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PHARMACEUTICAL ABSTRACTS

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ABSTRACTORS

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CHEMISTRY

ANALYTICAL (*Continued*)

Intermediates in Coal-Tar Colors—Tests for. A method is proposed (technique described in detail) for the determination of Lake Red C Amine (2-chloro-5-toluidine-4-sulfonic acid), the intermediate found in D&C Red Nos. 8 and 9. The method consists essentially in boiling the sample with 2% barium chloride solution, filtering, extracting the solution with benzene to remove β-naphthol, diazotizing an aliquot of the solution for 30 mins. at 5° C. with thousandth-molar sodium nitrite solution, buffering with excess of solid sodium acetate, coupling in the cold with 0.1% aqueous solution of H-acid (1-amino-8-naphthol-3,6-disulfonic acid) and comparing colorimetrically with standards of Lake Red C Amine prepared at the same time and containing an equivalent quantity of barium chloride. On a sample of specially purified D&C Red No. 8 to which known amounts of Lake Red C Amine were added in various ways, the method gave recoveries of 75% to 100%.—S. H. NEWBURGER. *J. Assoc. Official Agr. Chem.*, 24 (1941), 908–910. (A. P.-C.)

Iodine Ointment—Analysis of. A detailed description is given of a technique for the determination of free iodine and potassium iodide in iodine ointment, the methods being essentially as follows: About 2 Gm. of ointment is melted on the water bath (at not above 70° C.), dissolved in 30 cc. of chloroform, 30 cc. of water is added and the mixture is titrated with decinormal sodium thiosulfate in presence of starch indicator, while shaking vigorously. This gives free iodine. The solution is diluted with 200 cc. of water, 0.5 cc. of 0.2% alcoholic *p*-ethoxychrysoidin indicator and 1 to 4 drops (to neutralize) of decinormal sodium hydroxide are added, and the solution is titrated with decinormal silver nitrate, approaching the end point dropwise and rotating the flask frequently. The end point, which is produced by 1 drop of silver nitrate, is characterized by flocculation of the colloidal silver bromide and complete disappearance of the reddish-brown tinges leaving an almost clear, pale yellow, supernatant liquid; cc. of silver nitrate minus cc. of thiosulfate = cc. consumed by iodide originally present. The methods were studied collaboratively. Results for free iodine were quite satisfactory; results for potassium iodide showed marked variation, although individual collaborators were able to obtain concordant results. It would seem that the method measures the potassium iodide present in the portions weighed out, and that these portions are not always representative for this salt; iodine ointment is a heterogeneous mixture of a glycerol solution of iodine and potassium iodide in a base composed largely of petrolatum, and it is probable that the iodine, which is soluble in both phases, becomes evenly dispersed, while the potassium iodide, which is not soluble, remains in solution in the glycerol.—WM. F. REINDOLLAR. *J. Assoc. Official Agr. Chem.*, 24 (1941), 833–835. (A. P.-C.)

Iron in Plants—Microchemical Detection of. A brief discussion of the various methods for determining iron in plants is given, followed by a description of a technique for demonstrating ferric iron *in situ* by means of sparteine thiocyanate. Tests were carried out on 42 species of plants and the results tabulated. Two photomicrographs.—MARIA A. MORELLO. *Mikrochemie*, 28 (1940), 245–253. (R. H. B.)

Iron Preparations of the DAB 6—Volumetric Estimation of. Definite suggestions are offered for improving the several procedures.—K. W. MERZ and A. BOLDT. *Deut. Apoth. Ztg.*, 55 (1940), 706; through *Chem. Abstr.*, 35 (1941), 1932. (H. M. B.)

Leptotaenia Multifida Nuttall—Phytochemical Study of. Total ash and moisture contents were 11.53% and 5.2%, respectively. Extracts obtained successively by petroleum ether, ether, alcohol (95%) and ethyl acetate were 26.35, 1.98, 0.82, 5.94 and 0.49%, respectively. A volatile oil has been isolated from the root (1%) with the following constant: sp. gr. (30°) 0.8701, refractive index (30°) 1.4789, $(\alpha)_{30°}$ + 4.14. A fraction was obtained resembling a mixture of sesquiterpene hydrocarbons and sesquiterpene alcohol. An oleoresinous portion yielded an oil resembling a mixture of terpene and sesquiterpenes. Sucrose has been isolated from the dried root. A crystalline substance has been isolated and a formula, $C_{14}H_{14}O_4$, tentatively assigned to it; it possesses a lactone group, produces an acetyl derivative, m. 126–127°, its reactions indicate it to be an isomer of nodakenetin.—WILLIAM R. LLOYD and GLENN L. JENKINS. *Pharm. Arch.*, 13 (1942), 33–38. (H. M. B.)

Magnesium Trisilicate—Analysis of. A search was made of the literature for information concerning its properties, uses and methods of analysis. The tests proposed by Glass (*Quart. J. Pharm. Pharmacol.*, 9 (1936), 445) and by Ross and Butler (meeting Am. Pharm. Mfrs. Assoc., Washington, D. C., Dec., 1938) are discussed from the standpoint of the advisability of studying them collaboratively.—E. K. TUCKER. *J. Assoc. Official Agr. Chem.*, 24 (1941), 836–837. (A. P.-C.)

Magnesium Trisilicate—Chemical Examination and Standardization of. The following analytical procedure is recommended. *Loss on Ignition.*—Weigh accurately about 1 Gm. of the sample into a tared platinum crucible and ignite gently; after 3 min. remove the lid and ignite over the full blast of the Meker burner for 30 min., replacing the lid for the last 10 min.; cool in a desiccator and weigh. *Silica.*—Crush any lumps in the residue with a glass rod, mix the powder thoroughly, while still in the crucible, with 6 Gm. of anhydrous sodium carbonate, adding it in several small portions, and finally cover the mixture with 2 Gm. of the anhydrous sodium carbonate. Ignite strongly over the full blast of a Meker burner for 30 min. Allow to cool, place the crucible and lid in a glass or porcelain evaporating dish containing 100 cc. of warm water, cover with a clock-glass, and add cautiously 35 cc. of hydrochloric acid. When the effervescence has subsided remove the clock-glass, after rinsing, and heat the evaporating dish on a water bath. When the crucible and lid are free from the cake, rinse and remove them from the dish. Break up any lumps with a glass rod and evaporate the contents of the basin to dryness with occasional stirring. Cover with a clock-glass and bake the dish and contents at 110° for 4 hrs. Moisten the contents of the dish with 10 cc. of hydrochloric acid, add 100 cc. of warm water, stir thoroughly and warm on the water bath. Collect the silica on a 15-cm. Whatman filter paper No. 54 and wash with hot water until the washings are free from chlorides. Reserve the precipitate and filter. Evaporate the combined filtrate and washings to dryness in the original evaporating dish, repeat the baking, filtration and washing, using an 11-cm. filter paper. Reserve the precipitate and filter. Mix the filtrate and washings and evaporate to about 100 cc., add 20 cc. of solution of ammonium chloride, heat to 80° to 90°, make alkaline with dilute solution of ammonia, and warm on the water bath for 10 min. Collect the precipitate on an 11-cm. Whatman filter paper No. 541 and wash the filter and precipitate with alkaline solution of ammonium nitrate (3 Gm. of

ammonium nitrate and 5 cc. of strong solution of ammonia per liter) until free from chlorides. Place the three precipitates and filters in a tared platinum crucible and heat gently over a low flame until completely charred; increase the flame gradually until the residue is perfectly white, then ignite strongly over the full flame of a Meker burner for 30 min. Cool and weigh. Moisten the residue with a few drops of water, add five drops of sulfuric acid and 15 cc. of hydrofluoric acid. Place the crucible eccentrically on a sand bath and heat until dry. Ignite strongly, cool and weigh. Deduct this from the previous weight and the difference is equal to the weight of silica. The weight of residue in the crucible is the weight of ferric oxide plus aluminum oxide. *Magnesium.*—Evaporate the combined filtrate and washings to about 100 cc. add 5 cc. of acetic acid and 20 cc. of solution of oxalic acid, make the hot solution alkaline with ammonia, stir vigorously, and set aside for 4 hrs. Collect the precipitate on a No. 42 Whatman filter, wash three times with dilute solution of ammonia diluted with four times its volume of water. Reserve the filtrate and washings. Dissolve the precipitate on the filter in 100 cc. of hot dilute nitric acid (1 in 5) and collect the runnings in the original beaker used for the precipitation of the calcium. Wash the filter well with hot water and tilt the beaker so that all traces of the precipitate are dissolved. To the hot solution add 2 cc. of solution of oxalic acid and a slight excess of solution of ammonia. Allow to stand for 4 hrs. and filter through a No. 42 Whatman filter, wash with dilute solution of ammonia diluted with four times its volume of water until the washings are free from chlorides. Ignite the precipitate and filter in a tared platinum crucible and weigh the calcium oxide. Evaporate the mixed filtrates and washings from the calcium precipitation to 200 cc., cool, add 30 cc. of solution of sodium ammonium phosphate, neutralize with strong solution of ammonia, add more strong solution of ammonia, equal to one-fifth of the total volume, stir well and set aside for 4 hrs. Collect the precipitate on a No. 42 Whatman filter, wash three times with dilute solution of ammonia, diluted with four times its volume of water and dissolve in 100 cc. of hot dilute nitric acid (1 in 5). Collect the runnings in the beaker used for the magnesium precipitation and wash the filter well with hot water. Add 2 cc. of solution of sodium ammonium phosphate, cool, neutralize with solution of ammonia and add a further 40 cc. of solution of ammonia, stir well and set aside for at least 4 hrs. in the cold. Collect the precipitate on a No. 42 Whatman filter, wash with dilute solution of ammonia, diluted with four times its volume of water, until the washings are free from chlorides. Ignite the filter and precipitate in a tared platinum crucible slowly over a mushroom burner, gradually increasing the flame until the residue is perfectly white; finally ignite over a Meker burner. Cool and weigh the magnesium pyrophosphate. Each gram of the residue is equivalent to 0.3621 Gm. of magnesium oxide. Qualitative tests for the limits of arsenic and lead are given. A method is given for the determination of adsorptive power of the product. The authors consider that a satisfactory sample of magnesium trisilicate should have: (1) The correct gravimetric ratio of $MgO:SiO_2$ of 1:2.24 (limits 2.21–2.28). (2) Powerful neutralizing ability with characteristic lag action. The total antacid power should not be less than 300 cc. of 0.05 *N* hydrochloric acid per Gm. (ignited weight) and the lag value should be approximately 50% of the total antacid power. (3) Adsorptive power showing lag phenomenon. The total adsorptive value should be not less than 240 mg. of methylene blue per Gm. of ignited sample.—H. SURFLEET and G. V. PORTER. *Quart. J. Pharm. Pharmacol.*, 13 (1940), 109–121. (S. W. G.)

Mercury Ointments—Analysis of. Because of the many modifications in the methods reported in the literature, consideration was given to the possibility of unifying the methods with the view to the adoption of a uniform method for ointments of mercury and its compounds. From a review of the work of previous associate referees of the Association, it appears impossible to correlate the methods for the sake of uniformity except at the expense of simplicity and accuracy, which is not desirable.—PAUL S. JORGENSEN. *J. Assoc. Official Agr. Chem.*, 24 (1941), 837–840. (A. P.-C.)

Methylene Blue—Determination of. A limited amount of experimental work on a sample of known purity substantiated Holmes' observations (*J. Assoc. Official Agr. Chem.*, 10 (1927) 503), but indicated a rather constant iodine absorption under the conditions of the A. O. A. C. iodometric method. The factor 0.006618 Gm. anhydrous methylene blue should be substituted for the equivalent given in the A. O. A. C. method for 1 cc. of decinormal iodine.—H. O. MORAW. *J. Assoc. Official Agr. Chem.*, 24 (1941), 806–809. (A. P.-C.)

Microchemical Apparatus—Report on Recommended Specification for. Apparatus reported upon by the A. C. S. committee includes specific descriptions for carbon-hydrogen and Dumas nitrogen determinations.—G. L. ROYER, H. K. ALBER, L. T. HALLETT, W. F. SPIKES and J. A. KUCK. *Ind. Eng. Chem., Anal. Ed.*, 13 (1941), 574–583. (E. G. V.)

Morpholine—Qualitative Determination of. Dilute solutions of alkaline mercuric iodide and morpholine produce fine white crystals when mixed on a micro-slide. Phenylmorpholine does not produce crystals. The reaction permits detection of 0.002 Gm. of morpholine. Four photomicrographs.—L. S. MALOWAN. *Mikrochemie*, 28 (1940), 285–288. (R. H. B.)

Nickel Salts—Determination of, with Zeiss Immersion Refractometer. The author measured the refractions of 0.1, 0.2 and other solutions up to 1.2 normal nickel chloride and nickel nitrate at 17.5°. Values for temperatures ranging from 0° to 30° were calculated. The results are tabulated and a review of the literature is given.—P. CSOKAN. *Z. Anal. Chem.*, 121 (1941), 29–38. (S. W. G.)

Ointment of Mercuric Nitrate—Assay of. The following method is proposed. Heat 3 to 5 Gm. of sample in a Kjeldahl flask with 40 cc. of 1 + 1 nitric acid for 1½ hrs., boiling just enough to maintain agitation, cool under running water, swirling to prevent undissolved matter from solidifying in one large piece, dilute to 200 cc., filter through a dry filter, transfer a 100-cc. aliquot to a Kjeldahl flask, add 10 cc. of sulfuric acid, heat to white fumes, immediately remove from the heat and allow to cool, add 5 cc. of nitric acid, heat at a medium rate till the rate of boiling decreases markedly, cool, dilute to 100 cc., cool again if necessary, and titrate with decinormal ammonnium thiocyanate using iron and ammonium sulfate as indicator (1 cc. = 0.01003 Gm. of mercury).—R. K. SNYDER. *J. Assoc. Official Agr. Chem.*, 24 (1941), 927–928. (A. P.-C.)

Organic Reagents and Methods Involving Their Use. Observations upon the precipitation of bismuth with salicyladoxime and also upon the quantitative estimation of zinc in the form of its monosalicylaldoxime salt. There are included some notes upon the black precipitate that is produced by salicylaldoxime in vanadic acid solutions.—J. F. FLAGG and N. H. FURMAN. *Ind. Eng. Chem., Anal. Ed.*, 12 (1940), 663. (E. G. V.)

Percaine—Some Reactions of. Percaine is diethylaminoethyleneamine - butyloxycinchoninate

hydrochloride. When heated with zinc powder it develops vapors of oxyquinoline, with soda-lime of an aliphatic amine. The characterization of these cleavage products is described. It gives also characteristic reactions on diazotation, esterification and treatment with HNO_3. The compound can be titrated with 0.1 normal sodium hydroxide using phenolphthalein as indicator and the base set free by this titration can be determined with sulfuric acid using rosolic acid. Both titrations must agree. The factor of calculation is 0.037972.—ROSA C. D'ALESSIO DE CARNEVALE BONINO. *Semana méd.*, 49, I (1942), 653. (A. E. M.)

Phenobarbital and Theobromine—Determination of. A study was made of methods that have been published for the determination of phenobarbital and of theobromine. Phenobarbital can be separated quantitatively from theobromine by using water-washed ether for extracting the phenobarbital and then extracting this ether solution with a portion of 10% hydrochloric acid to remove small amounts of theobromine that are extracted by the ether. Because of mechanical and solubility difficulties, the author has as yet been unable to devise a method for measuring the theobromine after removal of the phenobarbital. A study of Breukeleveen's modification (*Chem. Weekblad*, 24 (1927), 206) of the Emery-Spencer method (*J. Ind. Eng. Chem.*, 10 (1918), 605) showed that: (*a*) phenobarbital has no effect on the iodometric determination of theobromine; (*b*) theobromine recoveries are proportional to the quantity of iodine solution used up to an excess of about 130%; (*c*) from about 130% to 200% excess iodine, quantitative recoveries of theobromine are obtained; (*d*) above 200% excess iodine, recoveries diminish, probably due to a solubility factor affecting such a small sample; (*e*) lactose affects the results obtained by this method.—E. C. DEAL. *J. Assoc. Official Agr. Chem.*, 24 (1941), 818–821. (A. P.-C.)

Physostigmine Salicylate—Determination of. The previously described method (*J. Assoc. Official Agr. Chem.*, 23 (1940), 762) (elaborated to prevent ambiguity) was further studied collaboratively on a mixture of lactose and 2.27% physostigmine salicylate (purity 97.7%). Recoveries of 93.8% to 101.0%, average 97.5%, were obtained. Adoption of the method as tentative is recommended.—GEORGE M. JOHNSON. *J. Assoc. Official Agr. Chem.*, 24 (1941), 815–817. (A. P.-C.)

Plasmochin—Determination of. Plasmochin can be satisfactorily determined by the usual chloroform-shakeout method, and titrated with standard acid (preferably with bromocresol purple indicator, rather than with methyl red as with the latter the change from reddish yellow to yellow is difficult to observe). The same solution can be checked by a titration with decinormal sodium nitrite, starch-potassium iodide paper being used as indicator. Plasmochin in mixture with quinine can be satisfactorily determined without separation of the quinine, by titration with standard sodium nitrite. In such a mixture, both ingredients can be determined by a combination of gravimetric and sodium nitrite titration, the quinine being calculated by difference.—F. C. SINTON. *J. Assoc. Official Agr. Chem.*, 24 (1941), 821–823. (A. P.-C.)

Pyrethrin—Determination of. VII. Constituents of Pyrethrum Extract, Which Are Related to the Volumetric Assay of Pyrethrin. VIII. Step-Wise Volumetric Assay of Pyrethrin by Isolation of Chrysanthemum-mono- and -di-carboxylic Acids. VII. During the barium hydroxide treatment in the volumetric assay the greater part of the organic impurities is removed. VIII. Chrysanthemum-monocarboxylic acid solidifies at 10° and melts at 18–20°, whereas the dicarboxylic acid melts at 154°. No marked loss of either acid is observed during the volumetric process.—VII. S. TAKEI, M. ONO and K. NAKASIMA. VIII. S. TAKEI and K. WAKAZONO. *J. Agr. Chem. Soc. Japan*, 16 (1940), 389, 399; through *J. Soc. Chem. Ind.*, 59 (1940), 707. (E. G. V.)

Quinizarin Green SS (D&C Green No. 6) Gravimetric Estimation of, and Similar Anthraquinone Dyes. Quinizarin green SS is a condensation product of 1 molecule of leuco-quinizarin with 2 molecules of *p*-toluidine. Since it cannot be readily estimated by direct titrimetric or gravimetric procedures, a method is proposed (technique described in detail) based on fissuring the dye with acetic and hydrochloric acids and stannous chloride, distilling the free amine into hydrochloric acid, diazotizing, pouring into an alkaline (with sodium carbonate) solution of β-naphthol, filtering the precipitate, drying and weighing; weight of precipitate × 0.79517 = weight of Quinizarin SS. Alizurol purple (D&C Violet No. 2), another anthraquinone dye, is a condensation product of 1 molecule of leuco quinizarin with 1 molecule of *p*-toluidine. It is determined in the same way (except for slight modifications in the amounts or proportions of reagents); weight of precipitate × 1.25162 = weight of Alizurol purple. To determine uncombined *p*-toluidine in Quinizarin SS and (or) Alizurol purple, shake 5.0 Gm. of dye with 100 cc. of normal hydrochloric acid, filter, cool to 0° to 5° C., treat with 0.3 cc. of about half-normal sodium nitrite, let the reaction proceed 30 min., add about 0.5 Gm. of urea to destroy the excess of nitrous acid, pour into a mixture consisting of 5 cc. of 1% solution of Schaeffer's salt and 60 cc. of twice normal sodium carbonate, develop 1 hr. on the steam bath, and titrate with standard titanium trichloride (1 cc. decinormal titanium trichloride = 0.010 Gm. of *p*-toluidine).—C. F. JABLONSKI. *J. Assoc. Official Agr. Chem.*, 25 (1942), 230–232. (A. P.-C.)

Syrup of Bromides—Analysis of. A collaborative study was made of the determination of total bromine, ammonium, calcium, sodium, potassium and lithium, using well-known methods that are official for the A. O. A. C. For the assay of the metallic ions, the large quantity of sugar present was burnt, using the usual precautions. For the sampling, a 50-cc. portion of syrup was delivered from a pipette, which was then washed out. This may involve a small positive error (0.1% to 0.2%); and if greater accuracy is desired or if an excess is found, the concentration of the dilution may be determined by weight and by specific gravity. The collaborative results were in good agreement, and adoption of the methods as tentative is recommended.—RUPERT HYATT. *J. Assoc. Official Agr. Chem.*, 24 (1941), 842–845. (A. P.-C.)

