still present in the milk seventy-two hours after discontinuing its oral administration. That the drug was absorbed and excreted by the nursing infants was proved by demonstrating its presence in the urine of the infants. Here, the concentration varied from 0.19 mg. per 100 cc. to 1.40 mg. per 100 cc. It is stated to be theoretically possible for the concentration in milk to rise higher than that in the blood stream.—J. S. HEPBURN, N. F. PAXSON and A. N. ROGERS. *J. Biol. Chem.*, 123 (1938), liv; through *Abbott Abstract Service*, (1938), No. 343. (F. J. S.)

Sulfur—Determination of, in Blood Serum. Deproteinized serum was subjected to the following treatment: Benedict's reagent, evaporation at 100° C., addition of hydrogen peroxide, evaporation, ashing, solution in water and precipitation with benzidine reagent and an acetone-alcohol solution, filtration and solution in water, with titration with fiftieth-normal sodium hydroxide using bromothymol blue as indicator.—E. POLI. *Diagnostica tec. lab.* (Napoli) *Riv. mens.* 8 (1937), 409–415; through *Chimie & industrie*, 40 (1938), 242. (A. P.-C.)

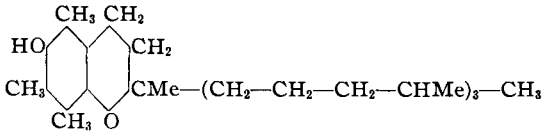
Tartar Emetic—A Note on the Use and Dispensing of. Attention was called to the lack of technic generally employed in determining the presence of schistosomes in specimens of urine and feces. An examination of the last drops of urine collected was found to facilitate a diagnosis. Tartar emetic solutions containing sodium chloride were found to be most useful in treating schistosomiasis. The patient's tolerance for tartar emetic was increased when only freshly prepared, perfectly clear, sterilized solutions were injected. A method of preparing such a solution was outlined.—F. GORDON CAWSTON. *J. Trop. Med. Hyg.*, 42 (1939), 98. (W. T. S.)

Teeth—Dissolving Effect of Acidulated Candies upon. The acids resulting from the fermentation of carbohydrates have been considered to play a part in the caries of teeth; consequently, the authors investigated the effect of candies to which rather high concentrations of citric acid have been added for flavoring. The p_H of a strong solution of such candy in saliva was found to be 3.4. Teeth were immersed in this solution for 24 hours, precautions being taken to insure that only the enamel was in contact with the fluid. At the end of this time, the solution was analyzed for calcium and phosphorus to determine how much of the tooth structure had been dissolved. Measurable amounts of these minerals were found, and in addition the surface of the tooth was encrusted with a white chalky friable substance which proved on analysis to consist of a complex mixture of the original calcium phosphate of the tooth structure with another compound in which the phosphate radicle had been replaced by citrate. Such factors may be important in tooth decay.—E. S. WEST and F. R. JUDY. *J. Biol. Chem.*, 123 (1938), cxxv; through *Abbott Abstract Service*, (1938), No. 357. (F. J. S.)

Thrombin Surgical Dressings—Determination of Blood-Clotting Activity of. The following procedure is recommended: Circles of lint are cut from the material by means of a punch, $^3/_4$ inch in diameter, so that the disks fit the bottom of a Gooch crucible. Filter paper circles are also cut to fit. One centimeter of citrated blood (2.5% solution of sodium citrate in normal saline —10% mixed with sheep's blood, 15% mixed with rabbit's blood) is then run into a boiling tube immersed in a water bath at 25° C. The disk of lint is threaded with a cotton thread by means of a needle and is suspended in the tube above the surface of the blood, but below water-level. After not less than two minutes, to allow the material to attain the temperature of the water bath, the lint disk is lowered into the blood and pressed down repeatedly for fifteen seconds with a glass rod in order to soak it thoroughly. After the reaction has proceeded for eight minutes, the disk is pulled out of the tube with the thread and at once transferred to the Gooch crucible, which has had the paper disk laid in it. The lint disk is arranged to lie flat and at once washed with 4 lots of 7 cc. of normal saline, drawn through by suction. The unclotted blood is thus removed, and the lint disc, with adhering clots can be dried or at once submitted to Kjeldahl digestion. The results are expressed as mg. of nitrogen per sq. cm. of fabric. With diluted blood the clot remains about the same size, but contains less solid and nitrogen, and more water. The relationship between surface concentration of thrombin and the resulting clot was studied and found to be quantitative, but not in simple proportion. Tests were made with different fabrics. Suggestions are made as

to the mode of action of the dressings in clotting blood.—R. M. SAVAGE and W. P. CHAMBERS. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 543–561. (S. W. G.)

Tocopherols—Synthesis of. The authors cited references to show that α-tocopherol, the most powerful anti-sterility factor (vitamin E) known to occur in nature, is now generally considered to be



6-hydroxy-2:5:7:8-tetramethyl-2-(4′:8′:12′-trimethyltridecyl) chroman. Two racemic tocopherols (representing the next lower homolog of α-tocopherol) were prepared in an effort to produce compounds possessing anti-sterility activity. These lower homologs were obtained in satisfactory yields by condensing *p*-xyloquinol monobenzoate and *o*-xyloquinol monobenzoate separately with phytol or phytyl bromide in the presence of anhydrous $ZnCl_2$. Both compounds showed biological activity almost equal to that of β- and γ-tocopherol.—A. JACOB, M. STEIGER, A. R. TODD and T. S. WORK. *J. Chem. Soc.* (London), (1939), 542. (W. T. S.)

Urinary Disinfectants. III. Resorcinol glucoside, synthesized according to Fischer's method, was injected intravenously into rabbits and subcutaneously into mice. There was no evidence of toxicity. The glucoside was always detected undecomposed in the urine; no free resorcinol was present although the test for glucuronic acid was always positive. Resorcinol glucoside shows little or no promise as a urinary disinfectant.—B. CACCIAVILLANI. *Boll. soc. ital. biol. sper.*, 12 (1937), 336–337; through *Chimie & industrie*, 40 (1938), 115. (A. P.-C.)

Vitamin A Deficiency—Degree and Prevalence of, in Adults. Report of study on students at Boston University, each receiving test on biophotometer. Those taking concentrates of vitamin A eliminated. Dietary and general history of each student with objective and subjective manifestations of vitamin A deficiency. One hundred sixty-two students tested, 55 had subnormal dark adaptations and were treated and results observed. Graphic difference in diet of normal and subnormal groups, subnormal obtaining less than half the amount of International units of vitamin A daily in food. Abnormal also twice as subject to colds and minor illnesses as normal group. All deficient students treated either with carotene in oil or capsules of halibut liver oil concentrates; in massive doses till symptoms disappeared. Study offers evidence of reliability of subnormal dark adaptation as indirect measure of vitamin A deficiency, and indicates 4000 International units of vitamin A as minimum daily requirement. Vitamin A deficiency artificially produced in writer by diet containing only 200 units daily; restored to normal by massive doses of vitamin A and resumption of normal diet.—HAROLD JEGHERS. *J. Am. Med. Assoc.*, 109 (1938), 756. (G. S. G.)

Vitamin A—Effects of Solvents on the Absorption Spectrum of. The effect of different solvents is not the same on all oils examined spectrophotometrically for their vitamin A content. The values of $E^{1\%}_{1\,cm.}$ 328$m\mu$ were determined for three liver oils and two concentrates, dissolved in five different solvents—alcohol, cyclohexane, hexane, ether and chloroform. The results show that higher values were obtained with alcohol than with cyclohexane or hexane, while a further effect is the shift of the band to 333mμ, with chloroform as solvent. Halibut liver oil gave a value of $E^{1\%}_{1\,cm.}$ 328mμ of 26.4 in chloroform, of 31.7 in ether of the residue from which chloroform was recovered, and 31.8 in ether direct. These irregularities suggest to the authors a *cis-trans* isomerism of vitamin A in different solvents, especially as any loss in absorption at 328mμ was invariably restored after standing the solution in the dark. It is suggested that the results and the explanations offered may explain similar spontaneous increases and decreases in absorption values, recorded by other workers.—E. L. SMITH, B. E. STERN and F. E. YOUNG. *Nature*, 141 (1938), 551; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 637. (S. W. G.)

Vitamin A—Estimation of. Independent attempts to redetermine the conversion factor relating spectrophotometric and biological values of the U. S. P. reference cod liver oil gave values which cast doubt upon the suitability of the factor provisionally recommended by the Accessory Food Factors Committee. A coöperative reinvestigation by ten laboratories of a sample of the

oil in comparison with the international β-carotene standard, gave values of which the weighted mean was 2619 International units per Gm. The value of $E_{1\,cm.}^{1\%}$ 328mμ for the unsaponifiable fraction of this sample was 1.44, giving a conversion factor of 1820. Statistically this is significantly different from the value of 1570 obtained for a sample of halibut liver oil. Until a further reinvestigation can be made, using pure vitamin A ester when available, it is recommended that the present provisional factor of 1600 shall be retained.—E. M. HUME. *Nature*, 143 (1939), 22; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 136. (F. J. S.)

Vitamin B Researches. In rats a vitamin B_1-free ration produces a distinct bradycardia, which disappears on addition of the vitamin (as yeast) to the ration. In underfeeding, bradycardia develops as a result of the inanition and is not relieved by administration of the vitamin. G. W. PARADE. *Z. Vitaminforsch.*, 6 (1937), 327–334; through *Chimie & industrie*, 40 (1938), 113. (A. P.-C.)

Vitamine B_1—Determination of, in Human Urine. The method consists in adsorbing the vitamin on frankonite and then determining it fluorometrically by means of "thiochrome." Taking into account the fluorescence of the urine itself, the method can determine vitamine B_1 with a sufficient accuracy, 3 to 5γ in 100 cc.—W. KARRER. *Helv. Chim. Acta*, 20 (1937), 1147–1155; through *Chimie & industrie*, 40 (1938), 43. (A. P.-C.)

Vitamin B_1—Formaldehyde Azo Reaction of. The formaldehyde azo test has been made more specific by carrying out the reaction with diazotized sulfanilic acid in presence of alcohol, and by extracting the resulting pink color with butyl alcohol from the alkaline solution, and again with dilute acid from butyl alcohol. Copper, mercury and silver interfere; these and some other metals also interfere in the Pauly test for histamine and histidine. Foodstuffs are extracted with alcohol (50%), the vitamin B_1 precipitated with sodium phosphotungstate, and the precipitate decomposed with baryta followed by sulfuric acid to remove barium. Phosphoric esters of vitamin B_1, if present, are hydrolyzed with takadiastase containing 0.5% of takaphosphatase.—H. W. KINNERSLEY and R. A. PETERS. *Biochem. J.*, 32 (1938), 1516; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 136. (F. J. S.)

Vitamin B_1—New International Standard of. The members of the International Conference on Vitamin Standardization have unanimously recommended that the International unit of vitamin B_1 be defined as the antineuritic activity of 3 mg. of the international standard preparation. In Great Britain, the new standard for vitamin B_1 is supplied by the Department of Biological Standards, the National Institute for Medical Research.—ANON. *Pharm. J.*, 141 (1938), 548. (W. B. B.)

Vitamin C—Increased Need for, in Tuberculosis. The authors had previously observed the presence of a constant hypovitaminosis C in tuberculous children, and carried out the present study, which corroborates other work showing an increased use of vitamin C in this disease. A group of ten of these children was studied with reference to the urinary output of ascorbic acid, the figures being compared with normal values obtained from a group of normal children on the same basic diet. After the excretion on the basal diet had been determined for both groups, 50 mg. per day of synthetic vitamin C were added to the diets of each group. In the normal children, the increase in the vitamin C level in the diet was followed by an immediate rise in the urinary output of this substance, whereas in the tuberculous children, much larger amounts had to be given to produce a comparable increase. This points to hypovitaminosis C and suggests that vitamin C should be increased in these cases.—T. S. BUMBALO and W. W. JETTER. *J. Pediat.*, 13 (1938), 334; through *Abbott Abstract Service*, (1939), No. 414. (F. J. S.)

Vitamin C—Necessity of Adequate, in Healing of Wounds. Metheny makes an attempt to show that vitamin C is necessary for the healing of wounds, that many patients with lesions of the gastrointestinal tract lack vitamin C, as well as being subject to other nutritional deficiencies, and finally that sometimes subclinical nutritional deficiencies become flamboyant following surgery. Three case reports of patients who finally underwent surgical operations for gastrointestinal disease are presented. Each of these patients had an abnormally low content of ascorbic acid in the blood some time before the operation; by feeding considerable quantities of ascorbic acid preoperatively, uneventful postoperative courses were secured. A fourth case is reported in which a patient who did not show any typical signs of vitamin deficiency was finally operated upon for the relief of chronic peptic ulcer. A few days postoperatively, violent symptoms de-

veloped which were finally recognized as acute pellagra.—D. METHENY. *Northwest Medicine*, 37 (1938), 349; through *Abbott Abstract Service*, (1939), No. 423. (F. J. S.)

Vitamin C Nutrition in Artificial Fever. Determinations of vitamin C excretion before and after periods of artificial fever show that fever increases the vitamin C requirements of man. Studies of vitamin C stores in adrenals and kidneys of guinea pigs show that artificial fever increases the requirement or accelerates the destruction of vitamin C. Since guinea pigs cannot lose vitamin C in sweat, an increase in the physiological need during fever is evident.—JANE ZOOK and GEORGE R. SHARPLESS. *Proc. Soc. Exptl. Biol. Med.*, 39 (1938), 233. (A. E. M.)

Vitamin C—Relation of, to Arsphenamine Reactions. The authors have been interested by reports appearing in the literature concerning a possible relationship between sensitivity to arsphenamine compounds and a lack of vitamin C. Observations which they review are: (1) A diet rich in vitamin C tended to reduce arsphenamine reactions in guinea pigs. (2) A diet poor in vitamin C predisposed to severe reactions in the same animals. (3) Vitamin C given intravenously to patients with arsphenamine dermatitis seemed to shorten its course. By studying the vitamin C content in the plasma of a series of syphilitic patients the authors found that syphilis *per se* does not produce an abnormally low level of the vitamin, nor does arsphenamine treatment. All patients showing a tendency to reactions, however, had low plasma vitamin, and showed retention of "saturation" doses. This phenomenon is regarded as an effect rather than a cause of reactions.—D. G. FRIEND and H. H. MARQUIS. *Am. J. Syphilis Gonorrhea, Venereal Diseases*, 22 (1938), 239; through *Abbott Abstract Service*, (1938), No. 274. (F. J. S.)

Vitamin C—Requirements of, in Early Infancy. Because his experience causes him to differ with the recommendations of the Health Committee of the League of Nations in the matter of minimum dosage and time of administration of vitamin C in infancy, the author publishes some results of assays performed upon the liver tissue of infants dying early in life. These data are thought to give additional and much-needed information concerning the actual amount of cevitamic acid present in the tissues, a quantity which is not measured by the usual blood and urine assays. All the infants examined had been kept exclusively on a diet of pooled pasteurized human milk—a food known to be very poor in vitamin C. The average content of vitamin C in the liver at birth was 38 mg. per Gm., while at 1 to 4 months of age, the content had dropped to an average of 10.8 mg. The author believes that the minimum daily dose of cevitamic acid should be 20 to 30 mg. for the infant.—T. H. INGALLS. *New Engl. J. Med.*, 218 (1938), 872; through *Abbott Abstract Service*, (1938), No. 327. (F. J. S.)

Vitamin C—When to Add, to Diet of Feeding Infant. Vitamin C is not usually added to the diet of artificially fed infants until the second or third month of life, and the author quotes various authorities who recommended this age as the proper one for beginning such supplementation. It is well recognized that breast milk contains fairly adequate amounts of vitamin C, and it is also known that pasteurized cow's milk is rather inadequate in this respect. The author determined the amount of ascorbic acid in the blood of a series of artificially fed infants before the diets had been supplemented with vitamin C to determine whether the poverty of vitamin C in their diet would be reflected in the blood level as compared with the blood level of "normal" infants. It was found that a normal two-weeks-old infant has a blood level of 1.0 mg. vitamin C per 100 cc. of blood. Infants fed for some time on artificial food have levels of 0.4 mg., while longer periods of artificial feeding result in even lower levels of vitamin C in the blood of the infants.—R. L. MINDLIN. *J. Pediat.*, 13 (1938), 309; through *Abbott Abstract Service*, (1939), No. 412. (F. J. S.)

Vitamin D—Effect of, on Growth in Infancy. A previous paper, based on the study of growth rates of 100 infants cared for under carefully controlled conditions of diet and housing, had demonstrated that infants receiving a supplement of approximately 340 units of vitamin D daily in the form of cod liver oil grew at faster rates than averages reported in recent literature. Since cod liver oil contains both vitamins A and D, it was desirable to learn which of these factors was responsible for the observed effect. This could easily be done by substituting viosterol for the cod liver oil. When this was done, it was found that the vitamin A had little effect upon linear growth, while vitamin D had a considerable effect. The optimum amount of vitamin D was 340 to 600 units daily; amounts considerably lower or considerably higher than this figure did not show so marked an effect upon growth. Growth during the first 8 weeks of life may be affected by factors other than dietary regimen, and this period was not included.—P. C. JEANS

and G. STEARNS. *J. Pediat.*, 13 (1938), 730; through *Abbott Abstract Service*, (1939), No. 419. (F. J. S.)

Vitamin E Activity—Synthetic Compounds with. In order to determine the specificity of vitamin E activity, the authors investigated a large number of simple and complicated synthetically prepared compounds (for example, duroquinone and pseudocumohydroquinone and a series of ethers of these compounds) qualitatively for their vitamin E activity. In this way they found that a relatively large number of these compounds when administered orally relieved the reabsorption sterility symptoms produced in the female rats by vitamine E deficiency. A final decision on the question of the specificity of vitamin E activity did not yet appear possible, but the authors could demonstrate that the effect on the course of pregnancy ascribed to vitamin E in female rats could be produced by structurally differing synthetic compounds, a fact which has not yet been observed for the other known vitamins.—F. WERDER and T. MOLL. *Z. Physiol. Chem.*, 254 (1938), 39; through *Scientia Pharm.*, 9 (1938), 102. (M. F. W. D.)

Vitamin E—Simple Method of Concentrating. A vitamin E concentrate potent in doses from 3 to 7.5 mg. has been prepared by the elimination of substances insoluble in methanol at dry ice temperature from the unsaponifiable fraction of wheat germ oil. The technic of preparation and the method of assay are described.—C. G. MACKENZIE, J. B. MACKENZIE and E. V. MCCOLLUM. *Pub. Health Reports U. S. A.*, 53 (1938), 1779; through *Brit. Med. J.*, 4064 (1938), 1126H. (W. H. H.)

Vitamin E—Synthesis of. The racemic compound recently synthesized by the authors from trimethylhydroquinone and phytyl bromide, which gave vitamin E activity in a dose of 6 mg., has been resolved into its optically active isomers. Determinations of the m. p., mixed m. p. and $[\alpha]_D$ in alcohol, of the bromo-camphorsulfonates, confirm the identity of the synthetic compound with α-tocopherol.—P. KARRER, H. FRITZSCHE, B. H. RINGIER and H. SALOMON. *Nature*, 141(1938), 1057; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 137. (F. J. S.)

Vitamin P—Critical Study of. A series of biochemical assays and both human and animal experimentation forced the recognition of vitamin P in the general cycle of vitamins. Pure hesperidin and two commercial preparations of vitamin P have been studied. Clinically and spectroscopically these preparations do not appear to be identical with vitamin P as described by Hongrois and in particular by Szent-Gyorgyi. Their biological action is very limited if one compares it with vitamin C. In the animal one notes an antitoxic action from preparations of vitamin P, which, when combined with vitamin C, appear to be more antitoxic. But the importance of these results is decreased by the inconstance of the various doses of this product necessary to reproduce obtained results. Clinically, the commercial preparations utilized which appeared to have a certain efficacy have lacked hesperidin, another substance of the biologically active flavin group.—H. LOTZE. *Deut. med. Wochschr.*, 64 (1938), 447; through *Presse Méd.*, 91 (1938), 179. (W. H. H.)

Vitamins—Formation of, by Yeasts. Xylose yeast (*Torula utilis*) was examined for vitamins B_1 and B_2, using rats as the experimental animals. The dried yeast contained, per Gm., 8 International units of B_1, that is, about one-tenth the vitamin B_1 of good dried brewers' yeast. About 10 International units of B_2 were found, which is about the same quantity of B_2 as is found in good brewers' yeast. These experiments show that *Torula utilis* is able to synthesize both B_1 and B_2.—A. SCHEUNERT and M. SCHIEBLICH. *Biedermanns Zentr.* (B.), 9 (1937), 173–177; through *Chimie & industrie*, 40 (1938), 156. (A. P.-C.)

Wine—Clarification of, by Casein. Casein (0.25 Gm./liter) is recommended as clarifying agent.—R. MARTIN. *Rev. vit.*, 84 (1936), 381–387; through *J. Soc. Chem. Ind.*, 11 (1938), 1351. (E. G. V.)

ANALYTICAL

Adrenalone Hydrochloride—Determination of the Content of Adrenalone in. Adrenalone HCl ("Adrenonhydrochloride") cannot be titrated directly with 0.1*N* sodium hydroxide and phenolphthalein in dilute solutions. Under such conditions the base is precipitated. The sharp end-point obtained when stronger solutions are used depends on precipitation of the adrenalone base. The results are thus dependant on concentration, and tend to be too low. Full precipitation of the base may be expected at about p_H 8 (the isoelectric point); *e. g.*, after addition of sodium bicarbonate. The precipitated base can be separated, dissolved in 0.1*N* hydrochloric acid and the

latter backtitrated with 0.1*N* sodium hydroxide to p_H about 4.3. The following analysis method is proposed: 0.2–0.3 Gm. adrenalone HCl is dissolved in 20 cc. water, 0.50 Gm. sodium bicarbonate is added and the solution repeatedly shaken. After 10 minutes the precipitated base is filtered off, washed with 50 cc. of water and dissolved in 10.00–15.00 cc. of 0.1*N* hydrochloric acid. Back titration is with 0.1*N* sodium hydroxide (indicator: bromphenol blue) to definite blueing of color. 1 cc. of 0.1*N* hydrochloric acid is equivalent to 0.02176 Gm. anhydrous adrenalone HCl.—F. REIMERS. *Dansk Tids. Farm.*, 12 (1938), 233. (C. S. L.)

Antimony—Determination of Small Quantities of, in Tartar Emetic Spray Residues. The stain method devised by Shelton and described by Scott (*Standard Methods of Chemical Analysis*, 4th Edition, rev., page 2, D. Van Nostrand) is modified and simplified with reference to both apparatus and procedure. Addition of stannous chloride (as required by Scott) and of potassium iodide (as used in the Gutzeit arsenic test) are unnecessary and interfere with the development of the stain. Soaking the stained paper in gold chloride solution is unnecessary; it may be helpful when permanent stains are desired, but for quantitative work permanent standard stains are of no value. The character of the stains is so easily affected by various factors that standards must be prepared each time under exactly the same conditions as are used for the unknown values. When the zinc is too fine (30 mesh or finer), the stains are abnormally pale, have no sharp end-point, and are otherwise inconsistent. When lead ions are present in the generator, better and more consistent stains are obtained. Pentavalent antimony can be transformed into stibine without being previously reduced to the trivalent state. Antimony from tartar emetic can be recovered from vegetable material ashed at 550° C. Quantities of arsenic such as may be found in C.P. reagents do not interfere with the determinations, but appreciable quantities will interfere. The method is suitable for determining 0.025 to 0.150 mg. of antimony, and the aliquots should be adjusted to fall approximately within these limits.—JEHIEL DAVIDSON, GEORGE N. PULLEY and C. C. CASSIL. *J. Assoc. Official Agr. Chem.*, 21 (1938), 314–318. (A. P.-C.)

Antipyrine—Detection and Determination of, in Pyramidone. Use is made of the reaction between antipyrine and $HgCl.NH_2$ (cf. Oliveri-Mandalà, *Chem. Abstr.*, 15, 3086) in warm aqueous solution, after cooling, potassium iodide is added to the filtrate and the solution titrated with 0.1*N* iodine. Pyramidone does not react under these conditions.—F. MONFORTE. *Ann. chim. applicata*, 28 (1938), 170–173; through *Chem. Abstr.*, 33 (1939), 3065. (F. J. S.)

Anusol Suppositories and Suppositoria Contra Hæmorrhoides—Analysis of. A method is described for the analysis of "Suppositoria contra Hæmorrhoides" which gives satisfactory results. An examination of "Anusol Suppositories" showed that they changed both externally and in composition, so that this specialty can hardly be called a constant product. The composition of "Suppositoria contra Hæmorrhoides" probably closely approximates that of the "Anusol Suppositories" now on the market; in every case much more so than the suppositories obtained as described in "Voorschriften van Specialites (1937)" and the three German articles mentioned in the paper. Analyses and composition are described.—H. J. VAN GIFFEN. *Pharm. Weekblad*, 75 (1938), 354. (E. H. W.)

Arsenic—Detection of, by Hypophosphorous Reagents. The different reagents used in the detection of arsenic are critically reviewed. The following reagent is recommended: Calcium hypophosphite 125 Gm., hydrochloric acid 1000 Gm., calcium iodide 80 Gm. The test is carried out as follows: Eight cubic centimeters of the reagent is added to 4–5 cc. of the aqueous arsenical solution. The reaction may be carried out in the cold when the mixture being tested may be altered by the presence of strong acid. At 20° C. a brown turbidity is produced in twenty seconds if 0.2 mg. of arsenic trioxide is present. After one minute the reaction is intense. By observing the final mixture along the long axis of a tube and comparing it with a standard the reaction will detect 0.004 mg. of arsenic trioxide. If 3–4 mg. of selenium is present, iodine is liberated and a heavy reddish brown precipitate is formed in two seconds. With amounts less than 3 mg. of selenium a reduction very much like that with arsenic, with respect to rapidity, occurs, but a yellowish rose color is produced. With tellurates and tellurites, the latter being more active, a gray black precipitate is formed under the same conditions as for selenium. With quantities less than 0.3 mg. the precipitate formed is a pale rose.—J. LANGLOIS and C. MORIN. *Bull. sci. pharmacol.*, 45 (1938), 482–492. (S. W. G.)

Arsenic—Determination of, in Bismuth Salts. Report is made of some work with the Gutzeit method as modified in U. S. P. X and XI. Eight samples of bismuth subcarbonate were

tested by both methods. Results are tabulated and discussed. U. S. P. X modification gave better results than U. S. P. XI but the whole subject is in need of further study.—M. W. CAREY, R. A. KONNERTH and R. E. SCHOETZOW. *J. Am. Pharm. Assoc.*, 28 (1939), 83. (Z. M. C.)

