

PHARMACEUTICAL ABSTRACTS

Published by the American Pharmaceutical Association,
2215 Constitution Ave., Washington, D. C.

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

ABSTRACTORS

C. R. ADDINALL
WILLIAM B. BAKER
GERSTON BRUCH
HENRY M. BURLAGE
ZADA M. COOPER
AMELIA C. DeDOMINICIS
MELVIN F. W. DUNKER
GEORGE W. FIERO
PERRY A. FOOTE
RALPH R. FORAN

GEORGIANA S. GITTINGER
SAMUEL W. GOLDSTEIN
THOMAS C. GRUBB
H. B. HAAG
G. W. HARGREAVES
WILLIAM H. HUNT
CHARLES JAROWSKI
ROLAND E. KREMERS
CLIFFORD S. LEONARD

NATHAN LEVIN
ARTHUR E. MEYER
A. PAPINEAU-COUTURE
E. V. SHULMAN
FRANK J. SLAMA
EDGAR B. STARKEY
W. TAYLOR SUMERFORD
E. G. VANDEN BOSCHE
G. L. WEBSTER
ELMER H. WIRTH

CONTENTS

Chemistry:	Pharmacy:	
Organic:	Galenical.....	234
Alkaloids (<i>Continued</i>).....	Pharmacopœias and For-	234
Essential Oils and Related	mularies.....	234
Products.....	Non-Official Formulæ.....	235
194	Dispensing.....	235
Glycosides, Ferments and	Pharmaceutical History....	236
Carbohydrates.....	Pharmaceutical Legislation.	236
195	Pharmaceutical Economics..	236
Other Plant Principles.....	Miscellaneous.....	237
198		
Fixed Oils, Fats and Waxes.	Pharmacology, Toxicology and	
200	Therapeutics:	
Unclassified.....	Pharmacology.....	238
202		
Biochemistry.....		
208		
Analytical.....		
222		
Pharmacognosy:		
Vegetable Drugs.....		
233		

CHEMISTRY

ORGANIC

Alkaloids (Continued)

Mitragyne Speciosa—Investigation of the Alkaloids from. I. The alkaloid, mitragynine, was isolated from the dried leaves of *Mitragyne speciosa* ("Kratom" of the native Siamese) a plant belonging to the natural order of *Rubiaceae* various other species of which have also yielded alkaloids. The isolation and structure of this alkaloid had received some previous attention so the present report represented an elaboration on and in certain instances a contradiction of the findings of the previous investigation. Mitragynine was isolated as the picrate and given the formula $C_{22}H_{30}O_4N_2$ (or possibly $C_{22}H_{22}O_4N_2$). The presence of two methoxyl, one carbomethoxyl and one carboxyl group in the molecule accounted for the 4 oxygen atoms shown to be present in the alkaloid. It behaved as a mono-acidic base, yielded a monomethiodide and could not be acetylated which caused the authors to regard the second nitrogen atom as a non-basic indole nitrogen. On hydrolysis in methyl-alcoholic potassium hydroxide mitragynine gave an ether-insoluble monocarboxylic acid and an ether-soluble tetramethoxy-compound which appeared to be the methyl alcohol addition product of mitragynine. The tetramethoxy compound on further heating with the alcoholic alkali was converted to the ether-insoluble derivative. Zinc dust distillation gave rise to a base, $C_{14}H_{14}ON_2$, containing one methoxyl, one methyl-imido and a reactive methylene group and may possibly be *N*-methyl-methoxyharman. A second alkaloid was detected in *Mitragyne speciosa* but was not characterized.—H. RAYMOND ING and CLIFFORD G. RAISON. *J. Chem. Soc.*, (1939), 986-990. (W. T. S.)

Mitraspecine, a New Alkaloid from Mitragyna Speciosa Korthals. Field found mitragynine and mitraversine in the leaves of *M. rotundifolia* Kuntze, and *M. speciosa* Korthals, and Hamet and Milliat recently identified mitraversine in the bark of *M. rotundifolia*. Finely ground bark of *M. speciosa* was mixed with 0.5 part of magnesium oxide, moistened and extracted with chloroform. The extract was evaporated down and extracted with 2% hydrochloric acid below 50° and the acid extracted was neutralized with ammonium hydroxide. The washed precipitate was taken up in ether, evaporated down, crystallized from 90% alcohol and recrystallized from methyl alcohol and 94% alcohol yielding monoclinic platelets of mitraspecine, $C_{28}H_{36}N_2O_6$, melts at 244-245°, $[\alpha]_D^{25}$ -59.15°, containing 3 OMe groups; picrate, melts at 136°. Mitraversine differs sensibly from amorphous mitragynine, $C_{22}H_{31}NO_5$, melts at 102-106°; picrate, melts at 223-224°. The bark of *M. speciosa* contains 5% of mitraspecine in contrast to the 0.2% content of wood.—P. DENIS. *Bull. classe sci., Acad. roy. Belg.*, 24 (1938), 653-658; through *Chem. Abstr.*, 33 (1939), 1741. (E. G. V.)

Poppy—Alkaloids of Wild Species of I. Two alkaloids were isolated from *Papaver orientale* from Georgia: thebaine and oripavine, the latter being a new alkaloid of the phenolic type, corresponding to the formula $C_{16}H_{12}(NCH_3)(OCH_3)(OH)(O)$. There was isolated from *Papaver armeniacum* a new alkaloid, arnepavine, corresponding to the formula $C_{16}H_{13}(NCH_3)(OCH_3)_2(OH)$. Oripavine and arnepavine seem to be derivatives of *N*-methylbenzyltetrahydroisoquinoline.—R. A. KONOVALOVA, S. YUNUSOV and A. P. OREKHOV. *J. Obchich. Khim.*, 7 (1937), 1791-1796; through *Chimie & Industrie* 41 (1939), 111. (A. P.-C.)

Poppy—Alkaloids of Wild Species of II. Five new alkaloids were obtained from *Papaver flori-*

bundum: (1) floripavine, of phenolic nature, $C_{16}H_{11}(NCH_3)(OCH_3)_2(OH)(O)$; (2) floribundine, a nonphenolic base, $C_{16}H_{13}(NCH_3)(OCH_3)(O)$; (3) arnepavine, $C_{19}H_{21}NO_3$; (4) floripavidine, $C_{21}H_{29}NO_5$, and (5) unidentified "base No. 5," melting at 205° to 206° C. The first three are probably derivatives of *N*-methylbenzyltetrahydroisoquinoline.—R. A. KONOVALOVA, S. YUNUSOV and A. P. OREKHOV. *J. Obchich. Khim.*, 7 (1937), 1797-1802; through *Chimie & Industrie*, 41 (1939), 111. (A. P.-C.)

Essential Oils and Related Products

Abies Amabilis and A. Grandis—Chemical Examination of the Essential Oils of. Report is made of a study of the oil from "white fir" or "silver fir." Details of experiments are given. The fresh bark of *Abies amabilis* yielded 0.50% of essential oil containing 72.4% of terpenes and 2.55% of high-boiling liquid. Terpenes were mainly *lævo-alpha*-pinene and *lævo-beta*-phellandrine. There was some *lævo-beta*-pinene, traces of free acetic acids, phenols and aldehydes. The fresh leaves and twigs yielded 0.08% of volatile oil containing traces of free acids, phenols and aldehydes. The low-boiling portion consisted of 81.21% of terpenes, *alpha*-pinene with smaller amounts of *beta*-pinene and *beta*-phellandrene. No sesquiterpenes or alcohol could be identified in the high-boiling fraction. *Abies grandis* yielded 0.37% of volatile oil containing traces of free acetic acid, phenols and aldehydes. The low-boiling portion, 59.40% of the oil was composed of terpenes, chiefly *alpha*-pinene, *beta*-pinene, *beta*-phellandrene. The high-boiling portion was mostly bornyl acetate and the sesquiterpene, *lævo*-cadinene.—MALCOLM S. TRUPP and LOUIS FISCHER. *Jour. A. Ph. A.*, 28 (1939), 433. (Z. M. C.)

Algerian Oil of Geranium. Isomenthone. The ketone fraction of Algerian oil of geranium, like that of Bourbon geranium oil, consists chiefly of *l*-isomenthone, more or less racemized, accompanied by other ketones or aldehydes. *l*-Isomenthone is very sensitive to acid or alkaline treatments, which produce or intensify its racemization. During the aging of the oil there is also racemization, which would account for the decrease in optical rotation of oil of geranium with time. Rectification of the oil in vacuum at relatively low temperature does not affect *l*-isomenthone; this furnishes a means of easily obtaining head fractions containing about 30% of *l*-isomenthone. The optical rotation cannot be characteristic of the isomenthone or of the head fractions which contain it. On the other hand, rotary dispersion can be used for its identification since it is independent of partial racemization; being quite different from that of *l*-menthone it seems to furnish very characteristic data. The refractive index also can be used as a characteristic for the identification of isomenthone or of the head fractions. On the whole it is not necessary to extract isomenthone from the oil to identify the latter; examination of the head fraction (10%) can suffice, because the physical characteristics of this fraction are due to *l*-isomenthone.—BERNARD ANGLA. *Chimie & Industrie*, 41 (1939), 234-240. (A. P.-C.)

Carnations of Provence—Absolute Oil of. The literature is briefly reviewed. Extraction with petroleum ether of carnations (*Dianthus caryophyllus* L.) yielded 0.25% of concrete, which gave a 13% yield of absolute having a refractive index at 20° C. of 1.4708, a specific gravity at 15° C. of 0.9726 and an optical rotation (1 dm.) of -4°, and which gave the following color reactions: ferric chloride, green; antimony trichloride, reddish brown; Bezssonoff's reagent, blue color in the cold.

It contained 43% of phenols + acids (absorption by 4% potassium hydroxide) and 7.2% of methoxyl (equivalent to 38.4% of eugenol). The chief constituent of the phenol fraction is eugenol. The nonphenolic fraction is a golden yellow liquid with an acid value of 7.9 and an ester value of 153.—S. SABETAY and G. MANE. *Rev. chim. ind. (Paris)*, 48 (1939), 39-41. (A. P.-C.)

Comptonia Asplenifolia—Volatile Oil of. This so-called sweet fern, upon distillation, yielded an oil whose constants are given. It contains about 20% of terpenes, a considerable amount of cineol, smaller amounts of esters and alcohols, no aldehydes or ketones. Acetic acid and some identified acids and lactones are present.—ROMULUS DE NICOLA and E. V. LYNN. *Jour. A. Ph. A.*, 28 (1939), 588. (Z. M. C.)

Essential Oils—Chemical Microscopy of. The problem of developing methods for the identification of individual essential oils by the methods of chemical microscopy was discussed. Microreactions for the following oils were described: bergamot, bitter almond, caraway, dill, cassia and cinnamon bark, catnip, cumin, fennel, wintergreen and sweet birch. Using phenylhydrazine as a reagent, negative results were obtained with 131 different oils. These were reported as the first step in devising a qualitative scheme for identifying unknown oils.—L. WILSON GREENE. *Perfumery Essent. Oil Record*, 30 (1939), 309. (A. C. DeD.)

Essential Oils—Effect of Soaps in Increasing the Water Solubility of. Ammonium ricinoleo sulfate, potassium linoleate and potassium ricinoleate were particularly effective in promoting the dissolution of oils of eucalyptus, citronella, tea-tree, clove, Huon pine, turpentine and cineol. Other soaps were favorable for emulsification but not for clear solutions. The solutions obtained were of about 40% concentration in most cases. In view of the ease and cheapness of preparation it is suggested that the process will be of value in compounding various types of medicinal preparations and insect repellents.—A. ALBERT. *J. Soc. Chem. Ind.*, 58 (1939), 196-199. (E. G. V.)

Essential Oils—New Color Reaction for. EM-reaction is an excellent means for the qualitative determination of terpene chromogenic compounds, as also for the examination of the degree of purity of numerous perfumery materials.—A. MULLER. *Perfumery Essent. Oil Record*, Annual Special Number, (1939), 37. (A. C. DeD.)

Eucalyptus Oils— α -Phellandrene Fraction of. The m. p. graph of mixtures of the additive products of maleic anhydride with *d*- and *l*- α -phellandrene (I) are recorded. By aid of the graph it is shown that a technical α -phellandrene which had been treated successively with *m*-resorcinol and sodium sulfite and then distilled contained I with a large amount of *p*-cymene (II), a small amount of some unidentified laevorotatory terpene, and a little origanene, but no *dl*-I. The oils from *E. dives*, *E. radiata* and *E. risdoni* contain a large proportion of II, while that from *E. amygdalina* contains a large amount of di-pentene; in none of them is *dl*-I present. II is regarded as being probably formed from *dl*-I by atomic oxidation.—A. J. BIRCH. *J. Proc. Roy. Soc. N. S. Wales*, 71 (1938), 261-266; through *J. Soc. Chem. Ind.*, 58 (1939), 550. (E. G. V.)

Oil of Cade (Essential Oil of Juniperus Oxycedrus L.). Steam distillation of a large quantity of *Juniperus oxycedrus* wood yielded 1.5% of amber colored, viscous oil having the following characteristics: specific gravity at 15° C. 0.9632, optical rotation at 16° C. -28°34', refractive index at 20° C. 1.5125, acid number 0.84, ester value 6.31,

ester value after acetylation 58.92, ester value after formylation 94, insoluble in 85% alcohol, soluble in 0.5 volume of 90% alcohol without turbidity, miscible in all proportions with 95% alcohol; tests for bases, pyrrole and furfural were negative. Sabetay's bromine in chloroform reaction gave a brownish maroon coloration. The chief constituents were found to be: 70% of sesquiterpenes comprising *l*- β -caryophyllene, *l*-cadinene (in large quantities) and cedrene (in small amounts); 5 to 10% of sesquiterpene alcohols, comprising pseudo-cedrol (more than 50%) and two unknown alcohols which were not isolated; 3 to 4% of ketones and aldehydes, including one ketone identical with that of vetiver and three ketones which were isolated but not identified; traces (about 0.3%) of phenols (possibly *p*-cresol) and traces (0.7%) of acids.—D. SONTAG. *Rev. marques parfums de France*, 17 (1939), 5-7. (A. P.-C.)

Terpeneless and Sesquiterpeneless Oil of Orange from French Guinea. Traubaud has recently given the following limits for the characteristics of these oils. **Terpeneless Oils**.—Specific gravity at 15° C. 0.869 to 0.880, optical rotation 44° to 56°, refractive index at 20° C. 1.4680 to 1.4710, aldehydes (by oximation) 14 to 19%, soluble in 0.8 to 1.5 volumes and over of 80% alcohol. **Sesquiterpeneless Oils**.—Specific gravity at 15° C. 0.876 to 0.887, optical rotation 22° to 26°, refractive index at 20° C. 1.4674 to 1.4672, aldehydes (by oximation) 24 to 27%, soluble in 2 to 3 volumes and over of 70% alcohol. While these constants may correspond to pure oils produced by well-established specialized manufacturing processes, they seem very narrow, especially as regards refractive index and particularly aldehydes in the sesquiterpeneless oil. These low values are undoubtedly due to the difficulty of separating completely the aldehydes from the terpenes, the latter entraining considerable amounts of aldehydes owing to the closeness of the boiling points. This is confirmed by the high aldehyde contents (0.6 to 1.5% as decyl aldehyde) in commercial distilled terpenes. Établissements Chiris have perfected a process (no details given) which retains in the deterpenated oils the full aroma of the original oil and gives terpenes containing only 0.05 to 0.1% of aldehydes. They produce regularly on a commercial scale sesquiterpeneless oil of orange having: specific gravity at 15° C. 0.867 to 0.886, optical rotation 25° to 35°, refractive index at 20° C. 1.457 to 1.470, aldehydes 26 to 52%, soluble in 1 to 5 volumes of 75% alcohol.—ÉTABLISSEMENTS ANTOINE CHRIS. *Rev. marques parfums de France*, 17 (1939), 30. (A. P.-C.)

Glycosides, Ferments and Carbohydrates

Aminosulfonamides—Reaction Products of Aromatic, with Aldoses. By treating an aminosulfonamide, such as sulfanilamide, with an aldose, such as galactose, xylose, glucosan or with a soluble polyose containing a similar ether linkage such as lactose (suitably by refluxing in a vehicle such as 95% ethanol, with or without use of hydrogen and a hydrogenation catalyst or an added agent giving a slightly alkaline reaction), crystalline products are obtained which are relatively nontoxic and suitable for therapeutic use orally or hypodermically or per rectum. Various details and modifications of procedure are described.—FRITZ MEYER and EVA SCHREIBER (née STEGE). U. S. pat. 2,141,843, Dec. 27, 1938. (A. P.-C.)

Ascorbinase (Ascorbic Acid Oxidase)—Application of, to the Estimation of Vitamin C. Ascorbinase was prepared from pumpkin pulp by a slight modification of Tauber's method. The preparation rapidly destroys ascorbic acid in pure solution and in washed crystalline lens from ox eyes. It acted

very slowly on the ascorbic acid in lemon juice and not at all on that in spinal fluid, human urine and cow milk.—N. BEZSSONOFF and H. VERTRUYEN. *Compt. rend. soc. biol.*, 128 (1938), 407-410; through *Chimie & Industrie*, 41 (1939), 318.

(A. P.-C.)

Carbohydrate Chemistry—New Results in. A comprehensive summary including the following subjects: configuration; preparation of monosaccharides; reduction and oxidation products; derivatives of the carbonyl group; glucosides and ethers; aldehyde and ketone derivatives; esters; syntheses; ring position and configuration; oligo- and polysaccharides; cellulose; starch; glycogen; Schardinger dextrans; the chemistry of the mannans; polylevans; xylan; agar agar; pectins; carbohydrate derivatives of biological importance; carbohydrate-protein compounds; and transition from carbohydrates to the carbocyclic compounds. Two hundred references are given.—F. MICHEEL. *Angew. Chem.*, 52 (1939), 6-17; through *Chem. Abstr.*, 33 (1939), 2885.

(E. G. V.)