Soaps—Forensic Chemical Examination of Materials Containing. I. Detection of Soaps and Soap Stains. The following summary is given: (1) Commercial soaps and soap stains on fabrics may be qualitatively compared in ultraviolet light. (2) The iron hydroxamate test for carboxylic acids is a sensitive test for commercial soaps. (3) The saturated fatty acids of commercial soaps may be characterized as acids containing seven or more carbon atoms by conversion into the corresponding ketones and formation of their 2:4-dinitrophenylhydrazones. (4) For qualitative tests, soaps may be extracted from fabrics with alcohol. Interfering substances can be removed from this extract with ether.—M. W. PARTRIDGE. *Quart. J. Pharm. Pharmacol.*, 15 (1942), 21–30. (S. W. G.)

Sodium Thiosulfate—Potassium Iodide as a Titration Standard for. An accurately weighed sample of potassium iodide is dissolved in sodium acetate solution and oxidized to iodate with bromine

water and the excess bromine destroyed by formic acid. After liberating the iodine from the iodate by means of potassium iodide and sulfuric acid, the sample is titrated with approximately $N/50$ thiosulfate. Tables are included to facilitate calculation of the normality of the thiosulfate.—W. HURKA. *Mikrochemie*, 28 (1940), 294–298. (R. H. B.)

Spectrophotometric Color Testing. Examples are given of the use of the automatic recording photoelectric spectrophotometer for proving the identity and determining the pure dye content of primary colors submitted for certification, for the analysis of dye mixtures, and for the estimation and identification of dyes used in hair rinses.—RALPH W. STEWART. *J. Assoc. Official Agr. Chem.*, 24 (1941), 910–915. (A. P.-C.)

Sulfapyridine—Determination of. A detailed description is given of a technique of the sodium nitrite titration method. About 0.5 Gm. of powder dissolved in 50 cc. of water and 5 cc. of concentrated hydrochloric acid is titrated at 15° to 20° C. with decinormal sodium nitrite (standardized against recrystallized sulfanilic acid), using as outside indicator a smear of starch-potassium iodide paste on No. 1 Whatman paper or its equivalent. The end point is an *immediate* blue streak, which should be permanent for 1 min. or longer. When excipients are present, the sulfapyridine is extracted with acetone, the latter is evaporated on a steam bath with the aid of an electric fan, and the residue is titrated as above. In a collaborative study of the method recoveries of 97.87% to 100.7% were obtained on pure powder, and of 67.16% to 70.9% on a mixture containing 70% of sulfapyridine.—IMAN SCHURMAN. *J. Assoc. Official Agr. Chem.*, 24 (1941), 810–814. (A. P.-C.)

Titrimetry—Ideological Uncertainties in. Definitions, terminology and calculation of results are discussed.—W. G. MELLON. *J. Chem. Educ.*, 17 (1940), 422–425. (E. G. V.)

Vitamin C and Other Organic Acids—Detection of, with Cobaltammines. The reaction of organic acids, such as formic, oxalic or dehydroascorbic acids with carbonatotetrammines of cobalt produces corresponding acidotetrammines, which form characteristic precipitates with bismuth potassium iodide. Ascorbic acid can be detected in urine and in citrus fruits by precipitation as the acidotetrammine, adding 80% H_2SO_4 to the precipitate, warming and detecting the liberated furfural with anilin-acetate test paper.—G. BECK. *Mikrochemie*, 28 (1940), 289–293. (R. H. B.)

Vitamin K. Colorimetric Determination of 2-Methyl-1,4-Naphthoquinone. Novelli's reaction is employed. Mix the solution which contains 10γ or more of the quinone with 0.1 cc. of a 5% solution of sodium bisulfite and 0.5 cc. of a 0.1% solution of 2,4-dinitrophenylhydrazine. Keep on boiling water for 30 min. replacing repeatedly the evaporated liquid with alcohol. Then evaporate almost to dryness, add 2 cc. of alcohol, 1.6 cc. of 2-normal ammonia and 1 cc. of amyl alcohol. Shake, heat for a minute on boiling water and after cooling dilute with 50% alcohol to 10 cc. The green color of the liquid is proportional to the concentration and follows the law of Lambert-Beer. For the colorimetric determination a light filter of 620 Å. is used. The extinction coefficient for 1 mg. at 10 mm. thickness is 1.77.—EUGENIO E. VONESCH. *Rev. farm. (Buenos Aires)*, 84 (1942), 115. (A. E. M.)

Weight-Burette for Use in Organic Analyses. Methods based on elevation of B. P. or depression of F. P. are not sensitive enough to determine the mol. wt. of steroid alcohols which often differ by one (CH_2) group. The Rast method is not applicable because of high temperatures used, and figures for H and C combustions are not dependable. The method of Sandqvist and Gorton involving the acidimetric determination of excess alkali following saponification of the alcohol ester, *e. g.*, cholesteryl acetate, is accurate within limits of volumetric errors. To obviate these errors, especially for small samples of material, F. describes and gives a diagram of a weight-burette operated by compressed air from a 4-L. bottle filled with a bicycle pump. The burette delivers through a capillary 10-mg. drops, loses no weight by evaporation, nor liquid from the capillary. The operation is described, and results from typical analyses are presented.—P. FANTL. *Australian J. Exp. Biol. Med. Sci.*, 19 (1941), 279–280. (W. T. S.)

PHARMACOGNOSY

A. VEGETABLE DRUGS

Agar—Production of, in New Zealand. Of the eight indigenous species of the *Gelidaceae*, two species of *Pterocladia* and one of *Gelidium* yield satisfactory agar. *Pt. lucida* and *Pt. capillacea* are the best commercial possibilities because of their relative abundance, their easy identification and the good yield of agar. *Pterocladia* is gathered from rocks at low tide in calm weather or from drift after storms. It is rinsed in fresh water and is hung on fences or spread thinly on concrete to dry in the sun. While drying it is frequently turned and is ready for packing in one day. The yield of agar is about 30%. The process of extraction is to digest the dried weed with water at 240° F., equivalent to 10 lbs. per sq. in. steam pressure, using sufficient water to give a solution of agar about 1% to 2% strength, after filtration and cooling, the resulting jelly is cut up and frozen. This removes water as ice, and the agar is set free on thawing; it is then dried in a current of warm air. The product is powdered and packed in tins, each containing 3 oz.—L. B. MOORE. *Bull. Imp. Inst.*, 39 (1941), 355; through *Quart. J. Pharm. Pharmacol.*, 15 (1942), 86. (S. W. G.)

California Aromatic Plants. Data relative to the drug, medicinal and aromatic plants that may be grown successfully in California are being compiled by the California State College of Agriculture.—*Chemist and Druggist*, 137 (1942), 64. (A. C. DeD.)

Cashew Nuts (Anacardium Occidentale). The nuts and the derived oil have a high nutritive value. The resinous liquid of the mesocarp used as a remedy for warts contains anacardic acid, tannin and cardol ($C_{21}H_{30}O_2$) together with coloring matter and resins. The stem of the nut is also edible.—F. R. BONCHRISTIANO. *Rev. Aliment. Chim. Ind.*, 4 (1940), 10; through *J. Soc. Chem. Ind.*, 59 (1940), 804. (E. G. V.)

Chionanthus—The Pharmacognosy of. Report is made of an investigation undertaken to improve the National Formulary VI monograph, to verify the presence of saponin and to develop a method of assay based on saponin content. A description is given of *Chionanthus virginicus* and its distribution. Comparisons between the authentic root bark and the N. F. VI description were made. Some discrepancies were found in the description of the unground drug, its histology and the powdered drug. A revised paragraph for the N. F. VI monograph is suggested. No groups of fibers were found in the phloem of the authentic root bark. Those found in the commercial bark represented stem bark. Stone cells were present in sclerenchyma groups of both cortex and phloem of root bark. Maximum size of individual starch grains was 27.2μ. The root bark yields much more than 25% of extractive material by the N. F. VI method, and it is suggested that the minimum extractive standard be considerably in-

creased. Alcohol-soluble extractive from root bark by U. S. P. method using 95% alcohol and the N. F. method using 73% alcohol, differ widely, and the yield of alcohol-soluble extractive from stem bark by either strength is nearly as large as from the root bark. So if the test is intended to exclude stem bark, it is a failure. Presence of saponin was verified. The smallest amount which will hemolyze red blood cells was determined by the method of Fantus and Dyniewicz and found to be 1 Gm. in 200 cc. The hemolytic index of crude chionanthus saponin ranged from 1:1110 to 1:1250 while standard saponin from quillaja bark was 1:55,000. The hemolytic index of its saponin has been used as a basis for the assay of chionanthus. "The smallest amount of crude saponin causing hemolysis within a given period of time is compared with that amount of standard pure saponin producing a similar reaction within an equivalent period."—H. M. YOUNGKEN and H. S. FELDMAN. *Jour. A. Ph. A.*, 31 (1942), 129. (Z. M. C.)

Derris Elliptica, Changi No. 3—Variations among Selected Plants of. Yields of root, extract (*A*), and rotenone (*B*) content are determined for progeny of several selected plants of this strain, grown at two places. Wide variations are recorded even for progeny of simple plants, but the ratio *B*:*A* is of the same order and is independent of age. In some cases *A* is quite high after 1 yr. Increasing the spacing from 3 x 3 to 6 x 4 ft. has no effect. A few of the variations are statistically significant.—C. D. V. GEORGI and G. L. TEIK. *Malayan Agric. J.*, 28 (1940), 44–68; through *J. Soc. Chem. Ind.*, 59 (1940), 558. (E. G. V.)

Ergots—The Pharmacognosy of Domestic Rye and Wheat. Report is made of an investigation undertaken to study the pharmacology of four domestic ergots; to assay these ergots chemically; and to compare the findings with those established for rye ergot U. S. P. XI. The ergots were obtained from plants in Minnesota and nearby states. The literature is briefly reviewed. Experimental work is reported in detail. The following salient points were observed: (1) The variations that occur in structural characteristics between foreign rye ergot and domestic rye ergot are mainly in size of cell forms. They are practically negligible. (2) Sclerotia of domestic and foreign rye ergots were generally larger in size than those of wheat ergot. The pseudoparenchyma cells of domestic wheat ergots, however, are more compactly arranged than are those of rye ergots. (3) There were no appreciable differences in the results of microchemical coloration tests, fixed oil determinations and moisture content for ergots of domestic rye and wheat. (4) A chemical assay indicated that total alkaloid content (as ergotoxine) of domestic rye ergot was greater than of foreign rye ergot. On the other hand, ergot from domestic wheat was in most cases found to be lower in total alkaloid (as ergotoxine) than ergot of rye.—H. W. YOUNGKEN, JR., E. B. FISCHER and C. H. ROGERS. *Jour. A. Ph. A.*, 31 (1942), 136. (Z. M. C.)

Medicinal and Poisonous Flaxworts of India. Data are given on the properties and uses of six species.—J. F. CAIUS. *J. Bombay Nat. Hist. Soc.*, 42 (1940), 167; through *Chem. Abstr.*, 36 (1942), 615. (F. J. S.)

Medicinal and Poisonous Labiates of India. The medicinal and poisonous properties of numerous species of plants are described.—J. F. CAIUS. *J. Bombay Nat. Hist. Soc.*, 42 (1941), 380; through *Chem. Abstr.*, 36 (1942), 615. (F. J. S.)

Medicinal Plants—Production of, in New Zealand. Small experimental plots were planted in the late spring of 1940 with imported seed stocks of drug plants which it was considered would do well under New Zealand conditions. Tests made on the material obtained were as follows: *Atropa belladonna:* flowering shoots (English seed) 0.88% total alkaloids, stem leaves at flowering (English seed) 0.38% total alkaloids. *Digitalis purpurea:* leaves from flowering local plants 14 units per Gm., leaves from rosette plants (seed from Paris) 18 units per Gm. *Datura stramonium:* leaves from flowering plants (local and imported) 0.34% total alkaloids. *Hyoscyamus niger:* leaves from annual plants in flower (Paris seed) 0.05% total alkaloids; leaves from biennial plants in 1st yr. (Astrin Bros., England) 0.13% total alkaloids. *Ricinus communis:* beans from plants grown at Auckland (seed from Australia) 56% oil; beans from plants grown at Wellington (seed from U. S. A.) 45% oil. *Mentha piperita* var *citrata:* leaves from nonflowering plants (plants from Australia) 0.32% oil (not quite up to the required standards of purity). *Chenopodium ambrosioides:* flowering and seed tops (seed from Northern N. Z.) 0.1% oil.—D. CAIRNS. *Bull. Imp. Inst.*, 39 (1941), 361–363. (A. P.-C.)

Plantago Arenaria Seed—Mucilage of. The authors conclude that the polysaccharide of this mucilage contains xylopyranose and galactopyranose "end groups" in the ratio of 9 to 1, the remaining xylose residues being linked by 1:2-β-linkages or triply linked with a free hydroxyl group on C_2.—W. A. G. NELSON and E. G. V. PERCIVAL. *J. Chem. Soc.*, (1942), 58–61. (W. T. S.)

Populus Candicans Aiton—Nomenclature Confusion. Leaf variation in the genus *Populus* has led to difference of opinion about whether certain plants should be given specific or varietal rating. *Populus candicans*, "Balm of Gilead Poplar," was ranked as a species in 1789, but this was soon challenged. Several of the differing opinions are discussed. The latest conception calls it "merely a clone of the heart-leaf type of the variable species called *Populus tacamahaca* (Miller)."—KENNETH REDMAN. *Jour. A. Ph. A.*, 31 (1942), 140. (Z. M. C.)

Pyrethrum Cinerariaefolium—Variations in Oxidase Activity and Pyrethrin Content of, During Drying. Inactivation of the Oxidase and Stabilization of the Drug. Data showing the destruction of the oxidase (I) during drying of the capitula under various conditions are discussed. Drying at low temperature in a vacuum or in the dark results in the highest content of pyrethrin (II). Treatment with sulfur dioxide destroys the I and gives a high content of II.—M. COVELLO. *Ann. chim. applicata*, 30 (1940), 88–98; through *J. Soc. Chem. Ind.*, 59 (1940), 565. (E. G. V.)

Wild and Drug Plants—Investigation of. The plants considered are: *Polygonum bistorta, Matricaria discoidea*, Herba millefolii, *Evonymous europaeus*, Semen curcurbitae, *Sambucus racemosa* and *Sorbus aucuparia.*—W. PEYER. *Deut. Apoth. Ztg.*, 55 (1940), 631–632; through *Chem. Abstr.*, 35 (1941), 1932. (H. M. B.)

PHARMACY

GALENICAL

Adrenaline—Stability of, in Solutions Containing Procaine. The following summary and conclusions are given. (1) Sodium metabisulfite seems necessary to ensure stability of adrenaline in the solution, and 0.1% is the optimum concentration. (2) Storage in an inert atmosphere is unnecessary. (3) Solutions containing phenylmercuric nitrate in place of the *p*-chloro-*m*-cresol in the formula for inclusion in the B. P. is recommended. (4) The solution should be sterilized by autoclaving at 10 lbs. pressure for 30 min. (5) The use of ampuls is preferred to storage in vaccine bottles.—G. WOOLFE. *Quart. J. Pharm. Pharmacol.*, 14 (1941), 234–240. (S. W. G.)

Adrenaline—Stability of, in Solutions of Procaine and Adrenaline. IV. Alkaline Buffered Solutions of Procaine and Adrenaline. The author summarizes his work as follows: (1) The stability of adrenaline in alkaline buffered solutions of procaine and adrenaline has been examined. (2) The adrenaline in such solutions may be stabilized by the addition of 0.2% of sodium metabisulfite. (3) The length of time which such solutions may be stored is limited by the instability of the procaine, not of the adrenaline. It probably should not exceed five days. (4) If an antiseptic is to be included in the solutions, phenylmercuric nitrate is recommended.—G. WOOLFE. *Quart. J. Pharm. Pharmacol.*, 15 (1942), 1–5. (S. W. G.)

Apothecaries Vacuum Distillation Apparatus. The author reviewed the construction of vacuum stills as regards capacity and design in relation to efficiency and to the heat transfer. The factors needed for calculation of the heat transfer coefficient were tabulated for several types of stills. A more efficient still of capacity 30–40 liters an hour was designed and is shown both in cross section and in illustrations. Comparison of the constants obtained when heating the water bath of the still with gas and with steam was tabulated. Under proper conditions the efficiency of the still in terms of the heat transferred to the liquid was 97.6%. Efficiency of the condenser and the vacuum pump was also considered. Use of the apparatus for making dried extracts of drugs was discussed.—C. F. JENSEN. *Dansk Tids. Farm.*, 15 (1941), 241. (C. S. L.)

Belladonna—Tincture of. The use of an acid extracting medium (*p*H 1) or maceration for 10 days produces only a slight increase in alkaloid content over the tincture obtained by accelerated lixiviation. Combination of maceration and lixiviation gives superior results.—TIMOTEO A. ESTEVEZ. *Rev. farm. (Buenos Aires)*, 84 (1942), 122. (A. E. M.)

Fresh Plants—Processing of, in the Pharmaceutical Industry. A review of the processes used in the manufacturing of pharmaceutical, especially homeopathic, preparations from fresh plants.—H. NEUGEBAUER. *Chem.-Ztg.*, 65 (1941), 101; through *Chem. Abstr.*, 36 (1942), 220. (F. J. S.)

Tablets—Standardization of Medicinal. Statistical Considerations. The author discusses the various factors which affect the standardization of tablets and divides them into two groups; *i. e.*, manufacturer's "safety limits" and errors of sampling for analysis and analytical limitations. The standards should be expressed in terms of the actual substance assayed, and as in the case of the United States National Formulary should "include all tolerances."—N. EVERS. *Quart. J. Pharm. Pharmacol.*, 15 (1942), 6–15. (S. W. G.)

NON-OFFICIAL FORMULAS

Antiseptic Baby Oil. This type of oil is discussed and the following formula offered: Oxyquinoline base 1.0, lilacine (perfume) 0.6, corn oil 240.0; light liquid petrolatum (viscosity 65–75) *q. s.* 1000.0. Dissolve the oxyquinoline in the corn oil by trituration, add the lilacine and the light liquid petrolatum enough to make 1000.0. Mix and filter, if necessary. The perfume may be omitted if desired.—S. W. MORRISON. *Am. Professional Pharmacist*, 8 (1942), 372–374. (H. M. B.)

Cosmetic Stockings. The components of this type of preparation are discussed and six formulas presented.—JOSEPH KALISH. *Drug and Cosmetic Ind.*, 51 (1942), 44–45. (H. M. B.)

Hydrogenated Castor Oil—Derivatives from. I. 12-Hydroxystearic Acid and Its Alkyl Esters. This acid which can be prepared free from unsaturated acids is an excellent starting point for derivatives which are desirable in pharmaceutical cosmetic and industrial products. The two classes which should be most productive involve modification of the carboxyl and of the hydroxyl groups. In the present report, discussion is limited to the normal primary alkyl esters of 12-hydroxystearic acid. Details of experimental work are reported. Melting points and solubilities are discussed. Mixtures of white petrolatum containing 10% of the ester as a hardener were prepared by fusion with each of the esters in the series. All of the esters as well as the hydroxy acid formed homogeneous mixtures imparting a degree of hardness depending on melting point of the ester, thus permitting flexibility in the compounding of ointments. The esters *per se* were not suitable to replace beeswax in beeswax-borax type of creams. Tri-isopropanolamine produced satisfactory cosmetic creams. Two formulas are given—one of the almond oil type of cream, one of the mineral oil type. Emulsified cosmetic creams of the water-miscible type were prepared by using Aerosol OT. Formulas and procedure are given. Results of the work on these twelve esters indicate possibilities which should make the formulation of waxes that are superior in stability, freedom from color, odor and rancidity.—SAUL A. BELL and ABRAHAM TAUB. *Jour. A. Ph. A.*, 31 (1942), 75. (Z. M. C.)