Arsenic Compounds—Determination of the Arsenic Content of, with Potassium Persulfate and Sulfuric Acid. The following method has been devised for the determination of arsenic in organic arsenicals: 0.2 Gm. of the arsenical is dissolved in 10 cc. concentrated sulfuric acid; the mixture is heated to boiling and after twenty minutes, 3–6 Gm. potassium persulfate are added. (The persulfate is added in divided portions while cooling.) When all the potassium persulfate has been added, the reaction mixture is heated to boiling for three minutes and then allowed to cool, and added (quantitatively) to 100 cc. water. 2 Gm. potassium iodide are added and after a half-hour, the liberated iodine is titrated with 0.1*N* sodium thiosulfate solution.—K. BRAND and E. ROSENKRANZ. *Pharm. Zentralhalle*, 79 (1938), 591–592. (N. L.)

Arsenical Compounds—Semi-Micro Method for the Rapid Colorimetric Determination of. A method is described, applicable to the determination of either mineral or organic arsenic compounds, based on the intense yellow color of colloidal sols of arsenic trisulfide. The optimum conditions of formation of the colloid are based on the relatively stable sols obtained in the presence of gelatin and in a solution containing considerable hydrochloric acid. The quantity of arsenic present should be 0.1 to 1.0 mg. Organic matter, if present, is destroyed by treatment with nitric and sulfuric acids in special flasks which permit work with only 1 cc. of acid. Reduction of arsenic pentoxide to arsenic trioxide is done with hydrazine sulfate. Cations which interfere with the reaction are listed, and methods are given for separating arsenic in such cases. These methods are based on either preparation of a mixed precipitate of arsenic and lead sulfides, or on formation of arsenamide, which is collected over potassium permanganate solution. Neither lead nor manganese modify the color or impede the formation of the colloidal arsenic sulfide. Colorimetric determination is effected in a comparator with a series of tubes prepared simultaneously.—F. GAUDY and M. P. ANTOLA. *Anales asoc. quím. argentina*, 25 (1937), 76–80; through *Chimie & industrie*, 40 (1938), 236. (A. P.-C.)

Ascorbic Acid—Volumetric Determination of. A critical study of the methods for determining ascorbic acid. The iodate method is preferably applied in a neutral or slightly acid solution, as under these conditions the reaction is quantitative.—R. INDOVINA and F. MANFROI. *Ann. chim. applicata*, 28 (1938), 347–353; through *Chem. Abstr.*, 33 (1939), 2928. (F. J. S.)

Boric Acid—Detection and Determination of, by Means of Turmeric in Strongly Acid Solutions. When turmeric solution is added to concentrated hydrochloric acid, the mixture is red at first; as the solution is diluted with water, the red color gradually changes to yellow, If to the diluted solution some boric acid is added, the reverse color change from yellow to red takes place. The color change is more sensitive in strong hydrochloric acid solutions, but for colorimetric estimation a more dilute hydrochloric acid is preferable. The test for boric acid can be made on a glass plate or in a small test-tube. In the former case mix 1 cc. of the solution to be tested with 1 cc. of concentrated hydrochloric acid. Take 1 drop of the solution on a glass plate and mix with 0.1 cc. of aqueous turmeric solution. As little as 1α of boric anhydride can be detected. The change in color varies with the boric acid content so that by comparison tests a satisfactory colorimetric determination can be made. The effect of other ions on the test was studied. Fluoride tends to prevent the reaction, but 0.04 mg. of boric anhydride can be detected in the presence of considerable fluoride. Oxidizing agents interfere by destroying the dyestuff. Any considerable quantity of titanium, zirconium, molybdenum or tungsten interferes since these also give color reactions with turmeric although there is no danger of mistaking their color effects with that obtained in the boric acid test as outlined above.—H. SCHÄFER. *Z. anal. Chem.*, 110 (1937), 11–18; through *Chimie & industrie*, 40 (1938), 33. (A. P.-C.)

Calomel—Estimation of, in Compound Cathartic Pills. The official A. O. A. C. iodometric method for the determination of mercurous chloride in tablets (presumably other than the official tablets of calomel or calomel and soda) should be restricted to tablets of comparatively simple composition. A modified gravimetric sulfide method is described and has been found to give acceptable results for the determination of mercury in mixtures of mercurous chloride and plant drugs. The method consists essentially in extracting the finely powdered sample in a Caldwell crucible successively with warm alcohol, ethyl oxide, dilute acetic acid, alcohol and ethyl oxide; shaking the air-dried residue with a measured volume of Br_2 aqueous; acidifying an aliquot of clear

solution with sulfuric acid, boiling off excess bromine, adding excess potassium permanganate, destroying the excess potassium permanganate with hydrogen peroxide and the excess of the latter in turn with very dilute potassium permanganate or by boiling two to three minutes; filtering, washing, saturating the combined filtrate and washings with hydrogen sulfide, and weighing mercuric sulfide as usual.—J. D. CURPHEY, F. A. ROTONDARO and D. M. TAYLOR. *J. Assoc. Official Agr. Chem.*, 22 (1939), 118–121; through *Chem. Abstr.*, 33 (1939), 3072. (F. J. S.)

Cannabis, Sativa—Panama, Chemistry and Pharmacology of. The dry herb *Cannabis sativa* shows an ash content of 12.3% which is composed of 16.35% acid insoluble ash, 7.21% P_2O_5, 62.20% CaO and 3.07% iron. The extraction of 300 Gm. of dry drug with 5% hydrochloric acid yielded some wax-like material but no paraffin-like substances and no alkaloids. The extract resembled coumarin in odor. No ethereal oil could be separated by steam distillation and extraction of the steam distillate with ether. The odoriferous principle does not appear to exist in the free state in the plant. The marc remaining after the acid extraction was then macerated with 95% alcohol for 5 days and the alcohol extractive concentrated *in vacuo* to yield 4.8% of a dark resinous mass. A sample of cannabis on extraction with ether gave a green solution which contained only chlorophyll and no phytosterol. Extraction of this marc with 95% alcohol gave a green solution which contained chlorophyll and a little cannabis resin. When the marc was extracted with 5% HCl, there was obtained a brown extract with the odor characteristic of the previous acid extract. The presence of phytosterol, the odoriferous principle and larger amounts of cannabinol indicates that the HCl splits the constituents of the drug. Pharmacologic studies on the resin showed that its activity is low, and the fatigue symptoms do not go over into true sleep.—L. S. MALOWAM. *Arch. Pharm.*, 276 (1938), 150. (M. F. W. D.)

Carijo and Barbacua Maté—Chemical Differentiation of. The steam distillation of maté dried by the primitive carijo method, importation of which is prohibited in Argentina, has a high ultraviolet fluorescence and contains phenols which give azo dyes and a positive Millon reaction. Some permitted samples of maté also give these reactions and the method is not recommended.—A. JACOBACCI. *Industria y quím.*, 2 (1938), 106–107; through *J. Soc. Chem. Ind.*, 57 (1938), 1500. (E. G. V.)

Cellulose—Measurement of the Apparent Fluidity of Dispersions of, in Cuprammonium Solution. The importance of the cuprammonium fluidity test for the indication of fundamental change in cellulose, particularly in the earlier stages of degradation, is quite generally recognized. Without special equipment and technic, however, the test is difficult to perform. It is the object of this paper to describe relatively simple equipment and technic found practical for measurement of the apparent fluidity of dispersions of cellulose in cuprammonium solution. Directions are given for the preparation and storage of the cuprammonium solution; for the construction and calibration of viscometers; for the dispersion of cellulose in the cuprammonium solution; and for the measurement of the fluidity of the dispersion. Some of the difficulties which arise in precise measurements are indicated, and data illustrating the duplicability of results are presented.—R. T. MEASE. *J. Research National Bur. Standards*, 22 (1939), 271. (F. J. S.)

Cerate Oxidimetry. The potentiometric titration of the oxalate and arsenite ions in perchloric acid solution using perchlorato cerate solutions in perchloric acid has been made. A potential break of 650 and 600 mv., respectively, was obtained and nitro-ferroin is shown to have a color transition point at the halfway interval of both potentiometric inflections. The determination of the oxalate ion under the conditions indicated has the advantage over permanganate and sulfato cerate that the reaction can be carried out at room temperature. The determination of the arsenite ion in perchloric acid solution with osmic acid as a catalyst and perchlorato cerate solutions as oxidant is more satisfactory than the corresponding determination in sulfuric acid solutions using sulfato cerate as oxidant. Sodium oxalate, arsenious acid and standard ferrous sulfate (standardized indirectly against oxalate) give concordant results in evaluating perchlorato or nitro cerate solutions. Nitro-ferroin (nitro-*o*-phenanthroline ferrous complex) has been used for the first time as an oxidation-reduction indicator. Its use in the case of perchlorate and nitro cerate oxidations is practicable because of the high potential relationships involved in these cases. The transition from the reduced to the oxidized form of nitro-ferroin was found to be approximately 1.25 volts.—G. F. SMITH and C. A. GETZ. *Ind. Eng. Chem., Anal. Ed.*, 10 (1938), 304–306. (E. G. V.)

Chemical Incompatibility. Difficult to mix benzoate of soda with calcium chloride without precipitation. May be accomplished with large amounts of solvent, each salt being dissolved separately. Also note the water of crystallization in calcium chloride, whether 2 or 6 molecules of water, and regulate solution accordingly.—EMILIO A. DEL CARLO. *Rev. Farm. Argentina*, (Nov. 1937); through *Tribuna farm.*, 5 (1937), 153. (G. S. G.)

Didymocarpus Pedicellata—Constituents of. II. Comparative Studies in the Constitution of Pedicin, Isopedicin, Pedicinin and Pedicellin. Investigations in the constitution of coloring matters of *Didymocarpus pedicellata*, reported in the earlier communication, were carried out chiefly by studying their behavior toward caustic soda, permanganate, nitric acid and bromine. As a result of these studies they have been established as derivatives of chalkone and benzal-coumaranone. Pedicellin has been shown to be 2:3:4:5:6-pentamethoxychalkone, pedicin to be 5:6-dihydroxy-2:3:4-trimethoxychalkone, pedicinin to be 3:5:6-trihydroxy-4-methoxybenzal-coumaranone and isopedicin to be 5-hydroxy-2:3:4-trimethoxy-benzylcoumaranone. Incidentally, it has been brought out that these coloring matters are not allied to duniine as suggested by Robinson in a recent note on the coloring matter of *Streptocarpus Dunii*, Mast.—VISHWANATH SHARMA and SALIMUZZAMAN SIDDIQUI. *J. Indian Chem. Soc.*, 16 (1939), 1. (F. J. S.)

Drinking Water—Titration of the Calcium and Sodium Combination in. The titrimetric alkali determination in drinking water after Wagner-Kionka following the method of Tillmans and Neu, gave unreliable results in the hands of the authors. The deviations could not be explained from the calcium contents of the tap waters no more than from the erroneous manner in which Tillmans and Neu calculate their blank-titer ciphers. The authors have therefore further investigated the foundations of the titrimetric alkali determination including particularly the following sources of error: the alkali content of the reagents; the combination of alkali with the precipitates; the incomplete precipitation of the $BaCO_3$ and the titration error involved by titrating to pT = 4.47. The authors describe two new methods which have given good results in the hands of various investigators.—J. F. REITH and MISS A. LOOYEN. *Pharm. Weekblad*, 75 (1938), 690. (E. H. W.)

Drug Ash—Composition of. In this paper, the qualitative compositions of the ashes of twelve common drugs are stated: quebracho wood, pernambuco wood, guaiacum wood, sassafras wood, red sandalwood, sagrada bark, Russian frangula bark, Chinese cinnamon, Ceylon cinnamon, condurango bark, oak bark and pomegranate bark. Methods for detecting Sn, V, U, Ga, Mn, Cb, Ta and B are described.—L. ROSENTHALER. *Mikrochemie*, 25 (1938), 5–8; through *Chem. Abstr.*, 33 (1939), 1442. (F. J. S.)

Dusts—Study of Fate of, in the Body. VIII. Approximate Determination of Traces of Carbon in Tissues. The gravimetric determination is not satisfactory for small amounts of carbon. The principal causes of error are variation in weight of the filter in the course of the procedure, and the insoluble organic residue of the tissues. The following procedure is recommended: Heat the sample (1 to 3 Gm. of lamb's lung) on a boiling water bath with a mixture of 3 cc. of hydrochloric acid, 1.5 cc. of sodium hydroxide solution, and 4 cc. of 0.2% aqueous potassium permanganate solution. Cool, transfer and wash the fatty cake on an ordinary filter paper. Place the fatty material in a large test-tube, add 20 cc. of alcohol and 4 cc. of hydrochloric acid, then boil the mixture for two hours. Filter the suspension through a Gooch crucible provided with a disc of filter paper, using suction. Wash the residue with alcohol until the filtrate comes through colorless, then by means of a jet of alcohol transfer the residue to a tube containing 20 cc. of alcohol and 4 cc. of concentrated sodium hydroxide solution and boil for 15 minutes. Allow to cool to room temperature, filter through the same disc of paper, using suction, and wash the residue as above using alcohol, acidified water and again alcohol. Allow the paper disc, to which the carbon adheres, to dry, then compare with standard discs. The standards used were prepared with the same vegetable charcoal as that used in the assays. Photographs of results with 1 mg., 0.5 mg. and 0.2 mg. are given. The charcoal was added to the sample of tissue used in the assay. Results obtained with different tissues taken from rabbits that had charcoal administered intravenously are tabulated.—E. KAHANE and C. MISSBACH. *J. pharm. chim.*, 29 (1939), 101–111. (S. W. G.)

Ecgonine—Microchemical Identification of. One per cent aqueous solutions and 1% solutions in 0.5*N* HCl were used for the microchemical reactions given for ecgonine $C_9H_{15}NO_3$. (1) In the case of both solutions the drop remains clear upon the addition of platinic chloride. When a saturated solution of NaI is then added, black, right-angled prisms 0.010 to 0.040 mm. are

formed. A few six-sided prisms and diamond-shaped plates are formed upon further standing. The reaction is sensitivity in a 0.1% solution in acid. (2) Gold chloride yields a clear drop with either solution but upon the addition of a saturated solution of NaBr and warming, a crystalline product is formed consisting usually of four-sided, right-angled prisms, red to brown in color, 0.005 to 0.015 mm. in size and exhibiting dichroism. They are weakly anisotropic. Smaller prisms are then formed which exhibit strong double refraction. The reaction is sensitive in 0.2% solution. (3) Mercuric chloride, especially in acid solution, yields four-sided crystals tending to form four-sided conglomerates. They are weakly anisotropic and vary from 0.025 to 0.080 mm. in size. The reaction takes place in the cold. (4), (5) Neither potassium ferrocyanide nor potassium ferricyanide gave precipitates. (6) Dragendorff's reagent gives a brown precipitate with both solutions consisting, in the acid solution, of black and brown six-sided plates from 0.005 to 0.030 mm. in size which are followed upon standing, by thin six-sided plates up to 0.130 mm. in size. The crystals show no double refraction. Oily drops only are obtained in the neutral solution. (7) KOH yields no precipitate. (8) Crystals are obtained with picrolinic acid upon the addition of a drop of 90% alcohol but these are not characteristic. The above reactions show a similarity to those obtained with betaine, but there are distinct differences in the reaction products which serve to differentiate ecgonine from betaine. Sketches of the crystals are given.—F. AMELINK. *Pharm. Weekblad*, 75 (1938), 861. (E. H. W.)

Elixir of Three Bromides N. F. VI—Assay of. The present assay determines only total bromide. An investigation was undertaken to devise a method that would give the amount of each bromide. An adaptation of Caley and Foulk's method, using magnesium uranyl acetate as precipitating agent was used. Amounts of ammonium, potassium and sodium bromides were calculated after using the general procedure for determination of ammonium bromide and total bromine. The estimation of potassium bromide yields results in good agreement with the theoretical.—SAMUEL W. GOLDSTEIN and WILLIAM F. REINDOLLAR. *J. Am. Pharm. Assoc.*, 28 (1939), 85. (Z. M. C.)

Ergot Alkaloids. IV. Method for Analysis of Fluidextract of Ergot. The method of separation of ergot alkaloids (*Ibid.*, Paper III, page 272) was applied to assay of fluidextract of ergot, with removal of interfering color substances. Method: (1) By perforation with ether at p_H 4 only the ergotoxine group alkaloids were extracted. The color substances extracted into the ether were removed by shaking with phosphate buffer at p_H 9.2, then the ergotoxine alkaloids were transferred to tartaric acid and determined colorimetrically. (2) The aqueous remainder from the initial ether extraction was made alkaline with ammonia, then perforated with ether, extracting the ergometrine quantitatively. The ether remained uncolored as the color substances went into the first extract. The ergometrine was transferred to tartaric acid solution and the color developed and measured in the usual way. Tests cited show the reliability of the method in four determinations on the same fluidextract.—S. A. SCHOU and M. TÖNNESEN. *Dansk. Tids. Farm.*, 12 (1938), 279. (C. S. L.)

Ergot Preparations. III. Method of Analysis of Mixtures of Ergotoxine and Ergometrine. Separation and determination of ergometrine and ergotoxine was based on the distribution ratios of the two alkaloids between water and ether at proper p_H. The two alkaloids were isolated and determined separately by colorimetry. Method: (1) To 20 cc. of aqueous or aqueous-alcoholic solution of the ergot alkaloids was added 30 cc. of a buffer solution to obtain p_H 4. By perforation with ether for 4 hours the ergotoxine was extracted. The extract (about 100 cc.) was shaken 6 times, each time with 10 cc. of 1% tartaric acid. The combined tartaric acid extracts were heated on the water bath to drive off ether and made to volume (100 cc. or to obtain about 15–20 mg. ergotoxine per 100 cc.). 1 cc. of this solution was mixed with 2 cc. of dimethyl-aminobenzaldehyde reagent and the color measured in the step photometer. (2) The aqueous solution remaining in the perforator (containing the ergometrine) was made decidedly alkaline with ammonia and perforated for 8 hours with ether. The ether solution (about 100 cc.) was shaken 3 times, each time with 10 cc. of 1% tartaric acid. The total tartaric acid extract was heated on the water bath to drive off ether and made to suitable volume (50–100 cc.), then measured by colorimetry as above. Tests cited show the quantitative nature of the separation.—S. A. SCHOU and M. TÖNNESEN. *Dansk. Tids. Farm.*, 12 (1938), 272. (C. S. L.)

Fluorides—Titration of Small Quantities of, with Thorium Nitrate. I. Effect of Changes in the Amount of Indicator and Acidity. A study was made of the following thorium nitrate

titration method: Place 40 cc. of sample solution in a 50 cc. Nessler tube; prepare a blank tube with distilled water; add to each tube 1 cc. of 0.01% aqueous solution of alizarin red, and mix; to the sample tube add twentieth-normal sodium hydroxide dropwise with mixing until its color just matches that of the blank which is faintly pink (neutral); to each tube add exactly 2.00 cc. of twentieth normal hydrochloric acid, mix well; from a 10-cc. burette (graduated in 0.05 cc.) add thorium nitrate solution (0.25 Gm. $Th(NO_3)_4.12H_2O$ per liter of water, exact strength not important) to the sample tube until, after mixing, the color barely changes to faint pink; note carefully the amount added and add exactly the same amount to the blank, and mix; into the blank (now more highly colored than the sample tube) run sodium fluoride solution (0.01 mg. of fluorine per cc.) from another 10 cc. burette till the colors of the two tubes match (after dilution to the same volume); mix well, and allow air bubbles to escape before making the final color comparison; check the end-point by adding 1 or 2 drops of the sodium fluoride solution to the blank, when a distinct color change should develop; the fluorine content of the sample tube equals the amount added to the blank tube. The comparison made between the additions of thorium solution dropwise and all at one time showed that the resultant color of the lake is practically the same in both cases. Variations in the acidity of the solution to be titrated for fluorine caused: (1) varying size of the blank, (2) varying titer of the thorium solution and (3) errors approximately proportional to the change in p_H and the amount of fluorine present. A suitable p_H range (2.5 to 3.0) is suggested for titrations of quantities up to 50 mg. of fluorine.—DAN DAHLE, R. U. BONNAR and H. J. WICHMANN. *J. Assoc. Official Agr. Chem.*, 21 (1938), 459–467. (A. P.-C.)

Fluorides—Titration of Small Quantities of, with Thorium Nitrate. II. Effects of Chlorides and Perchlorates. The presence of chlorides and perchlorates introduces into the thorium nitrate titration of fluorine a positive error, the size of which varies with the amount of salts present and with the amount of fluorine to be determined. The use of the Hoskins-Ferris buffer does not eliminate this salt error. Correct results can be obtained if the neutralization of the distillate is avoided; the following procedure is suggested for titration without neutralization: Determine the acidity of 40 cc. of distillate by titration with twentieth-normal sodium hydroxide, using alizarin red as indicator; to another 40-cc. aliquot of distillate add enough twentieth-normal hydrochloric acid to make the total acidity equal to 2 cc. of twentieth-normal acid per 40 cc., and determine fluorine by the "back titration" procedure described in the preceding abstract. The cause of high acidities in the distillates from the Willard-Winter distillation with perchloric acid was investigated. A procedure is suggested for eliminating such high acidity by distilling below 140° C. and by shielding the flask by resting it on an 8″ by 8″ pad of transite or asbestos with a hole about 2″ in diameter made to fit the flask perfectly. A possible development of a microtitration is indicated.—DAN DAHLE, H. J. WICHMANN and R. U. BONNAR. *J. Assoc. Official Agr. Chem.*, 21 (1938), 468–474. (A. P.-C.)

Formaldoxime as Color Reagent for Some Metals. Formaldoxime is a readily attainable reagent, useful and sensitive for the detection of various metals. Methods are given by which metals may be detected in the presence of one another, and also by which they may be determined quantitatively. A special colorimetric method for the determination of manganese is recommended, in connection with which various applications have been worked out.—G. H. WAGENAAR. *Pharm. Weekblad*, 75 (1938), 641. (E. H. W.)

Hydrocarbons—Separation of, of High Molecular Weight by Adsorption on Silica Gel. Data are presented on the separation of different types of hydrocarbons of high molecular weight by adsorption on silica gel. A sharp separation of 5-(7-tetrahydronaphthyl)-docosane from 5-(2-decahydronaphthyl)-docosane, and *n*-dotriacontane from 1-(*p*-diphenyl)-octadecane was obtained. Some separation of 1-(*p*-diphenyl)-octadecane from 5-(7-tetrahydronaphthyl)-docosane was found, but the separation was not so sharp as with the two preceding mixtures. No separation of a mixture of *n*-dotriacontane and 5-(2-decahydronaphthyl)-docosane was found. The capacity of 20 Gm. of silica gel to adsorb preferentially the more aromatic components of these mixtures was found to be 1.8, 3,3 and 0.8 Gm., respectively, for the first three mixtures listed above.—C. B. WILLINGHAM. *J. Research National Bur. Standards*, 22 (1939), 321. (F. J. S.)

Iodide and Bromide—Volumetric Oxidation of, by Periodic Acid. Potassium metaperiodate, KIO_4, can be purified readily so as to have a theoretical composition and may be used as a primary standard in iodimetry. The determination of an iodide must be carried out in a neutral

solution. The iodide is oxidized to iodate by the addition of an excess of periodate, the latter being determined by titration with a standard arsenite solution. Iodine is liberated and the reaction must be carried out in a closed vessel. Periodic acid oxidizes bromide in acid solution to bromine. The reaction goes to completion only if the bromine is removed by bubbling air through the solution. The excess periodate may then be titrated to determine the bromide.—H. H. WILLARD and L. H. GREATHOUSE. *J. Am. Chem. Soc.*, 60 (1938), 2869. (E. B. S.)

Isopropyl Alcohol—Detection of, in Tinctures and Spirits. In the examination of spirits (brandy, whiskey, etc.) for isopropyl alcohol it is essential to treat the distillate twice with medicinal charcoal before applying the reaction of Böhm and Bodendorf or Wührer, in order to eliminate troublesome materials. In the case of other alcoholic liquids, previously raised before the examination to about 40% alcohol, a single treatment suffices.—J. DEININGER. *Süddeut. Apoth.-Ztg.*, 79 (1939), 31–32; through *Chem. Abstr.*, 33 (1939), 2652. (F. J. S.)

Lead—Determination of Traces of. A collaborative investigation was made of the determination of lead in "stripping" solution from sprayed fruit (to which possible interfering substances had been added) by means of the colorimetric dithizone procedure (using either a photometer or Nessler tubes) and checking the results electrolytically either directly or after a dithizone extraction (if manganese was found present). The amount of silica which can be tolerated in the determination is about 50 mg. per 1400 Gm. of fruit; in the presence of normal amounts of the alkaline-earth metals, much more may be tolerated. Interference from silicates in the colorimetric dithizone method is therefore extremely unlikely; in any event, the analyst is always warned by the appearance of a mineral precipitate in his tubes, and can so choose his aliquot as to limit this interference. Direct electrolytic results in absence of manganese were, on the whole, satisfactory. In presence of manganese, where dithizone extraction was necessary, results tended to be slightly low, undoubtedly due to the influence of the silicates present in large amount; increase in the amount of citric acid used might be of some help. Zinc does not seem to cause serious interference in either method in the amounts that are likely to be present; cases where zinc has been reported to interfere are ascribed to the use of old potassium cyanide solution that had suffered deterioration. No interference occurs from sulfur when nitric acid is used for acidification of the alkaline stripping solution. Removal of interferences as outlined in the present tentative A. O. A. C. method is laborious; large amounts of iron and tin and about 80% of the bismuth can be removed without loss of lead by precipitating with cupferron directly in the acid solution of the ash and extracting with ether. The use of hydroxylamine hydrochloride to prevent oxidation of dithizone aids alkaline dithizone extraction of lead, and the use of 2 to 5 cc. of a 1% solution of the salt is recommended whenever oxidation of dithizone, due either to iron or organic oxidants, occurs. The predominant cause of deterioration with both chloroform and carbon tetrachloride solutions of dithizone is heat. Dithizone solutions in chloroform will keep almost indefinitely if stored in an ice box. No known method of preserving chloroform solutions involving the use of sulfite, hydroxylamine, etc., has proved of any value, but sulfurous acid has been found to aid in the preservation of carbon tetrachloride solutions of dithizone. It is expected that carbon tetrachloride may be substituted for chloroform in the "mixed color" dithizone method for lead, provided photometric methods are used, but not if visual methods are used. In the present A. O. A. C. method either hydrochloric or nitric acid may be used for rinsing the fruit and for acidification of the alkaline stripping solution; in most instances hydrochloric acid is used because a Gutzeit arsenic determination can be run directly on an aliquot of the filtrate used for the colorimetric lead determination. If within two or three weeks of spraying with lime-sulfur, analyses are made by the colorimetric dithizone method using hydrochloric acid for acidification, low lead results are obtained; after longer periods, no serious repression of lead results was noted, presumably due to oxidation of the lime-sulfur complex. No such interference occurs when nitric acid is used for acidification, and it is unnecessary to heat the filtrate. Hydrochloric acid may be retained in the rinse, and a rapid approximate Gutzeit arsenic determination may still be run on a further aliquot of the strip solution after acidification with hydrochloric acid, as the repression of arsenic does not seem to be as serious as that of lead. Hydrogen sulfide interference may be serious in the arsenic determination in only a few instances, and these should be detected by an odor of hydrogen sulfide in the filtrate or an undue blackening of the scrubber of the Gutzeit generator. So far as lead is concerned, there is no objection to the slight mixing of hydrochloric and nitric acids resulting from the use of a hydrochloric rinse and nitric acidification. Low results may sometimes be obtained

by the direct electrolytic method on aliquots of the acidified and filtered strip solution where excessive amounts of organic material have been incorporated in the dipping procedure; such trouble may sometimes arise either as the result of careless trimming of the fruit, or in the analysis of "mushy" fruit. Abandonment of the direct electrolytic procedure in favor of electrolysis after dithizone extraction is recommended, which in addition would render unnecessary the testing of the apple filtrate for manganese.—P. A. CLIFFORD. *J. Assoc. Official Agr. Chem.*, 21 (1938), 212–220. (A. P.-C.)