Cardiac Poisons—Vegetable. XVI. Constitution of Adynerin. The composition of adynerin corresponds to the formula $C_{30}H_{44}O_7$. Like oleandrin, it seems to be a glucoside of oleandrose. The genin (adynerigenin) has two double bonds, only one of which lends itself to catalytic hydrogenation. Of the four oxygen atoms in the molecule two form part of the lactone function and the two others are hydroxyl oxygens. Adynerin possesses no cardiac activity.—R. TSCHESCHE and K. BOHLE. *Ber. deut. chem. Ges.*, 71 (1938), 654-660; through *Chimie & Industrie*, 41 (1939), 316.

(A. P.-C.)

Catalase—Preparation and Properties of Highly Active, from Horse Liver. Catalase preparation having an activity of 55,000-60,000 was obtained from horse liver by a precipitation procedure using ammonium sulfate and ethyl alcohol followed by a chromatographic adsorption on calcium phosphate. It contained 15.5% nitrogen, 0.085% iron and 0.02-0.03% copper. The amount of nitrogen and iron was proportional to the activity of the solutions in the cells when the preparation was subjected to cataphoresis. Ultracentrifuge experiments gave a value of 225,000 for the molecular weight of the iron complex and indicated that the preparation was not homogeneous. Picric acid precipitated a fraction at p_H 5.2 which contained 0.1% iron and no copper and a second fraction at p_H 4.6 containing 0.16% copper and no iron. These fractions had a considerably lower activity than the original preparation and the full activity was not restored by mixing the two.—K. AGNER. *Biochem. J.*, 32 (1938), 1702-1706; through *Chem. Abstr.*, 33 (1939), 2158.

(F. J. S.)

Digitalis Lanata—Glucosides of. III. In guinea pigs the toxicity diminishes in the following order: total digilanides, digilanide C, digilanide A and digilanide B.—A. RABBENO. *Boll. soc. ital. biol. sper.*, 13 (1938), 171-172; through *Chimie & Industrie*, 41 (1939), 314.

(A. P.-C.)

Diuretic Drugs—Constituents of. IV. **Flavonol Glucoside of Reynoutria Japonica Houtt. Var. Typica Oki.** Treatment of the leaves of *Reynoutria japonica* with methanol, evaporation of the extract, solution in methanol and extraction with ethyl acetate yields about 1.2% of a flavonic glucoside that crystallizes from alcohol as yellowish needles melting at 236° C. On hydrolysis with 5% sulfuric acid the glucoside gives 1 mol. of quercetine and 1 mol. of glucose; it can be considered as the 3-glucoside of quercetine.—H. NAKAMURA, T. OHTA and G. HUKUTI. *J. Pharm. Soc. Japan*, 57 (1937), 261; through *Chimie & Industrie*, 41 (1939), 111.

(A. P.-C.)

Enzyme and Vitamin Products—Treating Yeast to Obtain. The process used comprises mixing yeast with up to about 10% its weight of ethyl acetate, to effect plasmolysis in about 10 minutes, incubating the plasmolyzate for a longer period while making additions of sodium phosphate to the magma throughout the time of said incubation in quantities and at intervals regulated to maintain the p_H within the approximate range of 6.3 to 6.6 to produce yeast autolyzate, then mixing the autolyzate with vegetable material having a high content of degradable protein, and incubating the mixture at a temperature of approximately 36° C. while again maintaining the p_H within the approximate range of 6.3 to 6.6 by regulated alkaline additions. Soybean meal, etc., may be used.—CHARLES WEIZMANN. U. S. pat. 2,141,455, Dec. 27, 1938.

(A. P.-C.)

Glucose—Iodimetric Determination of Small Quantities of. Glucose, 0.2 to 2 mg., may be determined with an accuracy of 2% by oxidation to gluconic acid with iodine in alkaline solution, the excess of iodine being determined with thiosulfate. A suitable amount of glucose in 10 cc. of doubly distilled water, with 1 cc. of $N/10$ iodine solution and 1 cc. of $N/5$ sodium hydroxide solution, is left in a closed flask for thirty minutes at room temperature. Six cc. of 25% hydrochloric acid is then added and the excess of iodine determined by $N/10$ sodium thiosulfate solution. A blank titration, omitting the glucose, should be performed. The difference between the titrations represents the amount of iodine required by the glucose. Each cc. of $N/10$ iodine is equivalent to 9 mg. of glucose. The presence of small concentrations of acetone, urea, uric acid, hippuric acid, creatine, creatinine, alcohol, glycerin and lactic acid did not affect the accuracy of the method. The method is applicable to the determination of glucose in blood dealbuminized by precipitated calcium hydroxide, provided that 1 cc. of a buffer solution consisting of equal volumes of 0.05 M potassium dihydrogen phosphate and 0.075 M sodium hydroxide is substituted for $N/5$ sodium hydroxide in the oxidation and the reaction continued for forty minutes.—E. C. NOYONS. *Rec. trav. chim.*, 58 (1939), 17; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 275.

(S. W. G.)

Glucosides Having an Action on the Heart—Manufacture of. The mixed glucosides obtained from oleander leaves is separated into two fractions, one of which is soluble and the other insoluble, by extraction with ether.—I. G. FARBENIND. A. G. Brit. pat. 498,307; through *J. Soc. Chem. Ind.*, 58 (1939), 664.

(E. G. V.)

Levulose—Selective Oxidation of, with Potassium Ferricyanide. When anhydrous sodium carbonate is used as the alkalizing agent, increasing the carbonate concentration increases proportionally the rate of oxidation of dextrose and levulose by an alkaline potassium ferricyanide solution. An alkaline buffer of sodium monohydrogen phosphate dodecahydrate causes a very slow reaction for both sugars but inhibits the dextrose reaction more than the levulose. Combining both carbonate and phosphate in the buffer causes an effect which is essentially a composite of the two individual effects—that is, carbonate accelerates the reaction rate of levulose while phosphate retards the oxidation of dextrose. In all cases, increasing the temperature causes a proportional increase in the rate of oxidation of both sugars. The alkaline potassium ferricyanide reagent containing both sodium carbonate and sodium hydrogen phosphate is a much better oxidizing agent for the determination of levulose in the presence of dextrose than the reagent composed of either one alone.—D. T. ENGLIS and H. C. BECKER. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 145-149.

(E. G. V.)

Malt Extract—Analysis of, by Selective Fermentation. The method compared (a) an unfermented portion of the solution of the malt extract with (b) a portion of the same solution after fermentation with a yeast known to ferment dextrose but not maltose and (c) another portion after fermentation with a maltose-fermenting yeast. The yeast in (b) also ferments levulose and mannose and that in (c) ferments these as well as maltose. Hence (a) - (b) gives a measure of the monosaccharides and (b) - (c) measures the maltose. The fermentation was for a period of nine days. The reducing sugar content of the solutions was determined by the Lane and Eynon volumetric copper reduction method. The author concludes that diastatic malt extracts contain no maltodextrins; the unfermentable carbohydrates include substances other than dextrins. He suggests that they are largely hexosans.—R. GARDNER. *Analyst*, 64 (1939), 103. (G. L. W.)

Papain—Nature of. The fresh latex of *Carica papaya* was used to prepare SH-papain by precipitation with alcohol. SS-papain was prepared by first oxidizing the latex with hydrogen peroxide or alloxan. The oxidized enzyme retains "gelatinase" activity suggesting that this does not involve the SH group. This conclusion is supported by the fact that the "gelatinase" activity of SH-papain is not inactivated by maleic acid. On the other hand, the SS-papain is inactive toward peptone, and the SH enzyme is inactivated by maleic acid. Iodoacetic acid inactivates both preparations irreversibly, in quantity much less than that required to react with the SH groups. It therefore appears that some group other than SH is necessary for both types of activity. The optimum p_H for gelatin hydrolysis is 3.6 to 3.8 for SS-papain and 3 to 5 for SH-papain. Cyanide and glutathione activate SS-papain and enable it to hydrolyze peptones.—C. V. GANAPATHY and B. N. SASTRI. *Biochem. J.*, 33 (1939), 1175; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 763. (F. J. S.)

Proteolytic Enzymes—Rôle of, in Industry. A review.—V. G. GORBATSHEVSKAJA. *Ukrain. Biochem. J.*, 13 (1939), 185-194; through *J. Soc. Chem. Ind.*, 58 (1939), 982. (E. G. V.)

Salicacæ—Biochemical Study of. Fermentary Hydrolysis of Cæsioides. The heteroside (cæsioides) obtained from *Salix cæsia* yielded, on decomposition with dilute acids, luteoline and glucose and xylose. Hydrolysis with rhamnodiastase indicated that the functional group of the glucose is involved in the heterosidic linkage. The following procedure was used to determine if the cæsioides is a primeveroside: The substance (0.1 Gm.) was placed in 200 cc. of boiling water. After rapidly cooling the solution, 0.1 Gm. of a fermentary powder of gaultheria leaves was added (this rapidly hydrolyzes primeverosides), and the mixture was kept in an oven at 36° for 15 days with occasional shaking. The mixture was then filtered, shaken with ether to remove traces of flavonol and evaporated to dryness in a vacuum. The residue was taken up in 10 cc. of hot methanol, animal charcoal was added and the mixture was filtered. The solution was evaporated to dryness, the residue was taken up in cold water and the mixture was filtered. The water was removed in a vacuum over a sulfuric acid. The residue was crystallized from 0.5 cc. of methanol after priming with crystals of primeverose. The recrystallized product (0.03 Gm.) melted at 210°, before and after mixing with pure primeverose; it gave a violet reaction with orcinol in hydrochloric acid (xylose) and exhibited a very slight dextrorotatory action (descending mutarotation). The cæsioides is a primeveroside of luteoline.—J. RABATE. *J. pharm. chim.*, 29 (1939), 584-585. (S. W. G.)

Saponin Drugs—Decrease in the Content of Active Principle in, during Storage. The amount of active hemolytic principles in saponin-containing drugs decreases considerably during storage. The foaming power decreases similarly in certain drugs (*Primula*), while in others (*Polygala senega*) it seems independent of the hemolytic value. Variations in the method of keeping the drugs during storage apparently do not affect the hemolytic power.—A. TOOMINGAS. *Pharmacia*, 18 (1938), 35-42; through *Chimie & Industrie*, 41 (1939), 313. (A. P.-C.)

Saponins of Horse Chestnut—Therapeutic Use of the. Experiments prove that saponins of horse chestnut may be substituted for white soap bark in therapy and in pharmaceutical practice and that acacia and tragacanth can be replaced by tylose to prepare cod liver oil emulsions; from the same viewpoint a substitution of *æsculus* saponin for that of *gypsophila* is also possible. With the addition of 0.75% tylose and 1% *æsculus* saponin as emulsifying agent, a cod liver oil emulsion can be prepared by shaking in a bottle and it is stable and meets all the requirements of a good official emulsion. Seventeen references.—M. ROBERG and H. HOFFMANN. *Deut. Apoth. Ztg.*, 54 (1939), 416-419. (H. M. B.)

Stachyose and Verbenaloside in Plants of the Genus *Verbena*. Stachyose was found in *Verbena bonariensis*, *Verbena hispida*, *Verbena venosa* and *Verbena officinalis*. Verbenaloside was found in *Verbena hastata*, *Verbena stricta*, *Verbena teucrioides*, *Verbena littoralis*, *Verbena supina*, *Verbena prostrata* and *Verbena officinalis*. Unidentified holosides and heterosides were present in all species. J. CHEYMOL. *Bull. soc. chim. biol.*, 19 (1937), 1647-1653; through *Chimie & Industrie*, 41 (1939), 312. (A. P.-C.)

k-Strophanthoside, the Chief Glucoside of *Strophanthus Kombé* Seeds. The total glucoside content of the drug consists of about 75% of *k*-strophanthoside. Its degradation into strophanthidin takes place in several ways: (1) through enzymatic degradation by strophanthobiase into cymarine and acid hydrolysis of the latter; (2) direct acid hydrolysis; (3) enzymatic degradation by α -glucosidase into *k*- β -strophanthin and enzymatic degradation of the latter by strophanthobiase into cymarine, or direct acid hydrolysis into strophanthidin. *k*-Strophanthoside possesses very valuable therapeutic properties involving the total effect of the drug under a form that is easily assayed.—A. STOLL, J. RENZ and W. KREIS. *Helvetica Chim. Acta*, 20 (1937), 1484-1510; through *Chimie & Industrie*, 41 (1939), 113. (A. P.-C.)

***Taxus Brevifolia*—Studies on the Glucosides Contained in.** Previous investigators have concluded that no glucosides were present. In this study, polarimetric examination showed an increase in reducing sugars after treatment of solution with invertase and a still further increase when the second solution was boiled to destroy invertase and then treated with emulsin. The number of mg. of reducing matter, expressed in glucose, formed in 100 cc. under influence of invertase shows an index of 801 for a change of deviation of 1°. The index corresponding to principal monosaccharides shows the nearest is 673 for gentianose. Though the difference is great, there might be a polysaccharid associated or not with saccharose or farrinose, the latter having been found in *Taxus baccata*. Considering the second and third solutions, the number of mg. of reducing matter, expressed in glucose, formed under the influence of emulsin shows an index of 306 for a change of deviation of 1°. The index of toxicatine is 296 so the presence of toxicatine seems probable.—GEORGES MASSON. *Jour. A. Ph. A.*, 28 (1939), 493. (Z. M. C.)

Other Plant Principles

Alcohols (Linalool)—Determination of Total. The method used was proposed by Glichitch in which the alcohols are esterified by treatment with a cold mixture of formic acid and acetic anhydride. By this method of treatment the alcohols are converted entirely into their formic esters, so that by saponifying the esterified oil in the usual way and determining its saponification value, the percentage of linalool may be calculated.—W. H. SIMMONS. *Perfumery Essent. Oil Record*, 30 (1939), 347.

(A. C. DeD.)

Andrographis Paniculata Nees—Bitter Principle from. I. The formula and other properties ascribed to andrographolide, $C_{20}H_{30}O_5$, by Gorter have been confirmed. The presence of a methylene-dioxy group has been proved. Triacetylandrographolide of Gorter could not be prepared. Hydrolysis of andrographolide gave two isomeric acids, $C_{20}H_{32}O_5$, one of which is probably identical with the known andrographolic acid. Iodine chloride indicated one double bond, but the catalytic hydrogenation of the bitter principle gave a dihydro derivative different from an isomeric dihydrographolide obtained by the action of stannous chloride.—A. MOKTADER and S. S. GUHA-SIRCAR. *J. Indian Chem. Soc.*, 16 (1939), 333. (F. J. S.)

Bassic Acid—Elucidation of the Structure of. In this, the fifth of a series of papers on sapogenins the authors report the isolation of a new sapogenin, basic acid, from mowrah meal obtained from the seeds of the Indian butter tree (*Bassia Latifolia* Roxb.). Basic acid, $C_{30}H_{46}O_5$, after recrystallization from dioxan was shown to be a pentacyclic monobasic acid of the triterpene series. Dehydrogenation yielded 1:8-dimethylpicene which indicated that basic acid has the same carbon skeleton as hederagenin. Other reactions showed that basic acid has two hydroxyl groups in the 1:3-position and possesses a carboxyl group and a double bond all of which are found in the typical sapogenin groupings. The position of another hydroxyl group and a reactive double bond was not determined and hence only a partial formula was suggested for the compound.—B. JASON HEYWOOD, GEORGE A. R. KON and LANCELOT L. WARE. *J. Chem. Soc.*, (1939), 1124-1129. (W. T. S.)

Bornylamine—Catalytic Oxidation of. Copper catalyzes the oxidation of bornylamine into camphor by means of oxygen; a small amount of bornylene is formed simultaneously. The reaction does not involve any isomerization of the carbon framework of the molecule, contrary to what takes place with nitrous acid. Oxidation into camphor involves as intermediate stage the formation of camphorimine; the latter is oxidized to the azine, which on hydrolysis produces camphor.—N. IA. DEMIANOV and I. I. LENARSKI. *Izv. Akad. Nauk. S. S. S. R. (Ser. Chim.)*, (1937), No. 5, 1001-1013; through *Chimie & Industrie*, 41 (1939), 114. (A. P.-C.)

Camphene—Rapid Determination of, for Industrial Control Purposes. One cc. of a solution of 1 Gm. of sulfuric acid in 10 Gm. of 96-98% formic acid is dissolved in 100 cc. of saturated aqueous sodium chloride, and the solution titrated with 0.5 N sodium hydroxide (*b* cc.), with phenolphthalein indicator. 2-5 cc. of the solution under examination and 1 Gm. of sulfuric acid-formic acid mixture are shaken for 2.5 minutes, 100 cc. of aqueous sodium chloride are added, and the solution is titrated as above (*e* cc.). The % camphene equals $6.8(b-e)/cp$, where *c* is the volume of the solution taken and *p* its specific gravity.—V. I. LIUBOMILOV. *Plom. Org. Chim.*, 6 (1939), 167-169; through *J. Soc. Chem. Ind.*, 58 (1939), 463. (E. G. V.)

Celastrus Scandens—Pigments Contained in the Bark of the Root of. Investigation was made to

ascertain whether β -carotene was the pigment in this root, because of the importance of it as a standard for vitamin A. It was found to be a red pigment celastrol and not β -carotene. Some information about celastrol is given.—O. GISVOLD. *Jour. A. Ph. A.*, 28 (1939), 440. (Z. M. C.)

Chamomile Oil—Anti-Inflammatory Substances in. Chamomile oil may be fractionated into "crude-azulene" and "residual oil," the former fraction being further divided into "pure-azulene" and "green-oil." The two last-named substances make up 1% and 0.05% of the original oil, respectively. Both exert anti-inflammatory action on human skin reddened by exposure to ultraviolet light. The anti-inflammatory action of "pure-azulene" is not lost during five months storage.—W. ALBATH. *Arch. exper. Path. Pharmacol.*, 193 (1939), 619; through *Squibb Abstr. Bull.*, 12 (1939), A-1588. (F. J. S.)