Skin Reconditioning. Soaps, creams and lotions are discussed and the following formulas offered: (1) Beeswax 10, spermaceti 5.0, cetyl alcohol 2.0, mineral oil 40.0, borax 0.5, water 42.5. A cold cream with spermaceti to increase luster and cetyl alcohol to soften the skin. (2) Glyceryl monostearate 20.0, mineral oil 25.0, glycerin 5.0, water 55.0. Heat ingredients to boiling, stir until emulsified, and then stir until cold. (3) Lanolin adsorption base 20.0, ceresin 3.0, mineral oil 32.0, water 45.0. (4) *Hand cream:* Stearic acid 20.0, cocoa butter 2.5, glycerin 8.0, quince seed 0.3, amino glycol 1.7, water 67.5. (5) *Hand lotion:* Glyceryl monostearate 3.0, cetyl alcohol 0.3, methylcellulose 1.0, alcohol 10.0, glycerin 10.0, water 75.7. (6) *Night cream:* Absorption base 15.0, cetyl alcohol 4.0, petrolatum 11.0, lanolin 10.0, mineral oil 20.0, water 40.0. Melt all ingredients at a low temperature except the water and stir until mixed. Heat mixture to 40–50° C. and the water to the same temperature and stir it into the oily mixture. Stir until cold.—JOSEPH KALISH. *Drug and Cosmetic Ind.*, 50 (1942), 618–619, 631. (H. M. B.)

Sulfathiazole—Vehicles for Topical Application of. Formulas for a starch base, bentonite vehicles, a pomade and two creams are offered with comments.—HERMAN GOODMAN. *Am. Professional Pharmacist*, 8 (1942), 355–356. (H. M. B.)

DISPENSING

Infusions—Preservation of Concentrated. II. Types of Microorganisms Present on Quassia and Calumba and Their Inhibition by Means of Alcohol. The following summary is given: (1) The bacteria present in samples of quassia and calumba have been investigated and characterized. (2) Two new species of *Achromobacter* have been described. (3) The flora of concentrated infusions of quassia and calumba containing up to 25% of alcohol (90%) have been examined. (4) The action of ethyl alcohol up to 50% in concentrated infusions has been tested on strains of bacteria isolated from the infusions. (5) Nonsporing organisms, including bacteria, molds and yeasts, may multiply in alcoholic strengths up to 10% of alcohol (90%). No such multiplication has been found in the presence of 15% or more of 90% alcohol. (6) Even 50% of ethyl alcohol is insufficient to kill spores of *B. subtilis* and

B. mycoides during a storage period of seven months. (7) The results obtained indicate that 15% of 90% alcohol is sufficient to preserve the concentrated infusions.—K. BULLOCK. *Quart. J. Pharm. Pharmacol.*, 15 (1942), 41–50. (S. W. G.)

Infusions—Preservation of Concentrated. III. Chemical Preservatives Other than Alcohol. The following summary is given: (1) Benzoic acid in the quantities recommended (calumba 0.24%, quassia 0 1%, orange 0.1%, gentian, compound 0.2%, senna 0.24%) has been shown to be the most efficient chemical preservative, apart from alcohol, for use in concentrated infusions. (2) The *p*-hydroxybenzoic acid esters and their salts are ineffective preservatives for the concentrated infusions. (3) Concentrated infusion of clove is shown to be apparently self-sterilizing. (4) Saturation with oils of clove or cinnamon is an efficient means of preservation for concentrated infusion of quassia. (5) The method of evaluating preservatives in galenical preparations has been further elaborated.—K. BULLOCK and J. W. LIGHTBOWN. *Quart. J. Pharm. Pharmacol.*, 15 (1942), 51–60. (S. W. G.)

Procaine and Adrenaline Hydrochlorides—Preparation of Solutions of, for Surgical Use. It has been shown that traces of iron, copper and sodium metabisulfite and the usual concentrations of adrenaline are without influence on the rate of hydrolysis of procaine in solution. The rate of decomposition of procaine in acid solution has been investigated and the *p*H of maximum stability for procaine has been found to be *p*H 3.3. An examination has been made of the proposed B. P. injection of procaine and adrenaline. The following formulas are proposed for the dispensing of alkaline buffered solutions of procaine and adrenaline in two solutions to be mixed in equal quantities when used. *Solution A:* Procaine hydrochloride 4.0 Gm., sodium metabisulfite 0.1 Gm., dilute hydrochloric acid 0.5 cc., phenylmercuric nitrate 0.002 Gm., solution of adrenaline hydrochloride 4.0 cc., distilled water to 100 cc. The *p*H of this solution is 3.30. *Solution B:* Sodium phosphate 4.8 Gm., phenylmercuric nitrate 0.004 Gm., distilled water to 100 cc. The *p*H of the solution resulting from admixture of equal volumes of solutions *A* and *B* was found to be 7.50. The solution is slightly hypertonic; freezing at −0.585 in the Beckmann apparatus. The advantages of the dry ampul method of dispensing are (*a*) the dry powders in the sealed ampul remain sterile and undecomposed indefinitely; (*b*) the solution when prepared is a fresh solution, there being no time for decomposition to occur before injection; (*c*) it is easy for the surgeon to prepare the solution by dissolving the powders in sterile water; (*d*) all the well-established advantages of a buffered alkaline solution in the tissues are obtained.—K. BULLOCK and J. S. CANNELL. *Quart. J. Pharm. Pharmacol.*, 14 (1941), 241–251. (S. W. G.)

Propylene Glycol as a Solvent for Sulfonamides. Propylene glycol serves as a medium in which one can dissolve 10% of sulfanilamide, 3% of sulfathiazole, 3% of sulfapyridine and approximately 0.3% of sulfadiazine. These solutions are made over a water bath at between 60° and 80° C. for from 10 to 20 min. and persist if preserved at a temperature of 35° C. or more. Some samples are now six months old and are apparently unchanged. Prolonged cooling will result in varying degrees of crystallization which disappears on moderate reheating in a water bath or over a warm radiator overnight. Solutions of sulfanilamide and sulfathiazole have been studied in considerable detail and when thus treated retain their potency, are self-sterilizing (Joslin and Hasley) and can be diluted with saline before using without change in homogeneity of the solution. In contradistinction to ethylene and diethylene glycol, propylene glycol is practically nontoxic even in considerable amounts and the advantages of a concentrated, self-sterilizing, bactericidal, dilutable and stable solution of certain sulfonamides warrant further study of this type of preparation.—FREDERICK F. YONKMAN, A. J. LEHMAN and H. F. CHASE. *Federation Proceedings II*, 1 (1942), 172–173. (H. B. H.)

PHARMACEUTICAL HISTORY

Friedrich August Kekule. A review.—H. GOODMAN. *Bull. N. Y. Academy Med.*, 18 (1942), 150. (A. C. DeD.)

Mercury Preparations—The First, Used in Syphilis. Skin diseases were treated in the 13th century with "Unguentum Saracenicum" consisting of euphorbia, lithargyrum, staphisagria, mercury and lard. Syphilis was treated in the 16th century with Babarroja's pills containing mercury 25 Gm., rhubarb 10 Gm., salsify 3 Gm., musk 1 Gm., ambergris 1 Gm., wheat flour 2 Gm. Paracelsus used the red precipitate and sublimate.—ANIBAL RUIZ MORENO. *Semana méd.*, 48, II (1941), 1134. (A. E. M.)

Nutrition and Digestion—An American Pioneer in. An account of the first American investigation on the subject of human nutrition, carried out by John R. Young.—*J. Chem. Educ.*, 17 (1940), 573–575. (E. G. V.)

Pharmacist on the Stage. A review of the part pharmacy has played upon the stage through its scientific influence and the individual characteristics of its practitioners.—F. A. WEISS. *Merck Report*, 51, No. 1 (1942), 4–12. (S. W. G.)

Physician—Medieval King and His. The relations of King Louis XI of France with his physician Cottier are sketched against the political, medical and pharmaceutical backgrounds of the mid-Renaissance period, about a generation before Paracelsus. The article is illustrated.—C. R. ADDINALL. *Merck Report*, 51, No. 1 (1942), 19–22. (S. W. G.)

Pill—History of the, as a Form of Medication. The author cites the Ebers Papyrus (dating from 1600 B.C.) as giving the first recipe for pills, a diuretic preparation made into a mass with honey and formed into spheres. He then considers the pill-knowledge of Hippocrates, of Scribonius Largus, of Nicolai Salernitanus, whose formulas prevailed from 1200 A.D. such that at least six of them appeared in the first Danish Dispensatory of 1658. Asculanus Saludin in his "Compendium Aromatariorum" (1488) first noted that pills should be used within six months after making and should not be too hard and dry. Pills of aloe were the subject of a dissertation of the University of Copenhagen in 1717. Using the pill formulas of the various Danish Pharmacopœias as examples, the author shows how the change gradually came from the idea of pills as a convenient dispensing form for masses, with little regard to the weight of the single dose, over to the idea that the pill should hold a determined amount of drug. The history of pill machines is briefly touched upon. The first description of a pill-rolling device appeared in Baume's "Elements de Pharmacie Theorique et Pratique," Paris, 1771. The author mentions a curiosity among pills, the perpetual pill (described about 1700), a pill of antimony metal which could be taken 60 times over and each time caused emesis. There is also a discussion of the curious practice of the apothecary, in the days before knowledge of the laws of hygiene, and of spitting into the pill mass to moisten it.—S. A. SCHOU. *Arch Pharm. Chemi*, 48 (1942), 595. (C. S. L.)

J. J. Thompson, 1856–1940. An obituary.—ANON *Chemistry and Industry*, 59 (1940), 637–638. (E. G. V.)

PHARMACEUTICAL EDUCATION

Army Pharmacy. A discussion of military practice of pharmacy and an appeal for greater acceptance of army-trained men.—HARVEY A. BOESE. *Am. Professional Pharmacist*, 8 (1942), 357–359. (H. M. B.)

Fractional Distillation Column. A description of the column and an appropriate student experiment for organic chemistry are given.—H. R. SNYDER and R. L. SHRINER. *J. Chem. Educ.*, 17 (1940), 589–590. (E. G. V.)

Swiss Pharmacists—Natural Science Society and. An address presented before the chemical section of the annual meeting of the Swiss Natural Science Society, relating to the contributions of pharmacists to the natural sciences.—G. A. HÄFLIGER. *Pharm. Acta Helv.*, 16 (1941), 140–148. (M. F. W. D.)

Words—Spelling of. The spelling of chemicals is discussed.—"SEMANTIKOS." *Chemistry and Industry*, 60 (1941), 163–164. (E. G. V.)

PHARMACEUTICAL LEGISLATION

Chemical Patents. An address.—H. E. POTTS. *Chemistry and Industry*, 60 (1941), 17–22. (E. G. V.)

Foods, Drugs and Cosmetics—Fill of Container Methods for. Various methods used by the Food and Drugs Administration, Washington, for measuring the volume of contents and fill of containers of foods, drugs and cosmetics in connection with the enforcement of net contents and fill requirements of the Food, Drug and Cosmetic Act, are described, and it is suggested that the Association study the problem.—S. C. ROWE. *J. Assoc. Official Agr. Chem.*, 25 (1942), 248–253. (A. P.-C.)

Pharmacist—Legal Responsibility of the. II. Responsibility Under Federal Statutes. This article deals with the increasing responsibility under federal legislation, as administered by the Federal Food and Drug Administration, and the Federal Trade Commission, and divides the discussion into sections under the following headings: Requirements of Advertisements; Naming the Product; Warning in Advertisements; Guaranteeing the Product; What Is a Material Fact?; Qualifying the Name; How Is a Violation Checked?; Procedure; Conflict of Scientific Testimony; Incompetent Testimony; Board of Review.—B. WERNE. *Merck Report*, 51, No. 2 (1942), 11–17. (S. W. G.)

PHARMACEUTICAL ECONOMICS

Analyst—Problems of an. A discussion of the samples and problems submitted to a laboratory open to the public.—W. A. ALEXANDER. *Chemistry and Industry*, 60 (1941), 49–50. (E. G. V.)

Drug Manufacture in India—Stimulation of, by War Conditions. Two hundred and ninety-two drugs, many formerly imported in India, are now being manufactured here. Twenty-eight are listed as available for export. The manufactured items range from alkaloids, biologicals, vitamins, chemotherapeuticals and dyes, to such staples as boric acid.—*Indian Med. Gaz.*, 76 (1941), 678–679. (W. T. S.)

Essential Drugs in India—Control of. The mechanism is outlined for maintaining a check on the import, manufacture and sale of essential drugs in India.—*Indian Med. Gaz.*, 76 (1941), 678. (W. T. S.)

German Drugs Now Being Manufactured in England. Cardiazol, formerly manufactured in Germany, is now produced in England by Knoll, Ltd., of London and is sold in India as Cartazol. Doryl, a product of E. Merck, Darmstadt, is manufactured by Savary and Moore, Ltd., of London and sold generally under the name "Moryl."—*Indian Med. Gaz.*, 76 (1941), 680. (W. T. S.)

Pharmacy—Status of, in the United States Army. An appeal by two unnamed lieutenants in the Medical Administrative Corps for action to bring Pharmacy its rightful respect and true role of service in the army.—ANON. *Am. Professional Pharmacist*, 8 (1942), 360–361, 386. (H. M. B.)

MISCELLANEOUS

Chewing Gum Tablets. Tablets are formed with a gum center having a number of coatings containing an insoluble alkali medicament, such as calcium carbonate and magnesium trisilicate, alternating with sugar sirup coatings, the amount of the medicament being about 25% by weight of the entire tablet.—KENNETH A. BARTLETT and WM. J. SCHULZ, assignors to WHITE LABORATORIES, INC. U. S. pat. 2,262,087, Nov. 11, 1941. (A. P.-C.)

Copper-Containing Fungicide. A fungicidal composition is prepared by intimately mixing a soluble copper salt such as copper sulfate with sodium carbonate or lime, with or without sodium chloride, adding hydrophilic clay, and heating the resulting mixture in the presence of water to form a complex basic salt in highly dispersed condition in the hydrophilic clay.—ERNEST C. LARGE, assignor to BOOTS PURE DRUG CO. U. S. pat. 2,264,212, Nov. 25, 1941. (A. P.-C.)

Cosmetic. An ointment-like deodorant and "antiperspirant" composition is prepared containing as the only ingredient of ointment-like consistency a base consisting of about 100 parts by weight of an odor-absorbent astringent hydrogel of aluminum containing between 75% and 85% of colloidal bound water, which dries upon application to the skin without leaving a powdery residue, the hydrogel being prepared by reacting an alkali with an acid aluminum salt in boiling aqueous solution at a *p*H value between 5.0 and 6.5, the salt and water being in the proportion of about 1 lb. of the salt per gal. of water, in admixture with about 25 and 60 parts by weight of hygroscopic polyhydroxy alcohol such as glycerol or propylglycol.—MARVIN R. THOMPSON, assignor to WM. R. WARNER & CO. U. S. pat. 2,256,505, Sept. 23, 1941. (A. P.-C.)

Dermal Lotion. A "dermal agent," such as salicylic acid and oil of bergamot, is used with a higher fatty acid ester of a lower aliphatic monohydric alcohol such as ethyl oleate or butyl palmite in alcohol solution.—WALTER G. CHRISTIANSEN, assignor to E. R. SQUIBB & SONS. U. S. pat. 2,256,106, Sept. 30, 1941. (A. P.-C.)

Disinfectants. Compounds suitable for use as disinfectants are formed by treating organic mercury hydroxides, oxides or salts with acetylene. Details are given, or general mention made, of the production of a large number of such compounds.—WILHELM BONRATH and HEINRICH KLÖS, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,252,778, Aug. 5, 1941. (A. P.-C.)

Emulsions for Cosmetic and Other Purposes. Aqueous emulsions of various oleaginous materials, etc., are prepared with use of a small proportion of the acetic acid amide of the monostearic acid ester of diethanolamine or various amides of a secondary aliphatic hydroxylamine corresponding to the general formula $R\text{CON}[M(\text{OH})_y]D(\text{O}R')_x$, where $R\text{CO}$— is an aliphatic acyl radical containing not more than 5 carbon atoms, D and M are organic radicals containing at least 2 carbon atoms, R' is an organic lipophile radical containing at least 8 carbon atoms, and x and y are small whole numbers.—BENJAMIN R. HARRIS and FRANK J. CAHN, assignors to THE EMULSOL CORP. U. S. pat. 2,259,466, Oct. 21, 1941. (A. P.-C.)

Fingernail Enamel. A nonsettling and nonsegregating opaque enamel composition is formed containing cellulose nitrate and a lake pigment consisting of zinc oxide having an average particle size of 0.12 to 0.18 micron and carrying on it a precipitated dye such as an orange or red dye.—ROBERT T. HUCKS, assignor to E. I. DU PONT DE NEMOURS & Co. U. S. pat. 2,261,623, Nov. 4, 1941. (A. P.-C.)

Germicidal Soaps. *2,251,934.*—Use is made of an alkali metal soap of at least one saturated acid together with 1% to 10% of an alkyl phenol, such as hexyl cresol, having germicidal properties (the soap being free from soaps of unsaturated acids and substantially free from unsaponifiable and unsaponified material other than phenol). *2,251,935.*—Relates to generally similar compositions prepared with a soap made from "commercial fatty oils or fats" such as hydrogenated coconut oil and also containing 1% to 10% of an alkyl phenol.—WALTER H. HARTUNG, assignor to SHARP & DOHME, INC. U. S. pats. 2,251,934 and 2,251,935, Aug. 12, 1941. (A. P.-C.)

Hair-Base Rinse. A composition is used such as may be prepared by mixing borax with lemon juice until the *p*H of the mixture lies between 3.4 and 3.6, allowing the juice to settle, separating the slurry, adding boric acid in approximately the amount as determined by the formula: (2.9 × weight of anhydrous citric acid in juice)—weight of total solids in juice—(0.528 × weight borax added), drying the mixture, mixing in 78.6 parts of boric acid moistened with 2.1 parts of water for every 100 parts of dried mixture, and drying in a current of warm air, whereby there is produced a dry, stable product having a brilliant lemon-yellow color.—CLARENCE W. WILSON, assignor to CALIFORNIA FRUIT GROWERS EXCHANGE. U. S. pat. 2,255,341, Sept. 9, 1941. (A. P.-C.)

Injection Solutions—A Safe Container for. A description.—HAROLD G. O. HOLCK. *Pharm. Arch.*, 12 (1941), 91–92. (H. M. B.)

Insect-Repellent Compositions. A primary aliphatic alcohol containing 10 to 14 carbon atoms, such as decyl or dodecyl alcohol, is used as an active ingredient.—ANDERSON W. RALSTON and JOHN P. BARRETT, assignors to ARMOUR & Co. U. S. pat. 2,254,665, Sept. 2, 1941. (A. P.-C.)

Insecticidal and Insect-Repellent Compositions. An acyl sulfide such as methallyl acetyl sulfide is used as an active constituent of insecticidal and fumigating compositions.—CLYVE C. ALLEN, assignor to SHELL DEVELOPMENT Co. U. S. pat. 2,259,869, Oct. 21, 1941. (A. P.-C.)

Insecticide. Use is made of the distillate obtained by dry distilling castor oil at a temperature of 260° to 300° C. (suitably until about half its weight is lost).—IVOR M. COLBETH, assignor to THE BAKER CASTOR OIL Co. U. S. pat. 2,257,597, Sept. 30, 1941. (A. P.-C.)

Insecticide Dispersion. New Method of Dispersing Pyrethrum and Rotenone in Air. Extremely effective dispersal of relatively nonvolatile insecticides (superior to that obtained by burning) can be procured by spraying a solution of the insecticide on to a hot plate (maintained at, *e. g.*, 375°); the high mortalities obtained in tests with such aerosols of pyrethrum and/or rotenone in safrole or of pyrethrum in ethyl alcohol, are illustrated by examples.—W. N. SULLIVAN, L. D. GOODHUE and J. H. FALES. *Soap*, 16 (1940), No. 6, 121, 123, 125; through *J. Soc. Chem. Ind.*, 59 (1940), 644. (E. G. V.)

Insecticides. Insecticidal powder or sprays are formed with compounds such as crotonaldehyde semicarbazone, 2-furaldehyde semicarbazone or salicylaldehyde semicarbazone as active ingredients.—SAMUEL I. GERTLER and L. J. HALLER, assignors to THE SECRETARY OF AGR. AND HIS SUCCESSORS IN OFFICE. U. S. pat. 2,261,735, Nov. 4, 1941. (A. P.-C.)