Lead—Rapid Simple Method for the Determination of, in Small Quantities of Urine. A sample of urine is divided into two portions and one is "deleaded" as in the usual dithizone method. After addition of reagents a known quantity of lead is added to the "deleaded" sample until colors match. An accuracy of 6% was obtained over a range of 0.05 to 0.75 mg. of lead per liter of urine. Results of 300 tests check previous accepted methods and this procedure can be carried out in an hour.—D. O. SHIELS. *J. Ind. Hyg. Toxicol.*, 20 (1938), 581–588; through *Chem. Abstr.*, 33 (1939), 2928. (F. J. S.)

Lithium—Determination of. Numerous tests on the determination of lithium in a mixture of chlorides of magnesium and the alkalies showed that the determination as fluoride, as phosphate or as triple acetate was likely to give erratic results. In one case only 39% of the true value was obtained. Attempts to determine lithium as aluminate were also very unsatisfactory at first and in one case over twice the true value was obtained. By working in the cold and at p_H 12.5 to 13 it was eventually found possible to get results within 1% of the truth when working with 0.1 Gm. of lithium carbonate. To prepare the reagents dissolve 50 Gm. of potash alum in 900 cc. of hot water, cool and add a concentrated solution of 20 Gm. of sodium hydroxide until the aluminum hydroxide which is precipitated redissolves in excess sodium hydroxide. Allow the mixture to stand over night and then adjust, if necessary, to the desired p_H. To carry out an analysis, make the p_H of the unknown solution about 3; add, for each mg. of lithium probably present, 40 cc. of the cold reagent; then, by adding a few drops of sodium hydroxide solution, again bring the p_H to 12.6 and filter after the solution has stood for a little while; wash the precipitate by decantation with cold water and then on the filter until the last portion of filtrate is no longer alkaline to phenolphthalein; ignite and weigh as $2Li_2O.5Al_2O_3$.—H. GROTHE and W. SAVELSBERG. *Z. anal. Chem.*, 110 (1937), 81–94; through *Chimie & industrie*, 40 (1938), 33. (A. P.-C.)

Magnesium—Determination of, in Biological Materials. Interference of Manganese. Existing methods of precipitating magnesium either as magnesium ammonium phosphate or as magnesium hydroxy quinolate are inaccurate in the presence of as little as 0.001 Gm. of manganese in 100 cc. of solution. The authors outline a method of eliminating this interference from the magnesium ammonium phosphate precipitation prior to the indirect determination of magnesium by a colorimetric determination of the phosphorus in the purified magnesium ammonium phosphate. Following the precipitation of magnesium and manganese as the mixed ammonium phosphates in a suitable centrifuge tube, the precipitates are centrifuged, decanted and washed once with Holzapfel's reagent (580 cc. of 96% alcohol, 320 cc. of water, 100 cc. of amyl alcohol and 30 cc. of concentrated ammonia). The precipitate is dissolved in 1 cc. of $N/1$ sulfuric acid and neutralized with 0.5 cc. of $2N$ sodium hydroxide. A few crystals of sodium acetate are added and the tube placed in a boiling water bath for a few minutes, mixed by rotation of the tube and oxidized with 0.75 cc. of bromine water. The tube is returned to the water bath for 7 to 8 minutes, a further 0.75 cc. of bromine water added and the mixture heated for a like period again. The manganese is converted to its insoluble hydrated oxide. After cooling in ice water the mixture is treated with 1 cc. of strong ammonia water followed by 1 cc. of 5% ammonium hydrogen phosphate, mixed and allowed to stand over night. The precipitate is washed by centrifuging and the phosphorus is determined in the usual manner. The manganese hydroxide is soluble in the molybdic acid used and does not interfere with the Fiske-Subbarow method.—J. DUCKWORTH and W. GODDEN. *Analyst*, 63 (1938), 805. (G. L. W.)

Malic Acid—New Method of Determination of. The method is based on the production of 1 mol. of acetaldehyde from 1 mol. of malic acid by mild potassium permanganate oxidation, quantitative yield of acetaldehyde being obtained by operating under appropriate conditions. A continuous distillation apparatus is used in which the permanganate solution is introduced drop by drop through a capillary tube. The amount of malic acid in the portion taken for analysis must be small (suitably 0.05 to 2 millimolecular equivalent), and the volume of the solution is brought to

about 100 cc. The solution must be buffered and have a p_H of about 3.2, which is suitably obtained by adding 10 to 20 cc. of a concentrated buffer solution containing 150 Gm. of potassium dihydrogen phosphate and 5 cc. of syrupy phosphoric acid per liter. Oxidation must be very slow, suitably by adding 1 drop per second of a one-hundredth or two-hundredth normal permanganate solution, and is catalyzed by a few mg. of manganese sulfate (*e. g.*, 1 cc. of a 50 Gm. per liter solution). Boiling must be brisk and should be regulated with a few pieces of pumice. Under these conditions a 98 to 99% recovery is obtained. Acetaldehyde can be determined by the method of Jaulmes and Espezel, or by adding an excess (at least 100%) of iodine to the alkaline (about half-normal) solution of malate, letting stand 15 minutes, acidifying and titrating the excess iodine with hundredth-normal sodium thiosulfate. Possible interference from ethanol and (probably) its esters, lactic acid, (perhaps) glyceric acid, glycolic acid, glycerol and certain sugars can easily be avoided by suitable precipitation treatments; moreover, the yields of acetaldehyde (or formaldehyde) obtained by oxidizing these compounds at a p_H of 3.2 are small or nil. Oxidation of tannins, anthocyans and pectins does not produce aldehyde under the above-specified conditions. Under the specified oxidation conditions citric acid yields acetone. Malic and citric acids can be determined in presence of each other as follows: oxidize, as specified above, and make the distillate to definite volume; on half the distillate determine acetaldehyde + acetone iodometrically; in the remainder of the distillate oxidize acetaldehyde with permanganate at room temperature (the solution should be half-normal in sulfuric acid and tenth-normal in permanganate), after 45 minutes reduce the excess permanganate with ferrous sulfate, distil the acetone (which is unaffected under these oxidizing conditions), determine iodometrically to obtain the citric acid content, and calculate malic acid by difference. Oxidation of tartaric acid under the above specified conditions gives rise to the formation of some acetaldehyde, proportionately about one-fifth that produced by malic acid; if the amount of tartaric present is large, the proportion can be reduced by neutralizing with barium hydroxide and filtering after standing for 24 hours. In presence of tartaric acid, malic acid is determined as described above, and the result is corrected for the amount of acetaldehyde produced by the amount of tartaric acid, which must be determined separately.—E. PEYNAUD. *Ann. fals.*, 31 (1938), 332–347. (A. P.-C.)

Medicines—Contribution to the Examination of. VI. The following are offered as changes or additions to the Ergänzungbuch: (1) *Carbon Tetrachloride.*—The specific gravity should be 1.593–1.598. Values for temperatures from 10–25° C. are offered. (2) *Magnesium Boro-Citrate.*—A solution of this salt in water (1 + 19) shows a p_H of 4; also 1 Gm. in 9 Gm. water upon heating should show no evolution of carbon dioxide. *Test for Tartaric Acid in the Salt.*—Dissolve 1 Gm., after acidifying with acetic acid, in 5 Gm. water and add 1 cc. of potassium acetate; the solution should remain clear after prolonged shaking. (3) *Determination of the Ester Number of Menthyl Valerianate.*—Weigh about 2 Gm. in a small flask and heat for 6 hours on a boiling water bath; after cooling, add 1 cc. of phenolphthalein and back titrate with 0.5*N* hydrochloric acid and calculate the ester number according to the German Pharmacopœia. Evaporate to dryness 10 cc. of the titrated liquid on the water bath until the residue no longer has the odor of menthol. After the overlayering of the residue with dilute sulfuric acid, the odor of valeric acid appears. (4) *Identification Test for Migranin.*—Shake 0.5 Gm. with 1 cc. of alcohol for a minute in a test-tube, allow to set for a time, pour off the liquid carefully and add to the residue 10 drops of hydrogen peroxide solution. After shaking, pour off the contents of the tube into a small evaporating dish and rinse with 10 drops of the peroxide solution, add to the united solutions 2 drops of hydrochloric acid and evaporate on a water bath. A yellow-red residue remains and this becomes purple-red upon the addition of a little ammonia. (5) *Decolorized Tincture of Iodine.*—The following formula is recommended: Iodine 10 parts, sodium thiosulfate 10, water 35, alcoholic ammonia solution 15, alcohol 50; dissolve the iodine with the sodium thiosulfate in 10 parts of water and add the alcoholic ammonia. After a short time, while shaking, the solution decolorizes, add the alcohol and allow to stand three days in a cool place and filter; add the remainder of the water. If a precipitate settles out filter before dispensing. (6) *Dried Zinc Sulfate.*—If the product has been dried at 100° C. the formula is $ZnSO_4.1H_2O$. The remainder of water is lost at gentle heating (about 200° C.). Description and test are given.—KONRAD SCHULZE and ERHARD SCHOLZ. *Deut. Apoth. Ztg.*, 53 (1938), 1245–1247. (H. M. B.)

Mercury—Determination of Traces of. Nitric acid can be freed from mercury by distillation over concentrated sulfuric acid. Sulfuric acid, reducing agents and neutral salt solutions can

be freed from mercury, if necessary, by dilution with water (1:10) and extraction with dithizone. It was confirmed that organic matter inhibits the extraction of mercury from dilute acid solution with dithizone. Concentration of mercury with a minimum of organic matter was studied. Of three precipitation methods tried, the most satisfactory consisted in addition of powdered metal, the best of which was zinc, optimum precipitation conditions being in dilute hydrochloric acid solution at a p_H of about 1 to 2; the zinc reacts partially with the acid under these conditions, forming what appears to be an oxychloride, which assists in collecting the precipitated mercury. When applied to nitric acid extracts of leafy vegetables containing added mercury, the method showed 100% recovery. It is essential to keep the zinc in a fine state and to prevent it from adhering to the bottle. The precipitate is filtered off, dissolved in nitric acid and oxidized with potassium permanganate to destroy organic matter. Isolation of the mercury can be effected more rapidly and more satisfactorily by extracting from the nitric acid with an excess of dithizone solution, removing from the dithizone by extraction with 1.5% sodium thiosulfate solution, oxidizing with permanganate and destroying the excess of the latter with hydroxylamine hydrochloride. A study was made of a modification of Fischer's comparative method (*Z. anal. Chem.*, 103 (1935), 241) and a photometric method similar to, or adapted from, that of Clifford and Wichman for lead (*J. Assoc. Official Agr. Chem.*, 19 (1936), 130). The comparative method showed an accuracy approaching 1γ. With the photometric method, it is not possible in the actual treatment of a sample to arrive at the point of determination, with the mercury in a plain sulfuric acid solution; most satisfactory results seem to be obtained using hydroxylamine hydrochloride as reducer.—W. O. WINKLER. *J. Assoc. Official Agr. Chem.*, 21 (1938), 220–228. (A. P.-C.)

Methyl Alcohol—Determination of. The authors recommend the following method for the quantitative determination of alcohol: To 5 cc. of the diluted alcoholic solution (containing not more than 2.5 mg./cc.) is added 4 cc. of a potassium permanganate-phosphorus pentoxide mixture (prepared by dissolving 3 Gm. potassium permanganate in 100 cc. water and adding 10 cc. of 5 *N*-phosphorus pentoxide solution. After standing ten minutes, 2 cc. of an oxalic-sulfuric acid mixture (containing 10 Gm. oxalic acid dissolved in 100 cc. water and 100 cc. concentrated sulfuric acid) is added and the mixture is allowed to stand an additional three minutes, after which 3 cc. of a sulfurous acid-fuchsin solution is added and then allowed to stand at 15°. After one hour, the per cent of methyl alcohol is read on a step-photometer.—O. ANT-WUORINEN and E. KETONEN. *Z. Untersuch. Lebensm.*, 74 (1937), 273; through *Pharm. Zentralhalle*, 79 (1938), 564. (N. L.)

Moisture in Oilseeds—Rapid Determination of, and Their Products. A horizontal, forced draught, jacketed oven (modified Carter-Simon apparatus) for series tests, and an alternative simpler unit for single tests (which may also be used as a controlled temperature hot plate for the determination of water in oils), are described for use in a rapid method, which requires only 15 minutes drying time for a 10-Gm. sample and yields accurate results to within 0.25% and agreeing with those obtained in a Freas oven at 105–110° after $1^1/_2$ hours. Devices to simplify the technic of weighing, etc., for unskilled operators are described.—E. FREYER. *Oil and Soap*, 15 (1938), 236–239; through *J. Soc. Chem. Ind.*, 11 (1938), 1322. (E. G. V.)

Nicotinic Acid—Colorimetric Estimation of, as Applied to Commercial Liver Extracts. *Preparation of Test Solution.*—Two cubic centimeters of liver extract is accurately pipetted into 18 cc. of purified alcohol and the mixture heated to 50° C. with stirring and kept at 50° C. for five minutes. The solution is filtered through a small Whatman filter paper. The filtrate, which is very slightly yellow, is used as the test solution. *Procedure.*—Ten cubic centimeters of the test solution is evaporated on the water bath just to dryness and then dissolved in 4 cc. of *N*/1 hydrochloric acid, heated in a boiling water bath for ten minutes, cooled and then 4 cc. of *N*/1 sodium hydroxide added. This solution, which is then transferred to a test-tube and washed in with distilled water up to 10 cc., contains all the original nicotinic acid and hydrolyzed nicotinamide. With some liver extracts considerable darkening occurs during hydrolysis. An aliquot portion of the hydrolyzed solution or test solution, which is found by trial to give a suitable color, is taken and made up to 3 cc., so that the proportion of alcohol and water is 1:2. Six cubic centimeters of cyanogen bromide is added, followed by 1 cc. of 4% aniline, mixing after each addition. The color is allowed to develop to a maximum and read in the Lovibond Tintometer, using a 10-mm. cell. This reaction is not specific for nicotinic acid, as it is given by other pyridine compounds. The adsorption of nicotinic acid and its amide by various charcoals has been demonstrated and the use of charcoals for decolorization is, in the authors' opinion, definitely open to criticism. The

results obtained show that the nicotinic acid content of commercial liver extracts varies within very wide limits. The probable causes for this variation may be the inefficient extraction from the original liver, or varying extraction by some solvent such as alcohol used for precipitation, or some other purpose. The importance of clinical workers specifying the brand of liver extract used by them is emphasized.—G. E. SHAW and C. A. MACDONALD. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 380–390. (S. W. G.)

Novocaine—A Test for Determining, in the Presence of Cocaine. Since smuggled cocaine is often adulterated with large quantities of novocaine it was necessary to provide government officials with a test for determining novocaine in the presence of cocaine. A satisfactory test consisted of using gold chloride to precipitate both substances and then adding hydrochloric acid which dissolved the novocaine gold chloride compound but not the cocaine gold chloride compound. The test was said to work in the presence of other adulterants.—K. N. BAGCHI, H. D. GANGULI, P. N. MUKERJEE and J. N. BANERJEE. *Indian Med. Gaz.*, 74 (1939); through *J. Trop. Med. Hyg.*, 42 (1939), 122. (W. T. S.)

Ointment of Mercuric Nitrate—Assay of Strong. The following method is recommended: Weigh out about 2 Gm. of the well-mixed ointment into a 250-cc. flask, add 10 Gm. of potassium hydroxide pellets, 2 Gm. of zinc dust, 10 cc. of water and 10 to 20 cc. of industrial methylated spirit, and fit the flask to a reflux condenser of the usual Liebig type. Boil the mixture over a very small flame for fifteen minutes and cautiously add down the condenser tube a mixture of 3 cc. of solution of formaldehyde and 50 cc. of water. Raise the solution just to boiling and remove the flame. Filter off the hot soap solution through a paper pulp filter in a Gooch crucible, using suction, wash the amalgam with water by decantation, transfer the wad of paper pulp to the flask, which is then re-fitted to the condenser. Pour down the condenser tube 20 cc. of water, followed gradually by 20 cc. of nitric acid. Wash the tube with a little water, remove the flask from the condenser and dissolve the mercury by gently boiling. Transfer any traces of metal adhering to the Gooch crucible to the flask by means of a few drops of nitric acid. Remove the greater part of the nitrous fumes by heat, cool the solution thoroughly, oxidize with permanganate, and decolorize with a drop of solution of hydrogen peroxide. Titrate with $N/10$ thiocyanate, using ferric ammonium sulfate solution as indicator.—G. J. W. FERREY. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 431–436. (S. W. G.)

Organic Acids—Determination of, in Silage Extracts and Bacterial Cultures. After careful sampling, moisture and total nitrogen in the dry matter is determined. Portions of 100 Gm. of fresh material are shaken 3 to 4 hours with 200 cc. of carbon dioxide-free water and an aqueous extract obtained by squeezing through muslin and filtering. The p_H of this extract is important in evaluating the quality of the silage. At values below p_H 4.5 there is usually more lactic acid present than volatile acids and undesirable butyric acid is practically absent. The ratio of amino acids to volatile bases is greater than unity and increases with increase in acidity. Above p_H 4.5, the amount of volatile acids rises rapidly, butyric acid predominating; the production of bases increases and the amino acids decrease. The aqueous extract (60 cc.) is diluted to 200 cc. with neutral 90% alcohol and filtered to remove proteins and coloring matter. Ten cc. of this filtrate (A) is diluted with 40 cc. of 90% alcohol and the total acidity titrated with $N/10$ sodium hydroxide (B) using phenolphthalein indicator. Another portion of 50 cc. of A is neutralized with five times B and the solution steam distilled for about 6 to 7 minutes, collecting the distilled volatile bases and alcohol in standard acid. The excess acid is determined by titration with standard alkali (alizarin indicator) and the amount of volatile bases determined. The residue left in the still is alkaline due to the amino acids present in A. Titration of this residue is a measure of these amino acids. Good silage contains more amino acids than volatile bases. Lactic acid may be estimated at about 85% of the total present by making from 5 to 25 cc. of A alkaline with a small excess of sodium hydroxide and evaporating to about one-third of its original volume. Neutralize with sulfuric acid and dilute to about 100-cc. in a 200-cc. flask. Add 0.5 cc. of 20% hydrated copper sulfate and heat to 46° to 47° C. Add 9.5 cc. of the copper solution and maintain at 47° for 10 minutes. Add 10 cc. of a 30% suspension of calcium hydroxide and dilute to 201 cc. with warm water. Maintain the temperature, shake occasionally for 10 minutes and filter. Neutralize a definite volume of filtrate with sulfuric acid in a distilling flask and dilute to 50 cc. with a solution of manganous sulfate and phosphoric acid of such concentration that the diluted solution is $M/10$ phosphoric acid and 1% manganous sulfate. Connect the still so that the condenser dips

into a cooled solution containing 10 cc. of $N/20$ sodium bisulfite solution, heat the contents of the distilling flask to boiling and add, dropwise, a $N/300$ solution of potassium permanganate. Boil for 15 to 30 minutes until the still contents are permanently yellowish brown. Add an excess of $N/40$ iodine solution to the bisulfite-distillate mixture and titrate the excess of iodine with $N/100$ sodium thiosulfate solution. Carry out a blank determination of the bisulfite solution. 1 cc. of $N/100$ iodine = 0.00045 Gm. of lactic acid. The lactic acid found by this procedure is multiplied by the empirical factor 1.17 to obtain the lactic acid in the sample of filtrate A.—A. M. SMITH. *Analyst*, 63 (1938), 777. (G. L. W.)

Parachlorometaxylenol—Determination of, in Antiseptic Solutions. Considerable interest is now being shown in non-poisonous antiseptic solutions having high Rideal Walker Coefficients. These solutions consist essentially of a high powered antiseptic agent in soap solution to which essential oils are added to produce the final pleasant clean note. One of the most widely used of these active compounds with the high R. W. Coefficient is parachlorometaxylenol and Merritt and West have recently published a method for its determination in these solutions. The method involves the conversion of the phenol into its sodium salt, removal of the volatile alcohols by distillation and the essential oils by extraction with petroleum spirit. The soap is then removed as its calcium salt when the parachlorometaxylenol, liberated from the treated solution with hydrochloric acid, is extracted with ether. Finally, the crude phenol is dissolved in a small quantity of sodium hydroxide and precipitated with carbon dioxide and weighed after drying in a vacuum desiccator. The method would not be applicable if essential oils containing phenols were included in the formula but considering the oils available for this purpose, this is unlikely.—ANON. *Perfumery Essent. Oil Record*, 29 (1938), 462. (A. C. DeD.)

Photometer in the Pharmacy Laboratory. The estimation of antipyrine, hydrogen peroxide and tannic acid is described and illustrated graphically in their various preparations.—FRESENIUS. *Süddeut. Apoth.-Ztg.*, 78 (1938), 977–979; through *Chem. Abstr.*, 33 (1939), 2652. (F. J. S.)

Prontosil Album—Microchemical Identification of. The author offers the following reactions for the identification of *p*-aminobenzolsulfanilimide. (1) A wooden match stick soaked in an acid solution of sulfanilimide dries orange-yellow. The stick is decolorized when held in ammonia vapors. This preliminary test serves only as a matter of orientation, as sulfanilic acid also gives the reaction. (2) With platinum chloride, especially in $0.5N$ HCl, convex lens-shaped crystals appear upon warming and scratching. These are light yellow in color, 0.030 to 0.250 mm. in size and exhibit oblique extinction. The crystalline product is freely soluble. Upon the addition of a saturated solution of NaBr and warming, beautiful six-sided prisms are formed which vary in size from 0.015 to 0.070 mm. These grow larger upon standing. The crystals show parallel extinction and additive colors in the long direction. The reaction is sensitive in a 0.2% solution. (3) Picric acid soon forms yellow needles in the cold with saturated aqueous solutions. These usually assume a star-shaped arrangement which may cover the entire field. They exhibit strong double refraction, show parallel extinction and exhibit additive colors in the long direction. The reaction is sensitive in 0.5% solutions. (4) Picrolinic acid yields prisms and needles in neutral solutions after warming strongly and scratching. These occur in sheaves or in a star-shaped arrangement and are followed by light yellow, lens-shaped, rounded prisms which are strongly double refractive, many showing oblique extinction and a few parallel extinction. They occur up to 0.130 mm. in size. The reaction is sensitive in 0.5% solutions. None of these reactions is given by sulfanilic acid. (5) When a drop is exposed above bromine water, a white precipitate forms in the 0.1% solution (the solution should be acid). Under low magnification this precipitate exhibits a tangle of crooked needles, mostly branched. Under higher magnification these branching crystals appear as leafy prisms, 0.030 to 0.050 mm. in size. They exhibit weak birefringence. Sulfanilic acid gives a similar white precipitate but does not form well-defined crystals. The wood-stick reaction may be used as an orientation reaction. As identification reactions the brom-platinate, the picrate and the picrolinate serve best. Several sketches of the crystals are given.—F. AMELINK. *Pharm. Weekblad*, 75 (1938), 851. (E. H. W.)

Pyrethrum Flowers (Chrysanthemum Cinerariæfolium)—Chemical Evaluation of. Five established methods for determining pyrethrin are compared. Discrepancies between values for pyrethrins I and II were notably greater than those for total pyrethrin content.—J. T. MARTIN. *J. Agr. Sci.*, 28 (1938), 456–471; through *J. Soc. Chem. Ind.*, 57 (1938), 1499. (E. G. V.)

Quinine Content of Quinine Salts--Determination of, in Drug Mixtures. The acidimetric procedure of Pharm. Hung. IV is suitable for quinine sulfate even in mixtures of drugs. Presence of organic acids (*e. g.*, phenylcinchoninic, acetylsalicylic acids and salts) disturbs the method.—F. SZEGHO. *Magyar Gyógyszerésztud. Társaság Értesitője*, 14 (1938), 646-649; through *Chem. Abstr.*, 33 (1939), 1877. (F. J. S.).

Selenium—Determination of Traces of. The weight of sample taken has no significant effect on the results obtained. A comparative study made of a number of digestion procedures showed that several, though not all, are equally satisfactory; a simplified nitric-sulfuric-mercuric oxide digestion procedure was developed. The use of the starch indicator in the volumetric determination of selenium by reduction of selenious acid with sodium thiosulfate is quite satisfactory for amounts of selenium above 5γ; the data indicate that, with a given concentration of reagents and with a burette of specified size, the deviation over a definite range is fairly constant; and consequently the % error of the determination is inversely proportional to the amount of selenium measured. The strength of the titrating solutions to be used is judged by the amount of selenium present for measurement, which can be estimated roughly from the appearance of the selenium precipitate on the filter pad. The digestion procedure developed and the volumetric determination with starch indicator are described in detail.—A. L. CURL and R. A. OSBORN. *J. Assoc. Official Agr. Chem.*, 21 (1938), 228-235. (A. P.-C.)