Chelidonium Majus—Resin from the Root of. The so-called "resin" from the root of *Chelidonium majus* consists essentially of 40% of fatty oil (having an acid value of 65.23, saponification value of 123.1, and an iodine value of 31.23), 15% of ether-soluble acids, an ether-insoluble residue, and only 5% of resinous material. Provisional experiments on white mice and on grass frogs indicate that the constituents of chelidonium resin possess no marked physiological activity.—H. NEUGEBAUER and K. BRUNNER. *Pharm. Zentralhalle*, 79 (1938), 17-19; through *Chimie & Industrie*, 41 (1939), 112. (A. P.-C.)

Citral—Condensation of. The patentees have found that with the aid of one or more suitable condensing agents, citral may be condensed with other aldehydes so as to form open chain products. The condensing agents consist of one or more of the alkali metal derivatives of ammonia and/or of the alcohols, such as, for example, sodamide or potassium tertiary butoxide. The condensation is preferably affected in the presence of an inert solvent, such as, for example, ether. The condensation products obtained are themselves aldehydes. The method is described.—BRITISH PATENT SPECIFICATION No. 510,540. *Perfumery Essent. Oil Record*, 30 (1939), 319. (A. C. DeD.)

Claviceps Paspali—Isolation of the Active Principle in. A method for the isolation of the active principle in *Claviceps paspali* (Stevens and Hall) is given. The amorphous compounds obtained have as yet resisted purification and identification. It is concluded that the active constituent in this compound is not an ergot alkaloid, as it does not conform with pharmacological and chemical data for the ergot alkaloids. Hydrolysis with enzymes indicates that the compound is not a glucoside.—M. GIEGER and B. F. BARRENTINE. *J. Am. Chem. Soc.*, 61 (1939), 966. (E. B. S.)

Cornus Florida—Investigation of an Active Constituent of. An unsaturated monobasic hydroxy acid of the triterpene series, isolated from the bark of *Cornus florida* L., was shown to be identical with betulic acid, an oxidation product of betulin. The identity of the two products has been confirmed by comparison of a number of their derivatives, including the dihydro compounds. By the action of hydrogen bromide in acetic acid, betulic acid gives rise to the acetate of a saturated stable lactone, and with bromine *o*-acetylbetulic acid yields *o*-acetyl-bromo- and *o*-acetyldibromo-lactones, reactions common to known unsaturated hydroxytriterpene acids.—ALEXANDER ROBERTSON, GABRA SOLIMAN and EDMUND C. OWEN. *J. Chem. Soc.*, (1939), 1267-1273. (W. T. S.)

Coumarins—Natural. XL. Coumarins of the Drug Semen Angelicae. It has been previously shown that roots of *Angelica archangelica* L. contain

angelicin, osthol and osthenol; it is now shown that in the fruit of this plant, sold as the semen angelicæ, a larger number of coumarins and entirely different ones are present. The approximate content of the fruit is: imperitorin (I) 0.5%, bergapten (II) 0.1%, umbelliprenin (III) 0.04%, phenol ($C_6H_5O_2$) (IV) 0.02%, xanthotoxin ($C_{12}H_8O_4$) (V) 0.02% and xanthotoxol (VI) 0.02. In the first ether extraction, the product was separated by means of petroleum ether; the insoluble portion was further fractionated by ether, giving I (its presence in other fractions was detected by the formation of the phenol, allo-imperatorin on distillation), II and V. In a second extraction the ether extract was concentrated and extracted with 0.5% KOH; acidification gives VI; the ether solution yields III. The petroleum ether portion contains I, II and IV. Methylation of IV yields isopinpinellin. Complete details are given of the methods used for the separation of the various coumarins.—E. SPATH and F. VIERHAPPER. *Monatsh.*, 72 (1938), 179-189; through *Chem. Abstr.*, 33 (1939), 2505. (E. G. V.)

Curare—Composition and Preparation of. The curare of the Nambikwaras is of simple vegetable nature. Only one plant, a species of *Strychnos* is used. The large pivotal root, scraped to obtain the bark impregnated with a red and gummy juice, is the only part of the plant used. The preparation of curare is reduced to three principal operations: exhaustion of the bark by cold water, rapid boiling and concentration with gentle heat. In other parts of the Amazon exist more complex curares to which other vegetable and animal materials such as toad venom are added.—MAURICE CAULLERY. *Compt. rend.*, 208 (1939), 2104. (G. W. H.)

Derris Elliptica—An Active Constituent of. A continuation of some studies on the active principles of leguminous fish-poison plants has resulted in the isolation of optically active *l*-elliptone from the neutral rotenone-free resin of *D. elliptica*. *l*-Elliptone has been shown by polariscopic data to be the precursor of a substance which Buckley (*J. Soc. Chem. Ind.*, 55 (1936), 285) isolated from the same resin by the use of KOH. The close relationship of *l*-elliptone to rotenone is shown by a positive Durham test afforded by the former. A comparison of certain other reactions of *l*-elliptone with those of isorotenone indicated that *l*-elliptone is a lower homolog of this compound.—STANLEY H. HARPER. *J. Chem. Soc.*, (1939), 1099-1105. (W. T. S.)

Eugenol in Jasmine Essence. Potassium hydroxide solution (4%) extracts phenols, mainly eugenol and some cresols, from different preparations of jasmine essence. Fermentation of the residue of the flowers after removing the oil regenerates a substance with the odor of jasmine.—S. SABETAY and L. TRABAUD. *Compt. rend.*, 208 (1939), 1242-1244; through *J. Soc. Chem. Ind.*, 58 (1939), 884. (E. G. V.)

Gossypol—Estimation of, in Crude Cottonseed Oil. Exactly 0.2 Gm. of gossypol dissolved in peroxide-free ether was added dropwise to a hot mixture of petroleum ether (b. p. 60° to 68° C.) aniline, and pyridine, digested at 55° C., and allowed to stand. The precipitate was transferred to a Gooch crucible with a small amount of pyridine, washed with small amounts of petroleum ether, and dried 5 minutes at 100° C. and over phosphorus pentoxide at room temperature. The precipitate was found by analysis to be dianilino-gossypol-dipyridine. Calculated for $C_{42}H_{40}N_2O_6 \cdot 2C_6H_5N$, $N = 6.77$; found, 6.68 and 6.66. Dianilino-gossypol was prepared from gossypol with aniline alone without the use of pyridine. It was recrystallized from boiling benzene and dried at 100° C. for 2 hours. Calculated for $C_{42}H_{40}N_2O_6$, $N = 4.19$; found, 4.11 and 4.10.—F. H. SMITH and J. O.

HALVERSON. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 475. (E. G. V.)

Pectin Studies. The recent theories regarding the molecular structure of pectin are critically reviewed. The properties of six different methods of evaluating pectin are compared. The grade of pectin and the true viscosity of its solutions are functions of the molecular chain length. The setting time of pectin jellies and the effect of salts are functions of the combining weights of pectins. As pectins undergo progressive demethylation, the combining weight decreases proportionally and the setting time increases to a maximum in the range of combining weight of 550-575. If demethylation proceeds beyond this range, the setting time is again rapidly decreased. Pectins of low combining weight show abnormal viscosities within certain p_H ranges and in the presence of salts. The viscosity of pectin solutions may be used as an index of grade, provided differences due to salt and p_H effects are eliminated. The so-called optimum p_H for jellies is a fictitious value useful only when considered in connection with narrowly limited conditions of jelly making. It has no general significance. A buffered acid solution which permits grading of any commercial pectin at p_H 3.1 is described.—A. G. OLSEN, R. F. STUEWER, E. R. FEHLBERG and N. M. BEACH. *Ind. Eng. Chem.*, 31 (1939), 1015-1020. (E. G. V.)

Phebalium Argenteum—Oil of. The crystalline coumarin derivative previously isolated from this essential oil is now found to melt at 166°-167°, and to be identical with psoralene.—ROSE and FINLARPON. *J. Indian Chem. Soc.*, 15 (1938), 516; through *Chemist and Druggist*, 130 (1939), 556. (A. C. DeD.)

Picrotoxin—Elucidation of the Structure of. IV. An extensive investigation on the hydrogenation of picrotoxinin under a variety of conditions was undertaken and, while only α -dihydropicrotoxinin was obtained when a platinum catalyst was employed, the use of a palladium catalyst invariably gave a mixed product, the constituents of which appear to depend on the solvent. As tested by hydrogenation and ozonolysis methods, α - and β -bromopicrotoxinin, the corresponding α - and β -bromopicrotoxinic acids, and β -picrotoxinic acid do not contain a double bond. On the other hand α -picrotoxinic acid has an ethylenic linkage present in an isopropylene system, since on ozonolysis it yields a product which on being boiled with hydriodic acid and red phosphorus gives rise to the ketone, $C_{13}H_{16}O_2$, and nor- and hydroxy-nor-picrotoxinic acid.—RONALD W. H. O'DONNELL, ALEXANDER ROBERTSON and JAMES C. HARLAND. *J. Chem. Soc.*, (1939), 1261-1266. (W. T. S.)

Piperitone—Optically Active. Piperitone having a high optical activity is obtained by causing optically active piperitone to crystallize from a solvent at a temperature below about -40° C. The patentees have found that by exposing the optically active mixture, comprising *l*-piperitone, piperitone racemate and non-ketonic bodies, obtainable by fractional distillation or solvent extraction of the essential oil, to a temperature below about -40° C., the *l*-piperitone crystallizes from the solvent non-ketonic bodies leaving the piperitone racemate in solution. The isolation of the crystals from the solution is not easy because of the high viscosity of the solution, but by lowering this viscosity by the addition of a solvent of sufficiently low freezing point before the cooling operation or in a cooled condition after that operation, the solution can more readily be removed from the crystals, for instance, by suction. Alternatively, the crystals may be separated from a part of the solvent non-ketonic bodies and may then be washed with the cooled solvent of low freezing point to remove ad-

herent non-ketonic bodies. The operations of cooling and separation of the crystals may be repeated if required in order to yield a piperitone of maximum optical activity.—ANON. *Perfumery Essent. Oil Record*, 30 (1939), 285. (A. C. DeD.)

Pyrethrum Flowers—Amount of Pyrethrin in. Flowers were extracted in a Soxhlet with petroleum ether, saponified, precipitated, separated from other acids, fractionated, titrated and the factors corrected for humidity. The result was that from 5 to 10 Gm. of dried pyrethrum flowers (pulverized), 0.0066 Gm. of pyrethrin *alpha* and 0.0037 Gm. of pyrethrin *beta* were obtained.—JOSE CARLOMAGNO. *Tribuna farm.*, 4 (1938), 11. (G. S. G.)

Quillajic Acid—Elucidation of the Structure of. In this, the sixth of a series of reports concerning the structures of certain sapogenins it was stated that the sapogenin found in quillaja bark is unsaturated and possesses the formula $C_{30}H_{46}O_6$ and not $C_{29}H_{44}O_6$ as previously reported. Quillajic acid is a triterpene derivative and was shown by a diacetylactone conversion to possess a double bond at a $\beta\gamma$ - or $\gamma\alpha$ -position with respect to the acid group. Other data was presented to show that the carboxyl group of quillajic acid is in a "protected" position and that the carbonyl group which it doubtless contains in ring (A) is in a 1:3-position to a hydroxyl group. The position of a second hydroxyl group was not determined but both hydroxyl groups must be secondary as judged from oxidative reactions.—DONALD F. ELLIOTT and GEORGE A. R. KON. *J. Chem. Soc.*, (1939), 1130-1135. (W. T. S.)

Thymol—Mercuration of Substituted Derivatives of. I. Nitrosothymol Derivatives. The reaction of mercuric acetate upon nitrosothymol and chlorothymol has been studied. Attempts to obtain mercury derivatives of nitrosocarvacrol failed. Alcohol was used as solvent because it seemed to be the best mutual solvent for mercuric acetate and the substituted thymol being mercurated and because there is a marked difference in solubility of the mercury derivatives in hot and cold alcohol. Upon long continued boiling some alcohol is oxidized at the expense of mercuric acetate and necessitates removal of resulting mercurous acetate. The position of the mercury group in the compounds was proved by replacing the mercury with iodine and oxidizing the resulting product to 2-iodothymoquinone. The latter in turn was used to obtain 2-iodo-6-isonitrosothymoquinone.—A. WAYNE RUDDY and JOSEPH B. BURT. *Jour. A. Ph. A.*, 28 (1939), 286. (Z. M. C.)

Vegetable Gums of the Sterculia Group—Medicinal Compositions of. A granular product is formed, each granule of which comprises a body portion of gum such as gum sterculia in substantially homogeneous, uncompacted, angular form, a film of oleaginous water-repellent material such as a neutral mineral oil on the granules, and an exterior, slowly-soluble coating containing particles of the gum in finely divided form, the granules being stable in storage and the coating serving to retard hydration of the body of the granules.—BOYD P. WELIN, assignor to WELIN-SAFER CO. U. S. pat. 2,146,867, Feb. 14, 1939. (A. P.-C.)

Viburnitol, a New Crystalline Substance from Viburnum Tinus L. Viburnitol, extracted from *Viburnum tinus*, is a 1,2,3,4,5-cyclohexanepentol, isomeric with quercitol. It is the third known cyclohexanepentol, of which there are theoretically 16 stereochemical isomers, 4 optically inactive and 12 active.—H. HERISSEY and G. POIROT. *J. Pharm. chim.*, 26 (1937), 385-397; through *Chimie & Industrie*, 41 (1939) 113. (A. P.-C.)

Fixed Oils, Fats and Waxes

Animal and Vegetable Fats—Selective Oxidation of. A New Constant. The constant, called "oxida-

tion value," is defined as the amount of oxidation, expressed as grams of iodine per 100 Gm. of fat, which takes place at 60° C. in one hour when the fat is dissolved in an excess of a mixture of approximately normal sodium dichromate in glacial acetic acid (10 volumes) and carbon tetrachloride (2 volumes). Method: A sample of fat (whose size is in reverse ratio to the iodine value) is dissolved in 2 cc. of carbon tetrachloride; 10 cc. of the dichromate solution is added and the mixture kept at 60° C. for one hour. The mixture is diluted with a little water, 25 cc. of $N/2.5$ ferrous sulfate solution is added and the excess of ferrous iron is titrated with $N/10$ potassium permanganate solution using diphenylamine sulfate as indicator. A blank is conducted under the same conditions. The oxidation value is calculated on the assumption that 4 oxygen atoms per double bond are taken up, and 1 cc. $N/10$ sodium dichromate = 0.008 Gm. oxygen or 0.003175 Gm. iodine.—W. A. ALEXANDER. *Analyst*, 64 (1939), 157. (G. L. W.)

Animal Fats—Titer of Solid, and Their Mixtures. The titer of mixed animal fats was determined according to the procedures of Finkener, Shukov and Wolfbauer. The fusion curves of binary mixtures of fatty acids obtained from pork, horse, beef, mutton and goat fats have a single minimum or maximum, least well defined when Shukov's procedure is applied. The lowest values are given by Finkener's method.—A. KOSS. *Przemysl Chem.*, 22 (1938), 411-414; through *J. Soc. Chem. Ind.*, 58 (1939), 624. (E. G. V.)

Castor Oil. Antioxidants for organic compounds are listed in the order in which they prevent the oxidation of castor oil.—G. O. INMAN. *Ind. Eng. Chem.*, 31 (1939), 1103-1104. (E. G. V.)

Castor Oil—Transformation of, at High Temperature. Castor oil was heated in absence of oxygen at 240-275° and the distillate collected. The density and viscosity of the residue were minimum and the iodine value was maximum when 8-10% of the distillate had passed over, while the index of refraction and the saponification and acid values rose continuously. The solubility of the residue in ethyl alcohol falls as the water content of the distillate rises. The process is initially predominately one of cracking, changing after volatilization of 7-9% of the oil to one of polymerization and condensation.—K. K. PAPOK and K. I. KOGTEVA. *Maslob. Zhir. Delo*, 1 (1939), 10-14; through *J. Soc. Chem. Ind.*, 58 (1939), 513. (E. G. V.)

Chaulmoogric Acids—Unsaturated Esters of. By treating a mixture of the organic acids of chaulmoogra oil and phosphorus trichloride with unsaturated alcohols in an atmosphere of nitrogen, the corresponding unsaturated esters of the chaulmoogric acids. The crotyl, oleyl, cinnamyl, geranyl, citronellyl and linalyl esters were thus prepared. They are almost colorless, oily liquids with characteristic odors. They are better tolerated physiologically than the saturated or aromatic esters (ethyl or benzyl).—K. BÜRSCHKIES. *Ber. deut. chem. ges.*, 71 (1938), 233-236; through *Chimie & Industrie*, 41 (1939), 114. (A. P.-C.)

Cocklebur Oil—Physicochemical Investigation of. The fruit of the cocklebur (*Xanthium strumarium* L.) contains 38-40 (dry weight) of an oil of high I number and driability. It forms a thin, transparent, tough and lustrous film and should be of value in paints and varnishes.—N. MAKSIMOV. *Compt. rend. acad. sci. U. S. S. R.*, 20 (1938), 381-382 (in English); through *Chem. Abstr.*, 33 (1939), 2747. (F. J. S.)

Cod Liver Oils—Norwegian, Fishes of the Family Gadidae in Norway and America and. The vitamin A potency of the samples which were collected by

Kawai at Oslo and Avolvaer, Norway, in 1936, was for the most part significantly lower than that of samples of Japanese origin.—K. KAWAI, M. YOSHIDA and M. ISHII. *J. Pharm. Soc. Japan*, 58 (1938), 153-154; through *Chimie & Industrie*, 41 (1939), 527. (A. P.-C.)

Fats and Oils—Rancidity of. A review.—E. L. KRUGERS. *Dagbladet. Chem. Weekblad*, 36 (1939), 179-190; through *J. Soc. Chem. Ind.*, 58 (1939), 512. (E. G. V.)