Insecticides. Rotenone or a rotenone-containing derris-type resin is activated by an admixture of substances such as phenothioxin or one of its derivatives, and may also be mixed with dibenzyl disulfide.—ROBERT J. GEARY, assignor to THE DOW CHEMICAL Co. U. S. pats. 2,265,155 and 2,265,156, Dec. 9, 1941. (A. P.-C.)

Insecticides Suitable for Use as Sprays. A terpin lower fatty acid ester such as a terpin diacetate is used, suitably with a diluent such as kerosene, etc., supported on finely divided derris root, cubé root, tobacco, timbo root or pyrethrum flowers.—JOSEPH N. BORGLIN, assignor to HERCULES POWDER Co. U. S. pat. 2,252,548, Aug. 12, 1941. (A. P.-C.)

Lactic Acid Preparations—Production of. Solid, nonhygroscopic lactic acid (I) preparations are obtained by heating to a moderately elevated temperature (60–80°) a salt of I or one or more salts of acids which are less ionized in solution than is I, *e. g.*, lactates, acetates or citrates of alkaline earths, magnesium, copper, lithium, iron, and excluding such salts as would provide sufficient heat of reaction to produce the necessary temperature, *e. g.*, alkaline-earth carbonates, with greater than 2 equivalents of I, conveniently as a 65–85% solution, for such a time that a homogeneous product is formed, which sets on cooling. *E. g.*, calcium acetate, lactate, tartrate or citrate, copper acetate, or zinc acetate is heated until dissolved in I and the solution is cooled.—H. C. HEIDE. Brit. Pat. 520,281; through *J. Soc. Chem. Ind.*, 59 (1940), 566. (E. G. V.)

Mercurated Aliphatic Ketones. Germicidal and weed-killing compounds are prepared, of the general formula *RCOR'* (where *R* and *R'* are aliphatic hydrocarbon chains at least one of which contains the grouping —CH(Hg*X*)CH(O*Y*)—, where *X* is an acid radical and *Y* is hydrogen or an alkyl group containing 5 or less carbon atoms). These compounds are generally heavy liquids or low-melting solids insoluble in water but soluble in organic solvents such as ether, alcohol, kerosene or benzene. They may be produced by treating an unsaturated aliphatic ketone having one or more double bonds with a mercuric salt in the presence of water or an aliphatic alcohol containing not more than 5 carbon atoms. The unsaturated aliphatic ketone starting material should have at least 11 carbon atoms in a straight chain including the carbon atom of the carbonyl group. Thus, there can be used any ketone having the formula *RCOR'* where at least one of the alkyl groups contains a double bond. When both alkyl groups contain a double bond, as in oleone, the extent of mercuration can be controlled by the quantity of mercuric salt added. Details are given of the production of a number of such compounds.—ANDERSON W. RALSTON and MILES R. MCCORKLE, assignors to ARMOUR AND CO. U. S. pat. 2,262,430, Nov. 11, 1941. (A. P.-C.)

Mesmerism. A lecture.—R. C. EVANS. *Chemistry and Industry*, 59 (1940), 518–521. (E. G. V.)

Mixing Machines. Apparatus for suspension in a tank comprises upper and lower inlets with separate impellers on a common vertical shaft and a common peripheral, slit-like outlet at an intermediate height. The interior of the outlet device is shaped so that the two streams intersect and thus intermingle therein.—J. P. OGILVIE, L. A. TROMP and SUGAR MANUFACTURERS SUPPLY Co., LTD. Brit. Pat. 518,854; through *J. Soc. Chem. Ind.*, 59 (1940), 506. (E. G. V.)

Nail Enamel. A discussion.—A. ROSENBAUM. *Drug and Cosmetic Ind.*, 50 (1942), 508–510. (H. M. B.)

Parasiticides. As active ingredients, use is made of an organic oil-soluble toxicant such as rotenone in solution in an oily product of condensation of an alkylene dichloride with an aromatic hydrocarbon having one or two nuclear hydrogen atoms replaced by chlorine, such as one of an ethylene dichloride with chlorotoluene.—WM. P. TER HORST, assignor to U. S. RUBBER CO. U. S. pat. 2,248,458, July 8, 1941. (A. P.-C.)

Parasiticides Derived from Terpenes. Parasiticides suitable for use in combating insects or fungi are prepared containing a terpinyl ethyl ether thiocyanate or other compounds of the general formula *RCNX* in which *R* represents a terpene ether, *X* represents sulfur, selenium or tellurium, and the CN*X* radical is attached to a carbon atom of the terpene portion of the terpene ether.—JOSEPH N. BORGLIN, assignor to HERCULES POWDER CO. U. S. pat. 2,263,716, Nov. 25, 1941. (A. P.-C.)

Perfume. To effect defleurage of a naphthenic mineral oil containing ethereal oils, the oil is treated with 80% to 90% alcohol.—WERNER FREUDENBERG, assignor to THOMAS YOUNG NURSERIES, INC. U. S. pat. 2,256,772, Sept. 23, 1941. (A. P.-C.)

Perfume Fixative. Hydroxycitronellol is used with various perfumes, for soaps, cosmetics, etc.—MARION S. CARPENTER, assignor to BURTON T. BUSH, INC. U. S. pat. 2,258,132, Oct. 7, 1941. (A. P.-C.)

Skin—Compositions for Use on the, for Its Protection from Sunlight. In a vehicle such as paraffin or chalk and talcum, use is made of a protective proportion (suitably about 17% to 20%) of a solid ester, of wax-like consistency, which is the reaction product of an acid taken from the group consisting of salicylic, umbelliferoneacetic, dichloropyridinecarboxylic, and hydroxynaphthoic acids, with an alcohol taken from the group consisting of lauryl and cetyl alcohols, octadecanol, cholesterol and abietinol. Various details are given of the production of such esters.—MAX DOHRN and HANS NAHME, assignors to SHERKA CHEMICAL CO., INC. U. S. pat. 2,260,173, Oct. 21, 1941. (A. P.-C.)

PHARMACOLOGY, TOXICOLOGY AND THERAPEUTICS

PHARMACOLOGY

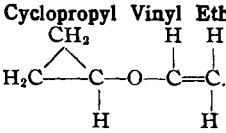
Adenyl Compounds—Contribution to the Pharmacology of. A report is made of certain new findings in the pharmacology of adenine, adenosine, adenylic acid and adenyl pyrophosphate with especial reference to the effect of the last named on the frog's heart.—IAN ROBERTSON and F. H. SHAW. *Australian J. Exp. Med. Biol. Sci.*, 19 (1941), 207–209. (W. T. S.)

Adrenal Cortical Extract and Sex Hormones—Influence of, on Liver Glycogen. Adrenal cortical extract and progesterone subcutaneously in young rabbits causes a deposition of liver glycogen, while testosterone, estradiol and desoxycorticosterone were inactive in this respect. Anterior pituitary extract administered to adrenalectomized rabbits produces a deposition of liver fat, but fails to promote glycogen formation as occurred in normal animals.—A. B. CORKILL and J. F. NELSON. *Australian J. Exp. Biol. Med. Sci.*, 19 (1941), 241–242. (W. T. S.)

Alcohol—Effect of, on Vision. Fifty drivers were each given 7 tests concerned with vision before and after imbibition of alcohol in a dose of at least an ounce of whisky for each 30 pounds of body weight. The resultant concentrations of alcohol in the blood varied from 58 to 218 mg. per 100 cc. In every case with a concentration over 115 mg. per 100 cc. a significant change in at least one of the tests was found. The greatest number of changes occurred in visual acuity, the smallest in field of vision. Although there was a definite tendency for those with the higher blood alcohol concentrations to show more changes, this was far from true in every case. These findings support the contention that there exists a considerable individual variation on tolerance to a given concentration of alcohol in the blood, and indicate the importance of recognizing the limitations of blood alcohol concentration as the sole criterion of intoxication.—NEWMAN and FLETCHER. *Am. J. Med. Sci.*, 202 (1941), 730. (B. H.)

Androgen—Effect of, on Metabolism of Subcutaneous Corn-Oil. The administration of testosterone propionate accelerates the rate of disappearance of corn oil injected subcutaneously in castrate male mice. This relationship is best explained by the hypothesis that androgen specifically increases the rate of utilization of body fat.—JOSEPH C. TURNER and BARBARA MULLIKEN. *Proc. Soc. Exptl. Biol. Med.*, 49 (1942), 585. (A. E. M.)

Anesthesia. VI. The Anesthetic Action of Cyclopropyl Vinyl Ether. Cyprethylene ether is:



Its explosive range with oxygen is approximately the same as for ether. It boils at 67° C. The oil/water coefficient is 16 times greater than that of ethyl ether. Anesthetic concentrations in the blood were found to be one-fifth of those for ether. No functional liver damage was found in the monkey after anesthetization with cyprethylene ether. In these animals, as well as in mice, rats and dogs, the anesthetic caused no histological changes of significance in important viscera. In the dog, blood pressure is only slightly lowered by anesthetic concentrations of the drug. The initial experiments on cyprethylene ether justifies its careful trial clinically by experienced anesthetists.—J. C. KRANTZ, JR., W. E. EVANS, JR., S. E. FORMAN and H. L. WOLLENWEBER. *J. Pharmacol.*, 75 (1942), 30–37. (H. B. H.)

Antispasmodic Derivatives of Ethylamine. Saturated derivatives of ethylamine, of the general formula $CH_3CH(R')NHR''$ (where R' is an alkyl radical containing 4, 5, 6 or 7 carbon atoms in a straight or branched chain and R'' is an alkyl radical containing 1, 3 or 5 carbon atoms or a cycloalkyl radical) have a favorable antispasmodic action. R' may, for example, be butyl, isobutyl, amyl, isoamyl, hexyl or heptyl; R'' may be an alkyl radical, *e. g.*, methyl, propyl, isopropyl, amyl or isoamyl, or a cycloalkyl radical, *e. g.*, cyclopentyl, cyclohexyl or methylcyclohexyl. These compounds are produced by condensing alkyl methyl ketones of the general formula $R'COCH_3$ with primary amines of the general formula $R''NH_2$ wherein R'' is an alkyl containing 1, 3 or 5 carbon atoms, or cycloalkyl radical, and reducing the product. The condensation and the reduction take place simultaneously or successively. In carrying out the process the ketones are condensed with alkylamines, for example, methyl-, propyl-, isopropyl-, amyl- or isoamyl-amine. The condensation can also be carried out with cycloalkylamines, *e. g.*, cyclopentyl-, cyclohexyl- or methylcyclohexyl-amine. The condensation product obtained is reduced in known manner, suitable by nascent hydrogen. Details are given of the production of a number of such products.—WILFRID KLAVEHN and ANTON

WOLF, assignors to E. BILHUBER CORP. U. S. pat. 2,256,434, Sept. 16, 1941. (A. P.-C.)

Antispasmodic Salts of Amino Alcohol Esters of 9-Fluorenecarboxylic Acid. $RR'NC_nH_{2n}$ esters of 9-fluorenecarboxylic acid are produced (where n is an integer between 1 and 4, and R and R' represent alkyl groups having not more than 4 carbon atoms) which have a relaxing effect on smooth muscle similar to that produced by atropine or papaverine and the water-soluble salts of which have a strong antispasmodic acid. These esters may be produced by causing the acid chloride of 9-fluorenecarboxylic acid to react with an amino alcohol in an inert diluent, and details are given of the production of a number of such compounds.—ROBERT R. BURTNER, assignor to G. D. SEARLE & Co. U. S. pat. 2,262,754, Nov. 18, 1941. (A. P.-C.)

Artichokes—Hypoglucemic Action of. Artichoke (*Cynara Scolymos*), is a common vegetable. Its hypoglucemic properties make it useful in special dietaries. Because some diabetics react badly to insulin researches have been made on various plants that might have hypoglucemic activity. Artichokes were dried in hot-air ovens and powdered. Various aqueous extracts were made of this powder, and also some of the vegetables were cooked in hot water and the infusion used. These extracts were administered by stomach tube to dogs. All of the extracts were lightly salted, and some of them also had small amounts of acetic acid added. Cooking time varied and some few alcoholic extracts were used in addition. The following conclusions were made: The hypoglucemic principle is thermolabile, disappearing after cooking. This principle is not due to salts of nickel or cobalt in the vegetable, nor is it due to vitamin B_1 or to the large amount of inulin in the plant. It is possible that its hypoglucemic action may be due to an excitation of the pancreas.—E. GASTON DE IRIARTE Y SANCHEZ. *An. Real Acad. Farm.*, 6 (1940), 79. (G. S. G.)

Ascorbic Acid Concentration in the Blood—Influence of Hyperpyrexia on. No significant changes in ascorbic acid concentration in the blood resulted from elevating the body temperature to 104° F. for four hours.—STAFFORD L. OSBORNE and CHESTER J. FARMER. *Proc. Soc. Exptl. Biol. Med.*, 49 (1942), 575. (A. E. M.)

Basic Esters. Spasmolytic esters are produced by a process which involves causing a dialicyclic or aryl alicyclic lower aliphatic acid or derivative of such an acid to react with an amino alcohol or hydrohalide or arylsulfonic ester of such an alcohol. Details are given, or general mention made, of the production of a large number of such compounds.—KARL MIESCHER and KARL HOFFMANN, assignors to CIBA PHARMACEUTICAL PRODUCTS, INC. U. S. pat. 2,265,184, Dec. 9, 1941. (A. P.-C.)

Bile Acid Metabolism—Studies on. I. The Fate of Cholic Acid in the Guinea Pig. The catabolism of cholic acid in the guinea pig has been studied. When injected intravenously, cholic acid was secreted rapidly and quantitatively into the bile and thus into the intestinal tract. Within 96 hrs. after injection, cholic acid disappeared from the animal body, without being eliminated as such in either urine or feces. That the cecum was concerned in this disappearance was shown (1) by essentially quantitative recovery of cholic acid administered to the guinea pig with a functionally inactive cecum and (2) by decomposition of cholic acid in the isolated cecum. This decomposition of cholic acid in the cecum was due to the activity of a Gram-negative rod having the cultural characteristics of *Alcaligenes faecalis*. This organism, growing in a synthetic medium, caused rapid decomposition of cholic acid.—L. H. SCHMIDT and HETTIE B. HUGHES. *J. Biol. Chem.*, 143 (1942), 771. (F. J. S.)

Blood Pressure Reducing Substance. In a treatment of hormone material of the kind present in healthy urine and in the posterior lobe of the pituitary gland, insoluble in concentrated ammonium sulfate solution and containing a substance capable of lowering the blood pressure, the material is heated in a solid state to a temperature of about 100° to 105° C. to destroy substances which are not stable at such temperatures.—ERNEST WOLLHEIM. U. S. pat. 2,256,933, Sept. 23, 1941. (A. P.-C.)

Carbamic Acids—Cycloalkylalkyl Esters of. Compounds which may be used as hypnotics and rectal anesthetics are produced by a method which involves treating a cycloalkylalkanol with phosgene, and treating the resulting cycloalkylalkyl ester of chloroformic acid with a compound of the general formula $RR'NH$ in which R and R' each represent hydrogen or a lower alkyl radical. Details are given of the production of several such compounds.—WM. A. LOTT, assignor to E. R. SQUIBB AND SONS. U. S. pat. 2,261,169, Nov. 4, 1941. (A. P.-C.)

Carcinogenic Hydrocarbons. V. A Comparison of the Fluorescence Intensity of Cholanthrene and Certain of Its Homologs. A study of fluorescence intensities in some homologous 20-substituted cholanthrenes has shown that the fluorescence intensity increases as does the carcinogenic activity in a comparison of cholanthrene and methylcholanthrene. In the higher homologs, however, the rapid decline in carcinogenic activity is not accompanied by a corresponding decline of fluorescence intensity, which remains nearly the same for these substances when equimolecular concentrations are used.—W. F. BRUCE. *J. Am. Chem. Soc.*, 63 (1941), 304. (E. B. S.)

Chloroform—Liberation of Tissue Substances by. For surgical anesthesia the concentration of $HCCl_3$ required in the tissue is 0.03% volume of liquid to tissue weight, but in practice higher concentrations are used (Clarke, A. J. (1938), "Applied Pharmacology," fifth edition (Churchill), p. 201). In 2 dogs receiving chloroform through the portal vein in concentrations of 0.08%, death occurred in 10–24 hrs. following drowsiness in one dog and consciousness in another. The livers of these dogs were low in adenyl compound while livers of dogs surviving similar or even higher doses of $HCCl_3$ contained higher amounts of adenyl compound. The dogs died when ratios were 0.7% $HCCl_3$ to 1.2% adenyl compound. Chloroform also causes liberation of an inactivating enzyme, histamine and S. R. S. from the isolated perfused dog's liver. Acetylcholine is liberated by $HCCl_3$ from the isolated perfused head of the guinea pig.—E. R. TRETHEWIE. *Australian J. Exp. Biol. Med. Sci.*,19 (1941), 176–184. (W. T. S.)

Choline and Betaine—Structural Specificity of, in Transmethylation. A number of derivatives of choline, various betaines, and other compounds have been tested for their ability to support growth of young rats given a diet containing homocystine but lacking in methionine. The high degree of specificity with regard to structure in relation to the ability to act as a methyl donator in this connection is shown by the fact that of the many compounds tested only choline (and simple derivatives thereof such as lecithin and phosphorylcholine), betaine and dimethylethylhydroxyethylammonium chloride were found to support growth under these conditions. The synthesis of α,α-dimethylcholine and of diethylmethyl-β,γ-dihydroxypropylammonium chloride has been described. The results of the present investigation are discussed with reference to the behavior of choline and related compounds in their ability to prevent development of fatty livers and hemorrhagic kidneys in the rat and to prevent perosis and act as a growth essential in the chick.—A.

W. MOYER and VINCENT DU VIGNEAUD. *J. Biol. Chem.*, 143 (1942), 373. (F. J. S.)

Cobra Venom and Thiamine—Pharmacological Interactions of. Both cobra venom and vitamin B_1 act on the central nervous system. Injected in small doses cobra venom produces marked analgesia. This relief of pain is due to direct action on the brain; the hypothalamus is the center of the analgesia. Neurotoxin is the constituent which is responsible and the venom is rich in it and free from hematoxins, proteins and other harmful constituents. Neurotoxin is not a protein and not an alkaloid but it seems to be closely related to alkaloids. Therapeutic applications of cobra venom and of thiamine hydrochloride are briefly reviewed. It seemed worth while to study the possible antagonistic or synergistic interaction of combinations of the two drugs when administered to animals. Experiments, conducted chiefly on white mice, are reported in detail. The following conclusions were reached: (1) Administration of suitable amounts of vitamin B_1 to mice makes them more resistant to cobra neurotoxin, while excessive doses of thiamine are toxic in this respect. (2) Mice maintained on diets deficient in vitamin B_1 are less resistant to cobra venom. (3) Such a deficiency in rats does not affect the analgesic potency of cobra neurotoxin.—DAVID I. MACHT and ELIZABETH C. SPENCER. *Jour. A. Ph. A.*, 31 (1942), 146. (Z. M. C.)

Curare-Like Action of Certain New Synthetic Agents. A series of about forty synthetic agents was tested for their curare-like effects. Among these compounds were new quaternary ammonium bases, derivatives of quinine, quinoline, brucine, nicotine, pyridine, morpholinium and picoline. Two naturally occurring alkaloids, *beta*-erythroidine hydrochloride and dihydro-*beta*-erythroidine hydrobromide were also studied. The degree of muscular paralysis was observed in amphibia, fowls and mammals. Central and peripheral respiratory effects and cardiovascular changes were determined in dogs by the method of Thomas and Franke. The most promising synthetic agent is quinine ethochloride dihydrate; dihydro-*beta*-erythroidine hydrobromide is the most potent natural compound.—A. J. LEHMAN and H. F. CHASE. *Federation Proceedings II*, 1 (1942), 157. (H. B. H.)

Curare-Like Agents—Anticonvulsant Action of Natural and Synthetic. The anticonvulsant action of quinine ethochloride dihydrate (QEC), quinine methochloride (QMC), *beta*-erythroidine hydrochloride (BE), and dihydro-*beta*-erythroidine (DBE) was determined in dogs using metrazol, 25 mg./Kg., as the convulsant. Dogs could not be as satisfactorily protected with BE, 5.0 mg./Kg., DBE, 1 mg./Kg., and QMC, 4.5 mg./Kg., as with QEC, 8.5 mg./Kg. Toxic effects of the latter were not as manifest as with the other three compounds. Higher doses of BE, DBE and QMC gave better protection than the smaller doses listed, but the resulting respiratory embarrassment necessitated artificial respiration to save the animal. A strong parasympathetic stimulation, possibly nicotine-like, was noted for BE and DBE as an undesirable side-action. QEC, in the dose given, limited metrazol convulsions to a few mild tremors and resuscitative measures were not necessary. In our hands prostigmine affords little or no antagonism to the curare-like actions of any of these agents.—A. J. LEHMAN and H. F. CHASE. *Federation Proceedings II*, 1 (1942), 157. (H. B. H.)