Selenium—Microchemical Detection of. $SeO_3^=$ in 2 *N* hydrochloric acid gives first a red and then a reddish violet color with 1% $NPh_2.NH_2$ in glacial acetic acid; limiting sensitivity 0.05×10^{-6} Gm. SeO_2. Selenium, selenides and $SeO_4^=$ are first converted into $SeO_3^=$. Iodates, chlorates, permanganates, etc., and peroxides must be destroyed by warming with hydrochloric acid, while Fe^{+++}, Cu^{++}, tungstates and molybdates are converted into complex oxalates by boiling with HCl + $H_2C_2O_4$. $TeO_3^=$ and $TeO_4^=$ give no reaction, and 0.001% selenium can be detected in 20 mg. of sulfur or tellurium. Sulfides and selenium minerals are attacked by heating with concentrated hydrochloric acid and perhydrol.—F. FEIGL and V. DEMANT. *Mikrochem. Acta*, 1 (1937), 322; through *Squibb Abstr. Bull.*, 11 (1938), A-744. (F. J. S.)

Silver—Volumetric Determination of Small Amounts of, in Body Tissue or Fluid. The organic matter is first destroyed by means of sulfuric acid with a small amount of copper sulfate and nitric acid. Igniting to remove organic matter would cause a volatilization of part of the silver present. The silver present as silver sulfate is centrifuged and washed, and hydrochloric acid added which converts the silver sulfate to silver chloride. The silver chloride is also centrifuged and reduced by boiling with CH_2O (10% solution in potassium hydroxide) to silver. The silver is then dissolved with nitric acid and determined by the Volhard method. In this way amounts of silver down to 0.1 mg. are determined to within 1-5% or better.—A. CURATOLO. *Atti accad. Lincei. Classe sci. fis., mat. nat.*, 28 (1938), 42-45; through *Chem. Abstr.*, 33 (1939), 2928. (F. J. S.)

Spirit of Camphor—Assay of. Study of the assay process of spirit of camphor shows that it and also the method of preparing the dinitrophenylhydrazine reagent are unsatisfactory. Results of Plein and Poe are confirmed and what is thought to be a better procedure described. The dinitrophenylhydrazine reagent is stabilized with methyl alcohol, the time of refluxing is considerably reduced and the yield of dinitrophenylhydrazone increased.—O. GISVOLD. *J. Am. Pharm. Assoc.*, 28 (1939), 142. (Z. M. C.)

Spot Tests for Testing Drugs. II. New Tests for Amines with Particular Attention to *p*-Phenylenediamine. A very sensitive test for primary and secondary amines can be based on the formation of colored Schiff bases with furfural or with *p*-dimethylaminobenzaldehyde. Place a little of the substance in a very small crucible and moisten with 2 drops of a solution of 10 drops of furfural in 10 cc. of glacial acetic acid or in the saturated solution of *p*-dimethylaminobenzaldehyde in glacial acetic acid. In most cases it is necessary to heat carefully to dryness and moisten the residue with a few drops of acetic acid. If an amine is present a characteristic coloration is obtained. The results obtained with over 50 amines are tabulated. In only a few cases no coloration was obtained. By means of these tests an approximate estimation of the quantity of amine present can be obtained. Dimethylaminobenzaldehyde can also be used to test for protein. Moisten a little of the sample to be tested with two drops of the saturated solution of the reagent in acetic acid and add 1 drop of concentrated hydrochloric acid. If protein is present a violet coloration is soon noticeable.—O. FREHDEN and L. GOLDSCHMIDT. *Mikrochim. Acta*, 1 (1937), 338-353; through *Chimie & industrie*, 40 (1938), 110. (A. P.-C.)

Sulfanilamide—Microscopical Identification of. The melt between slide and coverglass as well as the crystals obtained by recrystallizing from water on a slide and those obtained with 10% I_2-NaI solution serve to identify sulfanilamide microscopically. Crystallographic constants and sketches are given.—C. VAN ZYP. *Pharm. Weekblad*, 75 (1938), 585. (E. H. W.)

Temperature Scale—Establishment of, for the Calibration of Thermometers between 14° and 83° K. Seven resistance thermometers (six Pt; one 90Pt:10Rh alloy) have been calibrated on the thermodynamic scale by comparison with a helium gas thermometer. The boiling point of oxygen was taken to be 90.19° K., and computations were made in such a way as to secure continuity between the International Temperature Scale and the scale being established. On the latter scale the triple point of normal hydrogen was found to be 13.96° K. and the boiling point 20.39° K. Tables have been prepared by means of which temperatures corresponding to observed resistances may be obtained by linear interpolation.—H. J. HOGE and F. G. BRICKWEDDE. *J. Research National Bur. Standards*, 22 (1939), 351. (F. J. S.)

Vanillin—Photometric Determination of, in Vanilla Extracts. Pipette 10 cc. of the vanilla extract into a 50-cc. volumetric flask, add 25 cc. of water and 5 cc. of 8% lead acetate solution, and make up to 50 cc. with water. Filter through a dry filter. (If a complete analysis is being conducted, 2 cc. of the clear lead filtrate as prepared for the official gravimetric determination of vanillin and coumarin may be employed.) Pipette 5 cc. of the clear lead filtrate into a 50-cc. volumetric flask and add 25 cc. of 0.167*N* hydrochloric acid. Shake, add 3 cc. of a 0.5% solution (2 cc. are sufficient for lower concentrations) of *o*-iodoxy ammonium benzoate, and fill the flask to the mark with 0.167*N* hydrochloric acid. Shake thoroughly and allow the mixture to stand for exactly 15 minutes. In the meantime prepare in the same manner a reference solution, omitting the reagent. Transfer to 5 mm. photometer cells and read the % of transmission on spectrum filter S43. Filtration of the color complex is not necessary. The method is suitable for use with the Pulfrich photometer and with the Cenco-Sanford-Sheard photelometer. In concentrations of 10 to 70 mg. per liter, the color complex gives a concentration curve with the Pulfrich photometer that closely approximates Beer's law. In this range determinations may be made with an accuracy of 2 to 3%. Coumarin and other constituents normally remaining in the lead filtrate from vanilla extracts do not interfere.—T. C. DANIELS, B. EMERY and D. PRATHER. *Ind. Eng. Chem., Anal. Ed.*, 10 (1938), 320–321. (E. G. V.)

Veratrum Viride—Assay of. Reference is made to previous work on veratrum. The present work was undertaken to determine suitability, accuracy and reliability of the minimum pigeon emetic dose method for estimating the potency of *Veratrum viride* and to determine whether this method is more suitable than previously proposed assay methods. Experimental work is reported in detail and the report is illustrated by graphs and tables. The sub-titles indicate somewhat the scope: pigeon emesis, minimum lethal dose methods, the relationship between the emetic and the chemical assay, the effect of p_H on the stability of tinctures; the relationship between the pigeon emetic assay and the circulatory effects produced in animals. The minimum emetic dose of tinctures of *Veratrum viride* can be determined with sufficient accuracy for biological assay and the method is simple, quick, economical. Pigeons can be used repeatedly at 14-day intervals. The blood pressure response of cats and dogs was sufficiently consistent to justify use of the method for indicating reliability of an assay for *Veratrum viride*. Potencies of tinctures showed close parallelism by the two methods. Neither greater sensitivity nor tolerance was observed if rest periods were sufficient. Variability is not great enough to necessitate standardization. Minimum emetic and minimum lethal doses are closely parallel, the ratio being 1 to 13. Emetic dose method is more economical. Objections were found to the use of mice, frogs, cats, dogs and rabbits in determining minimum lethal dose. Alkaloidal content does not indicate physiological activity. The alkaloids are not stabilized by a p_H of from 4.87 to 5.57; eight tinctures with p_H adjusted to this range showed variable decreases in their physiological acitivity. Data on pigeon emetic assay justify proposal of a biological standard but it will not be proposed until clinical data are available to establish the relationship of the minimum emetic dose to the therapeutic dose for man.—B. V. CHRISTENSEN and A. P. MCLEAN. *J. Am. Pharm. Assoc.*, 28 (1939), 74. (Z. M. C.)

Zinc—Determination of Traces of. The following method has been developed and is proposed for study. Transfer 0.2 to 0.5 Gm. of finely ground (1 mm.) air-dry material, containing about 0.00001 Gm. (10 p. p. m.) of zinc to a platinum ash dish and incinerate in an electric muffle

below visible redness; take up with 3 to 5 cc. of water and 1 cc. of hydrochloric acid, transfer to a 60-cc. pear-shaped separatory funnel, make to about 25 cc., add 1 cc. of carbamate solution (0.25% of sodium diethyldithiocarbamate in water), 5 cc. of carbon tetrachloride (distilled over anhydrous sodium sulfate) and an excess (indicated by the green color of the carbon tetrachloride) of 0.10% dithizone solution in fiftieth-normal ammonium hydroxide (prepared fresh daily), shake out and discard the solvent layer. To the aqueous solution add 2 cc. of ammonium citrate (dissolve 200 Gm. of citric acid or 220 Gm. of ammonium citrate in water, make alkaline to litmus with ammonia, make to 2000 cc., add excess dithizone solution, shake with carbon tetrachloride, discard the solvent and filter the aqueous layer), 1 cc. of carbamate solution, 1.5 cc. of twice normal ammonium hydroxide, 10 cc. of carbon tetrachloride and an excess of dithizone solution (indicated by the orange color of the aqueous layer); shake out, remove the aqueous layer by suction, wash with 2 10-cc. portions of fiftieth-normal ammonia, and draw off the carbon tetrachloride containing the colored zinc salt into a glass-stoppered weighing bottle. Compare the color in a Duboscq colorimeter, using micro cups and a green color filter against 1 cc. of zinc solution (0.00001 Gm. per cc.) treated in exactly the same manner after the addition of 1 cc. of twice normal hydrochloric acid (prepared from hydrochloric acid distilled into redistilled water). The color of the zinc-dithizone complex is fairly stable, but it should be compared as soon as possible for the best results. A few results are given showing that a satisfactory separation is obtainable.—R. A. CAUGHEY. *J. Assoc. Official Agr. Chem.*, 21 (1938), 204–207. (A. P.-C.)

PHARMACOGNOSY

VEGETABLE DRUGS

Arnica—Inula Viscosa, a False. The authors enumerate the following flowers as being used to adulterate arnica flowers: *Inula Britannica* L., *I. dysenterica* L., *I. salicina* L., *Senecio Doronicum* L. and *Hypochoeris maculata* L. Recently they have found the capitula of *Inula viscosa* Aiton W. which is a very common plant in Algeria, in the Rif and in Tunis and is frequently found in countries around the Mediterranean Sea. A detailed macroscopical description is given of the capitula, the following distinctions being made: ligulate floret, not more than 12 mm. long (arnica 25–30 mm.); disc florets, only 10 mm. (arnica florets 13–15 mm.); pappus bristles shorter and more slender than in arnica; in the fruit the pappus falls leaving a small collerette at the crown of the fruit; the anthers are hastate at the base and the mature ovary is 3 mm. long, whereas in arnica it is 6 to 7 mm. Figures are given of the disc florets of *Arnica*, *Inula viscosa* and *I. dysenterica*, also of some of the finer details of structure mentioned in the paper.—A. JUILLET and J. SUSPLUGAS. *Bull. Pharm. Sud-Est*, 42 (1938), 242; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 785. (S. W. G.)

Bauhinia Reticulata—Analysis of Fruits and Leaves of. The following conclusions are given: *Fruits.*—(*a*) In the pericarp: balsamic extract soluble in acetone, 16%; reducing sugars, 1.1%; saccharose, 2.7%; hydratopectin, 6%. (*b*) In the entire fruit: free *l*-tartaric acid, 1.4%; *l*-tartaric acid combined as potassium acid tartrate, 3.9%; potassium oxide, 1.3%. *Leaves.*—The dried leaves contain free *l*-tartaric acid, 1.5%; *l*-tartaric acid as potassium acid tartrate, 3.0%; *l*-tartaric acid as neutral calcium tartrate, 1.4%; potassium oxide, 0.9%. The leaves and fruits of *B. reticulata* are the only natural source of *l*-tartaric acid, and may yield 40–50 Gm. of acid per Kg. of dried drug.—J. RABATÉ and A. GOUREVITCH. *J. pharm. chim.*, 28 (1938), 386–397. (S. W. G.)

Cacao, Cacao Butter and Chocolate—Standardization of the Methods of Analysis of Powdered. The article is composed of the findings of an International Commission in Europe investigating the cacao bean and its products. Definitions, directions for sampling and grading the beans, and detailed directions for running any of the analyses required for these products are given.—C. ARRAGON. *Pharm. Acta. Helv.*, 13 (1938), 141–157. (M. F. W. D.)

Camphor from Herbs. Cultural methods of *Ocimum canum* Kisi as a source of camphor are discussed; yields of oil from the entire plant are 0.5–0.8% containing about 65% camphor. Results of experimental plantings in the United States are described.—E. G. THOMSSEN. *Drug Cosmetic Ind.*, 43 (1938), 546–549. (H. M. B.)

Cannabis Indica Resin—Active Principles of. Since cannabinol has been shown not to be the pharmacologically active principle of *Cannabis indica* resin, attempts have been made to

isolate the substance responsible for its pharmacological action. Although preparations of *Cannabis indica* induce a characteristic cataleptic condition in dogs, this effect is not suitable as the basis of a quantitative assay. The method used is based on the Gayer test, using rabbits in which corneal anesthesia is induced by the active fractions of the resin, the substances being injected in 0.5 per cent w/v acetone solution. *p*-Nitrobenzoylation of the high boiling pharmacologically active resin from the female flowers yielded crystalline cannabinol *p*-nitrobenzoate and a mixture of resinous esters. Cannabinol is highly toxic and gave a negative result in the Gayer test, while the hydrolytic product from the resinous esters gave a strongly positive reaction and was less toxic than cannabinol. This active material was fractionated by chromatographic absorption on alumina from light petroleum and an oily fraction was obtained showing a positive Gayer test in rabbits in a dose of 0.25 mg. per Kg. of body weight. Since the highly active fraction could not be crystallized, it is considered that this oil does not yet represent the homogeneous active principle.—T. S. WORK, F. BERGEL and A. R. TODD. *Biochem. J.*, 33 (1939), 123; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 299. (F. J. S.)

Drug Mixtures—Contribution to the knowledge of. III. Flores Tiliæ in Counting Procedure. The counting procedure for the study of herb mixtures which in II was tested on fennel seed has been shown to be adaptable to the determination of an index number for linden flowers. The flowers were counted in a standard mixture consisting of 50 Gm. of senna leaves, 25 Gm. of linden flowers and 15 Gm. of fennel seed, and the value compared with those of three adulterated mixtures. It is shown that the mixture index found for the standard tea and also the numbers are significantly increased (from 27 to 52 to 52 to 77) on the addition of 20% of linden flowers and significantly decreased by the addition of only 10% of either senna leaves or fennel seed. In order to test a mixture, the numbers from 25 series of observations are sufficient; this is shown by the agreement of repeated countings on the same mixture and by the definite variations caused by the determination of different mixtures. All of the figures are tabulated. The standard counting area and procedure have been described in the first article of the series.—G. OEHM and L. BLAŽEK. *Arch. Pharm.*, 276 (1938), 125. (M. F. W. D.)

Drugs—Unusual Names for.—FRIDO KORDON. *Wein. Pharm. Wochschr.*, 71 (1938), 193–196. (H. M. B.)

Ephedra—Experiments with, in the Southwest. Attention is directed to necessity for research to determine fundamental facts concerning culture of any drug plant before commercial growing is undertaken. Report is made about what The Bureau of Plant Industry of the Department of Agriculture has undertaken in this direction in connection with mahuang. A definite program involves studies on the following: Changes in ephedrine content of eight species; effect of irrigation and other management practices on ephedrine content and growth rate of four species; rate of growth after cutting various distances from the ground; yield of herb of the several species; relative production of ephedrine per acre as determined by the percentage of alkaloid present and the quantity of herb produced by several of the most promising species, hybrids and selections; and studies on propagation methods and related problems. *E. gerardiana* has shown more than 1% of alkaloid; seedlings of *E. sinica* showed minimum and maximums of 0.96 and 1.30 and 0.99 and 1.31%, respectively. Composite samples from the large plots were much lower. Two hybrids have shown wide variation.—A. F. SIEVERS. *J. Am. Pharm. Assoc.*, 27 (1938), 1221. (Z. M. C.)

Ephedra Sinica—Cultivation of, in South Dakota. Report is made of attempts to cultivate *Ephedra sinica* in order to determine its possibilities as a commercial drug crop. The report is in four distinct parts. Propagation by means of seed and from root stock. Viable seeds of good quality were produced and propagation from seeds works best when seeds are sowed in rows, directly in outdoor plots. It can be propagated from its root stock; stem cuttings did not root. It is estimated that an acre should accommodate 6500 plants. Cultural investigations lead to the conclusion that ephedra is climatically adapted to South Dakota. Mulching is unnecessary; it is essentially a dry land plant and does not thrive in low wet ground. Plants are disease and insect resistant. It is best to grow plants in rows where they can be cultivated until they form a sod when further cultivation is unnecessary. Fruits should be hand picked and after drying, the seeds can be separated or the whole fruit can be used for planting. Stems should be cut in late September or early October. Sun curing is satisfactory. Farm-haying tools serve for harvesting: cutting with a mower, curing in the sun, stacking or baling for shipment. As the stems

mature they become so lignified that other means of cutting may be necessary. An assay method has been worked out and procedure is given in detail. Some peculiarities were encountered and these are taken into account. Four-year stems present the best prospect for commercial production and it seems certain that South Dakota can produce the drug commercially, especially in case of emergency.—B. V. CHRISTENSEN and L. D. HINER. *J. Am. Pharm. Assoc.*, 28 (1939), 199. (Z. M. C.)

Eupatorium—Chinese. The leaves of Chinese eupatorium have been found to contain a toxic principle, resembling coumarin with m. p. of 67° C. On the basis of the dried leaf, 0.34% of a phytosterol was isolated, with m. p. 212–213°. Its acetate melts at 230–231° C. The leaf contains a small amount of alkaloid, tannin and sugar; and, from the fresh leaves, about 1% of a volatile oil was isolated. Extracts prepared according to Couch's method did not give the reactions for tremetol which is believed to be the toxic principle of American eupatorium, nor does the Chinese eupatorium produce acetonuria or marked hyperglycemia.—H. L. LI, C. PAK and B. E. READ. *Chinese J. Physiol.*, 12, 263–280; through *Pharm. J.*, 141 (1938), 580. (W. B. B.)

Insects Injurious to Dried Plants and Drugs. A discussion of the *Coleopteras* and *Lepidopteras* which damage drug stocks. The most obnoxious insects besides the moths with respect to dried plants are given as the *Anobiides*, especially *Stegobium paniceum* and *Lasioderma sericorne*, and the *Ptinides* or *Ptines*. Powdered plants and extracts are attacked by almost all *Coleopteras*. Drugs of animal origin are hosts to the *Dermestes*, especially the *Anthrenes* and *Trogoderms*.—P. LEPESME. *Bull. sci. pharmacol.*, 45 (1938), 352–361. (S. W. G.)

Italian Production. Among the plants grown in Italy whose essential oils are used in the perfumery and liqueur trades, and to some extent for medicinal purposes, are thyme (*Thymus vulgaris*), of which large quantities are distilled in Sicily; *Helychrisum vulgaris;* rosemary (*Rosmarinus officinalis*); basil (*O. basilicum*), now widely cultivated; the aromatic calamus found in the swampy lands of North Italy; the Calabrian and Sicilian acacia; the carnations (*Dianthus caryophyllus*) of Liguria; the pink geranium now extensively cultivated in Calabria and Sicily; lavender, grown in Piedmont, Western Liguria, and the province of Salerno, and now in Calabria; minosa; roses; jasmin; and the bitter orange (Calabria and Sicily); violets; the anise (*Pimpinella anisum*), cultivated more especially in Sicily; myrtle; sage (*Salvia officinalis* and *Salvia sclarea*); peppermint (*Mentha piperita*, Italo-Mitcham), extensively cultivated in Piedmont; the iris (*Iris florentina*) of Florence and Verona; marjoram (*Origanum vulgare*); coriander (*Coriandrum sativum*); and savory (*Satureia horensis*).—ANON. *Perfumery Essent. Oil Record*, 30 (1939), 63. (A. C. DeD.)

Magnoliaceæ—Investigations on the Existence of Cardio-Active Principles in. A systematic study of 15 different species of *Magnolia*, 2 Magnolia bastards, *Michelia fuscata*, *Liriodendron tulipifera*, *Kadsura japonica*, *Drimys Winteri*, *Schizandra chinensis*, *Taluma pumila* and two species of *Illicium* was undertaken. In most cases the bark, and wherever possible, the leaves, flowers and fruits were investigated for cardio-active principles by the frog method and a comparison of relative potencies made. It is evident that in most *Magnolia* species the bark is the chief carrier of cardiac activity, the leaves and flowers possessing only a very small potency, while in *Michelia* and *Talauma* the distribution is reversed and the leaves contain larger amounts of digitaloids than the bark. However, since only one species of each, *Michelia* and *Talauma* was investigated, it is not to be asserted that the distribution of active principles in various genii of *Magnoliaceæ* must be different. The leaves of *Drimys Winteri*, showed the presence of a considerable amount of cardioactive principles while the bark was inactive.—R. JARETZKY and W. LIER. *Arch. Pharm.*, 138 (1938), 138. (M. F. W. D.)

Mandioca—Chemical-Industrial Study of Brazilian. A study was made of mandioca roots, with reference to the industrial value of flour prepared from them. Leaves have no nutritive value. Chemical analysis of mandioca roots, fresh and dry, produces 57% moisture in fresh ones; ash 0.79% in fresh, 1.86% in dry; ether soluble substances 0.38% fresh, 0.90% dry; protein 1.17% in fresh, 1.37% in dry; fiber 0.71% fresh, 1.67% dry; amides 39.32% fresh, 94.20% dry. —FELIX GUIMARES. *Rev. Soc. Brasil. Quim.*, 6 (1937), 160. (G. S. G.)

Olive Oils—Influence of Altitude on the Iodine Number and the Refractive Index of. The iodine number and the n of oils obtained from olive seeds increased with the altitude at which the seeds were collected in about 75% of the cases; oils from mesocarp did not change in the same way

in the varieties examined. The minimum and maximum values found are for mesocarop oils: iodine number 78.83–82.62, *n* 1.4715–1.4740; for seed oils: iodine number 84.86–93.10, *n* 1.4727–1.4760.—P. MANNINI. *Olivicoltore*, 10 (1938); through *Chem. Abstr.*, 33 (1939), 3836. (F. J. S.)

Opium from Sardinia. Analysis of crops from various sections of Sardinia showed morphine content above the prescribed 10%.—G. B. ZANDA. *Arch. farmacol. sper.*, 67 (1939), 29–31; through *Chem. Abstr.*, 33 (1939), 3969. (F. J. S.)

Palisade Ratio—Value of, in Detection of Adulterants in Belladonna Leaf and Stramonium Leaf. The authors show that the palisade ratio provides a very constant character, which may be employed both to distinguish between the leaves of two different species for which the ratios are different and also, in some cases, to detect adulteration in samples of drugs which consist of leaves. The clearing reagent used was a solution of 50 Gm. of chloral hydrate dissolved in 20 cc. of distilled water. The determinations were carried out as follows: Pieces of leaves 2 to 3 mm. square were placed in a test-tube with sufficient chloral hydrate solution to cover them and heated on a water bath for ten minutes. The pieces were then mounted in Berlese Mountant. The drawings were made with the help of a camera lucida. The outlines of four contiguous epidermal cells were traced and the outlines of the underlying palisade cells were then superimposed after adjusting the focus. The total number of palisade cells lying beneath the four epidermal cells was counted. In making this count, those palisade cells of which more than half the area lay under the epidermal cells were included, while those of which more than half the area lay outside the epidermal cells were not counted. The total number, when divided by four, gave the palisade ratio as defined by Wallis and Dewar. Results of tests show that the palisade ratio of belladonna never falls below 6, while for both *Scopolia carniolica* and *Solanum nigrum* it never exceeds this figure; so that the ratio provides a clear distinction in the cases of both of these common adulterants. For *S. anomala* the percentage of determinations less than 6 was 71% and for *S. sinensis* the percentage less than 6 was 50%. Samples of powdered belladonna containing either of these leaves as an adulterant would always give some values of less than 6; and their detection would thus be possible. The palisade ratio of stramonium never falls below 4, while that of *Solanum nigrum* never exceeds this figure. In the case of powdered drugs, a sample may be cleared by heating in a test-tube with chloral hydrate solution on a water bath for three minutes. A drop of the cleared powder may then be transferred to a slide by means of a dipping-tube and mounted in chloral hydrate.—T. E. WALLIS and J. L. FORSDIKE. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 700–708. (S. W. G.)

Quercitrin—Presence of, in Leaves of Bauhinia Reticulata. The separation and identification of the quercitroside are described. The dried leaves contain 0.5% of the rhamnoside of quercitol (quercitrin).—J. RABATÉ. *J. pharm. chim.*, 28 (1938), 435–437. (S. W. G.)

Salicaceæ—Biochemical Studies of. Salix Arbuscula L. The following conclusions are given: The leaves of *Salix arbuscula* contain beside saccharose, a new flavonic heteroside, arbusculoside, the *d*-galactoside of myricetol. The branches contain saccharose and a heteroside which yields on fermentary hydrolysis an intense rose odor. This heteroside, which has not been isolated in a pure state, is probably different from the heteroside isolated from *Salix triandra* which also has a rose odor.—J. RABATÉ. *J. pharm. chim.*, 28 (1938), 443–447. (S. W. G.)

Salix Cæsia Vill. Biochemical Study of the Salicaceæ. The following conclusions are given: The leaves of *Salix cæsia* contain sucrose, a salicoside, and a new glycoside cæsioside having the formula $C_{26}H_{28}O_{15}.3H_2O$. It appears to be a vicianoside of luteolin. The small twigs contain about 1% of the salicoside; the large stems contain about 1.5% of sucrose and a very small amount of the salicoside compared to the amount in the young twigs.—J. RABATÉ. *J. pharm. chim.*, 28 (1938), 478–484. (S. W. G.)

Soya Beans—Cultivation of, in Northern Poland. A review of cultural experiments. Nineteen references.—JAN MUSZYNSKI. *Scientia Pharm.*, 9 (1938), 138–140. (H. M. B.)

Strophanthus Seeds—Microchemical Assay of. The color reaction obtained with sulfuric acid on sections of the different seeds is discussed. The author states that it is not the embryo especially that is colored, as the French Codex indicates, but the albumen. The coloration of the cotyledons is slow and less intense. The change to red at the end of the reaction, as indicated in the Codex, for *S. hispidus* and *S. Kombe* is not obtained. This may cause confusion with the

reaction of *S. gratus* which also does not show the final red color.—R. GIRARD. *Bull. trav. soc. pharm. Bordeaux*, 77 (1939), 23–25. (S. W. G.)