Fats—Determination of Free Alkali in. The difference between the acid value of centrifuged and uncentrifuged fat corresponds with the free alkali content.—V. TIPIKIN. *Maslobojno Zhirovoe Delo*, 1 (1939), 18; through *J. Soc. Chem. Ind.*, 58 (1939), 512. (E. G. V.)

Fats—Natural, Studies on the Nature of Antioxygens Present in. IV. Proportions and Properties of Antioxygenic Compounds in Various Extracted Seed Cakes. The antioxygenic activities and other properties of concentrates prepared from extracted palm kernel, groundnut, soy bean, cottonseed and linseed meals have been examined by the procedures described in *J. Soc. Chem. Ind.*, 56 (1937), 23T. The yields of the concentrates of the seed meals were of the same order, but their antioxygenic activities differed considerably. Those of palm kernel and linseed meals were of very low antioxygenic power, those from groundnut and soy bean meals had pronounced, and that from cottonseed meal exceptionally pronounced antioxygenic activity. The activities of the concentrates bore no apparent relationship to the mean unsaturation of the respective seed fats, nor to the small, but definite, proportions of organic nitrogen which were always present. On the other hand it was evident that an antioxygenic compound of a basic nature was invariably present. The antioxygenic activity was suppressed after treatment of the concentrates with anhydrous hydrogen chloride, and partly restored on subsequent neutralization with sodium methoxide. The identity of the basic component concerned was not determinable, but there is some cause to believe that a basic oxygen, rather than a basic nitrogen, compound may be the factor responsible for retardation of atmospheric oxidation.—T. P. HILDITCH and S. PAUL. *J. Soc. Chem. Ind.*, 58 (1939), 21-24. (E. G. V.)

Hexadecenoic Acid in Soy Bean Oil—Occurrence and Structure of. Complete analysis of the mixed fatty acids from a large quantity (1.14 Kg.) of soy bean oil has shown that Δ^8 -hexadecenoic acid (accompanied by a little hexadecadienoic acid) is present to the extent of about 0.5%. This establishes that the hexadecenoic acid of the seed fat is identical with that present in the fats of animals and fishes, and also suggests that the values obtained in previous analyses of seed fats (on smaller quantities of total fatty acids) are probably somewhat higher than the true figure.—T. P. HILDITCH and H. JASPERSON. *J. Soc. Chem. Ind.*, 58 (1939), 187-189. (E. G. V.)

Insecticidal Oil—Emulsifiable. A process of producing a soluble phytonomic insecticidal oil comprises treating a mineral oil with sulfuric acid to form a solution in the oil of reaction products having characteristics of sulfonic acids, separating the sludge formed by the acid treatment from the oil solution, neutralizing the oil solution of reaction products with an alkali, and maintaining in solution in the oil without removal therefrom of a substantial portion of the neutralized reaction products as an emulsifying agent for the completed insecticidal oil. The retained portion of neutralized reaction products may comprise approximately from 0.4 to 10% of the oil.—Wm. H. HAMPTON and NORMAN N.

GAY, assigns to STANDARD OIL CO. OF CALIFORNIA. U. S. pat. 2,144,260, Jan. 17, 1939. (A. P.-C.)

Lecithin—Manufacture and Use of, in the Fat and Oil Industry. The manufacture, properties and uses of lecithin are reviewed.—J. EICHBERG. *Oil & Soap*, 16 (1939), 51-54; through *J. Soc. Chem. Ind.*, 58 (1939), 626. (E. G. V.)

Lipoid-Soluble Substances—Production of, Having Bactericidal Properties. High molecular weight alcohols obtained by reduction of oils of *Flacourtiaceae*, or the esters of the acids, are converted into acid phosphates, sulfates or borates.—O. STEFANOVIC. Brit. pat. 493,437; through *J. Soc. Chem. Ind.*, 58 (1939), 438. (E. G. V.)

Mineral Oil Deterioration. A description of refined apparatus and tests which have been carried out to obtain quantitative determinations with the Grignard reagents of ketones, esters and peroxides such as are found in oils.—A. G. ASSAF and E. K. GLADDING. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 164-166. (E. G. V.)

Mineral Oils and Vaseline—Determination of Insoluble Impurities in. The oil of vaseline is dissolved in light petroleum, the solution allowed to settle, the supernatant liquid poured off and the residue washed by decantation and weighed. Heavy particles in vaseline are detected by adding an equal volume of water, and boiling, when sand or other mineral impurities sink to the bottom of the container.—S. I. VOROBIEVA and Z. F. KIRIAKINA. *Zavod. Lab.*, 7 (1938), 1320-1321; through *J. Soc. Chem. Ind.*, 58 (1939), 457. (E. G. V.)

Oil of Malhado-Bounce—Analysis of. An analysis of Malhado-Bounce liver oil establishes this as three plus in both vitamin A and vitamin D potency, at 0.5% dilution. The female fish is used, 4 Kg. of liver producing 1350 cc. of oil.—MARINA CORREA LOPES. *Rev. assoc. brasil. farm.*, 19 (1938), 113. (E. S. G.)

Oil of Oiticica. A drying oil much used in paints and varnishes, expressed or extracted by solvents from seeds of *Licania rigida*. It contains a strong unsaturated acid which has been called licanic or cuepinic acid; has two forms, an *alpha* in the new oil, and *beta* from old oil. It has been given the formula $\text{CH}_3(\text{CH}_2)_3\text{CH}:\text{CH}:\text{CH}:\text{CH}:\text{CH}-(\text{CH}_2)_4\text{CO}(\text{CH}_2)\text{COOH}$. It possesses better drying qualities than linseed or tung oils.—ANTENOR MACHADO. *Rev. soc. brasil. quim.*, 7 (1938), 73. (E. S. G.)

Olive Oil—Oxidation of, Effectiveness of Colored Samples of Cellophane in Retarding the. A study has been made of the protective properties of twelve different colored samples of cellophane in relation to the acceleration by light of the oxidation of olive oil. It has been found that the following factors influence the protection afforded by a sample of cellophane under the conditions of the experiments: (1) the quantity of light, particularly ultraviolet, transmitted by the sample of cellophane; (2) the stability of the pigment (dye) in the sample of cellophane to the action of light. The samples showing the most protection were found to be deep red, orange, violet, grass green and lemon yellow. The remainder showed relatively low protection and it is noteworthy that they were all of a very lightly dyed or pigmented type. There is little doubt that the ultraviolet rays are mainly responsible for the accelerating action of light on the oxidation of olive oil. No marked accelerating properties could be associated with visible wave lengths.—H. L. G. BARTON and A. DAVIES. *J. Soc. Chem. Ind.*, 58 (1939), 189-193. (E. G. V.)

Olive Oil—Unusual Adulterant of. Quinoline-yellow was detected by its fluorescence in ultraviolet light.—J. PRITZKER and R. JUNGKUNZ. *Z. Untersuch.*

Lebensm., 77 (1939), 254-256; through *J. Soc. Chem. Ind.*, 58 (1939), 513. (E. G. V.)

Seed Fat of *Hodgsonia Capniocarpa*. The seed fat of *Hodgsonia capniocarpa* (*Cucurbitaceae*), a Malayan climbing plant, contains as component acids myristic 0.5, palmitic 36.1, stearic 9.5, arachidic 0.3, hexadecenoic 2.7, oleic 26.5 and linoleic 24.3%, by weight. The presence of linoleic acid in almost the same proportion as oleic acid caused the glyceride structure of this fat to be of special interest as compared with those of other fats containing the same mixture of acids, but in which linoleic acid is present in only minor proportions. The component glycerides were estimated to be approximately "oleo"—dipalmitins 33, "oleo"—palmitostearins 27, palmitid "oleins" 24 and tri-"oleins" 13% (molecular), and the fat thus differs from others of similar general fatty acid composition (in which linoleic acid is a minor component) on its content of tri-unsaturated glycerides. These are probably mixed oleo-linoleins, and the specific mixture of glycerides encountered in this fat is evidently the result of the combination of four major component acids (palmitic, stearic, oleic and linoleic) into mixed triglycerides, whereas in the former cases studied only the three acids, palmitic, stearic and oleic, have been major component acids of the fats in question.—T. P. HILDITCH, M. L. MEARA and W. H. PEDELTY. *J. Soc. Chem. Ind.*, 58 (1939), 26-29. (E. G. V.)

Seed Fats—Fatty Acids and Glycerides of Solid VII. Dika Fat. The component acids and glycerides of dika fat (the seed fat of *Iringia gabonensis* (*Simarubaceae*) from Sierra Leone) have been studied by the procedure employed in previous parts of this series. The fatty acids included *n*-decoic 3.1, lauric 58.6, myristic 33.4, palmitic 2.0, stearic 1.1 and oleic 1.8% by weight; dilauromyristin was the chief component glyceride (about 65%), with subordinate amounts of other mixed glycerides, especially laurodimyristin. Comparison of the present results with those of other workers shows that there is evidently more than one variety of *I. gabonensis*, seed fats of this species having been observed to contain in the present instance lauric acid, and in other instances myristic acid, as the main component acid (60-70% of the mixed fatty acids in each case). Again the seed fats of *I. Barteri* (Nigeria) and *I. Olivieri* (Cochin China) appear to be closely similar, but to differ from either of the *I. gabonensis* fats which have been examined, since their component acids include about 40% of lauric acid and 55% of myristic acids. The unsaturated (oleic) acid content also varies in different instances from about 2% to about 10% of the total fatty acids.—W. J. BUSHELL and T. P. HILDITCH. *J. Soc. Chem. Ind.*, 58 (1939), 24-26. (E. G. V.)

Stearic Acid—Determination of, in Fats. By studying the behavior of mixtures of stearic and other fatty acids of known composition, tables have been constructed from which the values obtained by Hehner and Mitchell's method may be corrected. Using a standard procedure, the error of the determination is decreased to 1%. Other difficultly-soluble acids, such as arachidonic or behenic acid, must be separately determined and taken into account.—A. HEIDUSCHKA and H. BOHME. *Z. Unters. Lebensm.*, 77 (1939), 33-38; through *J. Soc. Chem. Ind.*, 58 (1939), 398. (E. G. V.)

Vitamin Action of Unsaturated Fatty Acids on the Skin. A review with twelve references.—H. RUF. *Deut. Apoth. Ztg.* 54 (1939), 872-873. (H. M. B.)

Watermelon Seed Oil (Cuban Queen Variety)—Characteristics and Composition of. A study of watermelon seed oil (Cuban Queen Variety) showed for the air-dried seed the following percentage composition: moisture 8.84; water-soluble ash 0.05;

water-insoluble ash 2.31; protein (N 6.25) 17.31; fat (ether extract) 26.52; undetermined 44.97. The chemical and physical characteristics of the oil were: specific gravity at 25°/25° 0.9197; index of refraction at 20° 1.4669; acid value 0.42; saponification value 197.4; iodine number (Hanus) 133.8; unsaponifiable matter 1.19%; unsaturated acids % (corr.) 78.96; saturated acids % (corr.) 14.56; iodine number of unsaturated acids 166.6; Reichert-Meissl number 0.29; Polenske number 0.72; acetyl value 7.5 and Hehner value (corrected for unsaponifiable matter) 89.2. A study of the glycerides gave the following percentages of fatty acids: palmitic acid 8.84, stearic acid 5.61; arachidic acid 0.72; oleic acid 13.03 and linoleic acid 68.38%.—A. G. NOLTE and H. W. VON LOESECKE. *J. Am. Chem. Soc.*, 61 (1939), 889. (E. B. S.)

Whale Liver Oil—Chromatographic Fractionation of. The unsaponifiable fraction of whale liver oil, after removal of sterols by freezing, was submitted to chromatographic separation through a column of calcium hydroxide, painting with antimony trichloride, and subsequent elution of four lengths of column with petroleum ether-methyl alcohol as solvent. Examination of the fractions showed that the biological activity was uniformly much lower than would have been expected from the antimony trichloride reaction, but greater than shown by the ultraviolet absorption. There was no evidence of the substance absorbing at 344 μ , associated by Heilbron and co-workers with the vitamin A activity of fresh-water fish livers. Absorption for the antimony trichloride reaction was greater at 570 μ than at 610 μ , and the ultraviolet field showed a maximum at 290 μ . These facts suggest the presence of a hitherto unknown substance possessing the biological activity of vitamin A.—H. WILLSTAEDT and H. B. JENSEN. *Nature*, 143 (1939), 474; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 771. (F. J. S.)

Unclassified

Acridine Derivatives as Antimalarials. IV. Certain sulfonamidophenylsulfonamido-5-dialkylamino-alkylaminoacridines and 5-acridylsulfamylsulfanilamides have been prepared and described. Unlike other acridine derivatives they are comparatively tasteless, but possess, particularly in neutral solutions, the characteristic fluorescence of the 5-aminoacridines.—S. J. DAS-GUPTA. *J. Indian Chem. Soc.*, 16 (1939), 364. (F. J. S.)

Alkylchlorophenols. Details are given of the production of compounds (suitable for combating bacteria such as *Staphylococcus aureus*) such as 4-*amyl*-2-chlorophenol and 4-*butyl*-2-chlorophenol. In one method an acyl chloride or other acyl halide, containing the same number of carbon atoms as the alkyl group which it is desired to substitute in the chlorophenol, is caused to react upon an *o*-chlorophenol with the formation of the corresponding ester of the chlorophenol. By suitable means, as by treatment with anhydrous aluminum chloride, a rearrangement of such ester is effected with the formation of a chlorophenyl alkyl ketone in which the hydrocarbon radical contains one CH₂ group less than the hydrocarbon-substituting group in the final product. The ketone is then reduced to form the desired hydrocarbon-substituted chlorophenol. Or a similar sequence of reaction may be carried out, beginning with phenol and an acyl chloride, resulting in the production of a phenol having a hydrocarbon radical substituted in the 4-position, chlorine being introduced into the *ortho*-position in this compound, by treatment with sulfur chloride in carbon tetrachloride solution or by other suitable chlorinating agent.—EMIL KLARMANN, assignor to LEHN & FINK PRODUCTS CORP. U. S. pat. 2,139,550, Dec. 6, 1938. (A. P.-C.)

Amber—Constituents of. The ether extract of 200 Gm. amber was shaken with 5% potassium hydroxide, acidified with hydrochloric acid and extracted again with ether, which gave 15.7 Gm. dark oily substance. When this was distilled under reduced pressure it gave a compound, $C_{20}H_{40}O_2$, melting at 74–74.5°, which did not depress the melting point of arachidic acid, melting at 74–75°. The ether solution containing a neutral substance gave a compound melting at 105–114° (yield 15 Gm.). The filtrate gave a nonsaponifiable compound, melting at 108–114° (yield 44.4 Gm.). Acetylation of the above compound gave epicoprosterol acetate (I), $C_{29}H_{50}O_2$, melting at 86–86.5°, $[\alpha]_D^{25}$ 48.08° (in chloroform). Hydrolysis of I gave epicoprosterol (II), $C_{27}H_{48}O_2$, melting at 112–114°, $[\alpha]_D^{25}$ 32.20° (in chloroform). Oxidation of II with chromic oxide gave coprostanone (III), $C_{27}H_{46}O$, melting at 61–62°; semicarbazone, melting at 187–188°. II and phosphorus pentachloride gave the corresponding chloride, which on dehalogenation with sodium gave coprostanone, $C_{27}H_{48}$, melting at 70–71°. III, according to Ruzicka, gave coprosterol while II, according to Windaus gave coprosterol.—T. ISIGURO and MATAO WATANABE. *J. Pharm. Soc. Japan*, 58 (1938), 790–797; through *Chem. Abstr.*, 33 (1939), 2529. (E. G. V.)

***p*-Aminophenylsulfamide—Water-Soluble Derivatives of.** Solutions of sulfanilamide of concentrations higher than 1% cannot be prepared without the use of special organic solvents (such as glycol, propylene glycol) which are very toxic and dangerous; but as the active antistreptococcal radical of sulfanilamide is SO_2NH_2 , it is sufficient to use water-soluble derivatives of sulfanilamide, some of which are colored and others colorless. Their action is inversely proportional to their molecular weight; e. g., a 2.5% solution of soluble Protosil, having a molecular weight of 588.5, is equivalent to a 0.73% of *p*-aminophenylsulfamide with a molecular weight of 172.2. Among these derivatives may be mentioned soluseptazine, which is disodium *p*- γ -phenylpropylaminophenylsulfamide- α - γ -disulfonate, a 6% solution of which is equivalent to a 2.08% solution of *p*-aminophenylsulfamide.—Q. MINGOJA. *Ann. soc. pharm. chim. São Paulo*, 3 (1938), 136–151; through *Chimie & Industrie*, 41 (1939), 320. (A. P.-C.)

Anesthesine—Reaction of Formol with. Formol reacts with anesthesine (ethyl *para*-aminobenzoate) in very slightly acid medium to yield a condensation product. Anesthesine is soluble in cold diluted hydrochloric acid; while the addition product is insoluble in the cold but dissolves on heating the acid mixture. On cooling the solution remains clear because the addition product is hydrolyzed under these conditions. Molecular weight determinations indicate that one molecule of the aldehyde unites with two molecules of the amine.—H. LÉCOQ. *Bull. soc. chim. Belg.*; through *J. pharm. Belg.*, 21 (1939), 402. (S. W. G.)

Antimonial Antimalarials. In an attempt to obtain compounds of enhanced therapeutic activity and low toxicity for the treatment of kala-azar, three types of compounds have been prepared: aryl stibonic acids mainly substituted in the *p*-position (I), derivatives of diphenyldistibonic acid (II), derivatives of substituted thioureas in which one substituent is an aryl stibonic acid and the other a phenyl group substituted in the *p*-position by groups such as $COOH$, SO_2H , AsO_2H_2 , OH , capable of forming salts with alkalis or alkylamines (III). The compounds of greatest therapeutic activity were those of type III.—G. M. DYSON. *Rec. trav. chim.*, 57 (1938), 1016; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 295. (S. W. G.)