Cyclopropyl Vinyl Ether—Pharmacology and Anesthetic Properties of. Cyclopropyl vinyl ether (cyprethylene ether) is a compound containing structures essential to the molecules of the three anesthetics cyclopropane, ethyl ether and ethylene. Thus cyprethylene ether contains the cyclopropyl ring, the carbon-oxygen-carbon linkage of ethyl ether and the double bond of ethylene. Cyprethylene ether is an anesthetic in man and many species of animals. Its potency is approximately the same as divinyl oxide. The anesthetic index of cyprethylene ether is very high, approximately twice that of diethyl ether.—JOHN C. KRANTZ and SYLVAN E. FORMAN. *Federation Proceedings II*, 1 (1942), 156. (H. B. H.)

Demerol, a New Synthetic Drug—Effectiveness in Man of. Demerol (1-methyl-4-phenyl-piperidine-4-carbonic acid ethyl ester hydrochloride), a new synthetic analgesic, was found to be a satisfactory and safe drug in over 800 patients, most of whom ordinarily would have required opiates for relief. The dose is 50 to 150 mg. orally or intramuscularly, in a single dose or repeated doses several times daily. An effect is apparent within 20 to 60 min. orally or 15 min. parenterally. In either case the effect lasts from one to several hours with an average duration of 2 to 3 hrs. Postoperative patients, regardless of surgical procedure, in the majority of instances are maintained comfortably without difficulty. Pains of visceral origin are effectively relieved (gastrointestinal intubation studies in man with balloons have demonstrated an antispasmodic action contributing to the analgesic effect). Arthritic, neuritic and vascular pains are also relieved. Nausea and vomiting occur in approximately 5% of the cases. Especially in ambulatory patients other side effects, which are of short duration and usually insignificant, are noted. These are dizziness, perspiration, lightheadedness, dryness of mouth and euphoria. Extreme weakness with marked dizziness and vomiting occurs rarely. Drowsiness and sleep occur with the larger doses, usually following parenteral administration, are of short duration and are not followed by depression or confusion. No toxicity in the hematopoetic, genitourinary, respiratory or cardiovascular systems, and no evidence of addiction following prolonged use has been noted.—ROBERT C. BATTERMAN. *Federation Proceedings II*, 1 (1942), 143. (H. B. H.)

Demerol—Development of Tolerance to. Demerol (1 - methyl - 4 - phenyl - piperidine - 4 - carbonic acid ethyl ester) was administered regularly to four patients. Using the Hardy-Wolff method determinations of the pain threshold raising effect were made at weekly intervals during the period of administration and at 15-day intervals following withdrawal. In each case there was a reduction in the pain threshold raising effect of the drug as the study progressed. At the end of eight weeks tolerance appeared to have reached a maximum. Tolerance is maintained for at least 30 days after withdrawal. This effect appears to be similar to but perhaps less permanent than the tolerance developed to morphine.—H. L. ANDREWS. *Federation Proceedings II*, 1 (1942), 142–143. (H. B. H.)

Demerol (1 - Methyl - 4 - Phenyl - Piperidine - 4 - Carbonic Acid Ethyl Ester)—Addiction Liability of. Demerol was substituted for morphine and administered to 13 addicts for 10 days. In each instance physical dependence on morphine was partially satisfied by Demerol. On withdrawing Demerol, the abstinence syndrome became intensified for two days, then waned. Demerol was given to a group of "recovered" or post-addicts in progressively increasing amounts for 10 to 11 weeks. Signs of withdrawal appeared on withholding the drug after one and two months of administration. The abstinence syndrome which appeared on withdrawal was in every way typical of, but less severe than, the morphine abstinence syndrome. The maximum daily dose was 3.5 Gm. The duration of its physical dependence action was 4 to 5 hrs. (the time required for the abstinence syndrome to reach

50% of its maximum intensity). Muscular tremors and twitches appeared in the second week and continued throughout. In the tenth week two of the subjects had mild epileptiform (petit mal) seizures. —C. K. HIMMELSBACH. *Federation Proceedings II*, 1 (1942), 153. (H. B. H.)

Demerol—Studies of the Addiction Liability of. Demerol is 1-methyl-4-phenyl-piperidine-4-carbonic acid ethyl ester. Studies were made on man. It partially satisfied the physical dependence established to morphine. Definite but mild abstinence symptoms developed on withdrawal. Administered to post-morphine-addicts, physical dependence resulted, the abstinence syndrome being milder than that noted with morphine but typical. The duration of physical dependence to Demerol was shorter than is the case with morphine. The author concludes that Demerol possesses addiction liability.—C. K. HIMMELSBACH. *J. Pharmacol.*, 75 (1942), 64–68. (H. B. H.)

Dialkylaminoalkyl Furoates and Benzoates—Some, as Topical Anesthetics. Benzoates and furoates of a number of amino alcohols have been prepared. Both types of esters have a low order of topical anesthetic activity but the furoates are frequently somewhat superior.—E. S. COOK and C. W. KREKE. *J. Am. Chem. Soc.*, 62 (1940), 1951. (E. B. S.)

Dicoumarin—Effect of, on the Coagulation of Blood. Dicoumarin was administered to six patients in an effort to prolong the clotting time. There was one case of pleurisy and effusion, one of subacute bacterial endocarditis, one of carcinoma of the cecum and three of thrombophlebitis. All cases showed a prolongation of the prothrombin and clotting times. The most effective dose seemed to be 200 to 300 mg. repeated daily. The effects of the drug required 24 to 72 hrs. to appear and 8 to 10 days to disappear after withdrawal of the drug. Half of the patients showed a moderate response to the drug and the other half a more marked susceptibility. Certain individuals responded only moderately, and blood transfusions failed to produce a normal prothrombin time following administration of the drug in several cases. In one, addition of vitamin K therapy returned the prothrombin time to normal. There was no way to predict which reaction would occur.—S. R. TOWNSEND and E. S. MILLS. *Can. Med. Assoc. J.*, 46 (1942), 214; through *Abbott Abstract Service*, (1942), No. 1107. (F. J. S.)

Digitalis—A Method for the Bioassay of, in Humans. In previous investigations evidence was presented for the view that animal methods for the assay of digitalis bodies may be misleading when the results are applied to humans. It was shown that the frog method has serious defects in this respect, since a specimen may be twice as active as another when compared in the frog, while of the same activity when compared in humans. In these studies the results of the cat method proved to be a more reliable index of the relative potency of digitalis preparations in man. Defects of the cat method were also pointed out. In the past two years the authors have explored the possibilities of using human subjects for the assay of digitalis. Degrees of change in the T-wave of the electrocardiogram in patients with regular sinus rhythm indicate grades of digitalis action. In suitable individuals the T-wave reliably reveals 22% differences in dosage. The present technique is to calibrate the patient with three doses of the standard Reference Powder, differing from each other by 22%. The dose of the unknown is then selected which produces an effect falling within the calibrated range. The ratio of the dose of the unknown to the dose of the standard represents the relative potency of the two preparations. The average of these ratios for a series of patients establishes the potency of the unknown in relation to the standard. Up to the present time, 97 subjects have been used for calibration. About 20% of these have proved sufficiently constant in their response to digitalis for a dependable estimate of the potency of the unknown specimen. Eight preparations of digitalis have been satisfactorily assayed by this method.—HARRY GOLD, HAROLD OTTO and NATHANIEL T. KWIT. *Federation Proceedings II*, 1 (1942), 151–152. (H. B. H.)

Digitalis—Estimation of, by the Cat Method. In the course of twelve years 276 estimations of digitalis were made by the cat method as described by De Lind van Wyngaarden. A total of 1000 cats was used. The average number of animals required for an estimation was 3.6. In 66% of the tests three cats were required to meet the demands of De Lind, whereas in 93% of the cases three to five animals were used. In thirty-eight out of 276 estimations one to three cats were excluded. The difference in the results of the estimations before and after excluding cats varied from 0 to 7.6%, with an average of 5%. The standard deviation of a single observation before excluding cats was 11.0% and after exclusion 8.6%. The standard error after exclusion for three cats was 5.0%. Twice the standard error is therefore 10.0%. This means that the result of an estimation with three cats, performed in accordance with the rules of De Lind Van Wyngaarden, in 95% of the cases differs not more than 10% from the true value of the preparation under test.—L. W. VAN ESVELD. *Arch. intern. pharmacodynamie*, 65 (1941), 216. (W. H. H.)

Digitalis Leaves—Variations in Samples of, from British Sources. The following summary is given: The potencies of sixteen samples of the leaves of *Digitalis purpurea* collected in different parts of England and Wales have been determined biologically by the B. P. 1932 frog assay method, to see if any relation existed between potency and environmental factors. No simple correlation was found, but potency varied from 5.5 to 21.2 units per gram, the mean being 12.4.—G. M. WATSON and W. O. JAMES. *Quart. J. Pharm. Pharmacol.*, 14 (1941), 214–216. (S. W. G.)

Digitalis—A Practical Technique and Design for the Assay of, on the Embryonic Chick Heart. In a previous report it was shown that the potency ratios for lanatoside C, digoxin and digitaline Nativelle obtained on the embryonic chick heart agree much better with the human oral dose than do those obtained on the cat or the frog. This work has been extended to the assay of digitalis tincture and powdered leaf for which a practical procedure is described. The sources of variation affecting the assay are evaluated and the method is shown to compare favorably with other commonly used methods with respect to precision, time consumption, cost and availability of the biological material. An experimental design is suggested whereby use may be made of factorial coefficients as a short cut in the computation of the ratio of standard to unknown and its standard error. Appropriate tests of significance are indicated. Comparisons are made between the potency of various preparations for the embryonic heart, the cat, the frog and man. The chick heart results have been found to parallel closely the human in so far as therapeutic data were available. They also agree with the cat in many but not all cases. Preliminary data suggest that tinctures which have aged with respect to the frog, retain their potency for the chick heart.—ROBERT A. LEHMAN and GEORGE H. PAFF. *Federation Proceedings II*, 1 (1942), 157–158. (H. B. H.)

3:5-Diiodohippuric Acid—Some Derivatives of. The authors prepared 3:5-diiodo-4-carboxymethoxy-hippuric acid, which they thought was very near to being the ideal pyelographic agent. The rates of excretion of 3:5-diiodo-4-hydroxyhippuric acid and iodoxyl (N-methyl-3:5-diiodo-4-pyridone-2:6-dicarboxylic acid) were compared by injecting their aqueous solutions into the caudal vein of rabbits, and estimating the iodine content of the urine excreted at regular intervals. The excretion of iodoxyl commenced within 50 min. of injection, and was complete in about 2½ hrs., whereas with the hippuric acid derivative, excretion did not commence until 75 min. after injection; it was complete in about the same time. Recovery of the iodine compounds was approximately quantitative in both instances. The toxicity of the hippuric acid derivative, as estimated by intravenous injection in rats, was 1.8 times as high as that of iodoxyl, the mean lethal dose (L. $D._{50}$) of which was about 10 mg. per Gm. The toxicity of 3:5-diiodo-4-carboxymethoxy-hippuric acid was about 1.4 times as high as that of iodoxyl when tested on rats, and nearly twice as great when tested on mice. These two hippuric acid derivatives, together with 4-hydroxy-3:5-diiodobenzoic acid and *o*-iodohippuric acid, were tested pharmacologically. The results, which will be published later, showed that none of the four substances had any effect on the heart beat, but all caused a slight dilatation of the coronary vessels. Their effect on the perfused ear of the rabbit was variable, sometimes causing dilatation, but more often constriction. One striking difference between the compounds was their effect on spinal and decerebrate cats. When injected intravenously, hydroxydiiodobenzoic acid and hydroxydiiodohippuric acid caused a rapid fall in blood pressure, whereas *o*-iodohippuric acid and carboxymethoxydiiodohippuric acid produced a small prolonged rise. Another difference observed was the effect produced on injection into the carotid artery of chloralosed cats, *o*-iodohippuric acid consistently producing convulsions, while carboxymethoxydiiodohippuric acid was apparently nonconvulsant. Carboxymethoxydiiodohippuric acid was tested clinically on three patients. After the intravenous injection of only a few cc. of a 50% solution, the following reactions were noted: flushing, appreciable rise in blood pressure, drowsiness with unpleasant memories, a desire to micturate and, in one instance, spontaneous defecation. These effects were sufficiently marked to prohibit the use of the compound as a pyelographic agent.—B. K. BLOUT, J. C. L. RESUGGAN and F. A. ROBINSON. *Quart. J. Pharm. Pharmacol.*, 15 (1942), 16–20. (S. W. G.)

5:5 - Disubstituted - 2,4 - Thiazolidinediones. A process which may be employed for producing a 5:5 - disubstituted - 2,4 - thiazolidinedione in which the two substituent groups are hydrocarbon groups of which at least one is a primary group, and each of which contains from 2 to 6 carbon atoms and has a carbon atom directly attached to the methylene carbon of the thiazolidinedione nucleus and to not more than 2 other carbon atoms, and the sum of the carbon atoms of the two substituents does not exceed 10, consists in treating the corresponding 5:5-disubstituted-2-imino-4-thiazolidone with an acid to remove the imino group. Details are given of the production of a number of such compounds, and alkali metal, ammonium and alkylamine salts. Both the acids and salts produced have a sedative action which, in the case of compounds such as some of the sodium salts when administered intravenously, may be accompanied by a stimulative action. —HORACE A. SHONLE and WILBUR J. DORAN, assignors to ELI LILLY & CO. U. S. pat. 2,255,903, Sept. 16, 1941. (A. P.-C.)

Drug Bioassays. In the bioassay of tincture of digitalis it is advisable to inject the same volume of standard and of unknown and both of the same alcoholic strength; 0.02 cc. per Gm. of frog, containing 23% alcohol by volume, has been found suitable for routine assays. According to the potency and alcoholic strength of the original tincture, this requires dilution with either addition or removal of alcohol. It was found possible experimentally to relate the amount of alcohol remaining in the residue left after evaporating part of a sample of tincture with the percentage of its original weight removed, the relationship being linear for evaporation of up to 50% of the sample. Evaporation is best carried out in a tared beaker under a stream of air. The only factor producing an appreciable influence is the relative humidity of the atmosphere, and this may be eliminated by using a special type of nozzle to prevent drawing room air into contact with the surface of the tincture by convection currents (the nozzle may be made of 6-mm. glass tubing protruding about 1 mm. from the center of the large end of a medium-sized cork). Collaborative study of the preparation of dilutions of tincture of digitalis in this manner is recommended. Preliminary tests on commercial products alleged to possess an enteric coating were made *in vitro* by exposing them to the action of water, artificial gastric juice (citric acid-phosphate buffer solution at *p*H 1), and a citric acid-phosphate buffer solution at *p*H 8, and the results indicated that 6 of the 8 products tested seemed to offer little, if any, protection of their contents against gastric juice. Collaborative study of the problem is recommended.—LLOYD C. MILLER. *J. Assoc. Official Agr. Chem.*, 24 (1941), 823–827. (A. P.-C.)

Epinephrine—Comparison of the Effects of, on Blood Pressure When Injected into a Vein and When Injected into the Marrow Cavities of Bone. Studies were made on etherized dogs and decapitated cats. No gross differences in the latent period and duration of action on blood pressure were noted between injections of epinephrine into a vein and into bone marrow (left tibial bone). Small volumes of epinephrine administered by way of the bone marrow increased blood pressure approximately 1/3 as much as by intravenous injection, as a small amount of the drug remains in the bone marrow. These differences are not noted when large volumes are injected. Oils and suspended particles when injected into the marrow cavity of the tibial bone appeared in the popliteal and deep femoral veins within one second after beginning the injection. Since a small amount of the injected material remains in the bone marrow, irritant substances should not be so administered.—MILES E. DRAKE and CHAS. M. GRUBER. *J. Pharmacol.*, 75 (1942), 6. (H. B. H.)

Fluorinated Amines—Some, of the Pressor Type. Three new fluorinated amines of the phenylethylamine type have been prepared. Physiological tests with white mice indicate that the fluorinated phenethylamines are slightly more toxic than the unsubstituted compounds. Toward dogs and guinea pigs the amines showed pressor activity while with rabbits the effect was depressor.—C. M. SUTER and A. W. WESTON. *J. Am. Chem. Soc.*, 63 (1941), 602. (E. B. S.)

Growth-Inhibitory Substances. A comprehensive review (107 references) on the inhibition of growth by chemical compounds. The experimental method is outlined and the results are presented. The compounds investigated were classified as: (1) 1:2-benzanthracene derivatives; (2) dimethyl anthracenes; (3) nitrogenous analogs of 1:2-benzanthracene; (4) benz- and dibenzphenothiazines; (5) analogs of 3:4-benzphenanthrene; (6) dibenzfluorenes; (7) dibenzcarbazoles; (8) derivatives of

fluoranthrene; (9) dibenzpyrene quinones; (10) azo compounds; (11) naphthylamines and naphthaquinone; (12) arsenonaphthalenes and other arsenicals; (13) derivatives of triphenylethylene; (14) diphenyl derivatives of indene, β-naphthindole and β-naphthofuran; (15) cholic acid, desoxycholic acid; (16) styryl 430, isomers and analogs; (17) miscellaneous compounds. The discussion is divided into: (*a*) correlation of inhibitory activity and carcinogenicity; (*b*) structural requirements for inhibitory and carcinogenic activity; (*c*) mode of production of inhibitory effects.—G. M. BADGER, L. A. ELSON, A. HADDOW, C. L. HEWETT and A. M. ROBINSON. *Proc. Roy. Soc. (London) (B)*, 130 (1942), 255–299. (W. T. S.)

Guinea Pigs—Some New Dietary Essentials Required by. Guinea pigs did not grow and soon died when they were fed a ration composed of casein, sucrose, inorganic salts, corn oil, vitamins A, D, K, E, thiamine, riboflavin, pyridoxine, nicotinic acid, pantothenic acid, choline, inositol and ascorbic acid. Two new factors, one soluble in 50% alcohol (GPF-1) and one insoluble in the solvent (GPF-2), have been shown to be necessary for the survival and growth of young guinea pigs. A third factor seemed to be necessary for continued growth and life of the animals for periods longer than a few weeks. Several properties of GPF-1 have been studied and advantage has been taken of these in the concentration of this factor. Purification of GPF-1 has been carried to a point such that 5 mg. per day produced good growth. Several compounds which have recently been found essential for chicks did not replace GPF-2.—D. W. WOOLLEY. *J. Biol. Chem.*, 143, (1942), 679. (F. J. S.)

Hormone-Active Substances—Oxidation of Halogen Compounds of Cyclic Ketones for the Production of. A process for oxidizing halogen compounds of cyclic ketones of the sterol series while splitting off the side chain to retain not more than 2 carbon atoms of the chain involves subjecting to oxidation a halogenated compound of the sterol series in which at least one halogen is in the 4, 5 or 6 position which can be transformed to a $\Delta^{4,5}$-3-ketone of the sterol series by means of zinc dust, and separating the components of the reaction products in accordance with the well-known methods. Various examples with details are given.—HANS HATZIG, assignor to RARE CHEMICALS, INC. U. S. pat. 2,259,109, Oct. 14, 1941. (A. P.-C.)

Iodized Salt—Adequacy of, for Goiter Prevention. Salt with only one part of iodine per 10,000 parts of sodium chloride will provide an abundance of iodine for the prevention of goiter.—ELMER L. SEVRINGHAUS and JAMES H. BARBOUR. *J. Clin. Endocrinol.*, 1 (1941), 850; through *Chem. Abstr.*, 36 (1942), 167. (F. J. S.)