Teas—Pharmacognostic Analysis of. A continuation dealing with the leaves of *Rubus fructicosus* L., *Othisiphon staminei* Benth. and *Mentha aquatica* L.—F. SCHLEMMER and L. HÖRHAMMER. *Deut. Apoth. Ztg.*, 53 (1938), 1273–1274. (H. M. B.)

Teas—Pharmacognostic Analysis of. A continuation of a series of articles dealing especially with the leaves of *Fraxinus excelsior* L., *Malva sylvestris* L., *M. neglecta* Wall. and *Menyanthes trifoliata* L.—F. SCHLEMMER and L. HÖRHAMMER. *Deut. Apoth. Ztg.*, 53 (1938), 1186–1187. (H. M. B.)

Typha Dominguensis—Use of, as Medicinal Plant. *T. dominguensis* Kunth., known in Brazil under the name Tabua contains a large amount of very pure cellulose, and is used in the production of alcohol. The therapeutic properties were first recognized by the farmers of southern Russia. The rhizome is used; but the constituents vary from 5–10%, depending upon whether the soil is clayey or sandy. The principal constituents are: starch, tannin, glucose and cellulose. A small proportion of a heavy oil with an almond-like odor is present. On exposure to sunlight it loses its color; it is soluble in alcohol, less soluble in petrolatum. It contains about 9.25% unsaponifiable matter. The oil has a slight purgative action. Ingestion of 8–10 cc. at one time causes strong colic, vomiting and dizziness; indicating the presence of a toxic substance. A volatile oil, having a yellow color and an odor of Chinese tea was obtained from the rhizome. This oil is soluble in 70% alcohol, and its principal constituent is thymol, which is responsible for the strong anthelmintic properties of the oil. A yellow resin, soluble in ether, alcohol and other organic solvents was obtained from the rhizome.—F. W. FREISE. *Rev. flora med.*, 4 (1938), 521; through *J. pharm. Belg.*, 20 (1938), 651. (S. W. G.)

Waxes and Wax Constituents—Microscopy of. Report is made of an investigation aimed at developing a method for identification and determination of adulterants in commonly used waxes. Details of the experimental work are reported and plates illustrative of the different types of crystals are used. Crystals are obtained by dissolving the wax in a suitable solvent at the solution temperature and cooling to room temperature. Each wax tends to produce at most two types of crystals. In mixtures of waxes some idea of the main constituents present may be obtained.—HARRY TAUB and SAMUEL ZWEIG. *J. Am. Pharm. Assoc.*, 28 (1939), 135. (Z. M. C.)

Wormseed Oil. Wormseed oil comes largely from the State of Maryland. Wormseed is grown on a plant of the *Artemisia* family. Oil from the seeds has been found of value as an anthelmintic in the treatment of hookworm cases, and was used extensively for the purpose in the World War. When the young wormseed plants are about four inches high they are set out in the fields about 18 inches apart and in rows three feet apart. The crop is harvested late in September. The stalks must be gathered by hand because the jar of cutting blades on a mower shakes off the seed. After the material is collected it is subjected to steam distillation for about half an hour in huge iron vats equipped with heavy lids, which are clamped down to form a perfect steam-tight fit. The yellowish colored liquid, mixed with steam and water, pours out of the bottom into pipes which run through long troughs of water to aid condensation. The seeds of the plant produce a burning sensation on contact with the skin and are a constant source of annoyance to the workers. From 30 to 40 pounds of oil to the acre is regarded as a fair average yield. It is shipped in drums of about 120 pounds capacity. A large portion goes into export trade, England being at present the principal customer.—ANON. *Perfumery Essent. Oil Record*, 29 (1938), 309. (A. C. DeD.)

Yellow Mustard—Evaluation of. Estimation of the glucoside sinalbin in yellow mustard flour by extraction with boiling ethanol showed a content of approximately 2.5%. Decomposition of the sinalbin with myrosin, without recrystallization, showed a purity of 82 to 83%; determination of sinalbin on the recrystallized samples showed a purity of 89.09 to 99.96%, which indicates the possibility of evaluating yellow mustard by establishing a check on the amount of isolated glucoside. The recrystallized samples of sinalbin were ash-free, gave water-clear solutions in hot alcohol and cold water, and a melting point of 100° to 102° C. (literature reports are 84° C. for the air-dried and 138° to 140° C. for the oven-dried sinalbin). It is reasonable to assume that the enzymatic hydrolysis does not always go to completion, or that side (if not reversible) reactions might take place, as they evidently do in the enzymatic breakdown of sinigrin, the glucoside of

black mustard.—ARNO VIEHOEVER and WALTER L. NELSON. *J. Assoc. Official Agr. Chem.*, 21 (1938), 488–493. (A. P.-C.)

PHARMACY

GALENICAL

Anesthetic Substances and Blood Salts—Stable Aqueous Solutions of. The salts occurring in the blood are added to an aqueous solution of an anesthetic of the class of the aminobenzoic acid alkamine esters.—EUGEN DÖRZBACH and VIKTOR BROSS, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,132,351, Oct. 4, 1938. (A. P.-C.)

Ascorbic Acid Salts of Histidine—Stable Solutions of. Stable solutions suitable for use in the treatment of gastroduodenal ulcers by injection, are prepared with oxygen-free water and stored in containers freed from air (suitably in nitrogen).—FRANZ ELGER, assignor to HOFFMANN-LA ROCHE INC. U. S. pat. 2,134,246, Oct. 25, 1938. (A. P.-C.)

Bleach Ointment, A. R. P. It would appear that A. R. P. bleach ointment can be prepared according to the official formula by ordinary milling processes in the cold. When stored in small quantity no apparent reaction takes place. Increase of temperature, however, either applied or generated internally when stored in bulk, causes a reaction to take place. There appears to be chlorination of the paraffin base and the ointment loses a considerable amount of available chloine. The ointment is best made in small quantity in the cold, and should be stored in small bulk. It is hoped to investigate further the keeping properties of the ointment under varying conditions of storage.—G. R. MILNE. *Pharm. J.*, 141 (1938), 521. (W. B. B.)

Dithizone Solutions—Some Notes on the Stability of. The most stable solutions of dithizone in chloroform were prepared from fresh U. S. P. chloroform further purified by the method of Biddle; certain precautions to be observed in this procedure are noted. The quality of carbon tetrachloride as a dithizone solvent is likewise improved by Biddle's procedure. Storage of carbon tetrachloride solutions of dithizone in the dark and under a layer of sulfur dioxide-water of about decimolar strength will preserve them almost indefinitely. The preparation of stable dithizone solutions in large quantity eliminates the necessity for frequent restandardization.—P. A. CLIFFORD. *J. Assoc. Official Agr. Chem.*, 21 (1938), 695–703. (A. P.-C.)

Ephedrine in Liquid Paraffin. Three samples of ephedrine alkaloid were examined for their degree of purity as judged by the standards of the Chinese Pharmacopœia, and were all found to contain less than 97% of the pure alkaloid. The results indicate that the hemihydrate, which contains 94.83% of ephedrine, is the form most commonly found upon the market in China. It has been observed that ordinary summer shade temperature in China is sufficient to melt samples of ephedrine to form an irregular mixture of the anhydrous and hydrated material with separation of water. The hemihydrate is stable up to 108° F.; mixed with the anhydrous base it may melt as low as 93° F. During the summer months ephedrine should be stored in a refrigerator. While ephedrine is found at normal pressure to boil at about 260° C. with decomposition, it was found that heated in the air at 124° C. for two hours ephedrine is completely volatile or possibly decomposes. At 100° C. it volatilizes slowly, and gradually even at 50° C. A sample exposed in the air four and a half months at room temperature showed a loss of 33%. In order to make a suitable solution in liquid paraffin it was found that anhydrous ephedrine requires gentle heating at 45° to 100° C. to yield a clear 2% solution stable at room temperature (25° C.). The hemihydrate requires prolonged heating on the water bath to yield a clear 1% solution stable at ordinary room temperature. Such solutions quickly heated over an open flame to 120°, lose 10 to 32% of the alkaloid. In paraffin at 100° the loss of alkaloid in one hour is insignificant.—B. E. READ. *Chinese Med. J.*, 51, 69; through *Pharm. J.*, 141 (1938), 580. (W. B. B.)

Filtration—Positive Pressure. An illustration is given, showing a positive pressure unit designed to render filtration reasonably continuous for quantities larger than 1 to 2 fluidounces. Pressure is applied through a cycle valve into a large reservoir containing the liquid to be filtered. As liquid passes through a Seitz pad, more of the liquid passes over from the reservoir to the filter unit. An air outlet must be provided in the receiver, otherwise filtration will gradually come to a standstill. As the reservoir becomes empty, it can be refilled by closing the tap to maintain the pressure over the filter pad, releasing the pressure in the reservoir by opening the valve, and adding liquid through the funnel, after opening the tap in its stem. On closing the tap and valve,

the pressure in the reservoir can be increased again to its former value, while filtration continues. The maximum pressure in use should be 200 mm. as Seitz pads cannot be regarded as safe against all bacteria at higher pressures.—W. C. WOOD. *Pharm. J.*, 142 (1939), 4. (W. B. B.)

Halibut Liver Oil—Deposit in Cooled. It was observed that when a sample of halibut liver oil was kept in a room at temperatures varying from 10° to 13° C. for several days, a thick deposit was thrown down which disappeared on the application of gentle warmth. Experiments were conducted to ascertain whether the deposit was peculiar to the single sample of oil, or if other halibut liver oils found in commerce gave a similar precipitate. A table is given with the results obtained with four commercial samples of halibut liver oil procured from different sources when kept at a temperature of 4° or 5° C. for twenty-four hours. Deposits were found in two, and not in the other two. It is recommended that halibut liver oil, after extraction, be chilled and filtered to remove any unsightly deposit.—E. A. LUM. *Pharm. J.*, 141 (1938), 439. (W. B. B.)

Hexamethylenetetramine Solutions—Studies on the Sterilization and Stability of. A fairly complete review of the literature on the stability of urotropin solutions and on changes resulting from heat sterilization is given. Using the method for determining formaldehyde in the presence of hexamethylenetetramine developed by the author (*Pharm. Acta. Helv.*, 13 (1938), 132.) it is shown that it is impossible to prepare a solution of hexamethylenetetramine free of formaldehyde, that the amount of the latter present depends upon the amount of heat used in sterilization, and that the formaldehyde and ammonia slowly recombine to form urotropin so that after 6 months, the content of free formaldehyde is almost the same in solutions prepared aseptically or sterilized by Tyndallization at 60°, in steam at 100° or in an autoclave. Solutions containing 10%, 20% and 40% urotropin were assayed for formaldehyde immediately, after 3 hours, 24 hours, 3 days, 8 days, 1, 3 and 6 months. All results are tabulated and graphed. As the concentration of the urotropin increased, the amount of formaldehyde split out, decreased. The changes in p_H of the solutions paralleled the amount of ammonia split out by the various procedures of sterilization. The most acceptable methods for the sterilization of the solutions are: preparing the solutions aseptically, Tyndallization at 60° for 1 hour for 3 successive days and filtration through special filters. Passage through the filter did not increase the hydrolysis of the urotropin. The 40% solution of urotropin sterilized according to the Swiss Pharm. V (steam at 100° for $^1/_2$ hour) is unsuitable for injection because of the presence of too much free formaldehyde. Twenty-five references.—J. BUCHI. *Pharm. Acta. Helv.*, 13 (1938), 157–175. (M. F. W. D.)

Homeopathic Triturations—Preparation of, by Ball Mills. The authors discuss the general directions for the preparation of triturations. They have prepared several triturations of sulfur and of metallic antimony. The degree of fineness is determined by observing the transparency of a suspension of the trituration after a given settling time in a dilute acacia solution using a Pulfrich photometer. As the particle size decreases the transparency decreases since the particles settle out less readily. The relationship of transparency to duration of milling (in hours) is illustrated by means of graphs. Since metals settle out too rapidly, the antimony suspensions were examined in gelatin.—C. A. ROJOHN and K. KOCH. *Scientia Pharm.*, 9 (1938), 90. (M. F. W. D.)

Insecticides—Oxidation Inhibitor for. *2,144,366*—A pyrethrum or rotenone insecticide is stabilized against oxidation by means of lignicol, guaiacol, cresol, phenol, thymol, eugenol, resorcinol, pyrogallol or hydroquinone. *2,144,367*—A solution of pyrethrum or rotenone in a volatile solvent is stabilized against oxidation by means of α or β-naphthol. *2,144,368*—A pyrethrum or rotenone insecticide is stabilized against oxidation by means of a naphthylamine. *2,144,369*—Diphenylamine or benzidine is used as the stabilizer.—DALTON B. FALOON, assignor to HAMMOND PAINT & CHEMICAL CO., INC. U. S. pats. 2,144,366 to 2,144,369, Jan. 17, 1939. (A. P.-C.)

Magnesium Peroxide Tablets—Preparation of. The author investigated the loss of oxygen from magnesium peroxide on keeping. The influence of moisture in the air causes the magnesium peroxide to lose its oxygen content very rapidly. It therefore follows that the preparation of magnesium peroxide tablets must be done by granulating with absolute alcohol and that the drying of the granules must be carried out at room temperature.—K. NILOU. *Pharm. Tidende.*, 48 (1938), 372; through *Pharm. Weekblad*, 75 (1938), 675. (E. H. W.)

Ointment of Phenol—Keeping Properties of. The loss of phenol from phenol ointment during the preparation of small quantities was found to be from 3.7 to 5.2% of the phenol added. Ointments prepared in accordance with the British Pharmacopœia, and stored in pots at room

temperature, lose phenol rapidly and the strength may fall as low as 2% after two years storage. More rapid loss occurs at higher temperatures. Specimens stored in collapsible tubes show little loss of phenol after ten months storage.—G. R. PAGE. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 373–379. (S. W. G.)

Soporific Barbiturates—Stability of the Sodium Salts of Some, in Solution. The sodium salts of luminal and prominal are relatively unstable in hot solution. The sodium salt of dial decomposes readily when heated. All the sodium barbiturates are more stable at atmospheric temperature than in hot solution. Excess of alkali readily decomposes the pyrimidine ring of the various compounds. The sodium salts of phanodorm, numal and veronal are the only ones which remain stable over a fairly prolonged period in aqueous solution (at atmospheric temperature).—H. ASPELUND and L. SKOGLUND. *Acta Acad. Aboensis Math. et Phys.*, 10 (1937), 1–22; through *Chimie & industrie*, 40 (1938), 110. (A. P.-C.)

Tincture of Aconite—Observations on, French Codex 1937. The changes in aconite preparations in the successive French Pharmacopœias is discussed. Standardization of the powdered drug used in the preparation of the tincture, the alkaloidal content and the manufacturing procedure are reviewed. The lack of a biological assay is pointed out.—A. ASTRUC, J. GIROUX and J. BERANGER. *J. pharm. chim.*, 28 (1938), 273–282. (S. W. G.)

Tragacanth Jelly—Additional Notes on. Reference is made to the N. F. VI formula and the method of evaluating tragacanths. It was recognized that age of tragacanth effects viscosity. Readings were made at intervals first of a few days then monthly for 10 months and it was found there is an increased value with age, perhaps due to a dehydration of the tragacanth with a resulting change in the gel prepared from it. Preserving the jellies from change over such a long period when containers had to be opened presented considerable difficulty. It seems that proper evaluation cannot be made until the question of abnormal swelling of some specimens is satisfactorily explained and there can be no marked uniformity in gels like the N. F. Ephedrine Jelly until the evaluation of tragacanth itself has been determined.—ADLEY B. NICHOLS. *J. Am. Pharm. Assoc.*, 28 (1939), 98. (Z. M. C.)

PHARMACOPŒIAS AND FORMULARIES

Chicory—Mineral and Extractive Matter of. The author recommends that the Belgian Pharmacopœia change the maximum of mineral matter from 10 to 8%, and the matter extracted by hot water should be raised from 50 to 60%.—L. HOTON. *J. Pharm. Belg.*, 20 (1938), 759, 777. (S. W. G.)

Disinfectants—Commercial Standards for. New U. S. Specifications. The National Bureau of Standards of the United States Department of Commerce has approved commercial standards for a number of disinfectants and germicides. These standards have been published in order that producers, distributors and users may have "a basis for understanding and voluntary guarantees, and as a foundation for confidence on the part of purchasers." Specified requirements are given on the following: Liquid Hypochlorite Disinfectant, Deodorant and Germicide; Pine Oil Disinfectant; Cresylic Disinfectants; Household Insecticide (Liquid Spray Type).—ANON. *Pharm. J.*, 142 (1939), 188. (W. B. B.)

Formularium Medicamentorum Indicum. About 185 preparations in this Netherlands Indies Formulary are described.—V. D. W. *Pharm. Weekblad*, 75 (1938), 1219. (E. H. W.)

National Formulary. A Review of the New Edition. A comparison of the 1933 National Formulary (Great Britain) with the 1939 compilation which has just been published shows that there was no real necessity for a new edition. On the whole, there are few alterations in the formulæ, but almost all are such as will meet with the full approval of pharmacists. A summary of the principal alterations and additions is given. The mixtures comprise perhaps the most important section of the book, and comparatively few changes have been found necessary. Following the mixtures is a new group of three preparations named Naristillæ, having liquid paraffin (heavy) as the vehicle. With tablets, the N. F. compilers have followed the Codex and current practice in regard to Tab. Acid. Acetylsalicyl. Co., which is now the aspirin, phenacetin and caffeine tablet of the B. P. C.—ANON. *Pharm. J.*, 142 (1939), 157. (W. B. B.)

National Formulary—Comments on the. Miscellaneous comments on the National Formulary (Great Britain).—ANON. *Pharm. J.*, 142 (1939), 185. (W. B. B.)

NON-OFFICIAL FORMULÆ

Hair Lacquers and Fixatives. The following formulæ are offered: (1) *Heavy Hair Lacquer.*—Resin 15, sandarac 10, Gum benzoin (Siam) 20, alcohol (96%) 50, perfume 5. Powder the gums and resin and rub into the heated alcohol until a clear solution results, add perfume and filter. (2) *Light Hair Lacquer.*—Water-soluble resin 25.0, distilled water 15, perfume 5, alcohol (7%) 55. Heat the resin with the water, add the perfume and then mix with the alcohol; iso-alcohols may be used but should be mixed a month or two previously with a deodorizing perfume. (3) *Wave sets.*—(*a*) Karaya 4.0, perfume 1.0, color 0.1, preservative 0.1, glycerin 1.0, water 93.8; this is a slippery lotion which leaves the hair soft, shiny and dries rapidly; (*b*) Karaya 4.0, borax powder 0.5, tragacanth powdered 2.0, color 0.1, preservative 0.1, sulfonated olive oil 0.1, glycerin 0.5, perfume 1.0, water 91.7; this set makes the actual molding of the waves easier but leaves the hair stiffer and dries slower than (*a*).—J. P. SARENSEN. *Drug and Cosmetic Ind.*, 44 (1939), 157. (H. M. B.)

Hands and Feet—Care of. Footbaths and agents for the removal of hardened tissue are discussed and thirteen formulæ offered.—ANON. *Reichstoff Ind. Kosmetik*, 13 (1938), 252–256. (H. M. B.)

Mouth and Tooth Washes. A review and discussion of the types and their composition. 28 formulæ are given.—EKMANN. *Riechstoff Ind. Kosmetik*, 13 (1938), 267–275. (H. M. B.)

Summer Preparations. Oil solutions, liquid creams, vanishing creams and hand lotions are recommended as carriers for the various commercial screens in suntan preparations; treatment of sunburn and insect repellents are discussed. The following formulæ are recommended:

	(*a.*)	(*b.*)	(*c.*)	(*d.*)
Stearic acid	15.0	....	2.0	0.5
Glyceryl monostearate	....	12.5	....	2.5
Potassium hydroxide	0.8	....	0.1	0.1
Screen	5.0	3.0	3.0	3.5
Diethyleneglycol ethyl ether	8.0	7.5	....	....
Cetyl alcohol	0.2	1.0	....	....
Water	71.0	76.0	86.6	89.3
Glycerin	....	....	5.0	3.0
Quince seed	....	....	1.0	....
Mineral oil	....	....	2.0	1.0
Preservative	....	....	0.1	0.1

In (*a*) melt the stearic acid and cetyl alcohol, dissolve the alkali in water, heat to the same temperature and mix; dissolve the screen in the ether and emulsify in the cream base; allow to stand over night and stir again; (*b*) is made by heating all the ingredients together to boiling and stirring until cold. (*c*) is made separately with part of the water; melt the stearic acid, stearate preservative, mineral oil and screen together; heat the glycerin, water, alkali to the same temperature, mix the two solutions and add the mucilage; stir until cold.—JOSEPH KALISH. *Drug and Cosmetic Ind.*, 44 (1939), 168–169. (H. M. B.)

Tested Formula. Liquid Lip Rouges. One type of preparation should consist of a permanent dye of good color, a wetting agent such as sodium lauryl sulfate to bring about smooth and even spreading, alcohol (10–50%) to increase the speed of drying and a gum or thickening agent to give permanence. A more modern type consists of an alcoholic solution of the dye modified by a thickener or film-forming agent. The following formulæ are offered: (1) Gum 0.5, alcohol 10.0, wetting agent 0.1, preservative 0.1, dye 2.0 and water 87.3. Mix the gum, alcohol and preservative and pour into the solution of the dye and the wetting agent in water; allow to stand for 1–2 days and filter. (2) Ethyl cellulose 2.0, castor oil 3.0, dye 2.0, alcohol 93.0. Dissolve the dye in the alcohol, add the ethyl cellulose a little at a time and stir until it has dissolved completely; add the oil and filter if necessary.—JOSEPH KALISH. *Drug and Cosmetic Ind.*, 43 (1938), 668–669. (H. M. B.)

Triethanolamine Creams. Triethanolamine as an emulsifying agent is a development of the last ten years, its possibilities having been first appreciated in the United States. Triethanolamine, $N(C_2H_4OH)_3$, is a viscous, colorless, odorless liquid, of high boiling point, readily soluble in water. It is a substituted ammonia, and behaves with acids exactly as does ammonia, readily

forming salts resembling the corresponding ammonium salts. The molecular weight of pure triethanolamine is 149, but as the commercial product always contains a small proportion of diethanolamine and traces of monoethanolamine, this figure is somewhat reduced. In the best grades the actual combining weight is about 137 to 140. As the combining weight of commercial stearic acid is about 270, approximately one part of triethanolamine is required to neutralize two parts of stearic acid. Triethanolamine soaps are easily formed; they are soluble in water, giving solutions which are apparently quite harmless on the skin, having p_H very near neutrality, and which possess excellent wetting and emulsifying powers. Triethanolamine stearate solutions are much more fluid than solutions of sodium, or even potassium stearate of equivalent concentration. In consequence, triethanolamine stearate creams are exceptionally soft in consistency. A typical mixture is given as follows: Stearic Acid, 80 Gm.; White Beeswax, 10 Gm.; Spermaceti, 10 Gm.; Glycerin, 50 Gm.; Triethanolamine, 10 to 15 Gm.; Distilled Water, 835 Gm.; Perfume, a sufficient quantity. One disadvantage of triethanolamine emulsions, which has received little, if any, public mention, is their tendency to become very thin in cold weather. The emulsion does not break down, but the viscosity of the product may be affected seriously, and give rise to complaints that it is too watery. A typical "starting point" formula for hair creams containing triethanolamine is: Stearic Acid, 2.5; Triethanolamine, 1.0; White Oils, 30.0; Water, to make 100.0; Perfume, a sufficient quantity.—ANON. *Pharm. J.*, 142 (1939), 53. (W. B. B.)

Vitamins. VI. The Potency of Commercial Preparations. A comprehensive guide, in table form, of proprietary vitamin preparations, compiled from information supplied or published by the manufacturers. The table is intended to serve as a guide to the nature, potency and source of the preparations listed. The proprietary remedies are listed in columns headed by the name of the vitamin they contain. Approximately 150 preparations are described, and the names of their makers are given in an adjoining column. The preparations described fall in a class of one of the following vitamins, or combinations of vitamins: A, B_1, B_2, B_1 and B_2, C, D, A and D, E, P: miscellaneous preparations.—ANON. *Pharm. J.*, 142 (1939), 54. (W. B. B.)

DISPENSING

Ampul Filling Device. A small syringe and reservoir device for hand filling of ampuls of medicine for injection is described and illustrated.—S. KJELLMARK. *Farm. Revy*, 38 (1939), 7. (C. S. L.)

Anesthetic Ointment. Ethylpara-aminobenzoate is added to isoamylhydrocupreine ointment in amount sufficient to overcome the normal irritating action of the isoamylhydrocupreine.—EDMOND T. TISZA, assignor to RARE CHEMICALS INC. U. S. pat. 2,142,537, Jan. 3, 1939. (A. P.-C.)

Bismuth Carbonate—Factors in the Action of Light on. I. The author summarizes his work as follows: (1) Experiments have been performed upon commercial samples of bismuth carbonate which show, in a general way, that the darkening on exposure to light in sugar mixtures follows the purity of the samples; the purer the sample the greater is the reactivity to light. (2) Impure bismuth carbonates may be obtained which have a great resistance to light in the sugar test. (3) Investigation on the cause of the light action has been started.—N. GLASS. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 468–477. (S. W. G.)

Bismuth Salicylate—Basic, Modification of Composition of, on Washing with Water. Basic bismuth salicylate (I) prepared by the addition of 100 Gm. of finely powdered $Bi(NO_3)_3$ to 52.5 Gm. *o*-$HO.C_6H_4.CO_2H$ in 500 cc. water at 50° contains 52.2% Bi_2O_3. Successive washings with 1 liter water and sampling after three washings gave samples containing 53.8, 63.8, 65.3, 65.0, 65.5, 64.6, 64.2, 65.0, 65.2 and 63.3% Bi_2O_3. Constant composition was obtained after nine washings with 1 liter water. It is recommended that preparations of I containing less than 60% Bi_2O_3 should not be used in the preparation of oil suspensions for therapeutic uses since such samples give a hard yellowish white deposit adhering to the bottom of the vial after sterilization at 100° for one hour.—L. BRACALONI. *Boll. chim.-farm.*, 77 (1938), 605–609; through *Chem. Abstr.*, 33 (1939), 1875. (F. J. S.)

Calcium Chloride and Sodium Benzoate—Incompatibility of. Both salts are compatible in solutions only within certain limits given by the solubility of calcium benzoate. A mixture of 2.5 Gm. sodium benzoate and 1.018 Gm. calcium chloride of 75.51% strength requires 60 cc. of water; an excess of either salt makes more water necessary. The addition of polygala infusion or

acacia gum prevents precipitation at somewhat higher concentrations. Tables are given to be used for the calculation of quantities of liquid required for certain prescriptions.—ANTONIO G. PEPE and EMILIO A. DEL CARLO. *Rev. farm.* (Buenos Aires), 80 (1938), 332. (A. E. M.)