Antispasmodics. III. Forty-six secondary and tertiary amines are described. Their preparation,

certain properties and antispasmodic activity are given. While methyl-di- β -cyclohexylethylamine has antispasmodic activity, the corresponding methyl-di-*n*-octylamine proved to be very weak. Amyl-di- β -cyclohexylethyl-, methyl-di- β -4-methylcyclohexylethyl-, ethyl-di- β -phenylethyl-, propyl-di- β -phenylethyl-, methyl-di- β -3-methylcyclohexylethyl-, ethyl- β -cyclohexylethyl- β' -cyclohexylmethyl- and ethyl- β -cyclohexylethyl- β' -phenylethylamines, *N,N'*-dimethyl-*N,N'*-di- β -cyclohexylethylethylenediamine and *N,N'*-dimethyl-*N,N'*-di- β -cyclohexylethyltrimethyl-ethylenediamine were found to be active antispasmodics.—F. F. BLICKE and F. B. ZIENTY. *J. Am. Chem. Soc.*, 61 (1939), 771. (E. B. S.)

Antispasmodics. IV. A number of mixed tertiary amines of the general formula CH_3NRR' in which R represents cyclohexylethyl and R' an alkyl, cycloalkylalkyl or arylalkyl group are described. A table is given showing antispasmodic activity and certain generalizations are given.—F. F. BLICKE and F. B. ZIENTY. *J. Am. Chem. Soc.*, 61 (1939), 774. (E. B. S.)

Aristol—A New Iodo-Bismuth Derivative of. The compound is prepared by treating freshly prepared aristol solution with bismuth iodide or oxyiodide. It is a brick red powder, insoluble in water, glycerol, alcohol, ether and fats. Its chemical composition corresponds to the formula $Aristol + BiI$ where the BiI group is combined through an oxygen atom, assuming for aristol the quinhydrone formula. Clinical experiments showed it to be an excellent antiseptic and capable of numerous therapeutic applications on account of its mild action and absence of caustic properties.—W. POPLAWSKI. *Arch. Chem. Farm. (Varsovie)*, 3 (1937), 234–237; through *Chimie & Industrie*, 41 (1939), 311. (A. P.-C.)

Arsenic Compounds—Organic Therapeutic. A relatively stable, non-toxic, neutral, water-soluble therapeutic product is obtained by adding sodium formaldehyde sulfoxylate to a solution of the glucoside of arspenamine in an aqueous solution of glucose and effecting precipitation, as with alcohol. Various details of procedure are described.—FRANK L. PYMAN, BERTRAM GARFORTH and LEONARD ANDERSON, assignors to BOOT'S PURE DRUG CO. LTD. U. S. pat. 2,140,717, Dec. 20, 1938. (A. P.-C.)

Ascorbic and Isoascorbic Acids—Compounds of, with Quinine and Quinidine. Molecular compounds of these components, suitable for injection in aqueous solution, are prepared by reaction together of the constituents (suitably in an atmosphere of nitrogen).—JOSEF EISENBRAND and MAX SIENZ, assignors to WINTHROP CHEMICAL Co. U. S. pat. 2,140,989, Dec. 20, 1938. (A. P.-C.)

Benzene Derivatives—Curative and Endotoxic Action of Certain Unsulfured, in Experimental Gonococcal and Meningococcal Infections. Certain unsulfured benzene derivatives, and more particularly hydroquinone, its acetyl derivative and 4,4-dihydroxyazobenzene, exert a curative action in experimental gonococcal and meningococcal infections. They also possess endotoxic properties. The hypothesis according to which their therapeutic activity would be due to their conversion into derivatives having a quinone structure which destroy either the organisms or their endotoxins, are not in contradiction with the experimental results.—C. LEVADITI, A. GIRARD and A. VAISMAN. *Compt. rend. soc. biol.*, 128 (1938), 305–307; through *Chimie & Industrie*, 41 (1938), 116. (A. P.-C.)

Benzoylbenzoic Acids—Local Anesthetics Derived from. The diethylaminoethyl esters of the three isomeric benzoylbenzoic acids have been ex-

aminated for local anesthetic activity and for toxicity. In each case the esters were prepared by interaction of the benzoylbenzoic chloride (prepared from benzoylbenzoic acid and thionyl chloride) and diethylaminoethyl alcohol in hot benzene solution. The hydrochlorides of diethylaminoethyl *m*- and *p*-benzoylbenzoates had no appreciable anesthetic activity. Diethylaminoethyl *o*-benzoylbenzoate hydrochloride was obtained in a lactone form, melting over the range 95° to 130° C. and in a ketonic form, m. p. 137° to 138° C., the lactone form having marked anesthetic action but being very toxic.—B. SAMDAHL and T. CHRISTIANSEN. *Bull. soc. chim.*, 5 (1938), 1573; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 296. (S. W. G.)

Camphorsulfonate of *p*-Aminobenzenesulfonamide. By treating camphorsulfonic acid with *p*-aminobenzenesulfonamide (suitably in water or methanol or ethanol), a crystalline product that melts at about 180° to 182° C. is obtained of ready solubility and highly efficient in the treatment of infections caused by cocci.—JOSEPH EBERT, assignor to FARASTAN Co. U. S. pat. 2,143,829, Jan. 10, 1939. (A. P.-C.)

Cinnamamides. By reaction together of suitable cinnamoyl chlorides and diamines, local anesthetic compounds are produced, such as *N*- α -ethylcinnamoyl-*N'*-diethylethylenediamine hydrochloride, *N*- α -methylcinnamoyl-*N'*-diethylethylenediamine hydrochloride, and *N*- α -amylcinnamoyl-*N'*-diethylethylenediamine hydrochloride, or higher. Details of the preparation of these compounds are given.—WM. A. LOTT, assignor to E. R. SQUIBB & SONS. U. S. pat. 2,139,687, Dec. 13, 1938. (A. P.-C.)

Cyclohexylammonium Mandelate. This compound melts about 208° C. and is a urinary antiseptic. It is made by reaction of cyclohexylamine with mandelic acid in alcohol or water.—ELMER H. STUART, assignor to ELI LILLY AND Co. U. S. pat. 2,140,461, Dec. 13, 1938. (A. P.-C.)

Dehydrogenation—Studies in. IV. In the present communication the syntheses of 7-methyl- and 7-ethyl-1:2:3:4-tetrahydronaphthalene-2:2-spirocyclopentane have been described and the selenium dehydrogenation of these two spiro hydrocarbons has been studied.—SURESH CHANDRA SEN-GUPTA. *J. Indian Chem. Soc.*, 16 (1939), 349. (F. J. S.)

Dialkylaminophosphorfluorides. These are prepared by causing dialkylaminophosphoric compounds containing at least one halogen atom replaceable by fluorine to react with compounds (potassium fluoride, antimony trifluoride) containing exchangeable fluorine, if necessary with heating and preferably in the presence of a solvent. Examples are given of the preparation of diethylaminophosphoroxo-, diethylaminophosphorsulfo- and diethylaminophosphordi-fluoride. The products are used as insecticides.—GERHARD SCHRADER and OTTO BAYER, assignors to WINTHROP CHEMICAL Co. U. S. pat. 2,146,356, Feb. 7, 1939. (A. P.-C.)

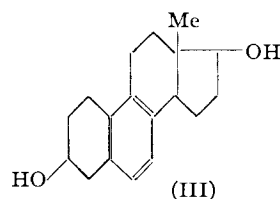
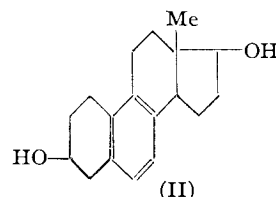
Di(aminoarylsulfon)amides. Therapeutic compounds of relatively low toxicity and suitable for combating streptococci, gonococci and similar bacteria, having the general formula $\text{RSO}_2(\text{R}'\text{SO}_2)\text{NX}$ in which R is an aminoaryl radical, R' is a mono-nuclear aryl radical and X is hydrogen, a metal, an alkyl radical or an aryl radical, are obtained in good yields of high purity by treating an acetylaminoarylsulfonyl chloride with ammonia or with an acetyl aminoarylsulfonyl chloride and hydrolyzing the acetylamino group. Details are given of the production of a number of such compounds including several sulfanilamide derivatives.—ELMORE H. NORRIS, assignor to CALCO CHEMICAL Co. U. S. pat. 2,133,787, Oct. 18, 1938. (A. P.-C.)

Dihalo α -(*p*-Hydroxyphenyl)- α -Aminoacetic Acid Hydrohalides. Therapeutic compounds useful in counteracting abnormally increased basal metabolism such as occurs in Basedow's disease are produced by treating α -(*p*-hydroxyphenyl)- α -aminoacetic acid with such a quantity of a halogenating agent that 2 atoms of halogen are introduced into the phenyl radical. Several examples with details are given.—OTTO DALMER and JOHN NIEMANN, assignors to MERCK & Co. U. S. pat. 2,145,249, Jan. 31, 1939. (A. P.-C.)

2,4-Dioxo-3,3-Dialkyl-6-Methyltetrahydro-pyridines. A process for the manufacture of a compound of the formula $\text{NH.CO.CR}''\text{.CO.CH:CH}_2$

where R' and R'' are allyl, allyl substituted in the β -position or propyl radicals comprises introducing two such alkyl radicals in the 3-position of 3,4-dihydro-6-methyl-2,4-dioxopyran and then treating the resulting 3,3-dialkyl derivative with ammonia. Production of the 3,3-dialkyl and 3,3-dipropyl compounds is described, and these compounds have soporific properties.—OTTO SCHNIDER, assignor to HOFFMANN-LAROCHE AND Co., Inc. U. S. pat. 2,137,192, Nov. 15, 1938. (A. P.-C.)

Equilenin—Hydrogenation of. The hydrogenation of equilenin (I) or of α -dihydroxyequilenin with excess of sodium in boiling amyl alcohol or ethyl alcohol gives a neutral product from which II, melting at 166–168°, $[\alpha]_D -16^\circ$, and III, melting at 191–193°, $[\alpha]_D 68^\circ$, were isolated as



as diacetates, melting at 117–118° and 128–129.5°, respectively, by chromatographic absorption on Brockmann aluminum oxide and by elution with a mixture of ether and pentane. Hydrolysis of the diacetates gave II and III. Their absorption spectra showed a maximum at about 2700 Å. III was probably identical with the product melting at 181°, of Ruzicka, Muller and Morgeli and II with that melting at 166.5° (acetate, melting at 115°) obtained by hydrogenation of I with platinum oxide in acid alcoholic medium. The hydrogenation of β -dihydroxyequilenin with sodium in ethyl alcohol gave a diacetate of the compound $\text{C}_{18}\text{H}_{22}\text{O}_2\text{Ac}_2$, melting at 171–173°, $[\alpha]_D -49^\circ$. By hydrolysis of the mother liquors there was obtained a second diol, $\text{C}_{18}\text{H}_{24}\text{O}_2$, melting at 181–183°, $[\alpha]_D 31^\circ$; diacetate, melting at 90–1.5°. II and III given subcutaneously to mice in 20- γ doses had no estrogenic action.—K. DAVID. *Acta Brevia Neerland. Physiol. Pharmacol. Microbiol.*, 8 (1938), 211–214; through *Chem. Abstr.*, 33 (1939), 2528. (F. J. S.)

Glycerides—Preparation of Partial. Oils are heated at 280° for 15 minutes with glycerol and 0.1% of lead oxide, to yield diglycerides.—R. M. ERASOVA. *Prom. Org. Chim.*, 6 (1939), 151–153; through *J. Soc. Chem. Ind.*, 58 (1939), 517. (E. G. V.)

Glycerin from Petroleum. The production of glycerin synthetically by the Shell Development Company in America may be expected in time to reduce the market price of glycerin. Although chemists have long been familiar with the synthesis of glycerin in poor yield by hydrolysis of 1,2,3 trichloropropane, it is only recently that the complete synthesis of glycerin from readily accessible materials at an economic cost has been worked out. The processes used are covered by patents. The starting material is propylene, which is readily obtained by the cracking of petroleum at suitably high temperatures and pressures. On chlorination at temperatures above 200° C. propylene forms allyl chloride with a yield of 85 to 90%. Allyl chloride is then hydrolyzed to allyl alcohol, which reacts with hypochlorous acid to give the corresponding chlorhydrin. On treatment with lime the chlorhydrin first forms an epoxide which later undergoes hydrolysis to glycerin.—ANON. *Pharm. J.*, 142 (1939), 590. (W. B. B.)

Hexahydrobenzylbarbituric Acids. A study of methyl, ethyl, propyl, isobutyl, isoamyl hexahydrobenzylbarbituric acids and their salts, showed that the sodium salt of hexahydrobenzylethylbarbituric acid produced the most powerful soporific effect (as compared with medinal), without causing tetanus like the 5,5-benzylbarbituric acids.—M. M. KATZ-NELSON and D. A. BRODSKY. *Compt. rend. acad. sci. U. R. S. S.*, 10 (1937), 477-481; through *Chimie & Industrie*, 41 (1939), 112. (A. P.-C.)

Hydrogenation. Hydrogenation as applied to hardening of vegetable oils, reduction of glycerides to higher alcohols, reduction of carbon monoxide to hydrocarbons or to alcohols, and treatment of petroleum is reviewed. Methods for the commercial preparation of hydrogen and its purification are outlined.—T. C. WHITNER. *Oil & Soap*, 16 (1939), 39-44; through *J. Soc. Chem. Ind.*, 58 (1939), 463. (E. G. V.)

Hydroxy- and Methoxy-Acrindines. The following hydroxy- and methoxy-acrindines have been prepared with a view to their examination for bactericidal activity: 1-methoxy-, 2-methoxy-, 2-methoxy-9:10-dihydro-, 2-hydroxy-9:10-dihydro-3-methoxy-, 3-methoxy-9:10-dihydro-, 4-methoxy- and 4-hydroxyacrindines, 1:4-dimethoxy-, 4:5-dimethoxy-, and 4:5-dimethoxy-9:10-dihydroacrindines. The nomenclature is based on the German numbering of the acridine nucleus, with the nitrogen atom having the number 10. During reduction of 4-methoxy-acridine with sodium and amyl alcohol, demethylation occurred giving 4-hydroxyacridine. Demethylation also occurred during cyclization of 4-methoxydiphenylamine-2'-carboxylic acid using either sulfuric acid or phosphorus pentachloride. In attempting cyclization of 2:5-dimethoxy-diphenylamine-2'-carboxylic acid using phosphorus pentachloride, a chlorinated dimethoxyacridine resulted, the required non-chlorinated compound being obtained when phosphorus trichloride was used.—S. M. SHERLIN, G. I. BRAZ and A. Y. YAKUBOVICH. *J. gen. Chem. Moscow*, 8 (1938), 884; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 283. (S. W. G.)

Hydroxy Ketones and Derivatives—Polynuclear Cyclic. Hydroxy ketones of the 10,13-dimethylpolyhydrocyclopentanophenanthrene series are made by reducing the 17-keto group of a 10,13-dimethylpolyhydrocyclopentanophenanthrene-3,17-dione to the carbinol group. Numerous examples with details are given. The hydroxy ketones and their esters obtained have powerful effects on the combs of capons and also on the seminal vesicle.—LEOPOLD RUZICKA and ALBERT WETTSTEIN, assignors to SOCIÉTÉ POUR L'INDUSTRIE CHIMIQUES À BALE. U. S. 2,143,453, Jan. 10, 1939. (A. P.-C.)

Hypnotics. 1,2-Dihalo- Δ^3 -cycloalkenes having 5 or 6 carbon atoms in the ring are prepared by treating the corresponding 1,2,3-trihalocycloalkene with a dehydrohalogenating agent such as sodium or potassium hydroxide or quinoline, the products being useful as intermediates in the preparation of hypnotics.—WALTER G. CHRISTIANSEN, assignor to E. R. SQUIBB AND SONS. U. S. pat. 2,146,720, Feb. 14, 1939. (A. P.-C.)

Inositolphosphoric Compounds. IV. Bismuth Inositolphosphate. A solution of 4.8 Gm. of sodium inositolphosphate in 48 cc. of 5% nitric acid is mixed with a solution of 6 Gm. of bismuth nitrate in 60 cc. of 5% nitric acid; a white precipitate of bismuth inositolphosphate is obtained, which is filtered, washed with 5% nitric acid, water, alcohol and ether, and dried at 40° C. The yield is 6 Gm. To prepare larger quantities, calcium or magnesium inositolphosphate can be used instead of the sodium salt. The product is a white amorphous powder, insoluble in water, organic solvents and dilute nitric acid, but soluble in hydrochloric acid.—S. OTOLSKI. *Arch. Chem. Farm. (Varsovie)*, 3 (1937), 231-234; through *Chimie & Industrie*, 41 (1939), 311. (A. P.-C.)

Inositolphosphoric Compounds. V. Copper inositolphosphate can be prepared by mixing a 5% aqueous solution of copper acetate with a solution of calcium or magnesium inositolphosphate in 5% acetic acid. It is a pale blue powder, insoluble in the ordinary solvents. It seems to be a salt containing 4 copper atoms in the molecule. It forms a water-soluble addition compound with ethylene diamine.—S. OTOLSKI. *Arch. Chem. Farm. (Varsovie)*, 3 (1937), 255-257; through *Chimie & Industrie*, 41 (1939), 311. (A. P.-C.)

Inositolphosphoric Compounds. VI. Manganese inositolphosphate is prepared by mixing an aqueous solution of sodium inositolphosphate (slightly acidified with sulfuric acid) with a solution of manganese sulfate, heating the mixture, and adding ammonia drop by drop to slight alkaline reaction; the salt precipitates as a pink powder. It is a hexamanganic salt, insoluble in water.—S. OTOLSKI. *Arch. Chem. Farm. (Varsovie)*, 3 (1937), 258-259; through *Chimie & Industrie*, 41 (1939), 311. (A. P.-C.)