Keto-alcohols. II. Synthetic Compounds with Corticosterone-Like Activity. The following new compounds were obtained and their chemical and physical properties are reported: *p*-hydroxybenzoylcarbinol; α-naphthylcarbinol; *m*-nitrophenylacetyl chloride; (3′-nitro-), (3′-cyano-), (3′-carboxy-) and (3′ - carboxy - α - ethyl -) - 4 - methoxydeoxybenzoins; 3′-carboxy-4-methoxy-α:β-diethylstilbene; 3′ - carboxy - 4 - hydroxy - α:β - diethylstilbene; 3′ - (ω - hydroxyaceto) - 4 - hydroxy - α:β - diethylstilbene; 3′-carbomethoxy-4-methoxy-α:β-diethylstilbene; and 3′-aceto-4-hydroxy-α:β-diethylstilbene. Benzoylcarbinol and 3′-(ω-hydroxyaceto)-4-hydroxy-α:β-diethylstilbene exhibit a biological activity qualitatively similar to that of deoxycorticosterone.—W. H. LINNELL and I. M. ROUSHDI. *Quart. J. Pharm. Pharmacol.*, 14 (1941), 270–280. (S. W. G.)

Kymograph Papers—A Foot Control for Smoking. A description.—JAMES M. DILLE. *Pharm. Arch.*, 13 (1942), 31–32. (H. M. B.)

Lanatoside C—Gastrointestinal Absorption of. The rate of absorption of Lanatoside C from the stomach, intestine and colon of cats was determined and compared to the rate of absorption of Tincture of Digitalis U. S. P. XI from the same sites. The drug was placed in the ligated portion of the gastrointestinal tract after anesthetization with sodium pentobarbital. After one hour the ligated section was removed and the lethal dose determined by intravenous infusion. This value subtracted from a control value, obtained by determining the lethal dose under the same conditions of anesthesia and surgical procedures, gives the amount of cardioactive glycosides absorbed in the time interval. The results obtained by this procedure, which is termed the determination of essential absorption, were compared to the results obtained by biologically assaying the residue in the excised section of the gastrointestinal tract for cardio-active glycosides. Absorption took place most rapidly from the intestine but quantities were also absorbed from the colon and stomach. Lanatoside C was absorbed more rapidly than the Tincture of Digitalis. Results also indicate that there is a likelihood of partial destruction of the cardio-active principles in the gastrointestinal tract.—JAMES M. DILLE and GEORGE B. WHATMORE. *Federation Proceedings II*, 1 (1942), 149. (H. B. H.)

Local Anesthetics Derived from Tetrahydronaphthalene. I. Esters of 2-Dialkylamino-3-Hydroxy - 1,2,3,4 - Tetrahydronaphthalenes. Improved procedures have been described for the preparation of 1,4-dihydronaphthalene and the corresponding chlorohydrin and oxide. Several amino alcohols have been synthesized from the two latter compounds and the benzoyl, *p*-nitrobenzoyl, *p*-aminobenzoyl and phenylcarbamyl esters of these alkamines have been made. Several of these esters show local anesthetic activity and 2-diethylamino-1,2,3,4 - tetrahydronaphthalene - 3 - phenylurethan is especially active.—E. S. COOK and A. J. HILL. *J. Am. Chem. Soc.*, 62 (1940), 1995. (E. B. S.)

Male Sexual Hormones—Primary Alcohols Having the Physiological Activity of. A process is employed for preparing primary alcohols of physiological activity which involves separating the carboxylic acids, which are produced on oxidation of compounds having the polyhydrocyclopentanophenanthrene skeleton and a side chain in position 17 of this skeleton, from the mixture of oxidation products so produced, by saponifying their acetyl compounds and transforming their esters to primary alcohols by reduction, details being given of the production of several such compounds which are all colorless, crystalline, optically active, physiologically effective, soluble in alcohols, ether and acetone, and difficultly soluble in water, alkalies and acids.—FRITZ JOHANNESSOHN and HANS HATZIG, assignors to RARE CHEMICALS, INC. U. S. pat. 2,259,698, Oct. 21, 1941. (A. P.-C.)

Manganese Deficiency in the Rat—Studies on. Pronounced manganese deficiency in the rat has been produced by the use of rats weaned without access to manganese. The deficiency resulted in definitely impaired growth in the male and the female rat. In the manganese-deficient female rat estrous cycles were irregular or absent, and there was a marked delay in the opening of the vaginal orifice. A manganese deficiency in the male rat caused testicular degeneration and complete sterility due to lack of spermatozoa production. Both male and female manganese-deficient rats were unable to reproduce. No histological abnormalities were detected in the adrenal, kidney, pituitary and thyroid of the manganese-deficient rat. The deficiency

did not result in reduced ascorbic acid content of tissues, nor did ascorbic acid stimulate the growth of the manganese-deficient rat. Synthesis of ascorbic acid from mannose by rat liver and other tissues *in vitro* could not be obtained with or without added manganese. A reduced arginase concentration in the liver of the manganese-deficient rat was found. There were no essential differences in the activity of the intestinal dipeptidases studied.—PAUL D. BOYER, JAMES H. SHAW and PAUL H. PHILLIPS. *J. Biol. Chem.*, 143 (1942), 417.
(F. J. S.)

Methyltestosterone—Influence of, on Metabolism of Normal, Castrate and Thyroidectomized Rats. The oxygen consumption of castrate male rats is lower than that of normal, but higher than that of thyroidectomized rats. In castrate-thyroidectomized rats it is not lower than that found in non-castrate thyroidectomized rats. Treatment with methyltestosterone did not affect the metabolic rate of non-castrate animals nor that of the castrates. It caused a moderate increase in the thyroidectomized-castrates. The latter rat showed an increased sensitivity to treatment with thyroid which, however, was neither caused nor increased by methyltestosterone.—ARTHUR E. MEYER and HELEN DANOW. *Proc. Soc. Exptl. Biol. Med.*, 49 (1942), 598.
(A. E. M.)

Morphine, Codeine and Their Derivatives—Studies of. XVI. Clinical Studies of Morphine, Methyldihydromorphinone (Metopon) and Dihydrodesoxymorphine-D (Desmorphine). Studies were made on man. Metopon (methyldihydromorphinone) in the treatment of chronic pain in a dose of 5 mg. corresponds to 10 mg. morphine. Metopon is superior to morphine as regards development of tolerance and dependence, and disappearance of tolerance during short periods of abstinence. It produces fewer side reactions and is not as hypnotic. Metopon is contraindicated for pre-anesthetic medication because of respiratory depression. Desomorphine (dihydrodesoxymorphine-D) has no particular advantage over morphine. All in all morphine is probably the most satisfactory phenanthrene analgesic.—LYNDON E. LEE, JR. *J. Pharmacol.*, 75 (1942), 161–173. (H. B. H.)

Morphine—Pain Threshold Response to, in Humans as Modified by Prostigmin Methylsulfate. The authors have previously reported (*J. Pharmacol.*, 68 (1940), 104; *J. Am. Med. Assn.*, 115 (1940), 2058) that prostigmin methylsulfate enhances the action of morphine on pressure-pain in cats, and that clinically it augments the relief of pain by morphine in humans. This report deals with preliminary experiments on seven normal humans performed on a modified Wolff-Hardy-Goodell quantitative, analgetic machine. Results show that the average increased temperature thresholds were as follows: 8.3° C. with 16 mg. morphine sulfate; 1.4° C. with 8 mg. morphine sulfate; and 5.2° C. with 8 mg. morphine sulfate + 0.5 mg. of "prostigmin." The above doses raised the threshold temperature over the normal value 23.4°, 9.5° and 12.8° C., respectively. When the time in which the peak threshold was reached is compared, there is very little difference between the small and large dose of morphine and the small dose of morphine + "prostigmin." As regards the total time of effect, the small dose of morphine + "prostigmin" is essentially the same as the large dose of morphine alone; *i. e.*, 247 and 243 min., respectively. By contrast, the small dose of morphine alone lasted approximately one hour less than either of the above (183 min.). These results indicate that "prostigmin" enhances the quantitative pain response to morphine and appears to corroborate our previous experimental and clinical reports.—DONALD SLAUGHTER and J. W. GALES. *Federation Proceedings II*, 1 (1942),167.(H. B. H.)

Nicotine—Urinary Excretion of, by Smokers. Urinary excretion of nicotine was determined chemically (and confirmed in several instances biologically) in four smokers. The subjects smoked 40 cigarettes per day and eliminated from 2 to 8 mg. of nicotine in the urine. This is the equivalent of about 2% to 8% of the nicotine retained on inhalation of the tobacco smoke. Urine from two non-smokers showed the presence of a trace of material giving a positive nicotine test (0.01 to 0.08 mg. per 24-hr. sample). In one subject studied especially for the purpose, acidification of the urine by the oral administration of ammonium chloride increased the urinary yield of nicotine (from an average of 6.4 mg. per 24 hrs. during the uncontrolled period to an average of 15 mg.); alkalinization of the urine decreased the urinary yield (to an average of 2.7 mg.). The extent of this increased resorption is too slight, however, to support the suggestion that poisoning might occur in a normal smoker as a result of massive resorption of nicotine by the urinary mucous membrane from an alkaline urine. Under like experimental conditions, a noninhaling smoker excreted in the urine only 10% as much nicotine as an inhaler. This is in keeping with the observation that a non-inhaler retains only about 10% as much nicotine as an inhaler, based on assay of the expelled smoke. It is concluded from the present experiments that some more effective mechanism than urinary excretion is normally active in the disposal of nicotine by man.—H. B. HAAG and P. S. LARSON. *Federation Proceedings II*, 1 (1942), 142–153.
(H. B. H.)

Pain—Studies on. Measurement of the Effect of Ethyl Alcohol on the Pain Threshold and on the "Alarm" Reaction. Pain was measured by the amount of heat (from a 1000-watt electric bulb) focused on the forehead necessary to provoke a painful sensation in man. Thirty cubic centimeters of alcohol was the smallest amount which had the highest threshold raising effect. The maximum pain threshold raising effect was a 45% elevation above control. Depending on the dose of alcohol, the duration of effect was from 1 hr. to 4 hrs. Thirty cubic centimeters of alcohol plus 0.3 Gm. acetylsalicylic acid was better than either alone.—H. G. WOLFF, J. D. HARDY and H. GOODELL. *J. Pharmacol.*, 75 (1942), 38–49. (H. B. H.)

Pantothenic Acid—Studies on the Excretion of. After administration of an oral dose of 1 mg. of calcium pantothenate per Kg. of body weight, the author found that no significant fraction of the dose was excreted in 2 hrs. When the dose was increased to 4 mg. per Kg., however, a distinct rise in the urinary pantothenic acid was observed with a peak at 60 to 100 min. and with a 2-hr. excretion of 0.9 to 5.0%. When 1 mg. of calcium pantothenate per Kg. was injected intravenously, 22% to 31% of the dose was found in the urine with a peak in the excretion within 40 min. After 4 mg. per Kg. intravenously, 41% to 57% was excreted in the urine within 20 min. The blood level of pantothenic acid rose markedly after intravenous administration of 4 mg. per Kg. but returned to normal in 2 hrs. No effect from administration of calcium pantothenate on blood or urine levels of riboflavin was seen and administration of riboflavin produced no change in the pantothenic acid content of the blood or urine.—R. H. SILBER and K. UNNA. *J. Biol. Chem.*, 142 (1942), 623; through *Abbott Abstract Service*, No. 1119.
(F. J. S.)

Papaverine, Epinephrine and Quinidine—Effect of, on the Fibrillation Threshold of the Mammalian Ventricles. Dogs anesthetized with sodium barbital were used as experimental subjects. Papaverine, epinephrine and quinidine raised the fibrillation threshold of the ventricles of the dog heart. Too rapid administration or excessive doses of papa-

verine or quinidine led to ventricular fibrillation.—RENÉ WÉGRIA and NEIL D. NICKERSON. *J. Pharmacol.*, 75 (1942), 50. (H. B. H.)

Pentothal—Use of, as Anesthetic in Thyroidectomy. Pentothal anesthesia was used in 80 cases of thyroidectomy in a Quebec Hospital. As a usual procedure in these cases, after a preliminary medication (nembutal, 1½ gr., the night before; nembutal, 3 gr., morphine sulfate, 1/6 gr., and atropine, 1/150 gr., in the morning before operation), 2½% pentothal was injected, preferably into one of the veins of the foot. The anesthesia was kept on a very light plane in order to preserve the conjunctival reflex. Comparing the results observed in these cases with those obtained from local and inhalation methods of anesthesia, the author concludes that the use of pentothal in thyroid surgery has the following advantages: it is noninflammable and nonexplosive; it lowers metabolism; anesthesia is easily inducted; the drug rarely causes vomiting; reduces the state of anxiety in the patient; and affords the surgeon an easier operation.—F. HUDON. *Can. Med. Assoc. J.*, 46 (1942), 86; through *Abbott Abstract Service*, (1942), No. 1111. (F. J. S.)

Phenothiazine, a New Anthelmintic for Domestic Animals—Monograph on. A review of its usefulness, toxicity, patents and chemistry is given. Samples melted from 177–184.5°. The year in which the sample was produced had an effect on the purity because of improvements in the process of synthesis. Thiozone, an oxidation product of the drug, may contaminate the product and give high results. Insoluble matter should not exceed 1.5%. A monograph is offered. Fifty-nine references.—EMERSON C. BEELER. *Bull. Natl. Formulary Comm.*, 10 (1942), 84–93. (H. M. B.)

Phenylcinchoninic Acid—Action of, in Rabbits. Studies were made on the rabbit. Phenylcinchoninic acid (atophan) was found to prevent convulsive siezures from metrazol. No explanation is given for this action. Neocinchophen did not prevent the metrazol convulsions.—L. J. POLLOCK, I. FINKELMAN and E. L. TIGAY. *J. Pharmacol.*, 74 (1942), 365–368. (H. B. H.)

Physiological Medium—New. Sea water made isotonic with blood and buffered at *p*H 7.3 to 7.4 with sodium lactate may be used as a physiological medium. In the preparation of such a solution the reagents (sodium hydroxide and lactic acids) must not be added directly to the sea water; the buffer mixture is prepared in distilled water and then added in appropriate amounts to sea water, otherwise precipitation of calcium and magnesium salts inevitably occurs. Such a solution properly sterilized can be kept at room temperature for several months without deteriorating. Used as a culture medium for heart fibroblasts for chick embryos it notably delays the acidification of the culture. Laboratory animals can withstand injections of massive quantities of the solution without any harmful effects.—J. L. TREMBLAY and G. W. CORRIVAULT. *Rev. Can. Biol.*, 1 (1942), 88–100. (A. P.-C.)

Pilocarpine and Adrenaline—the Mechanism of the Synergistic Action of, on Salivary Secretion. Adrenaline injected intravenously in small doses of 0.01 mg. or less in the cat does not elicit a secretion from the submaxillary gland; but such doses markedly increase a precurrent secretion induced by small doses of pilocarpine, eserine or mecholyl. This synergistic action of parasympathomimetic substances and adrenaline is believed to be due largely to the vasodilatation produced in the gland by the latter drug and consequent increased diffusion of the former substances. When administered in large doses, adrenaline causes constriction of the glandular blood vessels and at the same time inhibits the secretion induced by parasympathomimetic substances. Relations similar to those described for the submaxillary gland prevail also in the case of the parotid gland, though this organ is less sensitive both to parasympathomimetic stimuli and to adrenaline.—GEORGE W. STAVRAKY. *Rev. Can. Biol.*, 1 (1942), 64–71. (A. P.-C.)

Polyhydrocyclopentanophenanthrene Series—α,β-Unsaturated Ketones of the. Compounds having powerful effects, partly on the comb of capons or on the seminal vesicle, and partly in the estrus test on the rat, and which are intended for therapeutic use, are produced by a process which involves causing a halogen such as bromine to act on saturated polyhydro-3-ketocyclopentanophenanthrenes containing in the 17-position the group CO or $CR'R''$ (where R' represents free hydroxyl, esterified hydroxyl or etherified hydroxyl, and R'' represents alkyl or hydrogen), and treating the halogen compounds thus produced with an agent that eliminates hydrogen halide. Details are given of the production of several such compounds.—KARL MIESCHER and ALBERT WETTSTEIN, assignors to CIBA PHARMACEUTICAL PRODUCTS, INC. U. S. pat. 2,260,328, Oct. 28, 1941. (A. P.-C.)

Sex Hormone Actions of Some Steroids Related to Desoxycorticosterone and Progesterone. The sex hormone actions of three compounds related to progesterone and desoxycorticosterone acetate, *viz.*, acetoxypregnenolone (17-ethyl-Δ⁵-androstene-3(β),21-diol-20-one), pregnenolone (17-ethyl-Δ⁵-androstene-3(β)-ol-20-one) and pregnanedione (17-ethylandrostane-3,20-dione) were studied on ovariectomized rats. Both acetoxypregnenolone and pregnenolone cause vaginal cornification and prevent the appearance of castration changes in the pituitary; pregnanedione appeared to be devoid of such an action in the dose in which it was used. Attention is called to the fact that hormonal activity is much more widespread among the steroid compounds than has hitherto been suspected and that steroids possessing hormonal activity may readily be detected by the anesthetic effect produced by all steroid hormones when administered intraperitoneally or intravenously to rats.—GEORGES MASSON, ADRIEN BORDUAS and HANS SELYE. *Rev. Can. Biol.*, 1 (1942), 57–63. (A. P.-C.)

Sodium Amytal—Electroencephalographic Changes Induced by Intravenous. A definite and characteristic change appears in the human encephalogram following the slow intravenous administration of sodium amytal. The change is marked by the early appearance of a rhythmic oscillation with a frequency of approximately 20 waves per second, in place of the individual's spontaneous pattern. This action is not specific for barbiturates. It is a general concomitant of early depressed cortical activity.—ROBERT COHN and SOLOMON KATZENELBOGEN. *Proc. Soc. Exptl. Biol. Med.*, 49, (1942), 560. (A. E. M.)

Sterols—Comparison of Effects of Large Doses of Various Activated, on Serum Calcium. Crystalline vitamin D_2 and erton are statistically indistinguishable in their effects. Vitamin D_3 produces a more prolonged hypercalcemia than does vitamin D_2. On the basis of responses of these preparations A.T.10 (dihydrotachysterol) has an effect far greater than would be predicted from its antirachitic value.—EVAN W. MCCHESNEY and HUGO KOCHER. *Proc. Soc. Exptl. Biol. Med.*, 47 (1941), 156. (A. E. M.)

Strophanthin and Ouabain. A review.—EDWARD PODOLSKY. *Am. Professional Pharmacist*, 8 (1942), 293–297. (H. M. B.)

Sulfadiazine—Absorption of, after Intraperitoneal Administration in Dogs. In four dogs operated under sterile conditions powdered sulfadiazine, 100 mg./Kg., was placed on the intestines directly beneath the greater omentum, the incision closed and

the dogs permitted to recover. Absorption of the drug was followed hourly during the first 7 hrs. following administration and at 24-hr. intervals thereafter. The peak blood concentrations occurred 3 to 5 hrs. after administration and absorption of the drug continued for 144 hrs. During the first 7 hrs. the average blood concentrations were—1.96, 3.0, 3.64, 3.5, 3.32 and 3.23 mg./100 cc., respectively; slightly less than that reported for sulfathiazole (*Proc. Soc. Exp. Biol. Med.*, 48 (1941), 223, about the same as for sulfaguanidine (Ambrose and Haag, unpublished data) and considerably less than for sulfanilamide (Haag, Spealman and McCue, *Surgery*, in press), using the same dose of each (100 mg./Kg.) under similar conditions. The sulfadiazine blood concentration after 24 hrs. averaged 2.4 mg./100 cc. as compared to approximately 1 mg./100 cc. for each of the other sulfonamides. The average sulfadiazine blood concentrations for each of the succeeding 24-hr. periods were—1.5, 0.72, 0.6, 0.5 and 0.39 mg./100 cc. In two of the dogs urinary excretion of the drug was followed at 24-hr. intervals over a period of 96 hrs. During the first 24-hr. period 37% of the drug was excreted, in the second 7%, in the third 5% and in the fourth 4%. A total of 53% of the drug administered was absorbed and excreted within 96 hrs. after administration. Assuming the bacteriostatic action of sulfadiazine to be equal to sulfanilamide, sulfathiazole or sulfaguanidine these findings suggest that sulfadiazine is superior for local use because of its slower rate of absorption.—A. M. AMBROSE. *Federation Proceedings II*, 1 (1942), 141. (H. B. H.)