Chloral Hydrate Suppositories—Preparation of. Solidified glycerin may be utilized as an excipient where the amount of chloral hydrate does not exceed 25 Cg. in a 2.5 Gm. suppository. The solidification point of cacao butter is sharply lowered by the addition of chloral hydrate and it will not congeal if the proportion of chloral hydrate is greater than 10%. Cacao butter containing 4% of white wax may be used to prepare suppositories with 0.75 Gm. and 1.0 Gm. of chloral hydrate. In the summer months the white wax should be increased to 5%. The following melting points of cacao butter containing the indicated amounts of white wax are given: 1%, 32–32.8°; 2%, 32–32.5°; 3%, 32°; 3.5%, 32.2–32.8°; 4%, 35°; 5%, 36°; 6%, 38°.—G. -C. GUALDONI. *Boll. chim.-farm.*, 12 (1938), 373; through *J. pharm. Belg.*, 21 (1939), 8. (S. W. G.)

Dermatol and Chloramines—Incompatabilities of. Trituration of dermatol, dichloramine T and liquid petrolatum in sunlight causes a violent reaction, liberating suffocating white vapors and the swollen mass changes from yellow to black. Mixing the substances separately in the petrolatum does not prevent the reaction. The mixture may be prepared without reaction if the procedure is carried out in the absence of sunlight. If finely powdered dichloramine T and dermatol are mixed, the reaction goes on slowly with no apparent liberation of vapors, but with a rapid change of color from yellow to black. The reaction between chloramine T and dermatol is very much slower, the mixture on exposure to air becoming brown with no apparent evolution of hydrochloric acid fumes. If heated to 44° the reaction becomes rapid. The fumes evolved consist mainly of hypochlorous acid and the residue contains paracresylsulfamine and a mixture of decomposition products of dermatol: gallic acid, bismuth oxide, chloride and subchloride of bismuth.—A. CHAUVIN. *Union Pharmac.*, (Oct., 1938); through *J. pharm. Belg.*, 21 (1939), 6. (S. W. G.)

Dispensing—Sterilization in. A discussion of this subject with special reference to the question of dead micro-organisms.—P. VAN DER WIELEN. *Pharm. Weekblad*, 75 (1938), 1053. (E. H. W.)

Dry Extracts—Studies on New Solvents for the Preparation of. The preparation of extracts of the five following drugs was investigated using the extraction procedure of the Swiss Pharmacopœia V., but varying the solvent: cinchona, belladonna, nux vomica, rhubarb and gentian. A preliminary extraction was run using 6 or 7 solvents including the official menstruum and mixtures of acetone, alcohol, isopropyl alcohol and water in varying portions. Of these solvents 3 or 4 were chosen for further study depending on the completeness of extraction shown in the preliminary trial. All fractions of percolate were assayed by the official method. The hygroscopicity was determined by observing the increase in weight of a sample on exposure to water-saturated atmosphere at 18°. All of the extraction studies and hygroscopic studies were tabulated and graphed. From the results the author concludes that solvents other than ethyl alcohol merit consideration in the preparation of dry extracts. A mixture of isopropyl alcohol, acetone and water was one of the solvents used throughout and this liquid more readily extracts the active principles from cinchona, belladonna, rhubarb and gentian than does ethyl alcohol. Mixtures of acetone and water and isopropyl alcohol and water give good results but these two liquids have a slower rate of extraction. The determinations of hygroscopicity have been made over a long period and after a certain time the differences between extracts prepared with the various solvents are not significant. It should be noted that the curves representing the hygroscopicity of the sixteen extracts prepared, take the same direction and have a similar slope. The point of saturation is reached after about ninety hours of exposure.—F. DUCOMMUN. *Pharm. Acta. Helv.*, 13 (1938), 185–209. (M. F. W. D.)

Extract of Belladonna—Hygroscopicity of. The author has shown that: (1) the temperature at which the extractive is dried has no influence on the hygroscopic nature of the finished extract; (2) that the addition of gelatin considerably increases, whereas the addition of acacia decreases, the hygroscopicity of the extract; (3) that extracts prepared with milk sugar in place of cane sugar are less hygroscopic but do not equal the extract prepared by Lüdy in this respect.—F. DUCOMMUN. *Schweiz. Apoth.-Ztg.*, 76 (1938), 609. (M. F. W. D.)

Extracts—Vacuum Drying of. Dry extracts of krameria and cascara have been examined. It has been shown that commercial extracts can vary considerably in the amount of matter in-

soluble in cold water. The cause of this variation has been traced to variation in the temperature and time of drying. The authors recommend that the heating be carried out with a water jacket instead of steam. They suggest that the direction in the official British monograph to "evaporate the percolate to dryness under reduced pressure" should also state "at a temperature not exceeding 70° C." This would control the vacuum drying. There should also be a limit of matter insoluble in cold water, for this would ensure that the extract had not been overheated. The authors suggest for this, a maximum figure of 10% w/w. There is at present no satisfactory method of assaying extract of cascara for purgative activity, and the authors suggest that it would not be unreasonable to require that there should be a limit of 10% w/w of matter insoluble in cold water in dry extract of cascara. The directions for preparation should state that the percolate should be evaporated to dryness at a temperature not exceeding 100° C. Results of an examination of cascara tablets are given.—H. BERRY and E. M. TEMPLE. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 364–372. (S. W. G.)

Formalin Salve and Dusting Powder for Foot Therapy—Directions for. The formula and directions for the preparation of the salve and dusting powder are given.—J. THOMANN. *Schweiz. Apoth.-Ztg.*, 76 (1938), 668. (M. F. W. D.)

Homeopathic Triturations and Trituration Methods—Studies of. Experiments prove that triturations prepared by the hand method of the homeopathic pharmacopœia vary widely when made by different individuals (variations in turbidity values ±70% with 12 persons); turbidity values for two sulfur triturations and two carbo vegetabilis products were shown to decrease considerably when allowed to stand from 1.5–2 years. Commercial products also showed variations. It is recommended that a new method involving mechanical means be described for the pharmacopœia.—K. KOCH. *Scientia Pharm.* 9 (1938) 111–114. (H. M. B.)

Hydrogenated Castor Oil in Ointments. III. Product of Sulfonation. Sulfonated hydrogenated castor oil differs from other "sulfonated" oils chemically in that the sulfuric acid and the OH group on carbon atom 12 react. Physically it is solid while others are liquid. It readily combines with alkalies to form salts. Procedure is described. Solubility in water, alcohol and petrolatum, surface tension, p_H and "foam" ability are reported for a number. The sodium salt has the most satisfactory surface tension and "foam ability." This "sulfonated" hydrogenated castor oil was superior to the commercial article as an emulsifying agent and in the production of cosmetics. Stable cold creams and satisfactory vanishing creams are possible. The salts are good detergents.—GEORGE W. FIERO. *J. Am. Pharm. Assoc.*, 28 (1939), 100. (Z. M. C.)

Labarraque's Solution—Preparation of. A modification of the French Codex procedure in which 5 cc. of the solution is titrated with thiosulfate after the addition of 10 cc. of distilled water, 0.5 Gm. of potassium iodide and 2 cc. of acetic acid. The available chlorine is then brought to 6.34 Gm. per liter by dilution with distilled water.—E. CORDONNIER. *Bull. sci. pharmacol.*, 45 (1938), 399–400. (S. W. G.)

Mandelic Acid and Its Salts—Use of. The author briefly reviews the use of mandelic acid in medicine, describes the physical and chemical properties and the quantitative determination. The author also suggests several prescriptions providing mandelic acid in a suitable form.—H. LEHMANN. *Schweiz. Apoth.-Ztg.*, 76 (1938), 485. (M. F. W. D.)

Mixtures—Should They be Weighed or Measured? The author briefly discusses the advisability of measuring rather than weighing liquids included in prescriptions. A sample prescription is given.—K. STEIGER. *Schweiz. Apoth.-Ztg.*, 76 (1938), 540. (M. F. W. D.)

Ointments and Emulsions—Comments on the Preparation of, in the Dispensary. A discussion dealing with the preparation of concentrated emulsified products using rolling mills, emulsifiers and homogenizers. Forty-four illustrations of particles of ointments including resorcinol (14), salicylic acid (9), bismuth subgallate (5), red mercuric oxide (7), ointment leniens (4) and two special formulæ (5).—W. KERN and H. I. DÜBERKOP. *Deut. Apoth. Ztg.*, 53 (1938), 1140–1142. (H. M. B.)

Ointments—Liquid Extracts in. The author discusses three methods for the incorporation of liquid extracts into ointments.—J. SAMPLONIUS. *Pharm. Weekblad*, 75 (1938), 670. (E. H. W.)

Phosphorus—Solution of. K. has found that ether in this oil solution can prevent oxidation only as long as the air does not come into contact with the contents of the flask upon shaking.

He suggests in the place of the ether the use of pentane which has no taste when administered in cod liver oil.—K. FEIST. *Deut. Apoth. Ztg.*, 53 (1938), 1215–1216. (H. M. B.)

Procaine Hydrochloride—Preparation of Alkaline Buffered Solutions of, for Surgical Use. The following summary is given: (1) A method is described for the dispensing of dry-salt ampuls and vaccine bottles suitable for the preparation of alkaline, sterile, isotonic and buffered solutions of procaine hydrochloride. (2) Data showing the rate of decomposition of procaine hydrochloride in acid, neutral and alkaline solutions are given and discussed. (3) The state of the procaine molecule in acid and alkaline solutions is investigated and the relationship of the results obtained to the theory of anesthesia by alkaline solutions is indicated. (4) A report is given on the purity and differences of commercial brands of procaine hydrochloride at present on the market.—K. BULLOCK. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 407–430. (S. W. G.)

Seitz Filter—Use of. The author describes the filter in its usual form and also an improved type. He also describes in detail the preparation of two solutions.—OLIVER W. YOUNG. *J. Am. Pharm. Assoc.*, 27 (1938), 1241. (Z. M. C.)

Sodium Bicarbonate Tablets, Compound, B. P. C. and Ginger Tablets, Compound, B. P. C. —Preparation and Keeping Properties of. The following summary is given: (1) Compound tablets of sodium bicarbonate and compound tablets of ginger have been examined for the keeping properties of their ammonium bicarbonate. (2) These tablets when bought retail may often contain a negligible amount of this substance, owing to losses by volatilization. (3) This loss is continuous from the time that the granule is prepared for compression, and depends upon the extent to which the granule is exposed, the type of container used for storage, and the temperature. (4) Minimum loss is found in full bottles with closely fitting ground-glass stoppers kept in a cool room. The accuracy of the fit of the stopper is an important factor in controlling loss when the tablets are stored at warmer temperatures. (5) Storage in bottles is preferable to tins, and tins with lever lids are better than those with slip-on lids. (6) Tablets in bottles of 25 show a rate of loss which is much greater than from tablets stored in bulk, despite precautions taken to ensure an airtight seal. (7) Volatilization of the ammonium bicarbonate is accelerated by disturbing the bulk of the tablets each time a representative sample is taken, or a sale is made. (8) There is little difference between the rates of loss from a filled and a half-filled jar provided that both are kept in a cool place. This applies to filled and half-filled tins. At higher temperatures the half-filled containers lose ammonia much more rapidly than the filled containers. (9) The main source of loss of ammonia from tablets stored in jars and kept at a low temperature, is from expulsion of the gas on removing the stopper, thereby upsetting the equilibrium and causing subsequent further dissociation of ammonium bicarbonate. There is little loss from diffusion by leakage from the container. At higher temperatures leakages play an equal if not greater part in determining the rate of loss. (10) In a container approximately two-thirds full, the tablets at the bottom have a uniformly slower rate of loss than those at the surface. (11) There is no advantage in attempting to protect the volatile ammonium bicarbonate by coating it with wax. (12) Soda mint tablets packed in small bulk quantities keep better in filled narrow necked bottles.—H. BURLINSON. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 505–520. (S. W. G.)

Soft Soap and Soapy Preparations—Study of, Made by a Cold Process. The method for preparing liniment of soft soap suggested by Cox was tried with seven different oils and comparisons made of color, lathering properties, odor and cost. Cox's formula for soft soap was also tried with the seven oils and similar comparisons made. Other preparations tried were Camphor and Soap Liniment and Saponated Solution of Cresol. Methods of procedure are given in detail and other special features are discussed. The authors reach the following conclusions: The official soap preparations made by the cold saponification process all possess a better appearance than those prepared by the official processes. Soya bean oil or corn oil form excellent products, devoid of objectionable odor and low in price. The use of heat in the saponification process tends to produce darkened products. Saponated Solution of Cresol may be prepared without the application of heat and the preparations made by the cold process are much lighter in color.—DAVID W. O'DAY and JAMES W. JONES. *J. Am. Pharm. Assoc.*, 28 (1939), 227. (Z. M. C.)

Sterilization and Filtration under Normal Dispensary Conditions. A filtration-sterilization unit is described, which overcomes the difficulty of aerial and hand contamination when transfering the sterile filtrate into final containers. The most important single advantage of the apparatus is that the needle, through which the filtrate flows, is not open to contamination when

not actually in use. The apparatus consists of two main parts, the sterilizing unit and the filling unit. A photograph and illustrated sketch of the entire apparatus accompanies the article.—J. R. ELLIOTT and W. N. HAILSTONE. *Pharm. J.*, 142 (1939), 105. (W. B. B.)

Stramonium—Investigation of Dry Extract of. The following summary is given: (1) It has been shown that for the preparation of dry extract of stramonium alcohol (70%) is unsuitable because: (*a*) The extract is hygroscopic and becomes sticky when exposed to the atmosphere unless excessive heat is used for drying. (*b*) Fractionation occurs during evaporation of the percolate and it is difficult to obtain a homogeneous extract. (2) The criticism that the use of alcohol (95%) as the solvent produces an objectionable "oily" extract is not substantiated.—R. C. KAYE and A. T. MOORHOUSE. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 582–588. (S. W. G.)

PHARMACEUTICAL HISTORY

DeVrij, Dr. Joannes Elisa. A biographical account of Dr. DeVrij on the centenary of his promotion at the University of Leiden on June 25, 1838.—J. J. L. ZWIKKER. *Pharm. Weekblad* 75 (1938), 726. (E. H. W.)

Frederick Wilhelm I and Johann Phillipp Becker. From the life of a Hessian Apothecary in the 18th century.—ANON. *Deut. Apoth. Ztg.*, 53 (1938), 1290–1293. (H. M. B.)

Fritz Hofmann, German Apothecary, Discoverer of Synthetic Rubber.—WALTHER ZIMMERMANN-ILLENAU. *Deut. Apoth. Ztg.*, 53 (1938), 1286–1288. (H. M. B.)

German Pharmacy—Jews in the History of. Historical.—ANON. *Wien. Pharm. Wochenschr.*, 71 (1938), 219. (H. M. B.)

Görlitzer Town Apothecary in 1629—Catalog of the. F. ERDMANN. *Deut. Apoth. Ztg.*, 53 (1938), 1294–1298. (H. M. B.)

Herbs—Cost of, in the Middle Ages.—ANON. *Wien. Pharm. Wochschr.*, 71 (1938), 197–198. (H. M. B.)

Historical Books and Documents. Photographs of a few treasures in the Squibb collection.—GEORGE URDANG and F. W. NITARDY. *Am. Drug.*, 99, No. 2 (1939), 36. (E. V. S.)

Juniper in German Folk Knowledge. Historical.—E. ZÖLLNER. *Deut. Apoth. Ztg.*, 53 (1938), 1278–1279. (H. M. B.)

Leiden Charter for Apothecaries. Under the title "Concerning a petition and a noteworthy notarial act of the 17th century," the author relates an historical account much of which is gleaned from the Archives of the City of Leiden. The account throws a great deal of light upon the practice of pharmacy in Leiden during the 17th century and refers especially to the relation existing between physician and pharmacist at that time. The Charter of 1661 to the Guild of Apothecaries is given. From this charter it is evident that Leiden did not have a Pharmacopœia in 1661. The Leiden Formulary of 1638 cannot be so considered and there is doubt about the Pharmacopœias of 1674 and 1702, described by various authors. The first authentic Leiden Pharmacopœia is that of 1718.—T. POTJEWIJD. *Pharm. Weekblad*, 75 (1938), 1076. (E. H. W.)

Manganese and Chromium—Old and New Knowledge of. A review and discussion.—OTTO SCHMATOLLA. *Deut. Apoth. Ztg.*, 53 (1938), 1200–1202. (H. M. B.)

Medicine and Pharmacy in Greek and Roman Times. Historical.—JOSEF URBAN. *Wien. Pharm. Wochschr.*, 72 (1939), 25–33. (H. M. B.)

Michael Klaus—Letter of the Vienna Apothecary, to Kaiser Maximilian II and His Testament.—FR. MINAŘIK. *Wien. Pharm. Wochschr.*, 71 (1938), 222–223. (H. M. B.)

Military Pharmacy in the Netherlands—History of. This article describes the first Netherlands Military Formulary.—E. I. VAN ITALLIE. *Pharm. Weekblad*, 75 (1938), 1029. (E. H. W.)

Pharmacy in Sicily. An extensive historical account of pharmacy in Sicily with special reference to the production of citrus oils and juices.—P. VAN DER WIELEN. *Pharm. Weekblad*, 75 (1938), 505. (E. H. W.)

Rubia Tinctorium, an Old Drug Plant. A review of the pharmacological and chemical studies of Bauer.—ANON. *Deut. Apoth. Ztg.*, 53 (1938), 1258–1259. (H. M. B.)

300-Year Old Berg Apothecary in Königsberg.—H. VALENTIN. *Deut. Apoth. Ztg.*, 53 (1938), 1259–1262. (H. M. B.)

325-Year Old Apothecary in Husum.—HELGO KLATT. *Deut. Apoth. Ztg.*, 53 (1938), 1294. (H. M. B.)

University of Amsterdam. The New Laboratory for Biochemistry, Toxicology and Food Analysis. An historical review of this laboratory and a description of the new quarters are included.—J. TEMMINCK GROLL. *Pharm. Weekblad*, 75 (1938), 1059. (E. H. W.)

University of Portugal—Continuation of the History of, for the 400th Anniversary.—ANON. *Noticias Farm.*, 4 (1938), 129. (G. S. G.)

PHARMACEUTICAL LEGISLATION

Chemistry and Patents in Poland. A review of the laws affecting chemical patents.—ANON. *Riechstoff Ind. Kosmetik*, 13 (1938), 260–261. (H. M. B.)

Chemistry and Patents in Rumania. A review of the patent laws relating particularly to chemicals, foods and drugs.—ANON. *Riechstoff Ind. Kosmetik*, 13 (1938), 276–277. (H. M. B.)

Chemistry and Patents in Sweden. A review of the laws affecting chemical patents.—ANON. *Riechstoff Ind. Kosmetik*, 13 (1938), 257–259. (H. M. B.)

Patents and the Chemist. The subject is considered from the standpoint that patents are not monopolies against the public interest.—P. MAY. *Chemistry and Industry*, 58 (1939), 485–488. (E. G. V.)

Patent Practice and Procedure—Symposium on American. Papers presented before a joint meeting of the Division of Medicinal Chemistry, of Agriculture and Food Chemistry and of Biological Chemistry of the American Chemical Society. **Present American Patent System.**—F. E. BARROWS. **Patent Law and Practice of Foreign Countries.**—T. H. WEST. **Needs of Our Patent System.**—D. G. HAYNES. *Ind. Eng. Chem.*, 30 (1938), 1420–1432. (E. G. V.)

PHARMACEUTICAL ECONOMICS

Chemistry in 1938. Developments for the year in industry, pure science, research facilities, and relations with government are discussed, and chemical awards for 1938 are listed. Over 100 new products that became available are described.—ANON. *Ind. Eng. Chem.*, 31 (1939), 3–17. (E. G. V.)

Hospital Pharmacy—Stock Control in. The two major points in the plan discussed are a reserve or minimum stock and a card file record of each purchase of each item stocked. Types of cards used, method of handling orders, are explained. The card system makes an instantly available record of all purchases of all items. Standard drugs and chemicals are purchased on bid. New products are not purchased until the number of requests indicate that they will be used. Effort is made to avoid having the same substance under two trade names. A perpetual inventory of narcotic drugs is kept. How this is taken care of is explained. Both the system of narcotic records and that of general stock are flexible enough to suit a hospital of any size.—MARY E. BOWEN. *J. Am. Pharm. Assoc.*, 28 (1939) 235. (Z. M. C.)

Hospitals—Large and Small, Ability and Opportunity of the Pharmacist to Serve All. Duties of a pharmacist in a large hospital are enumerated. In smaller hospitals some of his time may be employed in related fields and these are discussed briefly.—MARY DIENHART. *J. Am. Pharm. Assoc.*, 28 (1939), 104. (Z. M. C.)

MISCELLANEOUS

Air-Purifying Device. A device for purifying the breathing air in a vapor bath for therapeutical use comprises a casing, means for introducing heating vapor into said casing, means for supplying mist of aqueous solution of calcium or barium hydroxide into the case, and means for supplying oxygen or ozone gas into the casing, for the purpose of continuously transforming carbon dioxide gas produced in the casing into calcium or barium carbonate and for supplementing oxygen.—ZENSEI FUJITA. U. S. pat. 2,139,718, Sept. 20, 1938. (A. P.-C.)

Anticryptogamic Composition. The product consists of a homogeneous mixture of calcium oxide and completely dehydrated copper sulfate, both in finely powdered condition.—ALBERT D'AMICO. U. S. pat. 2,138,733, Nov. 29, 1938. (A. P.-C.)

Ascorbic Acid—Process for the Preparation of Readily Water-Soluble Double Calcium Salts of. Equimolecular quantities of calcium salts of polyhydroxymonocarboxylic acids and of calcium ascorbate are made to react in aqueous solution.—SOC. ANON. DES PRODUITS ROCHE. Belg. pat. 425,345, Jan. 31, 1938. (A. P.-C.)

Cosmetic—Protective. A cosmetic effective in thin films to retard absorption of light of short wave-length contains as an active ingredient not more than 1% of acetophenone or of dibenzal acetone in a vehicle suitable for application to the skin, the active ingredient being characterized by relative permanency, non-irritation and substantial lack of color and odor.—SAMUEL ISERMANN, ERNST OHLSSON and JOHN W. ORELUP. U. S. pat. 2,134,947, Nov. 1, 1938. (A. P.-C.)

Cosmetics and Soaps—Hydrogenated Oils in. A review of current applications and future possibilities.—S. P. JANNAWAY. *Perfumery Essent. Oil Record*, 30 (1939), 5. (A. C. DeD.)

Cosmetics—Corrective. In a previous article the author discussed bleaching creams and lotions, freckle creams, anti-wrinkle creams, muscle oils and pore refining creams and lotions. In this article he discussed skin tonics (for both dry and greasy skins), acne preparations of a cosmetic type and face packs and beauty masks.—S. P. JANNAWAY. *Perfumery Essent. Oil Record*, 29 (1938), 377, 424. (A. C. DeD.)

Cosmetics—Sulfonated Oils in. The use of sulfonated oils in cosmetics and toilet preparations is discussed.—S. P. JANNAWAY. *Perfumery Essent. Oil Record*, 29 (1938), 292. (A. C. DeD.)

Disinfectant—Sanitary, New Process for the Production of a, in Tablet or Powder Form. The product consists of a mixture of tartaric acid, aluminum lactate, potassium bisulfide, sodium bicarbonate, borax, magnesium peroxide, hexamethylene tetramine, thymol and tribromonaphthol.—A. HOFFELD. Belg. pat. 427,421, May 31, 1938. (A. P.-C.)

Disinfectants—Nitrogen Compounds Useful as. Amides or esters of aminocarboxylic acids are converted into quaternary compounds by the action of mineral acid esters of aliphatic alcohols, etc.—DEUTSCHE HYDRIERWERKE A. G. Belg. pat. 427,447, May 31, 1938. (A. P.-C.)

Ether Sulfonates—Detergent Properties of. The deflocculating power of the sulfonated ether is superior to that of the other detergents tested. The chemical stability of the compound gives it unique possibilities in the cosmetic industry. It may have value as an acid soap for individuals who are sensitive to alkaline compounds. Skin normally has a p_H of 5.5, and dermatitis is sometimes caused by the inability of the skin to regain this condition after the use of an alkaline soap. The sulfonated ether may be used in a slightly acid bath, and the small amounts retained by the skin should cause no ill effects.—F. J. VAN ANTWERPEN. *Ind. Eng. Chem.*, 31 (1939), 64–66. (E. G. V.)

Formula Variation. Desired variations in small and large scale manufacture for the improvement of final cosmetic products are discussed.—JOSEPH KALISH. *Drug and Cosmetic Ind.*, 44 (1939), 31–32, 36. (H. M. B.)

Fruit Juices and Preservatives. The medicinal properties of fruit juices are discussed. The juices usually have a lower vitamin content than fresh fruit. The use of boric acid, *o*-hydroxybenzoic acid, benzoic acid and formic acid in the customary concentrations as preservatives is not harmful.—N. LEVIN and R. STEENHOFF. *Svenska Bryggareforen.*, 51 (1936), 185–195; through *J. Soc. Chem. Ind.*, 57 (1938), 1492. (E. G. V.)

Glassware—Testing of Pharmaceutical, by the Narcotine Hydrochloride Method. Limitations of the test and its application to the colored glass bottles are described.—F. H. ZSCHACKE. *Glashütte*, 66 (1936), 31–32; through *J. Soc. Chem. Ind.*, 11 (1938), 1296. (E. G. V.)

Glycerol Contamination—Sources of. The fermentation of glycerol water is a source of contamination of glycerol with low molecular fatty acids. It contains yeasts, and fungi such as *Ascomycetes* and *Saccharomycetes*, besides the usual microörganisms of butyric fermentation.—A. KLIUTSCHEVITSCH. *Maslobo'no Zhirovoe Delo*, 12 (1936), 95–96; through *J. Soc. Chem. Ind.*, 11 (1938), 1324. (E. G. V.)

Hair and the Shave. A discussion and laboratory experiments were conducted as follows: (1) softening of the hair, (2) proper application of shaving preparations and (3) shaving technic. The effects of softening agents were observed by stretching the hair under a definite pressure and for a certain time and measuring its elasticity under the same conditions by means of a specially constructed instrument. Shaving experiments on individuals for six weeks are reported. Results indicated that (1) a minimum time of one minute for cleansing and three minutes for softening the beard was necessary for a comfortable shave, (2) temperature of the water used should be a high as can be tolerated by the face, (3) brushless creams are not hair softening me-

diums but exert a supporting effect on the hairs and protect the skin by its lubricating properties, (4) shaving discomfort can be attributed to the use of a large shaving angle between the skin and the razor and excessive pressure applied to the skin. Shave with a relatively small angle using short quick strokes and the minimum amount of pressure.—ALBERT B. KISH. *Drug and Cosmetic Ind.*, 43 (1938), 664–666. (H. M. B.)