Mandelic Acid—Alkanolamine Salts of. Compounds suitable for oral administration in the treatment of infections of the urinary system comprise ethanalamine mandelate (a stable, white, nonhygroscopic compound that melts at about 107° C.) and other alkanolamine salts of mandelic acid in which the alkanol group contains 2 to 9 carbon atoms (suitably administered conjointly with ammonium chloride in enteric-coated tablets).—HORACE A. SHONLE, assignor to ELI LILLY AND Co. U. S. pat. 2,144,552, Jan. 17, 1939. (A. P.-C.)

Mercurated 3-Nitro-4-Alkylphenols. These compounds, in which the alkyl group contains at least three carbon atoms, are prepared by converting the corresponding alkylbenzene into a 2,4-dinitro derivative, forming a 2-nitro-4-amino derivative, hydroxylating and mercurating.—WALTER G. CHRISTIANSEN and EUGENE MONESS, assignors to E. R. SQUIBB & SONS. U. S. pat. 2,140,509, Dec. 20, 1938. (A. P.-C.)

Mercurialkylphenol Derivatives—Germicidal. Details are given for the production of a large number of such compounds.—WALTER CHRISTIANSEN and EUGENE MONESS, assignors to E. R. SQUIBB AND SONS. U. S. pat. 2,137,236, Nov. 22, 1938. (A. P.-C.)

Mercury Malates—Aromatic. 2,139,711—Germicidal compounds of relatively low toxicity are obtained by a process in which phenylmercuric

hydroxide is heated to a reaction temperature with malic acid in a substantially inert liquid such as water. The products are suitable for use in soaps, mouth washes, tooth pastes, etc. Tolymercury and naphthylmercury hydroxides form generally similar products. 2,139,712—This relates to aromatic mercury gluconates of generally similar production and properties.—CARL N. ANDERSEN, assignor to LEVER BROS. Co. U. S. pats. 2,139,711 and 2,139,712, Dec. 13, 1938. (A. P.-C.)

6-Methoxy-8-Aminoquinoline and Its Derivatives Plasmochin and Plasmocide—Contribution to the Knowledge of. Pure 6-methoxy-8-aminoquinoline melts at 52°. The lower melting points previously reported are due to the presence of such impurities as 6-methoxyquinoline. Plasmochin (6-methoxy-8-diethylamino-isopentylaminoquinoline) picrate was obtained from hot ethyl acetate solutions of plasmochin and picric acid. The melting point varies from 128–137° according to the purity. Plasmocide (6-methoxy-8-diethylamino-propylaminoquinoline) gives a dipicrate insoluble in ethyl acetate melting sharply at 190°. The solutions of plasmochin in mineral acids give a blue-violet color reaction with iodic acid. Plasmocide under the same conditions gives a red-violet color. Other new derivatives of 6-methoxyquinoline prepared are the 8-benzoylamino, m. p. 157°; 8-benzylamino, m. p. 65°; 8-*p*-nitrobenzylamino, m. p. 135°; 8-diphenylmethylamino, m. p. 160°; and 8-cinnamylamino, m. p. 96°.—ALEXIS TCHITCHIBABINE and CHARLES HOFFMANN. *Compt. rend.*, 208 (1939), 525. (G. W. H.)

β -Methylcholine Halides and Their Acyl Derivatives—Homologs of. A process for the production of β -alkylcholine chlorides wherein the alkyl radicals contain from 2 to 7 carbon atoms comprises treating the corresponding chlorhydrin with dimethylamine to obtain the corresponding amino-alkanol, converting the amino-alkanol to its methiodide and treating the iodide with silver chloride to obtain the corresponding chloride. Examples are given of the production of certain of these compounds exhibiting a "muscarine" action and of other exhibiting the typical so-called "nicotinic" action.—RANDOLPH T. MAJOR and HOWARD T. BONNETT, assignors to MERCK & Co. U. S. pat. 2,135,521, Nov. 8, 1938. (A. P.-C.)

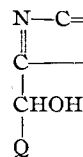
3-Methylisoquinolines Possessing Spasmodic Activity—Synthesis of. The method is based on the possibility of converting the nitrosites of propenyl phenol ethers by acetylation into α -aryl- β -nitropropanol acetates. By electrolytic reduction of the latter and migration of the acetyl α -aryl- β -acetaminopropanols are obtained which are readily deacetylated in acid solution to α -aryl- β -aminopropanols. The latter are converted by alkalization and addition of acid chlorides in benzene solution, into the corresponding α -aryl- β -acylamino-propanols from which 3-methylisoquinolines are obtained by intramolecular dehydration by means of phosphorus oxychloride.—V. BRUCKNER and G. V. PODOR. *Ber. deut. chem. Ges.*, 71 (1938), 541–549; through *Chimie & Industrie*, 40 (1938), 942. (A. P.-C.)

Nearsphenamine and Sulfarsphenamine—Precipitation of. Substantially dry isopropanol is used for precipitating these compounds from their aqueous solutions and the precipitate is dried in a vacuum over anhydrous calcium sulfate.—WALTER G. CHRISTIANSEN and ALFRED E. JURIST, assignors to E. R. SQUIBB & SONS. U. S. pat. 2,137,237, Nov. 22, 1938. (A. P.-C.)

Ninhydrin—Preparation of, from 2-Nitridanedione-(1,3). Bromonitroindanedione is heated with nitrobenzene in which it dissolves readily; the mixture is brought to boiling; nitrous vapors are given off; on cooling there separate out crystals of indanetrione, partly as white hydrate and partly as

red anhydride. On recrystallization from a small quantity of water pure white ninhydrin is obtained. The yield is 40% of theory.—G. WANAG and A. LODE. *Ber. deut. chem. Ges.*, 71 (1938), 1267–1272; through *Chimie & Industrie*, 41 (1939), 119. (A. P.-C.)

Niquidine—Report on the Constitution of. From previous studies of modified cinchona alkaloids G. and H. had suggested a formula for the two geometrical isomerides, niquidine and isoniquidine, formed in the dehalogenation of halogenodihydroquinidines by silver nitrate. Further evidence for this formula is now provided by a study of the oxidation products of "niquidine" (the mixture of the two geometrical isomerides) and dihydroniquidine ($\text{CH}_3\text{CH}:\text{CH} \rightarrow \text{CH}_3\text{CH}_2\text{CH}_2$). On oxidation with potassium permanganate "niquidine" yields acetaldehyde and two acids, $\text{C}_7\text{H}_{13}\text{O}_4\text{N}_2$ and $\text{C}_7\text{H}_{14}\text{O}_4\text{N}_2$. The latter may be represented by



(Q = 6-Methoxyquinolyl substituted in position 4) and the former by the same formula with the pyridyl ring reduced to piperidyl. Vigorous oxidation of dihydroniquidine with hydrogen peroxide leads to scission of the molecule at the secondary carbinol group, with the formation of quinic acid and its amine oxide, and from the 4-propylpiperidine ring, β -propylglutaric acid and ammonia. A similar decomposition ensues when dihydroquinidine is oxidized by hydrogen peroxide, the products in this instance being quinic acid and its amine oxide, with ω -ethylmethanetriacetic acid [β -(α -(carboxypropyl) glutaric acid)] and ammonia as the degradation products of the quinuclidine nucleus of the alkaloid.—E. M. GIBBS and T. A. HENRY. *J. Chem. Soc.*, (1939), 1294–1299. (W. T. S.)

***m*-Nitraniline—Sweetness of.** The author discusses the sweetness of various compounds including, sugars, dulcine, saccharine, etc., and gives a comparative table. He prepared several derivatives of *m*-nitraniline of which the following are listed together with a factor indicating their sweetness (cane sugar = 1): *m*-nitraniline (40); 4-nitro-2-aminophenol (200); 4-nitro-2-aminoanisole (330); 4-nitro-2-aminophenetol (1400); 4-nitro-2-aminophenyl-*n*-propylether (3300).—P. W. M. VAN DER WEYDEN. *Dissertation, (Leiden)*, (1939); through *Pharm. Weekblad*, 76 (1939), 172. (E. H. W.)

Pentahydroxyfuchsonone—Etherified Derivatives of. A process for preparing ethers of pentahydroxyfuchsonone comprises oxidizing leuco triphenylmethane derivatives of the general formula $\text{CH}[\text{C}_6\text{X}_3(\text{OR})_2]_3$ in which formula X represents hydrogen, alkyl, halogen or sulfo, the phenolic oxygen atoms being in mutual *ortho*-position on the benzene rings and in which R may be a hydrogen or an aliphatic radical, at least one of the phenolic oxygen atoms being linked to an aliphatic radical. The oxidation of the leuco derivative may be effected simultaneously with its production, and an organic nitrite such as amyl nitrite or an organic peroxide such as benzoyl peroxide (suitably in a solvent such as ethyl acetate) may be used as the oxidizing agent. The products may be used as therapeutic and anti-septic agents. Details are given of the production of various such compounds.—ZOLTAN FÖLDI. U. S. pat. 2,134,247, Oct. 25, 1938. (A. P.-C.)

Phenylphenols—Alkylated. Details are given of the preparation of a number of phenylphenols having branched-chain substituents each of which

contains 5 or more carbon atoms and at least one of which is attached to the hydroxylated benzene ring. These compounds may be used as microbicides, preservatives, mediators, etc.—EDGAR C. BRITTON, GERALD H. COLEMAN and RALPH P. PERKINS, assignors to DOW CHEMICAL CO. U. S. pat. 2,138,471, Nov. 29, 1938. (A. P.-C.)

Phenylphenyl Esters. Details are given of the use of acetic anhydride, benzoyl chloride, cinnamic acid and salicylic acid as acylating agents for the production of various phenylphenyl esters which are urinary bactericides of high activity and low toxicity, and which also may be used as intermediates.—WALTER G. CHRISTIANSEN and SIDNEY E. HARRIS, assignors to E. R. SQUIBB & SONS. U. S. pat. 2,141,172, Dec. 27, 1938. (A. P.-C.)

2-Phenylquinoline-4-Carboxylic Acid—Hydroxyethoxy Derivatives of. Details are given of the production of 2-phenyl-6-hydroxyethoxyquinoline-4-carboxylic acid (melting point 198° C.) and 2-phenyl-8-hydroxyethoxyquinoline-4-carboxylic acid (melting point 190° C.), which have good therapeutic and but low toxic action.—PAUL DIEDRICH, assignor to SCHERING-KAHLBAUM A.-G. U. S. pat. 2,138,628, Nov. 29, 1938. (A. P.-C.)

Phthalocyanines. The phthalocyanines are blue-to-green pigments and dyes containing the first new chromophore of commercial importance developed in a quarter of a century. Although closely related structurally to chlorophyll and hemin, there is no evidence that they occur in nature. The chemical and industrial history and scope of the development are reviewed.—M. A. DAHLEN. *Ind. Eng. Chem.*, 31 (1939), 839-847. (E. G. V.)

Piperazine Derivatives Possessing Chemotherapeutic Properties. It was found that synthetic piperazine derivatives, such as: 4-*N*-piperazyl-2',4'-diaminoazobenzene, 4-piperazylphenylazo-2',6'-diaminopyridine, 4-*N*-piperazylazobenzene-4'-sulfaminopyridine, 4-*N*-piperazylazobenzene-4'-sulfamide, etc., offer no advantage over the original unsubstituted compounds; their toxicity is slightly greater, while their therapeutic properties are the same or at times, slightly inferior.—D. KOHLBACH. *Archiv. za Hemiju*, 11 (1937), 99-123; through *Chimie & Industrie*, 41 (1939), 311. (A. P.-C.)

Piperidine Derivatives. XLV. Local Anesthetics Derived from α -Picoline. The preparation and properties, both pharmacological and physical, of a number of the benzoates of (1, alkyl-2, piperidyl) substituted ethyl, *n*-propyl and isopropyl alcohols are described. None of these compounds has proved to be a more effective local anesthetic than metycaine.—C. W. TULLOCK and S. M. McELVAIN. *J. Am. Chem. Soc.*, 61 (1939), 961. (E. B. S.)

Procaine—Bromo Derivatives of. Direct bromination by means of a very dilute solution of bromine in ether in sunlight gives the *m*-monobromo derivative, which melts at 157° to 158° C. The same compound can also be obtained synthetically; esterification of *m*-bromo-*p*-aminobenzoic acid by ethylene chlorhydrin and treatment of the resultant product with diethylamine. Esterification of *m*-bromo-*p*-aminobenzoic acid by ethanol or propanol in presence of sulfuric acid gives 3-bromoanesthine and 3-bromopropesin, respectively.—L. FREJKA and L. CIZMAI. *Chem. Listy*, 31 (1937), 460-464; through *Chimie & Industrie*, 41 (1939), 311. (A. P.-C.)

***d*-Pulegone—Reduction of, to Yield *d*-Neo-Iso-Pulegone.** In previous researches on the menthones the authors have reported that selective reduction of *d*-pulegone by the Ponndorf reagent under stated conditions leads to the formation of a mixture of optically active pulegols and isopulegols which undergo partial dehydration to yield terpenes. A pure dextrorotatory alcohol has been isolated by

fractionally crystallizing the derived 3:5-dinitrobenzoates. This is converted exclusively into *d*-neomenthol by catalytic hydrogenation. The stereoisomerism and nomenclature of the pulegols and isopulegols are discussed, and the new alcohol is named *d*-neo-isopulegol.—ANDREW G. SHORT and J. HINTON READ. *J. Chem. Soc.*, (1939), 1306-1309. (W. T. S.)

Pyramidone Camphorates. By melting point curves of mixtures of camphoric acid and pyramidone and attempts to prepare the so-called pyramidone acid camphorate by crystallization from concentrated equimolecular solutions of the mixed components, it is shown that the pyramidone camphorates are mixtures and not salts, that the neutral pyramidone camphorate is nonexistent; that pyramidone acid camphorate is a molecular compound (melting point 84° to 91.5° C.), and that commercial pyramidone camphorate is a mixture of camphoric acid and pyramidone.—D. PONTE. *Boll. chim.-farm.*, 76 (1937), 677-682; through *Chimie & Industrie*, 41 (1939), 113-114. (A. P.-C.)

Pyridine Derivatives—New, Possessing Analeptic and Cardiotonic Properties. With a view to obtaining a compound which, while possessing to a high degree the cardiotonic and analeptic properties of camphor, would be sufficiently soluble in water to be injectable directly, the authors prepared and studied 6-amino-8-phenylpyridine-2,3-triazol and its derivatives obtained by condensation with formaldehyde and sodium bisulfite or sodium sulfoxylate, by sulfonation with sulfuric acid monohydrate, by condensation with potassium cyanide or with chloroacetic acid or its esters. Of all these products only those formed by condensation with potassium cyanide or with chloroacetic acid had the required solubility.—G. CHARRIER and M. JORIO. *Ann. Chim. Farm.* (1938), 9-17; through *Chimie & Industrie*, 41 (1939), 119. (A. P.-C.)

Pyridine-*o*-Dicarboxylic Acid Diamides. Compounds, several of which are suitable for intravenous injection for favorable effects upon the blood circulation and respiration, are obtained by the reaction of a pyridine-*o*-dicarboxylic acid (or a derivative such as a salt, ester, halide or anhydride) on a primary or secondary aliphatic amine or a salt thereof, or an aliphatic derivative of carbamic acid, for instance a halide, in presence or absence of a solvent, of a condensing agent and of an agent that binds acids. The process may be performed in stages by first producing an *N*-substituted monoamide of the pyridine-*o*-dicarboxylic acid and then converting this into the *N,N'*-substituted diamide. In this manner there may be obtained among others, diamides the amide groups of which are differently substituted. In the reaction of the free pyridine-*o*-dicarboxylic acid or the corresponding monoamido-carboxylic acid with an amine there may be used with advantage a condensing agent, such as a phosphorus halide, thionyl chloride, phosgene or phosphorus pentoxide. The carboxylic acid and the amine may also be used in the form of their salts. Details are given of the production of a number of such compounds.—MAX HARTMANN and HELMUT ENSSLIN, assignors to SOCIÉTÉ POUR L'INDUSTRIE CHIMIQUE À BAËLE. U. S. pat. 2,136,502, Nov. 15, 1938. (A. P.-C.)

Resorcinol—Alkylating. By treating resorcinol with decyl alcohol in the presence of a dehydrating agent such as zinc chloride (suitably at 150° to 160° C.) a yellow viscous oil is produced, which boils at 173° to 190° C. under a pressure of 2 mm. and which is a germicide suitable for use in the oral cavity. Similarly, *l*-octanol, *l*-dodecano, etc., may be used.—EUCLID W. BOUSQUET, assignor to E. I. DU PONT DE NEMOURS AND CO. U. S. pat. 2,146,007, Feb. 7, 1939. (A. P.-C.)

Salicylic Acid, Etc.— α -Furoic Acid Ester of. This compound, which melts at 131° to 132° C., is produced from salicylic acid and furoyl chloride (suitably in benzene and in the presence of dimethylaniline). Mention is also made of the similar production of esters of the cresotic acids, the products being analgesics and antipyretics.—WM. HIEMENZ and LOUIS FREEDMAN, assignors to BAYER Co. U. S. pat. 2,140,052, Dec. 13, 1938. (A. P.-C.)

Scientific Side—Year's Work on the. A review of the most important papers which have appeared in *Perfumery and Essential Oil Record* during the year 1939 is given.—ANON. *Perfumery Essent. Oil Record*, 30 (1939), 425. (A. C. DeD.)

Snake Venoms. IV. Crotoxin extracted from *Crotalus* venom contains 4.01% sulfur, of which $87.6 \pm 2.3\%$ is in the form of cystine and $7.2 \pm 0.3\%$ is in the form of methionine. Assuming that crotoxin has a molecular weight of 33,000, the molecule would contain 41 atoms of sulfur, of which 36 + 3 are in the form of cystine and methionine and 2 in an unknown form. The active fraction of *Bothrops jararaca* venom contains 5.73% cystine and 1.08% methionine, which corresponds to a total sulfur content in the venom of 1.75%.—K. H. SLOTTA and W. FORSTER. *Ber. Deut. Chem. Ges.*, 71 (1938), 1082-1088; through *Chimie & Industrie*, 41 (1939), 116. (A. P.-C.)