Sulfadiazine—Absorption of, after Intraperitoneal Administration in Man. In four patients subjected to abdominal surgery 5 Gm. of powdered sulfadiazine was placed in the peritoneal cavity, absorption of the drug was followed every 2 hrs. during the first 24 hrs. after administration, every 6 hrs. for the next 24 hrs., and every 12 hrs. thereafter until the patient was either discharged from the hospital or the test was negative. In the first patient the peak blood concentration of 3.17 mg./100 cc. was reached in 108 hrs., in the second 3.83 mg./100 cc. in 2 hrs., in the third 2.15 mg./100 cc. in 3 hrs., and in the fourth 1.93 mg./100 cc. in 6 hrs. after administration. In the first patient 228 hrs. after administration the blood was free of sulfadiazine. Total urinary excretion was 98.9% of the amount administered. The second patient showed a blood concentration of 0.43 mg./100 cc. 444 hrs. after administration, with 99.3% of the drug administered excreted in the urine, and the fourth patient showed a blood concentration of 0.77 mg./100 cc. 453 hrs. after administration, with urinary excretion of approximately 50% of the amount administered. In all 3 of these patients in which urinary excretion was followed, about 30% of the drug was excreted in conjugated form, the remainder being excreted in free form. Determination of free and total sulfadiazine in over 200 blood samples from patients reported here and others showed the absence of any conjugation in all but one blood sample. In the absence of more direct evidence this would suggest that sulfadiazine is conjugated in the kidneys. The findings suggest that sulfadiazine is slowly absorbed from the abdominal cavity and that reinforcing the local treatment by oral administration of sulfadiazine or other sulfonamides, wherever indicated, may well be undertaken.—A. M. AMBROSE and ARNOLD R. GRISWOLD. *Federation Proceedings II*, 1 (1942), 142. (H. B. H.)

Sulfadiazine and Sodium Sulfadiazine. Comparison of Certain of Their Clinical and Pharmacologic Values. The summary and conclusions of the authors follow: (1) The absorption, excretion and acetylation of sulfadiazine, given orally, and of sodium sulfadiazine, given both orally and intravenously, have been studied in 218 patients who received these drugs over long periods of time. The toxic effects which occurred in these patients have been correlated with the pharmacological data available. (2) Sulfadiazine given orally yields higher concentrations of drug in the blood and smaller proportions of acetylated drug in the blood and in the urine than do any of the other sulfonamide drugs in general use. (3) Sodium sulfadiazine after oral administration yields even higher concentrations of drug in the blood than does sulfadiazine, and like the latter is acetylated only to a slight degree in the blood and in the urine. (4) Initial doses of 4 Gm. of sulfadiazine and of sodium sulfadiazine were observed to be much more effective than initial doses of 2 Gm. in establishing high concentrations in the blood soon after the start of treatment. (5) Sodium sulfadiazine given intravenously yields high levels of drug in the blood, is acetylated to only a slight degree, and appears to be relatively nontoxic. (6) Toxic reactions after sulfadiazine treatment were less frequent and less serious than after the use of other sulfonamide drugs. This, together with the high concentration of free drug obtainable in the blood, suggests that pharmacologically sulfadiazine and sodium sulfadiazine possess definite advantages over the other sulfonamide drugs in general use. A bibliography of 26 references is included.—C. WHEELER and N. PLUMMER. *Ann. Internal Med.*, 16 (1942), 269–285. (S. W. G.)

Sulfanilamide—Irritating Properties of Propylene Glycol Solution of. A 10% solution (*p*H of 5.3 to 5.6) of sulfanilamide in propylene glycol was injected in either 10, 20, 25, 50 or 100% concentrations in terms of propylene glycol content, diluted with 0.9% sodium chloride, into rats, rabbits, dogs and man. The subjects were observed for immediate and delayed effects and all pathologic studies were conducted by Dr. Mark Maun and Dr. Luverne Domeier. Rats receiving 10, 20, 50 and 100% propylene glycol solutions of sulfanilamide intraperitoneally, elicited, with rare exception, no signs of discomfort or other unpleasant reactions. Autopsy examinations, macroscopic and microscopic, after 24, 36 and 72 hrs. revealed, again with rare exceptions, no signs of inflammatory reactions. Unanesthetized dogs receiving solutions of 50% concentrations of propylene glycol intraperitoneally were moderately uncomfortable for 2 or 3 min., either from peritoneal reactions or more probably from intramuscular or subcutaneous irritation attending minute residual deposition of propylene glycol upon withdrawal of the needle. Dogs under pentobarbital anesthesia in mid-Fowler's position to allow bathing of intestinal segments in the pelvic vault for 1 hr. revealed varying degrees of hyperemia of the bathed segments but showed no signs whatever of irritation or inflammation on microscopic examination; and all of the laparotomized dogs now routinely receive from 1 to 2 oz. of sulfanilamide propylene glycol solutions diluted 1:1 with saline intraperitoneally as a prophylactic. Rabbits, dogs and human subjects presented no immediate or delayed evidence of venous irritation after intravenous injection of saline dilutions of the stock solution with a propylene glycol content of 10, 20 and 50% in man. Intramuscular injections of 1 cc. of the stock solution diluted 1:1 with saline or Locke's solution were transiently irritating for from $^1/_2$ to 1 min. in human subjects but no residual soreness prevailed beyond the first hour. The immediate discomfort was significantly greater than that attending control injections of sterile saline and although irritation was generally not so severe as to militate against this route of injection in real emergency such as prevails in a vomiting patient with sclerosed veins, one would not choose the intramuscular route as that of first choice. The stock

solution of 10% sulfanilamide in 100% propylene glycol elicited no signs or symptoms of irritation or discomfort when applied to freshly scarified areas on the forearms of the authors.—FREDERICK F. YONKMAN, FRANK BRUCE, MARSHALL PURDY, GARNETT ICE and JOHN JACOBS. *Federation Proceedings II*, 1 (1942), 172. (H. B. H.)

Suprarenal Glands and Their Hormones. A comprehensive summary of the physiology, chemistry and pharmacological activity of adrenaline and corticosterone. Adrenaline from the medulla is not absolutely essential to life, though its lack causes cessation of neuro-vegetative functions. The cortical hormone is necessary for survival, and corticosterone or desoxycorticosterone acetate can maintain life in cases of epinephrine insufficiency or in Addison's disease.—ULISSES LEMOS TORRES. *Arq. Biol. (San Paulo)*, 25 (1941), 193. (G. S. G.)

Thiamine Chloride—Action of Large Doses of, on the Frog Heart. The authors summarize their work as follows: Thiamine chloride in concentrations up to 100 mg. per 100 cc. of directly applied Howell-Ringer solution increases the tonus of the exposed frog heart. In larger concentrations it has a general cardiac depressant action which is due to acidity and hypertonicity. In concentrations of 100 and 250 mg. per 100 cc. it prevents bradycardia produced by chlorbutol, strophanthin, arecoline, physostigmine and acetylcholine.—E. M. BOYD and R. W. DINGWALL. *Quart. J. Pharm. Pharmacol.*, 14 (1941), 209–213. (S. W. G.)

Tissue Liquefier—a Simple. A description and a figure of the tissue press are given.—M. C. SHELESNYAK and M. S. BISKIND. *J. Biol. Chem.*, 143 (1942), 663. (F. J. S.)

Tripterygium Wildfordii (Lei-Kung-Teng)—a Pharmacological Study of. Lei-Kung-Teng (Yellow Drug), native to China and Japan, is used to the extent of 5000 Kg. annually as an insecticide. From it has been isolated dulcitol, reducing sugars and a red dye. Parts of the plant are taken as a drug and it has been used in suicide. Abdominal pain, vomiting, cyanosis, heart weakening and low blood pressure are its symptoms of poisoning. The present study is pharmacological. Using an extract, it was found that the M. L. D. in rats is 10 Gm./Kg. body weight. The cumulative fatal dose in rats is about 20 Gm./Kg. given in separate doses of 2.5 to 5 Gm./Kg. A 10 Gm./Kg. dose given orally to a puppy produced symptoms similar to those described above and killed the animal in 17 hrs. Pharmacologically, the drug slowed the heart beat of turtles, and this was not countered by atropine. Electrocardiograms with a dog showed prolongation of the P-R. interval. The drug acts directly on the heart muscle. The volume of the intestines and kidney enclosed in oncometers was decreased on contact by its action on the smooth muscle.—YANG TA-WANG. *Chinese Med. J.*, 60 (1941), 222–228. (W. T. S.)

Veratrine Alkaloids—Studies on. I. The Action of Veratrine upon the Isolated Mammalian Heart. Studies were made on the heart-lung preparation of the dog. In the failing heart veratrine increased the total output and improved the work of the heart, simulating the action of the cardiac glycosides. The action on heart rate was not constant. Coronary blood flow was unchanged in the normal heart but showed a transient increase in the case of the failing heart.—OTTO KRAYER and RAFAEL MENDEZ. *J. Pharmacol.*, 74 (1942), 350–364. (H. B. H.)

Viburnum Prunifolium—Uterine Principle from. A glycosidal agent has been isolated from *Viburnum prunifolium* N. F. which relaxes the virgin rat uterus and human uterine strips.—W. E. EVANS, JR., W. G. HARNE and J. C. KRANTZ, JR. *J. Pharmacol.*, 75 (1942), 174–177. (H. B. H.)

Viburnum—Studies on. XI. Bioassay Methods. Using a modification of the U. S. P. XI method for the assay of Liquor Pituitarii Posterioris, the uterine sedative action of *V. prunifolium* has been evaluated against U. S. P. standard powdered posterior pituitary, and by a modification of the U. S. P. XI method for the assay of Liquor Epinephrinæ Hydrochloridi. The depressor action of the plant has been quantitatively evaluated against epinephrine U. S. P. reference standard. The results indicate that 1 Gm. of the drug should be equivalent to not less than 10 gamma of standard powdered posterior pituitary, U. S. P. XI and that 1 Gm. of the drug should be equivalent to not less than 10 gamma of epinephrine U. S. P. reference standard.—JAMES C. MUNCH and HARRY J. PRATT. *Pharm. Arch.*, 12 (1941), 88–91. (H. M. B.)

Vitamin A—Biological Assay of. Effect of the Basal Diet on. The errors in the biological assay of vitamin A using the technique and diet described by Morgan have been calculated. A comparison of Morgan's vitamin A-free diet with the vitamin A-free diet given in the British Pharmacopœia, 1932, Addendum, 1936, has been made. It is shown that it is the presence of the coconut-cake meal in Morgan's diet which causes the better growth during both the depletion and test periods. The replacement of dextrinized rice starch in the Pharmacopœia diet by 30% of coconut-cake meal made it equal in all respects to Morgan's vitamin A-free diet. The storage of vitamin A in the livers of rats which had been previously depleted of the vitamin A reserves on Morgan's diet and the Pharmacopœia diet has been ascertained. Vitamin A and β-carotene (40 I. U. daily per rat) were fed as supplements. The excretion of β-carotene in the feces was also studied. A carotenoid was excreted in the feces of the rats receiving the Pharmacopœia diet when β-carotene was fed. No carotenoid or vitamin A was present in the feces of rats on Morgan's diet nor when vitamin A was administered to rats on the Pharmacopœia diet. There was a significant difference in growth response between rats receiving vitamin A and β-carotene, respectively, on the Pharmacopœia diet. The utilization of vitamin A and β-carotene is discussed.—N. T. GRIDGEMAN, H. LEES and H. WILKINSON. *J. Soc. Chem. Ind.*, 59 (1940), 120–125. (E. G. V.)

Vitamin E Deficiency—Muscular Dystrophy in the Absence of Testicular Degeneration in. The skeletal muscles of the male rabbit with a partial or complete dietary deficiency of vitamin E are more sensitive to morphological alterations than the testes. The absence of testicular degeneration in the rabbit does not exclude the existence of vitamin E deficiency and necrosis of the skeletal muscles.—C. G. MACKENZIE and E. V. MCCOLLUM. *Proc. Soc. Exptl. Biol. Med.*, 47 (1942), 148. (A. E. M.)

Vitamin K Activity of Certain Naphthols and Tetralones. It is suggested that the activity of the dihydro- and oxido-derivatives of vitamin K_1 and 2-methyl-1,4-naphthoquinone is due not to their functioning as derivatives, but to their biological transformation into the quinones, with somewhat varying efficiency. 3-Methyl-1-naphthol and 2-methyl-1-naphthol were found to have striking activity; others were quite inactive; some naphthylamines and tetralones were highly active.—M. TISHLER, L. F. FIESER and W. L. SAMPSON. *J. Am. Chem. Soc.*, 62 (1940), 1881. (E. B. S.)

Xanthines—Action of the, on the Force of Contraction of Isolated Mammalian Heart Muscle. The action of caffeine, theophylline and theobromine on the force of contraction of the isolated papillary muscle of the cat's right ventricle was studied. The drugs (in the form of free base and salts, *i. e.*, with sodium benzoate, sodium salicylate, ethylene-

diamine and sodium acetate) were introduced directly into the oxygenated Locke's solution after a control time interval. No significant increase in "systolic" force resulted from caffeine except in concentrations of 1:1000 or higher. Under such conditions there was a 50% to 250% increase, depending on the concentration, in the "systolic" tension, which was rapid in onset (2 to 15 min.) and brief in duration (5 to 30 min.). Theobromine produced similar effects in lower concentrations (1:2000 to 1:1000). Theophylline exhibited similar properties and was most effective (1:5000). The effects of the drugs were apparently unrelated to changes in "tone." Therefore, in concentrations comparable to those obtaining in the blood stream of man after intravenous injection of therapeutic doses (about 1:10,000 at the time of injection) the xanthines produce no significant changes in the force of contraction of heart muscle of the cat. With respect to their action in increasing the force of contraction of cardiac muscle, the xanthines differ from the digitalis glycosides in requiring relatively high concentrations and in acting briefly. —STEPHEN KROP. *Federation Proceedings II*, 1 (1942), 156. (H. B. H.)

TOXICOLOGY

Ephedrine Poisoning in a Human Subject. Through an error a fourteen-year-old boy suffering from bronchial asthma was given two 2-gr. doses of ephedrine 1½ hrs. apart. Although most of the second dose was lost by vomiting, the symptoms appeared in half an hour and were distressing. Vertigo and severe pains in the area of the heart were followed by throbbing which reached the fastigium and then waned. This series of paroxysms lasted for 2 hrs. Vomiting was frequent and retching severe. The patient seemed to be in a state of collapse with profuse perspiration and cold extremities. No urine could be passed due to strangury, but blood was not passed per urethram. Pulse was rapid and weak. The patient was relieved within 24 hrs. and had no symptoms of asthma.—M. N. DE. *Indian Med. Gaz.*, 76 (1941), 671. (W. T. S.)

Menadione, Menadiol and Esters—Toxicity of. Menadione is 2-methyl-1,4-naphthoquinone and menadiol is 2-methyl-1,4-naphthohydroquinone. Acute toxicity studies on mice (orally and subcutaneously) are reported for 1,4-naphthoquinone, menadiol, menadione, the diacetate, dipropionate, di-*n*-butyrate, di-iso-butyrate, di-*n*-valerate and di-iso-valerate esters of menadiol, and for vitamin K_1 (phytyl-menadione). Less extensive studies were made on chicks and rabbits. Orally, the toxicity of menadione, menadiol and its esters was found to be about one-third to one-fifteenth as toxic as when administered subcutaneously. The chronic toxicity was studied on rabbits, dogs, cats and monkeys. The chief manifestation of chronic toxicity was injury to the circulating erythrocytes.—S. ANSBACHER, W. C. CORWIN and B. G. H. THOMAS. *J. Pharmacol.*, 75 (1942), 111–124. (H. B. H.)

Potassium Salts—Effects of, in Man. The authors give the following summary: A considerable amount of several potassium salts (12.5 Gm. potassium chloride, 17.5 Gm. potassium bicarbonate) may be ingested by the normal person without demonstrable toxic effects. Similar doses may be given with safety to patients suffering from various diseases, but their use is specifically contraindicated in cases of severe renal and adrenal insufficiency. An important symptom, indicative of toxic action, is the development of paresthesia in the hands and feet. It is accompanied by a rapid rise in the concentration of potassium in blood serum to approximately 30 mg. per 100 cc. The diffuse action of potassium is revealed by the simultaneous production of effects on the functions of the heart, kidney and peripheral nerve endings.—N. M. KEITH, A. E. OSTERBERG and H. B. BURCHELL. *Ann. Internal Med.*, 16 (1942), 879–892. (S. W. G.)

Pyrethrum Deterioration. Pyrethrum powders gradually lose their toxicity to insects with age because the pyrethrins are affected by air, temperature and light. Powders containing 0.5–0.6% of pyrethrins lose 9–15% of the initial content in 6 months and 12–20% in 12 months; those with 0.8–1.0% lose 10–16% in 6, 16–24% in 12, and 30–36% in 24 months; and with 1.1% and upwards lose 14–20% in 6, 21–25% in 12, and 30–40% in 24 months. In general, the Hg-reduction method shows a 10% lower pyrethrin-iodine content than the Seil method of determination. It is suggested that the manufacturers should make allowance in the stated pyrethrin content for the loss on storage when labeling powders.—A. WEED. *Soap*, 16 (1940), 101–103; through *J. Soc. Chem. Ind.*, 59 (1940), 707. (E. G. V.)

Red Squill (Urginea Maritima)—The Fortification of, by Means of an Extract of Red Squill. Red squill powder of sufficient toxicity is an ideal poison for general use in the control of rats. Since it is strongly emetic the danger to man and to other animals is slight. It is hard to obtain a powder of uniform toxicity. Bioassays during the last two years have shown a variation in killing power from 400 mg./Kg. to approximately 3000 mg./Kg. Price is never an index of toxicity. The problem of importing it from the Mediterranean area has increased. Hence it seemed necessary to utilize squills of low toxicity. So this fortification process was devised. Extraction procedure is explained and its advantages discussed. It is the countercurrent principle. It is possible to increase the potency of weak powders to the point where they can be used efficiently in rat-control operations. This "fortified" squill retains all of the safety factors inherent in red squill powder. The solvent is recovered and used over again. The method can be adapted to large- or small-scale operations.—D. GLEN CRABTREE, JUSTICE C. WARD and F. F. GARLOUGH. *Jour. A. Ph. A.*, 31 (1942), 142. (Z. M. C.)

Scillaridin—Comparison of Efficiency-Increasing and Toxic Effects of Theophyllinated, on Isolated Cat Heart. A new cardiac drug prepared by replacing the sugar moiety in squill glucoside with two molecules of theophylline per molecule of genin has been studied in the completely isolated cat heart. The substance has marked cardiotonic properties and low toxicity. It exerts no appreciable coronary dilator effect on the completely isolated heart.—VICTOR LORBER, ALBERT J. GREENBERG and MAURICE B. VISSCHER. *Proc. Soc. Exptl. Biol. Med.*, 49 (1942), 517. (A. E. M.)

Spinal Anesthetic Agents—Animal Standards for Acute Toxicity of. The toxicity (M. L. C. — minimal lethal concentration) and anesthetic potency (M. A. C. — minimum anesthetic concentration) were determined on rabbits by subarachnoid administration. Some studies were also made on cats. By combining the results of this study (*C*) with similar observations by Bieter (*B*) the following therapeutic ratios were established for several spinal anesthetics: nupercaine (*C*), therapeutic ratio 33; pantocaine (*B*), 30; monocaine formate (*C*), 24; tutocaine (*B*), 12; nupercaine (*B*), 11.4; panthesine (*B*), 8; procaine (*B* and *C*), 6.6; and metycaine (*B*), 4.0. The authors feel that the introduction of therapeutic ratio (T. R.) is somewhat premature in this field of investigation and may lead to misapprehension.—CO TUI, A. L. PREISS, C. L. BURSTEIN and W. F. RUGGIERO. *J. Pharmacol.*, 75 (1942), 137–144. (H. B. H.)