Hair Lotion. A mixture of balsam and birch roots, lilac twigs, holly and birch leaves, petroleum, alcohol and flower oils is boiled, filtered, etc.—J . GODIN. Belg. pat. 426,750, April 30, 1938. (A. P.-C.)

Hydrogen Peroxide—Use of, in Dermatology. Few disinfectants can be applied to the skin without risk of producing a dermatitis, and the treatment of infected skin is generally best attained by the use of an antimicrobial agent acting through the blood stream. Nevertheless the author claims that two preparations, the first containing one part of green soap in three parts by weight of pure concentrated hydrogen peroxide and the second, a 15% peroxide (anhydrous) ointment are extremely efficacious in the treatment of acute acne, although the deeper indurated lesions must first be punctured or incised, and the treatment does not prevent fresh outbreaks; boils and carbuncles also respond. The first of these preparations is unstable and must be used at once if it is to be effective; it is a strong irritant and is allowed to act until the patient feels an intense smarting which is usually two to three minutes, but sometimes not for ten minutes. The ointment is more stable and much less irritating.—C. LAZAR. *Börgyogyaszati, Urologogiai es Venerelogiai Szemle*, 1938; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 793. (S. W. G.)

Insecticidal Composition. A non-aqueous insect spray consists of a dilute solution of at least one insect poison and an anhydrous wetting agent in kerosene (or other petroleum distillate), monoalkyl ethers of ethylene or diethylene glycol, benzene or ethylene dichloride.—DONALD F. MURPHY, assignor to RÖHM & HAAS CO. U. S. pat. 2,135,987, Nov. 8 , 1938. (A. P.-C.)

Insecticidal Composition. The active constituent is rotenone or pyrethrum, with a preservative consisting of a diaryl arylene diamine, aldehyde derivatives thereof, or the product obtained by reacting a diaryl arylene diamine with an aldehyde and an alcohol.—ROBERT L. SIBLEY, assignor to MONSANTO CHEMICAL CO. U. S. pat. 2,138,516, Nov. 29, 1938. (A. P.-C.)

Insecticidal Oil Composition. An oil such as an insecticidal mineral oil is used with less than 10% its quantity of an emulsifying component of petroleum sulfonic salts and an organic, oil-water interfacial tension depressant (such as cresol) the molecules of which contain a non-polar, oil-soluble, 6-membered carbocyclic ring with an attached water-solubilizing metal-free polar group. Numerous examples are given.—WM. H. VOLCK, assignor to CALIFORNIA SPRAY-CHEMICAL CORP. U. S. pat. 2,134,158, Oct. 25, 1938. (A. P.-C.)

Insecticide. The essential active ingredient is copper sucrate.—CHARLES C. PLUMMER dedicated to the free use of the Public in the territory of the United States. U. S. pat. 2,138,557, Nov. 29, 1938. (A. P.-C.)

Insecticide. The essential active ingredient is a pentaerythritol derivative in which the hydroxyl groups are replaced by chlorine, bromine or iodine atoms.—WM. G. ROSE and HERBERT L. J. HALLER, dedicated to the free use of the Public in the territory of the United States. U. S. pat. 2,140,481, Dec. 13, 1938. (A. P.-C.)

Insecticides. The toxic ingredient is a nitro substituted diphenyl oxide.—WM. F. HESTER, assignor to RHÖM & HAAS CO. U. S. pat. 2,134,556, Oct. 25, 1938. (A. P.-C.)

Insecticides and Fungicides. A bland vegetable or animal oil such as corn oil is used with an oil-soluble insect poison such as nicotine and with a hydrocarbon distillate such as a low-boiling petroleum fraction the hydrocarbon components of which are of substantially uniform molecular size.—WALTER C. O'KANE. U. S. pat. 2,127,526, Aug. 23, 1938. (A. P.-C.)

Insecticides and Fungicides. There are used the complex products of the reactions between a solution of an alkali metal arsenite, an inorganic cupric salt and alkali metal salts of the group consisting of vegetable, animal and fish oils, containing mixed glycerides of monocarboxylic acids of the series having the general formula $C_nH_{2n}O_2$, $C_nH_{2n-2}O_2$, $C_nH_{2n-4}O_2$, $C_nH_{2n-6}O_2$ and $C_nH_{2n-8}O_2$. Such products are suitable for use in sprays for foliage, etc.—FREDRICK E. DEARBORN, dedicated to the free use of the Public in the territory of the United States. U. S. pat. 2,127,380, Aug. 16, 1938. (A. P.-C.)

Insecticides, Etc., from Derris and the Like. A process for the production of a dry,

friable, insecticidal product from derris and similar insecticide-containing vegetable materials comprises extracting the insecticidal principles by use of a volatile chlorinated solvent such as carbon tetrachloride, adding an alkali metal carbonate or alkaline-earth metal carbonate to the solvent, and distilling off solvent and oils. An oil is obtainable from derris or the like, having a specific gravity at 25° C. of 0.998, an optical rotation (100 mm.) of +5°, a saponification value of 24, a saponification value after acetylation of 82.6 and a boiling range under 760 mm. of 210° to 250° C. The oil is suitable for use as an insect repellent.—ROBERT WOTHERSPOON, assignor to DERRIS, INC. U. S. pat. 2,126,854, Aug. 16, 1938. (A. P.-C.)

Insecticides—Rotenone Dusts as. Dusts containing greater than 0.25% of rotenone (I) are effective against *Coleoptera*. The rapidity of action on the insect is almost independent of the method of application, but natural I dusts are more effective than is pure I. Biological as well as chemical tests are necessary to determine the efficiency of I dusts.—G. CHEVALIER and P. LAFFOND. *Compt. rend. acad. agr. France*, 24 (1938), 380–386; through *J. Soc. Chem. Ind.*, 57 (1938), 1473. (E. G. V.)

Lard—Study of Rancidification of. I. *Normal Rancidification.* II. *Experimental Rancidification.* The following conclusions are given: Lard first passes through a period of induction, during which no characteristic change is noted. After this period, a change which becomes more pronounced as time passes is noted by the formation of peroxides. This fixation of oxygen is observed in fats just showing a positive Kreis reaction. The Kreis and Vitulesco and Popesco reactions are positive only after the period of induction. The determination of peroxide while the above reactions are still negative indicates when the alteration of the fat starts. The period of induction may be explained by the presence of an inhibitor in the freshly prepared fat, and as this is decomposed the fixation of oxygen increases. A peroxide oxygen index of 0 to 3 indicates that the fat has been recently prepared. Between 3 and 10 the fat is in the induction period, and above 10 the fat has become rancid. When the fat is heated to between 70° and 100° C. the oxidation is preceded by a period of induction. When heated to 120° C. no period of induction is noted. The rate of oxidation as a function of time is not constant, it speeds up with time as in the case of autocatalytic phenomena. The rate of oxidation increases with rise in temperature. The period of induction varied with the different samples studied. Ultraviolet rays cause changes in lard similar to those observed under normal conditions, but the alteration is much more rapid.—F. MORVILLEZ, P. BALATRE and L. PUJO. *J. pharm. chim.*, 29 (1939), 159–166, 167–175. (S. W. G.)

Larvicide and Process for Preparing Same. A larvicidal emulsion, characterized by its quick-breaking tendency upon application to the surface of an object, comprises water gas tar, gas oil, dispersed in an aqueous medium wherein a soap is the emulsifying agent.—WALTER D. MARTIN. U. S. pat. 2,141,087, Dec. 20, 1938. (A. P.-C.)

Lecithin and Its Applications in Chocolate, Soap and Cosmetic Manufacture. The cultivation of the soya bean (*Amarilla gigante*) in Peru is recommended because of the advantages of the presence of lecithin (I) in fatty products, owing to its stabilization of oil in water emulsions and prevention of oxidation. It improves the digestibility and manipulation of the chocolate, the detergent properties and the stability of the lather of soap and the tonic properties of cosmetics. The properties are recorded of a commercial sample of vitamin F which is employed in conjunction with I and cholesterol in the treatment of dandruff.—G. G. VALDIVIA. *Bol. soc. quim. Peru*, 4 (1938), 103–107; through *J. Soc. Chem. Ind.*, 57 (1938), 1494. (E. G. V.)

Lysol—Preparation of. The following summary is given: (1) By the addition of 4% of industrial spirit to the Pharmacopœial formula for lysol, the initial saponification may be carried out "homogeneously," the process being complete in less than twenty minutes. Liquor Cresolis Saponatus B. P. C. 1907 contained 4% of alcohol, which was added to the heated linseed oil and aqueous potassium hydroxide, but as the amounts of these were almost double those in the present preparation, it is found to be insufficient to produce the apparent miscibility obtained above, and hence to expedite the process to the same extent. (2) When large batches are being made no external source of heat is required.—J. JACKSON. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 538–542. (S. W. G.)

Medicinal Preparations—Shaped. Shaped suppositories or the like are coated with a fibrous substance having a low thermal conductivity, for example cellulose or derivative, and, if

desired, with a physiologically indifferent adhesive.—W. W. GROOVES. Brit. pat. 489,732; *J. Soc. Chem. Ind.*, 11 (1938), 1366. (E. G. V.)

Ointment Bases. Drugs producing local effects on dermal tissues are usually divided into those whose action is chiefly mechanical including emollients, protectives, demulcents and antiseptics and those which upon application induce physiological changes. Emollients which are applied to skin to protect it from irritation, to act as lubricants and to make it softer and more elastic are discussed and include lard, petrolatum, lanolin, wax, fixed oils and ointment bases. Recent work on ointments and liniments is reviewed. Nineteen references.—M. A. LESSER. *Drug and Cosmetic Ind.*, 44 (1939), 33–36. (H. M. B.)

Olefines and Phenols—Detergent Aids from. A procedure relating to detergent aids prepared by reacting together olefines, phenols and a strong mineral acid is described. It provides for the preparation of wetting agents having valuable properties as measured by the wetting number, clarity of hard water solution, cost, etc., and by reason of flexibility of the process, due to variations of the temperature, concentration of the reactants and the time of reaction, detergent acids may be obtained having various characteristics such as wetting power, detergent value, etc., in substantially any desired degree.—British pat. 25,642/37. *Perfumery Essent. Oil Record*, 29 (1938), 241. (A. C. DeD.)

Parasiticide—Process for the Production of Polysulfides of Organic Bases and Their Solutions Useful as. Hydroxyalkylamines are treated with sulfur and hydrogen sulfide, ultimately with addition of a diluent.—K. G. CARL BLANK. Belg. pat. 427,582, May 31, 1938. (A. P.-C.)

Perfumery—Progess of, in 1938. A review.—*Perfumery Essent. Oil Record*, 29 (1938), 463. (A. C. DeD.)

Rancidity—Photochemical Studies of. Mechanism of Rancidification. Experimental and theoretical support is adduced for the theory that rancidification is the consequence of the combination of the unsaturated glycerides with active (nascent) hydrogen peroxide which is produced (together with inactive hydrogen peroxide) by the interaction of molecular oxygen with nascent hydrogen liberated under the photochemical action of light from photosensitizers such as protochlorophyll, chlorophyll or hemoglobin, or by the reaction of finely divided metals and water. Accordingly the induction period which precedes rancidification is regarded as the time required for the photosensitizer or metallic "catalyst" to develop the reactive substances to the point at which rancidity develops; the sextant-green filter protects from rancidification because it excludes actinic light to which the photosensitizers are sensitive. Refining oils may reduce stability because the removal of brown, etc., pigments permits penetration of actinic light to greater depths and the consequent exposure of more photosensitive molecules. Organic peroxides and hydrogen peroxide (stable) apparently play no part and cannot be considered as a measure of rancidification. The amount of magnesium-chlorophyll which can be added to an oil before the characteristic red fluorescence develops appears to be related to its degree of freshness or rancidity. Active catalase such as is present in animal and seed tissues (although absent from expressed oils) prevents rancidification by decomposing the active hydrogen peroxide as fast as it is formed, and has proved to be an excellent antioxidant, especially when further protection by means of green wrappers is given. —M. R. COE. *Oil and Soap*, 15 (1938), 230–236; through *J. Soc. Chem. Ind.*, 11 (1938), 1321. (E. G. V.)

Rotenone Derivatives. Rotenone derivatives of the class: $RCN:NH_2$, RC:NNHR′, RC:NNR′R″, $RC:NNHCONH_2$, RC:NNHCONHR′, RC:NNHCONR′R″, RC:NOH, RC:NOR′, RC:NOM, where RC is the radical left when the ketone oxygen is removed from rotenone, where R′ and R″ are the same or different aryl or aralkyl radicals, and M is a metallic group, are suitable for use in sprays, etc.—ARTHUR L. BLOUNT, assignor to UNION OIL CO. OF CALIFORNIA. U. S. pat. 2,132,013, Oct. 4, 1938. (A. P.-C.)

Soap from Rape Oil—Manufacture of. Soft soap with detergent properties is obtained from hardened rape oil.—S. Z. Engel. *Maslobo̍ino Shirovoe Delo*, No. 4 (1938), 22–23; through *J. Soc. Chem. Ind.*, 57 (1938), 1447. (E. G. V.)

Soap—Transparency of. A discussion, mainly extracted from the papers of Tiutiunnikov *et al.*, on the structure and methods of producing transparent soap, including mechanical methods, for example, by milling, of rendering opaque soaps transparent.—ANON. *Seifens. Ztg.*, 65 (1938), 545–548; through *J. Soc. Chem. Ind.*, 57 (1938), 1447. (E. G. V.)

Soaps—Detergent Power and Disinfectant Power of. A lecture. The parallel increase of disinfecting activity and detergent power of soap solution with increasing molecular weight and molecular saturation of the soap is regarded as a consequence of the greater degree of hydrolysis of the high-molecular saturated soaps.—J. STOCKHAUSEN. *Fette u. Seifen*, 45 (1938), 596–597; through *J. Soc. Chem. Ind.*, 57 (1938), 1447. (E. G. V.)

Sprays and Fluids—Perfumed. These perfumed preparations may consist of essential oils and synthetic perfumery chemicals in the form of (*a*) solutions, (*b*) dispersions and (*c*) emulsions. A theatre spray may be a simple solution of perfume oils in a solvent such as industrial spirit, or it may be a fine dispersion of a perfume compound in sulfonated oil and water, or, the odorous portion may be emulsified in water with the aid of a suitable proportion of soap or other emulsifying agent. The article deals more specifically with the composition and manufacture of perfumed disinfectants (*i. e.*, pine, eucalyptus, etc.), theatre and cinema sprays, and liquid bath preparations.—S. P. JANNAWAY. *Perfumery Essent. Oil Record*, 30 (1939), 87. (A. C. DeD.)

Surgical Dressing. A relatively high X-ray transparent surgical dressing comprises a fabric and a composition including a plastic composition such as celluloid and a filler the major part of which is composed of a material such as pine wood flour having a high transparency factor to x-rays, a binder such as gum acacia and a solvent such as alcohol, acetone or carbon tetrachloride which is not a substantial solvent for the filler, an adhesive when two layers of the material are used together, and material including a vegetable oil such as castor oil for promoting uniform drying throughout the thickness of the dressing when it is applied.—WALTER DAHMEN. U. S. pat. 2,127,552, Aug. 23, 1938. (A. P.-C.)

Suture Material—Preserving, Sterile before and during Use. The material is stored in a solution of high-molecular weight organic acid salts (such as one of sodium palmitate), carbolic acid and alcohol which, when cool, solidify into a plastic mass. A special container used is described.—ERNST GELINSKY. U. S. pat. 2,128,801, Aug. 30, 1938. (A. P.-C.)

Tobacco—Perfuming. The choice of the perfume to be used is limited by the Customs and Excise regulations. All the flavors contain tincture of tonka bean and vanilla tincture as their base, usually modified by other aromatic spices such as nutmeg, cinnamon, together with traces of other strong smelling perfumes. Typical formula and methods for incorporating the perfume in tobacco for pipe smoking, tobacco for chewing, cigarettes, cigars and snuff are discussed.—ANON. *Perfumery Essent. Oil Record*, 29 (1938), 254. (A. C. DeD.)

Tooth Paste. Powdered sodium bicarbonate is used with about an equal quantity of a substantially saturated sucrose solution, a relatively small portion of dissolved soap sufficient to create a gel structure substantially preventing oozing of the paste, and a minor portion of an alkali salt of a sulfonated higher alcohol such as lauryl sodium sulfate—ERNEST C. CROCKER, assignor to ARTHUR D. LITTLE, INC. U. S. pat. 2,128,917, Sept. 6, 1938. (A. P.-C.)

Triturations of Fresh Plants Suitable for Medicinal Use. For producing preparations containing the volatile constituents of fresh plants such as thuja or juniper berries, etc., the plant material is mixed with grape sugar and a salt of alkaline reaction such as sodium carbonate, and the mixture is triturated and dried.—ALFRED KUHN, assignor to MADAUS & Co. U. S. pat. 2,128,616, Aug. 30, 1938. (A. P.-C.)

PHARMACOLOGY, TOXICOLOGY AND THERAPEUTICS

PHARMACOLOGY

Acetyl-β-Methylcholine—Isomers of. Levorotatory acetyl-β-methylcholine has an active muscarine-like action, but much less than that of the dextrorotatory isomer published by Molitor. The two isomers have an equivalent nicotinic power upon the denervated gastrocnemius of the cat. It has been possible to demonstrate that either of the two isomers have a nicotinic action upon the blood pressure of the cat. Only the dextrorotatory isomer is hydrolyzed by the esterase of the serum of the cat or the rabbit.—A. SIMONART. *Arch. inter. pharmacodynamie*, 60 (1938), 209. (W. H. H.)

Acid Amides as Hypnotics. II. Acetamide. A number of disubstituted acetamides were prepared in order to determine their activity as hypnotics. The activity of diethylthioacetamide is relatively high in comparison with other compounds prepared and is approximately five times as potent as diethylacetamide.—F. F. BLICKE and A. P. CENTOLELLA. *J. Am. Chem. Soc.*, 60 (1938), 2924. (E. B. S.)

Acid Amides as Hypnotics. I. Acylureas. The introduction of an acyl group such as diethylbromoacetyl or allylisopropylacetyl into urea converts the latter into an excellent hypnotic. The ureas were obtained by the following general manner: conversion of malonic ester into the required disubstituted derivative, hydrolysis of the ester, elimination of carbon dioxide with the formation of a disubstituted acetic acid, preparation of the corresponding acetyl chloride and treatment of the latter with urea or methylurea. Publications which illustrate the manner in which hypnotic activity varies with the nature of the acyl group are very few in number.—F. F. BLICKE and A. P. CENTOLELLA. *J. Am. Chem. Soc.*, 60 (1938), 2923. (E. B. S.)

Adrenal Cortical Hormone—Rapid and Sensitive Method for Bioassay of the. A method for the bioassay of the adrenal cortical hormone is described which allows its detection in minute quantities. It is based on the maintenance of life of adrenalectomized rats weighing 35–50 Gm. exposed to a temperature of +2 to +5°. The hormone is administered subcutaneously in 3 doses with periods of 3 hours between injections. The unit is defined as the minimum amount necessary to maintain the life of two-thirds of the treated rats at a time when two-thirds of the controls succumb. The test seems to be particularly suitable for clinical and physiological studies necessitating the determination of adrenal cortical hormone in tissues and body fluids when only traces are present.—HANS SELYE and VICTOR SCHENKER. *Proc. Soc. Exptl. Biol. Med.*, 39 (1938), 518. (A. E. M.)

2-Alkyl-1,2,3,4-Tetrahydroisoquinoline Hydrochlorides. A series of 2-alkyl-1,2,3,4-tetrahydroisoquinoline hydrochlorides is described, together with the corresponding 6,7-dimethoxy and 6,7-dihydroxy derivatives. Some 2-alkyl-6,7-dimethoxy-3,4-dihydroisoquinolinium iodides are also included. Preliminary pharmacological studies show that the nuclear unsubstituted compounds show a slight depressor effect and that they are relatively strong sympatholytics. The M. E. D. (dogs) ranges from 1 to 10 mg./Kg. and L 50 (mice) from 70 to 185 mg./Kg. 2-Methyl-6,7-dimethoxy-1,2,3,4-tetrahydroisoquinoline hydrochloride is a poor depressor, the M. E. D. (dogs) being 1 to 2 mg./Kg. and L 50 (mice), 52 mg./Kg. The corresponding dihydroxy compound is a relatively powerful pressor, the M. E. D. (dogs) being 1 to 2 mg./Kg. and L 50 (mice), 280 mg./Kg.—JOHANNES S. BUCK and WALTER S. IDE. *J. Am. Chem. Soc.*, 60 (1938), 2101. (E. B. S.)

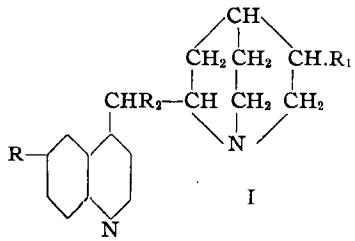
Amino Acids and Liver Function. Estimation of the response to an intravenous injection of glycine gives information regarding nitrogen metabolism and hepatic function. An increase in the urea excreted in the urine after the injection is of favorable significance. The test shows results which are in tolerable agreement with other tests of hepatic function.—J. HOREJSI, A. MECL and J. SPISAROVA. *Acta Med. Scand.*, 96 (1938), 217; through *Brit. Med. J.*, 4068 (1938), 1350 C. (W. H. H.)

***p*-Aminobenzoyl-Aminoethyl-Hydrocotarnine—Pharmacological Properties of.** A number of compounds derived from aminomethyl-hydrocotarnine have been reported as having a powerful mydriatic action, and this compound was prepared in the hope of discovering a local anesthetic. Aminomethyl-hydrocotarnine was treated with *p*-nitrobenzoyl chloride and the resulting nitrobenzoyl-amine reduced with stannous chloride to the *p*-aminobenzoyl-aminomethyl-hydrocotarnine. In comparative toxicity tests on mice, guinea pigs, cats and dogs the M. L. D. of the compound was approximately the same as that of cocaine. A dilution of 1:10,000 had no effect upon laboratory cultures of *Paramœcia*. Three methods of testing the local anesthetic action were employed. The first, the paralysis of the frog's sciatic nerve, gave very variable results, confirming the conclusion of Sinha that this method is unsuitable for the assay of local anesthetics. Application to the rabbit's cornea was used as the second experimental method, and measurement of the duration of anesthesia showed the drug to be superior to cocaine in this respect. No anesthesia could be observed when the drug was applied to the human cornea, however. When, in the third method, a 0.1% solution was injected intracutaneously on the flexor surface of the forearm and the duration of loss of sensation measured by noting the insensibility to pin pricks, the effect proved equal to that of cocaine. No anesthesia could be produced at the finger tip when a 1.0% solution was injected at the root of the finger in the neighborhood of the digital branch of the radial nerve. The compound is considered to be unsuitable for clinical practice.—B. B. DEY, P. LAKSHMIKANTHAM, J. C. DAVID and R. KRISHNASWAMI. *Ind. J. Med. Res.*, 25 (1938), 713; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 645. (S. W. G.)

Anterior Pituitary—Urinary Secretion Controlled by. The effect of large doses of oestrin and of anterior lobe preparations on urinary excretion provides evidence for a diuretic function of the anterior pituitary in man. The effect of oestrin in diabetes insipidus supports the pathological findings of von Hann (1918) that the presence of functional anterior lobe tissue is necessary for the production of diabetes insipidus. It is suggested that polyuria of Cushing's syndrome may be a manifestation of anterior pituitary hyperactivity. The response of urinary excretion to oestrin is considered to provide evidence in man of the "pituitary release phenomenon" described by Clauberg and Breipohl (1935) in rats.—B. G. SCHAPIRO. *Lancet*, 235 (1939), 1457.

(W. H. H.)

Antiplasmodial Action and Chemical Constitution. I. Experimental bird malaria has been used for following the effect of changes of structure on the therapeutic activity of the cinchona alkaloids. The procedure has been to administer orally to canaries a tolerated dose of the drug daily for six days, starting four hours after inoculation with *Plasmodium præcox*, and to observe the day of appearance of the parasites in the blood.



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Formula I, where R may be H or OMe, R_1 may be $—CH{:}CH_2$ or $—CH_2CH_3$, and R_2 is OH, embraces the chief naturally occurring cinchona alkaloids, all of which have been recorded as active under these conditions. Seven chloro-alkaloids (R_2=Cl), prepared by the action of phosphorus pentachloride on the hydrochlorides of the bases, were all inactive, as were quinene, cinchene and hydroquinene, prepared from the corresponding chlorides by the action of alcoholic potash (the bridge in I becoming —CH=CC⟨ ⟩). Desoxycinchonine and desoxycinchonidine (I, R, R_2=H, R_1= $—CH{=}CH_2$), prepared by the action of acid and iron filings on the corresponding chloro-alkaloids, as well as desoxydihydrocinchonine and desoxydihydrocinchonidine (R, R_2=H, R_1= $—CH_2CH_3$), prepared by the catalytic reduction of cinchonine chloride and cinchonidine chloride respectively, all proved to be inactive. The ester, methylquitenine (R=OMe, R_1= —CO—OMe, R_2=OH), prepared by oxidation of the vinyl group in quinine to carboxyl and subsequent esterification, showed slight activity, but the analogously formed methylcinchotenine and methylcinchotenidine were inactive. Conversion of methylquitenine into quitenamide or into quitenmethylamide destroyed its activity. The results show that structural modifications, particularly of the central —CH(OH)— group, profoundly affect the antiplasmodial activity of the cinchona alkaloids. It is suggested that the secondary alcoholic group may act as an anchoring group on certain structures in the parasitic substance. Two synthetic substances obtained in this work, 2-methyl-4-(3-pyridyl)quinoline and 2-styryl-4-(3-pyridyl) quinoline, which have a general structural similarity to the cinchona alkaloids, were inactive.—A. COHEN and H. KING. *Proc. Roy. Soc.*, B, 125 (1938), 49; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 306. (S. W. G.)

Atropine—Biological Determination of Small Quantities of. The acetylcholine-atropine antagonism on the duodenum of the rat is quantitative: equal doses of atropine produce identical effects; increasing doses of atropine decrease proportionately the acetylcholine hypertonia. This fact enables quantities of the order of 0.00025 to 0.0005 mg. atropine to be determined.—JEANNE LEVY and ESTERA MICHEL. *Compt. rend. soc. biol.*, 127 (1938), 12–16; through *Chimie & Industrie*, 40 (1938), 43. (A. P.-C.)