Spirocheticides—Oil-Soluble Bismuth Salts Suitable as. By reactions such as that of cold alcoholic sodium hydroxide solution on 2-ethylhexyl ethyl malonate, then followed by a bismuth subnitrate solution, there are formed oil-soluble bismuth salts of carbalkoxy acetic acids in which one of the two hydrogen atoms on the α -carbon is replaced by a univalent primary acyclic aliphatic hydrocarbon radical having at least 5 carbon atoms and the alkoxy group has not more than 4 carbon atoms.—HORACE A. SHONLE and JOHN H. WALDO, assignors to ELI LILLY AND Co. U. S. pat. 2,142,957, Jan. 3, 1939. (A. P.-C.)

Thebaine—Addition Compounds of. As the conjugated double bonds of thebaine are not blocked, this compound easily forms addition products with diene compounds. The reaction even takes place at ordinary temperature. It can be used to determine the alkaloid in presence of other substances by adding a measured excess of quinone and determining the excess iodometrically.—W. SANDERMANN. *Ber. deut. chem. Ges.*, 71 (1938), 648-650; through *Chimie & Industrie*, 41 (1939), 316. (A. P.-C.)

Thiazole Compounds. Various compounds which may be used in the production of antineuritic agents (by treating them with a pyrimidine compound containing a reactive constituent by heating in a solvent of high boiling point) are produced by a process which may comprise reaction upon an aliphatic ketone, containing in α -position to the keto group a halogen atom and containing attached to the halogenated carbon atom a lower alkyl group which is substituted by a substituent selected from the group consisting of esterified hydroxy groups, halogen and amino, carboxylic, carbalkoxy and carbocyclic acid amide and hydrazide groups with a rhodanide and treating the reaction product obtained by an acid condensing agent to form a 2-hydroxythiazole compound. Details are given of the production of a number of such compounds.—HANS ANDERSAG and KURT WESTPHAL, assignors to WINTHROP CHEMICAL Co. U. S. pat. 2,139,570, Dec. 6, 1938. (A. P.-C.)

Vinyl Barbituric Acids—Substituted. III. Derivatives Containing a Dialkylvinyl Group Having Five or More Carbon Atoms. The synthesis of a number of 5-(dialkylvinyl)-5-alkyl barbituric acids by condensing substituted vinyl alkyl cyanoacetic

esters with urea or guanidine, and hydrolyzing the resulting imino barbituric acids, is described. A table of the results of preliminary pharmacological studies is given. The (*l*-methyl-*l*-butenyl) and (*l*-ethylpropenyl) derivatives are effective hypnotics and have high therapeutic ratios. Compounds containing the (*l*-methyl-*l*-butenyl) showed unusually efficient absorption when administered orally to white mice.—A. C. COPE and E. M. HANCOCK. *J. Am. Chem. Soc.*, 61 (1939), 776. (E. B. S.)

Vioform—Preparation of, and Other Quinoline Derivatives from *p*-Dichlorobenzene. Vioform is obtained by known methods from *p*-dichlorobenzene via the following stages (% yields in parentheses): 2-nitro-1,4-dichlorobenzene (I) (98) yields 2-nitro-4-chlorophenol (76), yields 2-amino-4-chlorophenol (91), yields 5-chloro-8-hydroxyquinoline (64), yields Vioform (85). The following processes are briefly described: I yields 4-chloro-2-nitroanisole (90), yields 4-chloro-*o*-anisidine (92), yields 5-chloro-8-methoxyquinoline (58), yields 5-chloro-7-iodo-8-methoxyquinoline (81)—J. S. TURSKI and H. LE-PACH. *Przemysl Chem.*, 22 (1938), 518-520; through *J. Soc. Chem. Ind.*, 58 (1939), 662. (E. G. V.)

Washing, Cleansing, Wetting and Emulsifying Agents—Manufacture of. Surface-active agents for the paper and cosmetic industries are obtained by esterifying at least one hydroxyl group of a di- or poly-basic acid (I) derived from boron or phosphorus with a high molecular hydroxy-compound (II) and at least one hydroxyl group with a lower monohydric hydroxy-compound (III) and sulfonating the product; the esterification is effected by treating chlorides, oxides, oxychlorides or acids of boron or phosphorus with II and III, which may be ethers or esters of a lower polyhydric alcohol (IV) with alcohols or aliphatic acids, and may be produced by first treating the boron or phosphorus compound with IV followed by the alcohols or acids. Esterification with III may be effected after sulfonation and removal of excess of acid. One hydroxyl group of I may in addition be esterified with IV.—N. V. CHEM. FABR. SERVO, and M. D. ROZENBROEK. Brit. pat. 501,590; through *J. Soc. Chem. Ind.*, 58 (1939), 465. (E. G. V.)

BIOCHEMISTRY

Adermine (Vitamin B₆) Isolated from Rice Gluten and from Yeast. Adermine hydrochloride isolated in the pure state from yeast has a composition corresponding to the formula C₈H₁₂O₂NCl. It crystallizes in colorless prisms that melt with decomposition at 204° to 205° C. The hydrochloride is optically inactive. With ferric chloride it gives a color reaction (orange-red); by coupling with diazotized sulfanilic acid, it gives an orange-yellow azo dye. Adermine hydrochloride obtained from rice gluten exhibits the same properties.—R. KUHN and G. WENDT. *Ber. deut. chem. Ges.*, 71 (1938), 1118; through *Chimie & Industrie*, 41 (1939), 318. (A. P.-C.)

Adler's Reaction in Clinical and Legal Chemistry. The use of benzidine to detect the presence of blood in feces and urine is questioned as an absolute positive. It is usually found sufficiently sensitive to detect the presence of occult blood. The common procedure of an acetic solution of benzidine used with hydrogen peroxide is occasionally modified by the use of barium peroxide. False positives in feces are sometimes obtained because of the remains of some vegetable fibers and this may be overcome by diluting the feces with distilled water and boiling before applying Adler's modification of the benzidine test. Its importance is evident in legal practice in identifying blood stains on cloth. Frequently fruit or vegetable stains, or the use of chloride of lime for a bleaching agent, causes the cloth to give a

positive benzidine test, in localities where the water has appreciable amounts of iron salts in its composition.—ERNESTO E. TRELLES DUELO. *Rev. Farm. Cuba*, 16 (1938), 11. (G. S. G.)

Allantoin—Determination of, in Human Urine, and the Schryver-Fosse Color Reaction on Which It Is Based. A study of some simplifications effected in the Fosse method, which consists in converting the allantoin into allantoic acid by means of allantoinase of soy bean flour, and determining colorimetric glyoxylic acid produced from the allantoic acid. To 10 cc. of urine add 20 cc. of 0.1% potassium cyanide solution, 0.3 Gm. of soy bean powder and 10 drops of chloroform; place in the oven for 12 hours; filter, slightly acidify a 10-cc. aliquot with normal sulfuric acid; add 1 cc. of potassium ferrocyanide solution (150 Gm. of anhydrous salt per liter), 1 cc. of zinc sulfate solution (175 Gm. of $ZnSO_4 \cdot 7H_2O$ per liter); shake after each addition; dilute to 20 cc. with hundredth normal hydrochloric acid, shake vigorously, and filter. For the colorimetric estimation, to 2 cc. of filtrate add 2 drops of an aqueous 1% solution of phenylhydrazine hydrochloride; place the mixture for 2 minutes in a boiling water bath, after cooling add 1.8 cc. of concentrated hydrochloric acid and 2 drops of a 5% solution of potassium ferricyanide, let stand in the dark for 5 or 10 minutes and compare the rose color obtained with a series of standards.—M. PAGET and R. BERGER. *Compt. rend. soc. biol.*, 127 (1938), 1312-1314; through *Chimie & Industrie*, 40 (1938), 1078. (A. P.-C.)

Amino Acids—New Method for the Determination of. In dilute dioxane solution the amino and carboxylic groups of amino acids can be determined in the same portion of sample by titrating successively with sodium hydroxide and hydrochloric acid, using thymolphthalein and methyl red, respectively, for the two titrations. The hydrochloric acid titrates both the added alkali and the amino groups. The values obtained for both the amino and carboxylic groups are 98 to 101% of the true values for most of the amino acids of proteins, but both are 2 to 6% too high for tyrosine and cystine, and the values for the amino groups are 59 and 55% of the true values for histidine and arginine, respectively, and 92% for proline. Dipeptides are titrated in the same way as amino acids. Asparagine and taurine can be accurately titrated in 30% dioxane.—N. POPOVICI and A. RADULESCU. *Bull. soc. chim. biol.*, 20 (1938), 73-81; through *Chimie & Industrie*, 41 (1939), 50. (A. P.-C.)

Amylase in Urine—Determination of. A slight modification of the method of Willstätter, Waldschmidt-Leitz and Hesse (*Z. Physiol. Chem.*, 126 (1923), 93-131) was used. Small amounts of amylase are continuously excreted in human urine. Fasting adults excrete 0.14 to 0.24 unit per hour. A temporary increase occurs after meals. The total for normal men is 4.6 to 6.2 units in 24 hours and for women 3.2 to 4.7 units.—I. VINTILESCO, C. N. IONESCO and V. MANDROI. *Bull. soc. chim. biol.*, 20 (1938), 953-965; through *Chimie & Industrie*, 41 (1939), 460. (A. P.-C.)

Androsterone—Determination of Crystalline, with the Evelyn Photoelectric Colorimeter. A modification of the Zimmermann procedure for color development in an alkaline alcohol solution with substances containing the $-CH_2CO$ group by means of the reagent *m*-dinitrobenzene has been applied to the assay of crystalline androsterone, and the Evelyn photoelectric colorimeter has been calibrated for the technic in terms of androsterone. The greatest advantage gained by the use of this colorimeter is the elimination of the subjective factor inherent in visual comparative measurements. The data obtained indicate a high degree of reliability

and reproducibility of results.—HARRY B. FRIEDGOOD and HELEN L. WHIDDEN. *Endocrinology*, 25 (1939), 919; through *Squibb Abstr. Bull.*, 12 (1939), A-1550. (F. J. S.)

Anterior Pituitary Lobe—Active Extracts of the. Extracts are prepared by autolysis in an aqueous alcoholic medium in the presence of ethyl acetate and with the use of toluene, benzene, xylene or chloroform as a preservative.—CARL L. LAUTENSCHLAGER and WILLY LUDWIG, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,146,682, Feb. 7, 1939. (A. P.-C.)

Arakawa's Reaction and Methyl Glyoxal-Like Substance. The methyl glyoxal-like substance of human milk, on an average, is poor in Arakawa-positive milk and rich in Arakawa-negative milk. If the seasonal variation is allowed to be observed in spite of the scarcity of the cases for this purpose, then the general rule above applies best to the season, June-August, and then to the season, March-May. In infants with different diseases, the substance in their mother's milk was of the highest content in the case of infantile beriberi.—SH. SATO. *Tôhoku J. Exp. Med.*, 37 (1939), 62. (A. C. DeD.)

Arginine and Histidine—Determination of. A comparative study of three methods for the separation of arginine and histidine when present in the same solution: (1) fractional separation, the histidine being precipitated by the addition of a double silver salt to which baryta has been previously added, the arginine remaining in solution; (2) decomposition of arginine into ammonia and ornithine by the action of dilute alkali, the histidine remaining unchanged; (3) adjustment of the protein hydrolyzate to a pH of 9.9 and conversion of arginine into ornithine and urea by means of arginase, the histidine remaining unchanged. Histidine is then determined by the silver salt-barium hydroxide method and urea by the xanthidrol method.—GILBERTE MOUROT and O. HOFFER. *Bull. soc. chim. biol.*, 20 (1938), 274-292; through *Chimie & Industrie*, 41 (1939), 51-52. (A. P.-C.)

Ascorbic Acid—Colorimetric Determination of. Excess of thousandth-normal Tillmans solution (*p*-dichlorophenol-indophenol) is added to the solution of the sample and the excess of dye is extracted with xylene. The colored xylene solution is compared colorimetrically with a standard solution, permitting of calculating the excess that was added.—F. FOLKMANN. *Cesterr. Chem. Ztg.*, 41 (1938), 193-194; through *Chimie & Industrie*, 41 (1939), 318. (A. P.-C.)

Ascorbic Acid—Determination of, in Feces. Its Excretion in Health and Disease. A method for the estimation of ascorbic acid in feces is described. The fecal content of the normal individual on an adequate but unsupplemented diet averages about 5 mg. daily. Large variations in the oral intake affect the fecal excretion only slightly. Patients suffering from certain gastrointestinal disorders excrete larger quantities of ascorbic acid in the feces than normal individuals.—HERMAN CHINN and CHESTER J. FARMER. *Proc. Soc. Exptl. Biol. Med.*, 41 (1939), 561. (A. E. M.)

Ascorbic Acid Content of the Suprarenals—Interpretation of the. In the adult guinea pig the total weight of the suprarenal varies from 0.13 to 1.5 Gm. A better estimate of the vitamin C reserve is obtained by calculating the total ascorbic acid of the suprarenal tissue rather than the number of mg. per Gm.—G. MOURIQUAND, H. TÊTE and J. LAVAUD. *Compt. rend. soc. biol.*, 127 (1938), 1500-1502; through *Chimie & Industrie*, 40 (1938), 1078. (A. P.-C.)

Ascorbic Acid—New Color Reaction for. To 1 cc. of approximately 0.1% ascorbic acid add a little

dilute acetic acid or sulfuric acid and 0.5 cc. of 3% potassium permanganate. The ascorbic acid is oxidized to a mixture of *l*-threonic acid and oxalic acid. Add enough dilute hydrogen peroxide to remove the excess potassium permanganate; then test for oxalic acid.—M. PAGET and R. BERGER. *Compt. rend. soc. biol.*, 129 (1938), 960-961; through *Chem. Abstr.*, 33 (1939), 2553. (E. G. V.)

***l*-Ascorbic Acid—Oxidation of, in the Presence of Ammonia or Primary Amines.** In contact with energetic oxidizing agents or with atmospheric oxygen in an alkaline medium, *l*-ascorbic acid is converted into oxalic acid. The addition of 5 cc. of ammonium hydroxide (specific gravity 0.92) to 0.5 Gm. of ascorbic acid in 5 cc. of water gives, after standing for 48 hours, 0.135 Gm. of oxamide. Similarly, the addition of 10 cc. of 50% hydroxylamine, 33% ethylamine, 50% butylamine, 50% isobutylamine, isoamylamine and 50% cyclohexylamine gave 0.075, 0.050, 0.238, 0.210, 0.376 and 0.084 Gm. of the corresponding oxalic dihydrazide and disubstituted oxamides.—J. PARROD. *Bull. Soc. Chim. France*, 5 (1938), 938-941; through *Chimie & Industrie*, 39 (1939), 318. (A. P.-C.)

Ascorbic Acid—Reliability of the Chemical Method of Determining, in Urine. The presence of ascorbic acid in urine was confirmed when employing ascorbinase solutions in urine analysis. The dichlorophenolindophenol reducing substance found in urine by the Manceau, Policard and Ferrand method (the substance remaining after treating urine with mercury acetate) is in reality ascorbic acid.—S. I. VINOOUROV and Z. S. BOSSENKO. *Biochem. J.*, 11 (1939), 103-116; through *Chimie & Industrie*, 41 (1939), 250. (A. P.-C.)

Ascorbic Acid—Remarks on the Determination of, by the Methylene Blue Method of E. Martini and A. Bonsignore. The method is accurate if carried out under well-defined conditions. The relative error is about 5%, and the sensitiveness is about 0.0045 mg. There is nothing to prove that the method is absolute; it is only relative as compared with other known methods.—A. A. POLICARD, M. FERRAND and E. ARNOLD. *Bull. soc. chim. biol.*, 20 (1938), 165-172; through *Chimie & Industrie*, 41 (1939), 51. (A. P.-C.)

Ascorbic Acid—Resistance of, to the Action of Heat. Solutions of ascorbic acid of different p_H maintained for 20 minutes in an autoclave at 120° in the presence of various gases contain after this treatment the following percentages of the initial ascorbic acid: in oxygen, from 2% (at p_H 8) to 13% (at p_H 3.2); in air, from 51% (at p_H 8) to 60% (at p_H 3.2) in nitrogen or carbon dioxide from 88% (at p_H 8) to 96% (at p_H 3.2).—JEAN PIEN and HERBERT MEINRATH. *Compt. rend.*, 209 (1939), 462. (G. W. H.)

Bilirubin—Photometric Determination of, in Urine. Bilirubin is precipitated with calcium chloride and disodium hydrogen phosphate. The bilirubin is converted into azobilirubin and the color intensity is determined with the step photometer using filter S 7. Neutralize 2 cc. of fresh urine with strong alkali; add 1.5 cc. of 11% disodium phosphate solution and 0.5 cc. of 20% calcium chloride, allow to stand 10 or 15 minutes, centrifuge and discard the supernatant fluid; wash twice with 10 cc. of 0.2% calcium chloride and decant to the last drop; add 6.6 cc. of alcohol and 1 cc. of Ehrlich diazo reagent, stir well, then after 5 or 10 minutes add 2 cc. of hydrochloric acid and determine the extinction coefficient in a 1- or 3-cm. thickness. Only traces of bilirubin are found in normal urines; in jaundice there is a direct relation to the serum bilirubin content.—L. JENDRASSIK and P. GROF. *Biochem. Z.*, 296 (1938), 1312-1314; through *Chimie & Industrie*, 40 (1938), 1078. (A. P.-C.)

Bilirubin—Reaction of, with Concentrated Hydrochloric Acid and Its Application to the Determination of Bilirubin in Blood Serum. If 1 part of serum is mixed with 3 parts of concentrated hydrochloric acid, the proteins which coagulate at first redissolve to give a clear reddish solution, which after a certain time turns brownish, and finally becomes green after standing for several hours. The intensity of the red coloration depends on the yellow color of the original serum, which itself is due to the amount of bilirubin present. This amount can therefore be determined by comparing the color with that of a standard, either in a colorimeter or in a Pulfrich photometer.—L. HEILMEYER. *Biochem. Z.*, 296 (1938), 383-388; through *Chimie & Industrie*, 41 (1939), 248. (A. P.-C.)