Succinyl - Sulfathiazole—Toxicological Studies on. Succinyl-sulfathiazole, one of a series of sulfonamides synthesized by Moore, *et al.*, and found to be poorly absorbed from the gastrointestinal tract, has been shown (Poth and Knotts, *Proc. Soc. Exper. Biol. Med.*, 48 (1941), 129) to exert a marked coliform bacteriostatic action in the intestinal tract of dogs without causing toxic manifestations. Similar results were obtained in 40 humans. Six monkeys were given a neutral solution of sodium succinyl-sulfathiazole by stomach tube every 4 hrs. for 30 days. Dosage, two monkeys per dose level, was 0.5, 1.5 and 5.0 Gm. per Kg. per day, respectively; two control monkeys received water concurrently. All animals gained weight and no toxic manifestations or histopathological changes were seen; attention was given to hematology, plasma protein, isoiodeikon excretion, kidney function and drug concentration in blood and urine. A maximum of 1.3 mg. % sulfathiazole and 5.3 mg. % succinyl-sulfathiazole was found in the blood; urine studies indicated that less than 4% of ingested drug was eliminated by the kidney. The effect of high blood concentrations was studied in five of six unilaterally nephrectomized monkeys; pre-treatment kidney and liver were examined histologically. Parenteral injections of sodium succinyl-sulfathiazole (25% solution), one Gm. per Kg. per day, were given by various routes for 10 days. Blood levels reached 4.8 mg. % sulfathiazole and 170 mg. % succinyl-sulfathiazole; maximum urine concentration was 12.1 Gm. %. No toxic manifestation except temporary depression was seen. Histological studies showed moderate liver and kidney changes in some animals, although plasma protein concentration and isoiodeikon excretion was normal; moderate anemia was produced.—PAUL A. MATTIS and A. D. WELCH. *Federation Proceedings II*, 1 (1942), 159–160. (H. B. H.)

THERAPEUTICS

Acetophenetidin. A review with 25 references.—M. A. LESSER. *Drug. Cosmetic Ind.*, 51 (1942), 35–37, 49. (H. M. B.)

Acridine Series—Chemotherapeutic Studies in. VIII. Chloroaminoacridines. The authors prepared 7-chloro-2-, 9-chloro-2-, 7-chloro-3- and 9-chloro-3-aminoacridine. These, together with 6-chloro-2-, 8-chloro-2-, 6-chloro-3- and 8-chloro-3-aminoacridine, were submitted to bacteriological examination. None of the chloro-derivatives possessed an activity equal to that of the parent amino compound. The effect of positional isomerism is not apparent in the series under examination.—F. R. BRADBURY and W. H. LINNELL. *Quart. J. Pharm. Pharmacol.*, 15 (1942), 31–40. (S. W. G.)

Animal Glandular Products. Glandular material such as beef adrenals, in substantially its normal wet state, is mixed with an ammonium-aluminum, ammonium, aluminum, aluminum-potassium or sodium-potassium sulfate, and the mixture is allowed to stand to effect syneresis, and then pressed to obtain a therapeutic material.—WM. D. ALLERS, assignor to ARMOUR & CO. U. S. pat. 2,256,920, Sept. 23, 1941. (A. P.-C.)

Ascorbic Acid—Therapeutic Metallic Salts of. Various details are given or general mention made of the production of salts of ascorbic acid with iron, calcium, copper, manganese, bismuth, arsenic, silver, gold, mercury, zinc, aluminum and tin.—SIMON L. RUSKIN. U. S. pat. 2,260,870, Oct. 28, 1941. (A. P.-C.)

Bayer 205—After-History of Trypanosomiasis Cases Treated by. Thirty-six cases are followed up for thirteen years.—G. SAUNDERS. *J. Trop. Med. Hyg.*, 45 (1942), 25–26. (W. T. S.)

B Vitamins—Studies of, in the Human Subject. III. The Response of Cheilosis to Vitamin Therapy. The observations reported indicate that cheilosis is not necessarily a manifestation of riboflavin deficiency alone. Healing of the lesion often does not occur when riboflavin only is administered and, on the other hand, it may respond favorably to the administration of pyridoxine and, in some instances, of nicotinic acid. Furthermore, when the lesion is hemorrhagic and is accompanied by generalized involvement of the lips, especially of the vermilion, it may improve only when a low blood ascorbic acid level is elevated.—T. E. MACHELLA. *Am. J. Med. Sci.*, 203 (1942), 114. (B. H.)

Chemotherapy. I. Substituted Sulfanilamidopyridines. A number of substituted sulfanilamidopyridines have been synthesized. Several of these compounds showed marked chemotherapeutic activity against experimental streptococcal and pneumococcal infections in preliminary studies in mice. In the cases where two isomeric substituted sulfanilamidopyridines were compared, one was found to be effective while the other was not. The 5-sulfanilamido-2-halogen substituted pyridines were active, but these same isomers were inactive when the substituent was an amino, hydroxy or ethoxy group. Evidence is presented to show that the differences in the chemotherapeutic activity of the isomeric substituted sulfanilamidopyridines cannot be attributed to differences in solubility or the establishment and maintenance of adequate blood concentrations, but must be due to some inherent difference in the compounds themselves.—R. O. ROBLIN, JR., and P. S. WINNEK. *J. Am. Chem. Soc.*, 62 (1940), 1999. (E. B. S.)

Desoxycorticosterone—Efficacy of, in Maintaining Health in Adrenalectomized Guinea Pigs. A technique is described for completely adrenalectomizing guinea pigs in two stages. The use of specific hormones for maintaining health in these animals is discussed, and the efficacy of desoxycorticosterone in this respect is demonstrated.—A. R. ROBINSON. *Australian J. Exp. Biol. Med. Sci.*, 19 (1941), 261–264. (W. T. S.)

Diethylstilbestrol in the Treatment of Vaginitis. A study of fifty cases of gonococcal vaginitis treated with diethylstilbestrol revealed that this drug, in 1-mg. doses orally or 0.1-mg. amounts in suppositories, is an excellent means of control for the disease. The writer favors the suppository method since the untoward reactions are few and transient as compared to those with oral dosing.—J. DONALD WOODRUFF and RICHARD W. TE LINDE. *Southern Med. J.*, 35 (1942), 389–393. (W. T. S.)

Drugs—Rational Use of. The author points out that extreme simplification of medicine and prescribing of drugs in homeopathic fashion are not the goal of rationalized medicine. Mixtures of drugs are necessary when one drug will not produce the desired effect, and the employment of adjuvants and correctives are definitely indicated.—E. L. WOODS. *Merck Report*, 51 No. 1 (1942), 23. (S. W. G.)

Estrogens—Biologic Activity and Therapeutic Utilization of Synthetic. Four synthetics tested were estrone, estradiol, stilbestrol and hexestrol. Rats, monkeys and guinea pigs were used as test animals; and clinical observations were also made for relative potency. Toxicity appeared in the form of nausea and vomiting occasionally severe enough to stop medication. Less notable were anorexia, vertigo, abdominal cramps, paresthesia and cutaneous reactions. Stilbestrol proved five times more toxic than hexestrol, but only half as potent. All four synthetics have proved equally as useful as natural estrogens. Their chief use is logically in cases of severe reactions of menopause or in amenorrhea, prevention of lactation and pre-puberal vulvo-

vaginitis.—ROBERTO PASQUALIN. *Arq. Biol.* (*San Paulo*), 25 (1941), 186. (G. S. G.)

Estrone—Use of an Aqueous Suspension of, in Menopause. It is generally agreed that estrogens are more efficacious when they are absorbed slowly. Their absorption into the blood may be delayed by placing the crystalline estrogenic material directly into the tissues. The implantation of pellets involves a surgical procedure. The authors have used a suspension of estrone crystals in an aqueous solution of gum acacia for the treatment of a number of women displaying menopausal symptoms. Five mg. were given once a week to these women; a control group received injections of 5 mg. of estrone in oil in the same intervals. The aqueous suspension gave a greater length of relief than the oil suspension, and relief of symptoms lasted from 3 to 14 weeks. The injection of estrone crystals in water is considered equivalent to implanting the estrone crystals directly into the tissues and the authors believe that this method is superior to the injection of estrone in oil.—S. C. FREED and J. P. GREENHILL. *J. Clin. Endocrinology*, 1 (1941), 983; through *Abbott Abstract Service*, (1942), No. 1122. (F. J. S.)

Fuadin in Vincent's Infection. Vincent's infection is discussed from three standpoints: (1) definition of the condition, (2) description of the causative organism, (3) the clinical aspects. The clinical symptoms of the infection are said to disappear on giving 6 to 15 injections of fuadin (sodium antimony III *bis*-catecholdisulfonate) a compound containing 13.6% trivalent antimony.—DUDLEY C. SMITH. *Southern Med. J.*, 35 (1942), 299–302. (W. T. S.)

***m* - N - Glycinyl - *p* - Hydroxyarsenobenzenes—Therapeutic Substituted.** Compounds suitable for use in the treatment of trypanosomiasis and syphilis are formed by converting *p*-hydroxybenzenearsonic acid to a *p*-alkyloxybenzene-arsonic acid, then introducing the nitro group in the 3-position, reducing the nitro to amino and substituting the amino, as by replacing one of its hydrogen atoms with an acyl or glycyl group. Details are given of the production of a number of such compounds.—GEO. W. RAIZISS, LEROY W. CLEMENCE and ABRAHAM I. KREMENS, assignors to ABBOTT LABORATORIES. U. S. pat. 2,258,862, Oct. 14, 1941. (A. P.-C.)

Gold Salts—Value of, in Treatment of Rheumatoid Arthritis. The following summary is given: (1) In the present study of 245 cases of rheumatoid arthritis, gold salts when given in adequate dosage caused remission or marked improvement in 62% of the cases. In 10 cases of ankylosing spondylitis, gold salts were beneficial in only one case. (2) Even better results were obtained in arthritics of less than one year's duration. (3) The incidence of toxic reactions was high. They manifested themselves chiefly as dermatitis or stomatitis. There was one fatal case of ulcerative enteritis in this series of cases which possibly may have been due to gold salts. (4) Relapses occurred in 42% of the patients who received marked benefit from gold therapy. The relapses were usually milder than the original attack, but yielded less promptly to gold therapy. (5) Gold therapy can be a dangerous form of treatment and requires close observation of the patient and frequent examination of the blood and urine. In spite of its dangers, however, its beneficial effect on the course of rheumatoid arthritis would seem to justify its use in patients who can tolerate the drug.—R. L. CECIL, W. H. KAMMERER and F. J. DEPRUME. *Ann. Internal Med.*, 16 (1942), 811–827. (S. W. G.)

Gramicidin and Tyrocidine. A review of experimental work with these derivatives of soil bacteria. Isolation, prevalence, properties are discussed. Fifty-two references.—ANON. *Am. Professional Pharmacist*, 8 (1942), 423–428, 460. (H. M. B.)

Guanidine Hydrochloride—Further Experience with the Use of, in the Treatment of Myasthenia Gravis. Guanidine hydrochloride caused temporary improvement in muscle function in most patients with myasthenia gravis. Myasthenics have an increased tolerance to guanidine. Prolonged medication produces sustained improvement in muscle function without harmful effects. As a rule, less of the drug is required after several months of adequate medication. Individual attention is necessary to establish a proper schedule of medication but frequent readjustment of the guanidine ration is thereafter unnecessary. Guanidine, unlike prostigmin, does not inhibit the activity of choline esterase. It may play a fundamental role in restoring irritability to cells.—K. DODD, S. S. RIVEN and A. S. MINOT. *Am. Jour. Med. Sci.*, 202 (1941), 702. (B. H.)

Magnesium Chloride—Treatment of Warts with. Intravenous injections of 20% solutions were given in series, beginning with 0.1 Gm. and slowly increasing until a dose of 0.8 Gm. is reached with a total of 15 Gm. per series. A period of rest of 25 days was inserted between two treatments. The warts disappeared without leaving scars. Although the injections were generally well tolerated, occasionally mild secondary symptoms were observed such as headaches, nausea, diarrhea, loss of appetite and slight vascular disturbances.—José CAPURRO. *Semana méd.*, 48, II (1941), 292. (A. E. M.)

Magnesium Sulfate and Serum Used to Treat Tetanus. Several 10-cc. doses of a 25% magnesium sulfate solution given intravenously proved an excellent supplement to 30,000 I. U. of tetanus serum in controlling a severe case of tetanus in a sixteen-year-old boy.—N. C. PAUL. *Indian Med. Gaz.*, 76 (1941), 672. (W. T. S.)

Mandelic Acid—An Ammonium Salt of, in Some Cases of Urinary Infection. A report of several cases of bacterial infection of the urinary tract which were treated with ammonium mandelate. The cases ranged from mild acute pyelocystitis, pyelonephritis, a combination of the two and also a complication with typhoid fever and bronchitis. *B. coli* was probably the chief etiologic agent in all cases. Ammonium mandelate was successful in every case aided by a diet producing proper acidity in the urine, and by limitation of the fluid intake.—DOMINADOR M. GARDUNO. *J. Philippine Med. Assoc.*, 20 (1940), 657; through *Rev. Filipina Med. Farm.*, 32 (1941), 19. (G. S. G.)

Nucleoproteins—Production of Quinine Compounds of. Products of therapeutic value containing associations of nucleotides (adenylic acid) with quinine (for example, obtained by precipitating aqueous solutions with sodium hydroxide) are claimed.—S. L. RUSKIN. U. S. pat. 2,089,227; through *J. Soc. Chem. Ind.*, 59 (1940), 763. (E. G. V.)

Poison Ivy Hypersensitiveness in Humans. The writer discusses the patch test for determining human hypersensitiveness to poison ivy, and suggests that the refractory period of two or three months which follows the test might be an ideal way of producing in individuals a protective mechanism. A 10% solution or ointment of $FeCl_3$ blocks the experimental poison ivy reaction and hence is an excellent prophylactic drug. $FeCl_3$ solutions do, however, stain clothing and may produce permanent pigmentation in the skin.—EDMUND L. KEENEY. *Southern Med. J.*, 35 (1942), 408–410. (W. T. S.)

Prontosil—Effect of, on Avian Malaria. Prontosil was injected daily into the breast muscles of 10 birds, *Padda oryzivora* Linn., infected with *P. praecox*. An equal number of infected birds was used as control. Blood smears were made before, during and after treatment. The findings indicate

that: (1) prontosil in average doses exerts a decided anti-plasmodial action; (2) prontosil is both an efficient schizonticide and gametocide; (3) prontosil is not effective in preventing a relapse, even with prolonged administration long after smears were negative for plasmodia.—C. M. AFRICA, F. J. DY and L. J. SORIANO. *Acta Med. Philippina*, 2 (1940), 239; through *Rev. Filipina Med. Farm.*, 32 (1941), 70. (G. S. G.)

Protamine Zinc and Regular Insulin—Comparable Effects of, Over a Period of Years. A group of 34 diabetic patients observed on both regular and protamine zinc insulin is reported. The average period of observation was four and one-half years. Of these patients, six were well controlled on protamine zinc insulin alone; 14 did better on combinations of protamine zinc and regular insulin than on insulin alone. Treatment with protamine zinc insulin was ineffective with nine of the patients and they were returned to regular insulin alone, on which they were controlled. Four patients did as well on regular insulin alone as they did on combinations of protamine zinc and regular insulin. One patient who had been treated with protamine zinc insulin alone for almost four years became impossible to control and it was necessary to return her to regular insulin. It is felt by the authors that a combination of both insulins is an effective way of controlling glycosuria in the diabetic patient but it is important to realize that such procedure may have to be altered during periods of acute infection.—E. P. RALLI, H. BRANDALEONE and H. D. FEIN. *Ann. Internal Med.*, 16 (1942), 750–761. (S. W. G.)

Sixteen Vitamins and Their Deficiency Diseases. An extended review with 420 references.—ANON. *Bull. Lederle Laboratories*, 10 (1942), 1–59. (H. M. B.)

Skin Infections—Germicidal and Fungicidal Compositions Suitable for Combating. A composition suitable for use on human or animal tissues is formed of water-insoluble acids from oxidized petroleum hydrocarbons in chemical combination with a "hydroxybenzyl monaromatic tertiary amine" such as *tert*- butylhydroxybenzyldiethylamine.—CLARENCE E. EARLE. U. S. pat. 2,262,720, Nov. 11, 1941. (A. P.-C.)

Sucrose Octa-acetate as a Possible Bitter Stomachic. The properties of this compound and its possibility as a bitter are discussed—MELVIN W. GREEN. *Bull. Natl. Formulary Comm.*, 10 (1942), 131–133. (H. M. B.)

Sulfadiazine—Effect of, in Intracranial Wounds. Wounds were made in the skulls of nine cats, and in each the cerebral cortex was exposed and an area 0.5 to 1 cm. in diameter was excised. Sulfonamide drugs in powdered form in various amounts ranging from 0.4 to 150 mg. were placed in the wounds. The wounds were closed and the tissue reaction was determined by autopsy immediately or as much as 34 days later. The author did not use the sodium salts of the drugs because he believes they will cause degeneration of the nervous tissue due to their high hydrogen-ion concentration. Considerable difference in the rate of absorption was noted, sulfanilamide being the most rapidly absorbed, sulfathiazole next, sulfadiazine next and sulfapyridine least. It was observed that sulfadiazine caused no destruction or glial reaction, and only a negligible foreign body reaction in the meninges, and that it did not exercise any untoward effect upon wound healing.—E. F. HURTEAU. *Can. Med. Assoc. J.*, 46 (1942), 15; through *Abbott Abstract Service*, (1942), No. 1124. (F. J. S.)

Sulfaguanidine in the Treatment of Enteric Infections. E. refers to previous reports on the use of sulfa-drugs in enteric infections. He concludes from his own work in a Knoxville Hospital that sulfaguanidine (I) and sulfathiazole (II) are effective in bacillary dysentery in children. In parenteral diarrhea I is ineffective, II is effective. The course of typhoid fever is not affected by I.—J. GILBERT EBLEN. *Southern Med. J.*, 35 (1942), 302–305. (W. T. S.)

Sulfanilamide Derivatives—Water-Soluble Therapeutic. Therapeutic compounds adapted for use by hypodermic injection and which have the general formula $RCH(SO_3M)NH\text{-}Ar\text{-}SO_2NH_2$ (in which R represents a phenyl radical, a benzyl radical, a sulfonated saturated lower aliphatic radical or a phenyl-substituted lower aliphatic radical, sulfonated on the side chain, of the type $PhCH(SO_3M)\text{-}CH_2$—, and in which Ar represents a benzenoid radical, and M represents an alkali metal) are produced by a process which involves treating *p*-aminobenzenesulfonamide and an alkali metal bisulfite with an aldehyde of the group consisting of benzaldehyde, the phenyl-substituted lower aliphatic aldehyde saturated in the side chain, the phenyl-substituted lower aliphatic aldehyde mono-unsaturated in the side chain, and the lower mono-unsaturated aliphatic aldehydes to effect the ultimate condensation of these reagents. Examples are given involving the use of benzaldehyde, phenylacetaldehyde, cinnamaldehyde, acrylaldehyde and crotonaldehyde as initial materials.—ROBERT L. DESPOIS, assignor to SOCIÉTÉ DES USINES CHIMIQUES RHÔNE-POULENC. U. S. pat. 2,262,544, Nov. 11, 1941. (A. P.-C.)

Sulfanilamide in Trachoma. There are conflicting reports on the effectiveness of sulfanilamide when topically applied in trachoma. This question has been reopened, and extended to the oral use of the drug by clinical and experimental studies. It is concluded that sulfanilamide brossages act on the lesions of trachoma mechanically and not therapeutically. Subconjunctival injections of the sulfa-drugs were not superior to hypertonic saline employed in like manner. Benefits from ointments of sulfanilamide and prontosil were credited to their soothing bases. As medicated eye drops, saturated solutions of sulfanilamide and neoprontosil were inferior to argyrol, zinc sulfate and related drugs. Effective oral doses of sulfanilamide gave a 3 to 4 mg. % concentration of the drug in the aqueous humor of the eye. Increased concentrations, no matter how obtained, were without therapeutic value.—OTIS S. LEE, HANS S. ROTTENSTEIN and HO YUNG CHAO. *Chinese Med. J.*, 60 (1941), 207–221. (W. T. S.)

Sulfanilamide—Relation of Local Use of, to Formations of Adhesions. The tendency toward the direct application of sulfonamide derivatives in the treatment of wounds is rapidly increasing. The authors studied the introduction of these drugs into clean wounds in experimental animals. It was found that the local implantation of a moderate amount of sulfanilamide in wounds of the abdominal wall of these animals did not appreciably interfere with the healing of the wounds. In this series of experiments, wounds of the stomach and duodenum also healed normally if moderate amounts of the drug had been introduced. The wounds showed the same tensile strength as similar wounds in which the sulfonamides had not been introduced. Furthermore, by comparing wounds in the peritoneal cavity into which sulfanilamide, sulfathiazole, sulfadiazine or mixtures of these drugs had been introduced, with wounds which had not been so treated, the authors concluded that in the rat the drugs do not tend to cause adhesions.—S. P. HARBISON and J. A. KEY. *Arch. Surgery*, 44 (1942), 22; through *Abbott Abstract Service*, (1942), No. 1103. (F. J. S.)