Atropine—Enzymatic Hydrolysis of. The authors show the character of enzymatic hydrolysis in the blood of certain rabbits upon the action of atropine.—Z. LEVY and E. MICHEL. *Soc. de Biol.*, Dec. 3, 1938; through *Presse Medicale*, 99 (1938), 1827. (W. H. H.)

Barbiturate Poisoning—Pharmacological Effect of Picrotoxin in. Picrotoxin attracted the attention of pharmacologists soon after its isolation because of the pronounced stimulation of the medullary centers which it produced. The effect is most pronounced in lower animals, but

is also striking in human beings, where there is evidence of an added stimulation of the cerebral motor cortex and the spinal cord as well. A marked stimulating effect on the respiratory center caused this drug to be used in the treatment of barbiturate poisoning; the author has collected reports of 15 cases in which it was so used. These reports seem to indicate that it is useful under practical conditions for this purpose, but one must be certain that the state of coma treated is due to barbiturate poisoning, since picrotoxin is definitely contraindicated in the treatment of morphine poisoning. Picrotoxin should be used only in severe cases, by the fractional dose method and gastric lavage, oxygen administration and parenteral fluids should not be omitted.—J. M. DILLE. *Northwest Med.*, 38 (1939), 80; through *Abbott Abstract Service*, (1939), No. 481. (F. J. S.)

Barbituric Acid Derivatives—Effect of Some Short-Acting, on Intestinal Activity In Vivo. The compounds tested were evipal, amytal, sodium thio-ethamyl, nembutal and pentothal. They caused when injected intravenously an immediate depression of the rhythmic intestinal contraction and tonus. This primary effect, however, is transient and is succeeded by a more prolonged phase characterized by increase in both intestinal contractions and tonus.—C. L. BURSTEIN. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 122. (A. E. M.)

Barbituric Acids. 5,5-Allylfuromethyl barbituric acid, which melts at 149° to 151° C., is a valuable hypnotic.—GUSTAV HEILNER, assignor to CHEMISCHE FABRIKEN DR. JOACHIM WIERNIK & Co. *Aktiengesellschaft.* U. S. pat. 2,139,583, Dec. 6, 1938. (A. P.-C.)

Basal Anesthetics—Hypersusceptibility to. It is suggested that deductions as to the cause and the prevention of hypersusceptibility to basal anesthetics might be made by observing common factors in a large series of cases. The liability to liver-cell damage from the use of these drugs is discussed. Certain diseases and symptoms that suggest hypersusceptibility are recorded. The route of administration is discussed as a factor in hypersusceptibility.—B. P. HILL. *Brit. Med. J.*, 4066 (1938), 1199. (W. H. H.)

3,4-Benzpyrene Derivatives—New Synthesis of. A new and more saitsfactory method is described for the preparation of derivatives of the powerfully carcinogenic hydrocarbon 3,4-benzpyrine.—LOUIS F. FIESER and E. B. HERSHBERG. *J. Am. Chem. Soc.*, 60 (1938), 1658. (E. B. S.)

Boubour Bean of Java (Phaseolus Radiatus L.)—Hypoglucemic Action of. The beans are regularly used as food. A preparation obtained by extracting the ground beans with 40% alcohol containing 0.4% of hydrochloric acid had a mild hypoglucemic action when neutralized and administered to dogs, either orally or by injection.—F. MERCIER and MELLE. J. BONNAFOUS. *Compt. rend. soc. biol.*, 127 (1938), 549–551; through *Chimie & industrie*, 40 (1938), 111. (A. P.-C.)

Cardiac Stimulation—New Law of. The stimulation of a beating heart by drugs causes it to develop more energy and a law has been discovered to which this type of stimulation conforms. This law, when generalized, is expressible as follows. "In living structures their natural stimulation according to its strength causes a corresponding development of energy which first remains in being and then dissipates after the stimulant has ceased to act" (Burridge's Law). In the light of this new law many hitherto profound and insoluble problems acquire the altered character of self-evident truths.—W. BURRIDGE. *Arch. inter. pharmacodynamie*, 59 (1938), 450. (W. H. H.)

Castor Oil—A Superior Laxative. The author attributed the superiority of castor oil and sodium ricinoleate in treating dermatosis of an intestinal origin to this fact. Neither castor oil nor the sodium soap of its principal fatty acid is absorbed from the intestinal tract and hence their laxative action is distributed throughout both the small and large intestine.—ARTHUR G. SCHOCH. *Southern Med. Jour.*, 32 (1939), 326. (W. T. S.)

Chemotherapy—An Outline of. IV. General Anesthetics and an Introduction to the Antiseptics. The use of some of the newer barbiturates, such as amytal and nembutal for producing basal anesthesia, thus largely reducing the quantity of volatile anesthetic required, has reduced the danger of post-operation shock and sickness which often follows the use of chloroform and ether. Another substance which is gaining popularity as a basal narcotic is avertin, a solution of tribromethyl alcohol in amylene hydrate. Two new general anesthetics, vinyl ether and cyclopropane, have recently been introduced. Vinyl ether illustrates the increase of activity obtained by introducing a double bond into the design, resulting in the combination of the struc-

tures of ethylene and ether in one molecule. Its anesthetic potency is said to be four times that of ether. Unfortunately it is readily decomposed in air and light and easily polymerizes into a jelly. Cyclopropane, which is isomeric with propylene, shows anesthetic properties similar to those of ethylene; it is in fact much more potent. It possesses two disadvantages, with oxygen inflammable and explosive mixtures are formed, and it causes a rise in blood pressure and hence, increased hemorrhage. Under the heading of antiseptics a very large range of substances used for widely divergent purposes must be considered. Foremost among them are included phenol and chlorine compounds; alcohol, the chlorinated phenols and chloramine.—ANON. *Pharm. J.*, 142 (1939), 115. (W. B. B.)

Cholic Acid—Synthetic, and Its Cardiovascular and Respiratory Action. By hydrogenation in presence of platinum black 3,7,12-triketocholanic (dehydrocholic) acid was converted successively into 3-hydroxy-7,12-diketocholanic, 3,7-dihydroxy-12-ketocholanic and 3,7,12-trihydroxycholanic (cholic) acids. The cholic acid thus obtained had a specific rotatory power of 59°35′ while that of natural cholic acid is 28°44′. The physiological actions of these two cholic acids is quite different. The natural acid prevents adrenaline-chloroform syncope, the synthetic does not. The latter depresses respiration and blood pressure.—J. MANTA and V. LUPEA. *Bull. soc. chim. biol.* 19 (1937), 1343–1349; through *Chimie & industrie*, 40 (1938), 306–307. (A. P.-C.)

Choline and β-Methylcholine—Thioesters of, and Their Physiological Activity. Onium Compounds, XIX. Methods of preparation of tertiary amino alkyl thiols are described. Thioethyldimethylamine and its β-methyl derivative have been acetylated and the resulting thioesters converted into quaternary ammonium derivatives yielding thioesters of choline and β-methylcholine. The acetylation of thiocholine brings about a reversal of the effect of introducing the sulfur atom in acetylcholine and produces a marked augmentation of the stimulation action of nicotine. A greater augmentation is produced by acetyl-β-methyl-thiocholine. After atropine, 0.1 mg. of this substance caused the blood pressure to rise from 130 to 210 mm. In large doses both compounds have marked paralyzing nicotine and curare actions.—R. R. RENSKAW, P. F. DREISBACH, M. ZIFF and D. GREEN, *J. Am. Chem. Soc.*, 60 (1938), 1765. (E. B. S.)

Choline Derivatives and Blood Coagulation. Choline and the majority of its derivatives retard, in a very moderated manner *in vitro*, the coagulation of the recalcified oxalated plasma of the rabbit. This effect is essentially or uniquely due to a retardation of the formation of thrombin. In a concentration of 1–50 acetyl-β-ethylcholine prevents the coagulation of the recalcified oxalated plasma by intervening in an inhibitory manner upon three phases of coagulation. The introduction of an acetyl grouping into the molecule accentuates more often the retarding-like properties of the derivatives of choline with reference to coagulation *in vitro*. The introduction of a methyl or ethyl grouping attenuates or prevents, according to the case, the inhibiting effects of choline and its derivatives upon the coagulation *in vitro* of the recalcified plasma. The intravenous injection of choline and its derivatives does not modify, in the rabbit, the coagulation of recalcified oxalated plasma. Only homocholine has a very slight retarding effect.—E. ZUNZ and O. VESSELOVSKY. *Arch. inter. pharmacodynamie*, 60 (1938), 146. (W. H. H.)

Danish Apothecaries Control Laboratory—Biological Division of the. A description of the work conducted by this control laboratory especially as regards bioassays of vitamin preparations and hormones. Brief description is given of the determination of vitamin C by observation of changes in the odontoblast layer of the guinea pig tooth (with microphotographs), and of the determination of progesterone by its effect on the mucosa of the infantile rabbit uterus, also of oestrone in castrated female rats by the effect on uterine weight.—H. LINDSTROM. *Arch. Pharm. Chemi*, 46 (1939), 3. (C. S. L.)

Daphnia Methods—Report on. A brief list of apparatus and methods developed for routine and research work with *Daphnia*, intended to indicate the progress that has been made and to illustrate the present status of efforts of standardizing.—ARNO BIEHOEVER. *J. Assoc. Official Agr. Chem.*, 21 (1938), 533–535. (A. P.-C.)

Digitalis Assay—Swedish Official Method for. Comparisons were made of the bioassay of certain commercial digitalis leaf preparations and of the international standard preparation of 1936 in Swedish frogs and in German frogs (*Rana temporaria*) by the frog bioassay method official in the Swed. Phar. Swedish frogs were more resistant to digitalis than German frogs. The international standard preparation was found stronger than the official determination would indicate. The authors question the advisability of pharmacopœial requirement of a frog method

and propose choice of a cat or guinea pig method. A national standard preparation should be issued.—S. KJELLMARK and H. RYDIN. *Farm. Revy*, 38 (1939), 3. (C. S. L.)

Diothane Analogs—An Investigation of the Effect of Chemical Structure on Local Anesthetic Action of. The diacetate, dibenzoate, difuroate, dicinnamate and difuranacrylate of piperdinopropanediol were prepared. Pharmacological tests indicated that the furan ring has a favorable effect on anesthetic action. It apparently increases the solubility and decreases the irritation in this series of compounds.—ELSIE M. WALTER. *J. Am. Chem. Soc.*, 60 (1938), 2467. (E. B. S.)

Diphenylacetyl-Diethylaminoethanol Ester Hydrochloride (Trasentin)—Experimental Study of. The following conclusions are given: (1) The drug has the M. L. D. per Kg of body weight of rabbit of 500 mg. intramuscularly and 30 mg. intravenously. This shows the drug to be much more toxic by the intravenous channel. It is not a cumulative drug. There is evidence of its rapid excretion or of its rapid destruction in the body. In fatal doses the drug first depresses and later paralyzes the cerebrum, while the convulsions appearing in the meantime are asphyxial in character. Respiration is arrested before the heart. (2) In the intact dog, and in the isolated toad's heart, the drug depresses the heart by direct action on muscle and through stimulation of the vagal nerve ends. Like atropine, the drug paralyzes the vagal nerve ends to the heart in large doses, but it appears to be much weaker than atropine in this respect. (3) In moderate doses, it produces an evanescent fall of blood-pressure, a relaxation of the muscle wall of the bronchus, a limited degree of vasodilatation and a relaxation of the bitch uterus *in situ* especially if the tone of the uterine muscle is previously raised by pilocarpine or by pituitary extract. (4) It relaxes the mesenteric vein of the sheep, the isolated intestine of the rabbit and of man, the guinea-pig's and rabbit's uteri and the bull's ureter. This is especially prominent in the case of the rabbit's intestine, where the drug is superior to atropine or to papaverine in the same concentrations in antagonizing the spasm produced by both the barium ion and arecoline. It acts on the vagal nerve ends and directly on the plain muscle fibers. For the ureter, it is inferior to visammin when the same concentrations are compared. (5) The drug may differ from atropine in possessing a selective action on the innervation to certain organs. For example, in the rabbit and dog, it does not dilate the pupil of the eye in doses which greatly influence certain other parasympathetically innervated tissues.—K. SAMAAN and K. SAAD. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 679–691. (S. W. G.)

Donaxine—In What Pharmacological Group Should, Be Placed? Donaxine, $C_{11}H_{14}N_2$, from the grass *Arundo donax* L., is β-dimethylaminomethylindole. Its physiological action is much like that of *d*-pseudoephedrine; hence it should be placed in the adrenaline group.—RAYMOND-HAMET. *Compt. rend. soc. biol.*, 126 (1937), 859–862; through *Chimie & industrie*, 40 (1938) 112. (A. P.-C.)

Dosage-Mortality Curve—Determination of, from Small Numbers. The general assay procedure is followed and the results are used as usual as the basis of calculation, but the present method differs by the use of corrected probits (probable units) in the calculations. The dosages are transformed to logarithms and all percentages between 0 and 100 to empirical probits. The empirical probits are plotted against the logarithm of the dose and a straight line is fitted to the points. In placing the line, allow for a point above the line for each dosage giving 100% kill and a point below the line when the dosage has been completely ineffective. The method of calculation is based upon a table of probits for transforming the sigmoid dosage-mortality curve to a straight line, and a table of constants for determining the corrected probit and the weighting coefficient from the expected probit. The procedure is applied to basic groups of four individuals. The original paper should be consulted for the lengthy mathematical applications.—C. I. BLISS. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 192–216. (S. W. G.)

Drug Action—Ejaculation Induced by. A series of twelve hypnotics, thirteen stimulants and twenty-eight combinations from these two series, were explored to determine their capacity of eliciting ejaculation in the albino mouse. From these experiments the following conclusions can be drawn: Pernosten was the only hypnotic possessing an ejaculatory action. Yohimbine was the only stimulant devoid of the ejaculatory action. Terminal ejaculation, at the moment of, or within a few minutes before death, is the predominant feature of the ejaculatory action of the drugs found effective when used alone. Only three of the stimulants, amidopyrine, benzedrine and metrazol, were capable of intravital ejaculatory action; this action, however, was inconsistent

and usually required lethal doses. Also pernoston rarely produced ejaculation without subsequent death. Barbital, pernoston and nostal developed an ejaculatory action when combined with stimulants. All the other hypnotics were ineffective when combined with stimulants, and, in some instances, were capable of antagonistically inhibiting the ejaculatory action of all doses of the stimulant. In some instances, as for example, the effective combinations of barbital with amidopyrine and of pernoston with cocaine, codeine, picrotoxine, paredrine or strychnine, an antagonistic influence became manifest in another manner, namely, higher doses than were effective alone were required for eliciting ejaculatory response in the combination. In contrast to the alleged selectivity of yohimbine on the sex reflex apparatus, this drug proved ineffective alone or in any combination with hypnotics except with pernoston. In eight out of twenty-eight drug combinations a distinct, or very considerable, synergism was found with respect to the ejaculatory action. Morphine, amidopyrine, coramine, metrazol and benzedrine were the stimulants; pernoston and nostal (the two bromine-containing barbiturates examined) were the hypnotic components of these combinations. Two more such synergistic combinations were those of yohimbine with pernoston and with coramine. Some of these eight combinations mainifested a decisive selectivity of the ejaculatory action; they were capable of eliciting intravital ejaculation very consistently and with doses far below the lethal range. In some instances, $^1/_{100}$ or less of the minimum ejaculatory dose of the stimulant becomes effective when combined with a subtoxic dose of the hypnotic, and the ejaculatory response can be obtained in 80 to 100% of experiments in a range of innocuous doses. Among these selectively ejaculatory combinations, those of pernoston with benzedrine, metrazol and yohimbine were found most suitable for routine use. The optima of dosage, concentration, sequence and time interval of administration, as important conditions of the ejaculatory action, were ascertained, and directions, based upon these observations, are presented for employing those three drug combinations in routine work. A number of preliminary experiments are reported, in which it was attempted to transfer the findings on ejaculatory drug action in the mouse to other species of animals.—S. LOEWE. *Arch. inter. pharmacodynamie*, 60 (1938), 37. (W. H. H.)

Ephedrine. Low concentrations of ephedrine sensitize the rabbit's ear, the cat's nictitating membrane and the frog's heart not only to adrenaline but also to stimulation of adrenergic nerves. These actions of ephedrine are attributed to the inhibition of amine oxidase, which oxidizes adrenaline. This inhibition is compared with the inhibition of cholin esterase by eserine.—J. H. GADDUM and H. KWIATKOWSKI. *J. Physiol.*, 94 (1938), 87; through *Brit. Med. J.*, 4068 (1938), 1350G. (W. H. H.)

Ergometrinine—Action of, upon Diuresis. The intramuscular injection of ergometrinine increases the quantity of urine in the fasting animal and augments the consecutive diuresis from water, sodium chloride solution and a solution of urea. This diuretic effect is relatively moderate and much less intense than that obtained in the same conditions under the influence of ergometrine. The intramuscular injections of ergometrinine impedes the gradual diminution of the chlorides of urine at the time of water diuresis and ureic diuresis. It impedes slightly the gradual augmentation of chlorides at the time of sodium chloride diuresis. It does not modify in an appreciable manner the gradual increase of content of chlorides in the urine of a fasting animal. The intramuscular injections of ergometrinine impedes somewhat the gradual diminution of the rate of urea in urine during aqueous diuresis and tend, on the contrary, to accentuate during sodium chloride diuresis. It does not modify in an appreciable manner the gradual increase in the content of urea in urine of a fasting animal and accentuates it somewhat during ureic diuresis.—E. ZUNZ and O. VESSELOVSKY. *Arch. inter. pharmacodynamie*, 60 (1938), 163. (W. H. H.)

Ergot—New Investigations on the Effects of the Constituents of, on Diuresis. The investigation tended to show chiefly the interest there would be in using ergometrine as a substitute for ergotamine in confinements. Ergotamine (as also ergoclavine) strongly reduces diuresis, whereas ergometrine is strongly diuretic. Moreover, it exerts a strong action on the uterus without any tendency to produce gangrenous manifestations which are observed with ergotamine; it produces neither nausea nor vomiting, being in this respect similar to ergometrinine, ergine, isoergine, lysergic acid and isolysergic acid. Ergometrine increases the urinary flow, not only after the ingestion of water, but also after the ingestion of 10% salt or urea solution; it also acts if ingested during fasting. It does not produce any sympatholytic effects.—E. ZUNZ. *Bull. acad. roy. méd. Belg.*, 2 (1937), 492–509; through *Chimie & industrie*, 40 (1938), 112. (A. P.-C.)

Fluidextract of Gelsemium Elegans—Electrocardiographic Modifications Produced by. Fluidextract of *Gelsemium elegans* produces bradycardia in chloralosed dogs primarily by cardiac depression; it produces impairment of conductibility and cardiac circulation. This fluidextract produces the same electrocardiographic modifications as of *Gelsemium sempervirens.*—E. MOISSET DE ESPANES. *Société de Biol.*, Oct. 29, 1938; through *Presse Medicale*, 89 (1938), 1631. (W. H. H.)

Gonadotropic Hormones—Assay of. II. The following summary is given: The significance of the variations in the method of administration to the effectivity of gonadotropic hormones has been investigated in the cases of two highly purified preparations, Antex Leo 366 (mare's serum hormone) and Physex Leo 371 (human pregnancy urine hormone). Standard curves have been made for the ovarian and uterine weight, immature rats being used as test animals (10 animals per dose). Some of these tests were made with repeated subcutaneous doses, some with single subcutaneous doses, and some with single intravenous doses. The differences in the cases of the standard curves for the mare's serum hormone were only slight, the M. E. D. was the same with the various methods of administration. On the contrary, the effect of the human pregnancy urine hormone was greatly dependent on the method of administration. Single subcutaneous injections were found to be one-fourth as active, and single intravenous injections one-eight as active as repeated subcutaneous injections (five equal injections in forty-eight hours), as regard the lines of the curves, luteinization and vaginal cornification. These differences are thought to be due to non-excretion of mare's serum hormone through the kidneys in connection with slow destruction in the organism, slowness in the rate of absorption being disregarded.—C. HAMBURGER and K. PEDERSEN-BJERGAARD. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 186–91. (S. W. G.)

Gonadotropic Hormones—Assay of. III. The experiments show that crude and highly purified preparations of both human pregnancy urine hormone and pregnant mare serum hormone give qualitatively constant results for each type of hormone. As for pregnancy urine preparations, the rat test showed that the proportion between the follicle-stimulating effect (as measured by the uterine development) and the luteinizing capacity was constant, and it was found that the proportion between the "rabbit unit" and any chosen "rat unit" was the same with the crude tannate as with the 100 times more purified preparation, Physex 371. Experiments with the pregnant mare serum preparations confirm previous results, that various samples of mare's serum hormone, whether untreated (plasma) or highly purified (Antex), give the same type of uterine and ovarian dose-response curve for rats. Furthermore, it was shown that there was a constant relation between the dose causing ovulation or production of hemorrhagic follicles in the rabbit ovary and the dose necessary for the stimulation of follicles and the production of corpora lutea in immature rat ovaries and the indirect effect on the uterus. Here also the ratio of Rb. U.: R. U. was uninfluenced by the purification of the hormone material. These results do not necessarily indicate that only one gonadotropic factor is present in the preparations. But if the gonadotropic hormone from pregnant women and mares does consist of two or more factors, the relative content of these is not altered by the progressive purification of the preparations.—C. HAMBURGER. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 673–678. (S. W. G.)

Holarrhena Africana—Study of. The samples obtained under the name "seoulou" were tested. The root bark was found to be rich in alkaloids, slightly toxic and to have a chemical composition and pharmacodynamic action analogous to that of *H. antidysenterica.* Further study on the antidysenteric and febrifuge activity of *H. Africana* is recommended.—R. PARIS. *Bull. sci. pharmacol.*, 45 (1938), 453–457. (S. W. G.)

Hormones—Recent Discoveries about. The great advances that have taken place in recent years in our knowledge of hormones have been primarily due to the development of methods of biological standardization. The author discusses such hormones as adrenaline, thyroid, the androgens, the oestrogens, progestin; cortical hormones; hormones with unknown structure; insulin and parathyroid; the pituitary; gonadotropic substances. An illustration is given to demonstrate the effect of an oestrogen and anterior pituitary on the ovaries and uterus of young rats. Anterior pituitary stimulates the ovaries which liberate oestrogens and promote growth of the uterus. It is concluded that the synthesis of new substances, allied in chemical structure to the natural hormones, is likely to lead not only to cheaper ways of producing the effects of the hormone itself, but also to the discovery of new pharmacological effects, like that of benzedrine

and ephedrine on sleep, and of better methods of administration, like the taking of these substances by mouth.—J. H. GADDUM. *Pharm. J.*, 142 (1939), 27, 61. (W. B. B.)

Hydrogen, Magnesium and Phosphate Ions—Influence of, on Tissue Respiration in Vitro. Effect of hydrogen ion concentration, $MgCl_2$ and phosphate on the tissue respiration of rabbit kidney cortex was investigated by Warburg's second method. Three kinds of Ringer's solution of p_H 7.02, 7.20 and 7.42 were prepared by varying the bicarbonate concentration of the solution against the definite concentration of carbon dioxide gas. The tissue respiration in these various solutions was compared with that in the normal Ringer's solution of p_H 7.32, and it was found that no marked difference was caused by the variation of p_H in these ranges. Ringer's solutions containing 1, 5 and 10 mg. per cent $MgCl_2$ were prepared and the tissue respiration was measured against that in the normal Ringer's solution. It was shown that $MgCl_2$ seemed to have little effect on tissue respiration *in vitro* at such concentrations. Forty-five, 90 and 180 mg. per cent phosphate was added to 100 cc. Ringer's solution, and the tissue respiration was estimated by comparing with that in the normal Ringer's solution. The tissue respiration was increased with the increase of phosphate in the Ringer's solution.—H. YAMAMOTO. *Tôhoku J. Exp. Med.*, 35 (1939), 1. (A. C. DeD.)

Iodine Compounds—Organic, Renal Clearances of. Organic iodine compounds are excreted in part by the renal tubules and the clearances are depressed as the plasma concentration is elevated. All these substances depress the phenol-red clearance. They are apparently excreted by the same common cellular mechanism and thus enter into quantitative competition for that mechanism.—W. W. SMITH and H. A. RANGES. *Amer. J. Physiol.*, 123 (1939), 720; through *Brit. Med. J.*, 4067 (1938), 1296E. (W. H. H.)

Iron—Absorption and Excretion of, Following Different Routes of Administration. Three men and three women were placed upon diets containing 5.9 to 8.6 mg. of iron a day and shown to be in balance. The oral intakes were raised to 12 to 16 mg. of iron a day and the subjects were again shown to be in balance—that is, all the supplementary iron was excreted. Later 7 mg. of iron were injected intravenously every day, the intake by mouth being 7.6 to 11.7 mg. a day. None of the injected iron was excreted into the gastrointestinal tract; the intestine has no power of regulating by excretion the amount of iron in the body.—R. A. MCCANCE and E. M. WIDDOWSON. *J. Physiol.*, 94 (1938), 148; through *Brit. Med. J.*, 4068 (1938), 1350G. (W. H. H.)

Leucotaxine—Studies on Physiological Effects of. This is the crystalline nitrogenous substance recovered from areas of inflammation. Its liberation offers a reasonable explanation for the mechanism of increased capillary permeability and leucocytic migration in areas of injury.—V. MENKIN and M. A. KADISH. *Amer. J. Physiol.*, 124 (1938), 524; through *Brit. Med. J.*, 4069 (1938), 1402D. (W. H. H.)

Magnesium Sulfate—Intravenous. Injections of 5 cc. of a 50% solution of magnesium sulfate have proved beneficial in uraemia, and also in cases of over-digitalization. It has also been found useful in affections of the liver and gall bladder.—ST. KUTHAN. *Med. Klinik*, 34 (1938), 1363; through *Brit. Med. J.*, 4068 (1938), 1350A. (W. H. H.)

Male Sex Hormone—Biphasic Effect of, on the Pituitary of the Female Rat. A small dose of testosterone results in cessation of the estrus cycles, ovarian atrophy, diminished estrin production and involution of the uterus. This is effected by depression of the pituitary and follicle stimulating hormone secretion. A large dose results in cessation of the estrus cycles, persistent corpora lutea and diminished estrin, by stimulation of elaboration of luteinizing hormone. But in this case uterine involution does not occur because the larger amount of androgen present acts directly on the uterus to prevent the atrophy and to produce progestation-like changes.—S. C. FREED, J. P. GREENHILL and S. SOSKIN. *Proc. Soc. Exptl. Biol. Med.*, 39 (1938), 440. (A. E. M.)