Blood Levulose and Levulose-Tolerance Test. As a result of earlier work it has been shown that the levulose-tolerance test is more reliable if the results are based on estimations of blood levulose rather than total blood sugar. The author's modification of the diphenylamine method for the estimation of blood levulose has resulted in greater speed and accuracy of analysis. Normal results for blood-levulose curves obtained by this method are presented. Some additional results in cases of liver disease are described.—F. K. HERBERT. *Brit. Med. J.*, 4086 (1939), 867. (W. H. H.)

Blood—Nature of Iodine in. The whole of the iodine could be extracted from blood with ethyl alcohol or with 80% acetone, no iodine being left in the protein precipitate. Thyroxine and potassium iodide when added to blood were completely recovered. Ultra-filtration of blood plasma left all the iodine in the residue, except in one instance, where 17% of the iodine appeared in the ultra-filtrate. Inorganic iodine added to blood was recovered quantitatively in the filtrate. It is therefore concluded that normal blood contains less than 20% of its iodine in inorganic form. Thyroxine and diiodothyroxine, although ultra-filterable in simple aqueous solution, were retained in the residue in the presence of serum or plasma. Precipitation of proteins from blood with zinc sulfate-sodium hydroxide or with heat and acetic acid carried down 90% or more of the iodine with the precipitate. Added thyroxine or diiodothyroxine were similarly thrown down with the protein precipitate. In order to determine whether either of these iodine-containing amino acids was actually present in blood, a butyl alcohol extract of plasma was prepared and a portion of the extract shaken with an equal volume of 2 *N* sodium hydroxide. This fractionation takes inorganic iodine diiodothyroxine into the aqueous layer, whereas thyroxine remains in the butyl alcohol layer. With blood extracts, 27 to 58% of the total plasma iodine remained in the butyl alcohol phase.—V. TREVORROW. *J. Biol. Chem.*, 127 (1939), 737; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 766. (F. J. S.)

Blood Platelets in Infants with no "Diseases." On the basis of blood platelets, the majority of infants fed on human milk completely or almost completely negative to Arakawa's reaction, and some of them fed on human milk of Arakawa's reaction of intermediate strength are either in a state of B-avitaminosis or on the brink of it.—M. SHINDO. *Tôhoku J. Exp. Med.*, 36 (1939), 283. (A. C. DeD.)

Blood Platelets of Sucklings According to Arakawa's Reaction. An increase of blood platelet count was seen in infants fed on milk negative to Arakawa's reaction. When infants and/or their mothers had been taking a vitamin B preparation, the platelet count was only moderately over the normal limit even in the Arakawa-negative group. There is thus a close relation between blood platelet

count of infants and Arakawa's reaction of their mothers. It is to be added here that infants of the completely Arakawa-negative mothers have a reduced red cell count, in spite of the fact that those of mothers with intermediate Arakawa's reaction are of almost the same red cell count as those of Arakawa-positive mothers.—M. SHINDO. *Tôhoku J. Exp. Med.*, 37 (1939), 43. (A. C. DeD.)

Blood Serum Proteins—Need of Standardization of Definitions and Methods of Determination of. A discussion showing that the various methods used for the separation and determination of blood serum proteins give widely varying results according to the technic followed.—J. THIODET and M. RIBÈRE. *Bull. soc. chim. biol.*, 20 (1938), 495-497; through *Chimie & Industrie*, 49 (1939), 249. (A. P.-C.)

Blood Urea—Microdetermination of, by the Gasometric Hypobromite Method. The hypobromite method gives satisfactory results when the reaction is carried out in a Van Slyke apparatus under reduced pressure. All dissolved gases must first be removed from the sample of trichloroacetic acid blood filtrate.—CH. O. GULLAUMIN. *Bull. soc. chim. biol.*, 20 (1938), 159-164; through *Chimie & Industrie*, 41 (1939), 51. (A. P.-C.)

Cerebrospinal Fluid—Uric Acid of the. By determining the uric acid content of the cerebrospinal fluid with the new Brochner-Mortensen method in nine subjects suffering from different diseases, the author observed values varying between 0.70 mg. % and 1.2 mg. %; in eight of the nine cases examined the value was lower than 1 mg. %; the average 0.89 mg. %.—G. FRADA. *Biochim. terap. sper.*, 25 (1938), 464. (A. C. DeD.)

Chick Antidermatitis Factor—Nature and Partial Synthesis of. The chick antidermatitis factor appears to be very similar in properties to pantothenic acid. They both are heat and alkali labile hydroxy acids. The acetyl derivatives of both are heat stable and have approximately the same boiling point. Experiments show that the chick antidermatitis factor is a hydroxy acid in amide linkage with β -alanine, checking with Williams' analysis of pantothenic acid. Final proof of the two factors must await the crystallization of the pure compound.—D. H. WOOLLEY, H. A. WAISMANN and C. A. ELVEHJEM. *J. Am. Chem. Soc.*, 61 (1939), 977. (E. B. S.)

Cholesterol—New Derivatives of. A description of the preparation of a few new derivatives of cholesterol. By treating β -cholestanone and β -cholestenone with phenylethylmagnesium there are obtained 3-phenylethylcholestenone and 3-phenylethylcholestadiene, respectively. Rosenheim's reaction shows the product has two conjugated linkages. By treating β -cholestanone and β -cholestenone with bromoacetic ether there is obtained 3-cholesteneacetic acid and 3-cholestadieneacetic acid, respectively. No definite answer has yet been found as regards the double bond which forms by dehydration of the carbinols resulting from the two ends and hexocyclic reactions.—A. DANSI. *Gazz. chim. ital.*, 68 (1938), 273-276; through *Chimie & Industrie*, 41 (1939), 118. (A. P.-C.)

Choline Esters in Human Sympathetic Ganglions. Stellar and lumbar ganglions freshly removed from patients treated for pain by sympathectomy contained choline esters equivalent to 0.0013 to 0.0021 mg. of acetylchloride per Gm. of tissue.—D. VINCENT. *Compt. rend. soc. ciol.*, 128 (1938), 683-684; through *Chimie & Industrie*, 41 (1939), 250. (A. P.-C.)

Cholinesterase—Research on the, of the Central Nervous System. The central nervous system contains acetylcholinesterase, which is spread in different concentration in the various districts: the gray

substance and especially the ganglions of the base, contains more esterase than the white substance.—G. PIGHINI. *Biochim. terap. sper.*, 25 (1938), 347. (A. C. DeD.)

Cholinesterasic Activity of Muscles and of the Nervous System. The muscles, the blood and the spinal marrow of the embryo have a higher cholinesterasic activity than the same organs of the adult.—C. TORDA. *Biochim. terap. sper.*, 25 (1938), 532. (A. C. DeD.)

Cystine—New Reaction of, Applicable to Its Determination and Its Detection in Urinary Calculi and Concretions. Place a few fractions of a mg. of the product to be identified on a microscope slide; disperse in a drop of reagent consisting of a mixture of 1 cc. of concentrated hydrochloric acid and 10 cc. of 1% iodic acid solution. Without covering with a cover glass, examine directly under a magnification of 150 to 200 diameters. If cystine is present there are observed yellowish brown, sharp, elongated iodine crystals, frequently grouped in the shape of a cross or of a sword hilt. No other constituents of urinary calculi (including uric acid) liberate iodine from iodic acid. Formation of free iodine is due to the fact that the —S—S— group of the cystine is broken down by an oxido-reduction mechanism and takes away O_3H from the iodic acid.—G. DENIGÈS. *Compt. rend. acad. sci.*, 206 (1938), 1429-1430; through *Chimie & Industrie*, 41 (1939), 52. (A. P.-C.)

Cystine—New Synthesis of. The synthesis of cystine described involves condensation of benzyl mercaptan with formaldehyde in the presence of hydrochloric acid, condensation of the resulting benzylthiomethyl chloride with phthalimidomalonic ester, hydrolysis of the reaction product to benzyl-dl-cysteine, removal of the benzyl from the latter by sodium in liquid ammonia, and oxidation of the dl-cysteine formed. This synthesis is adaptable for the introduction of isotopic atoms in cystine.—J. L. WOOD and V. DU VIGNEAUD. *J. Biol. Chem.*, 131 (1939), 267; through *Squibb. Abstr. Bull.*, 12 (1939), A-1455. (F. J. S.)

Desoxycorticosterone Acetate Is Estrogenic in the Human Female. Typical estrogenic effects were produced with desoxycorticosterone acetate in the vaginal smears of post-menopausal women. It is suggested that the estrogens excreted after menopause or castration probably have their origin in the adrenal cortex.—UDALL J. SALMON. *Proc. Soc. Exptl. Biol. Med.*, 41 (1939), 515. (A. E. M.)

Equilenin—Total Syntheses of. An eleven-step synthesis is described, which converted the known 7-methoxy-1-keto-1,2,3,4-tetrahydrophenanthrene to the sex hormone equilene. The structure of the synthetic equilenin was definitely established. In view of Marker's conversion of equilenin to estrone by reduction, it follows that the total synthesis of both equilenin and estrone has been accomplished.—W. E. BACHMANN, W. COLE and A. L. WILDS. *J. Am. Chem. Soc.*, 61 (1939), 974. (E. B. S.)

Estrone—Assay of Tablet Preparations Containing. In the assay, of castrate female rats, of estrone-containing tablets intended for oral use, the subcutaneous injections of suspensions of the ground tablets in water or oil led to the same results as subcutaneous injection of oily solutions of benzene extracts of the tablets.—W. HEUBNER. *Arch. exptl. Path. Pharmacol.*, 193 (1939), 521; through *Squibb. Abstr. Bull.*, 12 (1939), A-1577. (F. J. S.)

Estrone—Influence of, on Hair Growth. Two cases are reported in which the administration of estradiol checked the falling hair in women suffering menstrual disturbances and caused the growth of new hair. A recommended dosage is 5 mg. every

3rd or 4th day until a total dosage of 30 mg. has been given.—E. TSCHERNE. *Deut. med. Wochschr.*, 65 (1939), 1692; through *Squibb Abstr. Bull.*, 12 (1939), A-1577. (F. J. S.)

Estrone Tablets—Commercial, Assay of. Thirteen commercial tablet preparations containing estrone (and no other hormones or drugs), intended for oral use, were assayed subcutaneously in castrate female mice against the international estrone standard. Various methods were used to extract the hormone from the tablets for assay, e. g., the tablets were extracted several times with benzene containing small amounts of sesame oil and the combined extracts were freed from benzene by distillation, leaving an oil solution of the hormone to be diluted further with sesame oil and injected into the mice. The completeness of the extraction was checked by assay of the residue on mice. Several of the commercial preparations were found to contain considerably less hormone than was indicated on their labels.—W. KOLL and F. KULZ. *Arch. expl. Path. Pharmacol.*, 193 (1939), 505; through *Squibb Abstr. Bull.*, 12 (1939), A-1577. (F. J. S.)

Female Hormones in the Urine of Pregnant Cows and the Analysis of Cow Urine. The urine was treated with acid and extracted with ether in the usual way, and the concentrated ether solution shaken with a 10% aqueous solution of sodium carbonate to remove certain impurities. Further purification was accomplished by the commonly-used methods. The yield of "active material," not further identified, was at the rate of 1.0 to 1.5 Gm. per 1000 liters of pregnant cow urine. Urine from non-pregnant cows contains about one-tenth as much.—T. H. TANG and T. F. HO. *Bull. soc. chim. biol.*, 20 (1938), 434-440; through *Chimie & Industrie*, 41 (1939), 249. (A. P.-C.)

Flavin—Determination of. The method of determining flavin (vitamin B₂) in certain vegetable substances (more particularly grape juice) in which it is present only in small quantity, is based essentially on adsorption of the vitamin from its alcoholic solution (previously defatted with chloroform) by means of ranconite and elution with a suitable mixture. The green fluorescence of flavin in ultraviolet light is then compared with that of a standard solution. The method (which is described in detail) is long and tedious and the results are usually 20 to 30% too low.—A. GOUREVITCH. *Bull. soc. chim. biol.*, 20 (1938), 502-505; through *Chimie & Industrie*, 41 (1939), 318. (A. P.-C.)

Folliculin—Action of Zinc on the Estrogenic Effects of, on Ovariectomized Rats. Zinc chloride intensifies and prolongs the estrogenic effects of folliculin on ovariectomized rats. It was observed that in the presence of zinc the estrogenic action of folliculin was increased by 37% as compared with folliculin alone. Under the same conditions zinc alone exerts no estrogenic action. Moreover, in order to obtain this intensification of the follicular action the proportion of zinc must not be less than 1.5 mg. per 0.0024 mg. of folliculin and 3 mg. per 0.0037 mg. of folliculin.—R. CAHEN and ANDRÉE TRONCHON. *Compt. rend. acad. sci.*, 206 (1938), 1409-1411; through *Chimie & Industrie*, 41 (1939), 109. (A. P.-C.)

Gastric Secretion—Inhibitory Effect of Urine Extracts on. From the urine of normal individuals there can be extracted a substance which when given intravenously inhibits gastric secretion stimulated by histamine. This substance is inactivated at 99° during 4 hours. Extracts of urine from ulcer patients do not protect against experimental ulcer but do reduce gastric acidity. There is a beneficial effect on Mann-Williamson ulcers which seems to be due to some factor in the urine extract other than the one which inhibits gastric secretion.—M. H.

F. FRIEDMAN, R. O. RECKNAGEL, D. J. SANDWEISS and T. L. PATTERSON. *Proc. Soc. Exptl. Biol. Med.*, 41 (1939), 509. (A. E. M.)

Glutathione—Determination of, in Tissues. In determinations of reduced glutathione by Kühn's method, if both total and reduced glutathione are determined in equal volumes of filtrate, sodium tungstate solution is preferable for precipitation of proteins. Before addition of the iodine solution, the filtrates are acidified, preferably with twice normal sulfuric acid and not with glacial acetic acid. The livers of some animals contain beside glutathione and ascorbic acid, some iodine-reducing substances.—S. GOLDMANN. *Oukr. Biokhem. J.*, 10 (1937), 595-607; through *Chimie & Industrie*, 41 (1939), 250. (A. P.-C.)

Glutathione—Isolation of, from Thymus Gland. Ground calf glands were deproteinized with 5% trichloroacetic acid. The filtered liquid was adjusted to pH 6, filtered and precipitated with mercuric sulfate. The mercury salt was decomposed with hydrogen sulfide in presence of 0.1 normal sulfuric acid and treated with carbon dioxide. Cuprous oxide was added as long as a grayish precipitate was formed. The centrifuged precipitate was treated with 0.5 normal sulfuric acid, and the decomposed salt was evaporated *in vacuo* of phosphorus pentoxide to crystallization. The product was identified as glutathione.—NORWOOD K. SCHAFFER and WILLIAM M. ZIEGLER. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 93. (A. E. M.)

Glutathione—Tissue, Additional Notes on the Binet-Weller Method for the Microdetermination of. The previously described method (*Bull. soc. chim. biol.*, 18 (1936), 358-374) has been simplified by using the double cyanide of potassium and cadmium to precipitate total glutathione; the pre-existing glutathione is precipitated with cadmium lactate; each precipitate is dissolved in 10 cc. of 10% phosphoric acid containing 5% of sodium chloride and the glutathione determined iodometrically. The sodium chloride is said to suppress the autoxidation of the hydriodic acid liberated.—L. BINET and G. WELLER. *Bull. soc. chim. biol.*, 20 (1938), 123-127; through *Chimie & Industrie*, 41 (1939), 50. (A. P.-C.)

Glycogen—Estimation of, in Small Fragments of Liver Excised with the Electric Knife. The method is a modification of that of Pflüger. Analyses of samples taken at the same time from the same lobe of the same liver agree within 18%. Simultaneous samples from different lobes of the liver of the same dog may differ as much as 45% in their glycogen contents.—L. HEDON and A. LOUBATIÈRES. *Bull. soc. chim. biol.*, 20 (1938), 910-922; through *Chimie & Industrie*, 41 (1939), 251. (A. P.-C.)

Glycogen in Blood—Micromethod for the Determination of. The method of Simonovits (*Biochem. Z.*, 265 (1933), 437-443) has been slightly modified by using as precipitant (for 0.5 to 1.0 cc. of hydrolyzed blood) 0.5 cc. of a 10% potassium sulfate solution, instead of saturated sodium chloride solution.—A. M. GHENKINE. *Biokhimiya*, 3 (1938), 47-58; through *Chimie & Industrie*, 41 (1939), 50. (A. P.-C.)

Gonadotropic Hormones—Action of, in Amenorrhea as Evaluated by Vaginal Smears. Definite smear changes indicative of ovarian stimulation and resembling the normal cycle have been induced in amenorrhea by means of gonadotropic hormones.—EPHRAIM SHORR and GEORGE N. PAPANICOLAOU. *Proc. Soc. Exptl. Biol. Med.*, 41 (1939), 629. (A. E. M.)

Gonadotropic Material from Urine. A process of obtaining a gonadotropic material comprises forming in urine a precipitate of a compound of tungstic or

molybdc acid, separating the precipitate from the liquid, treating the precipitate with an aqueous solution of brucine alkaloid, quinine, cinchonine, 8-hydroxyquinoline or benzidine, thereby obtaining the gonadotropic substance in the solution while leaving the acid compound as a precipitate and removing the solution of the gonadotropic substance from the precipitate.—EDWARD A. DOISY and PHILIP A. KATZMAN, assignors to the PRESIDENT and BOARD OF TRUSTEES OF ST. LOUIS UNIVERSITY. U. S. pat. 2,139,540, Dec. 6, 1938. (A. P.-C.)

Hemolysis in Vitro—Irreversibility of. Referring to some work by Manai and himself in regard to the influence temperature might have on the hypotonic hemolysis *in vitro*, the author reports some studies he has made concerning the veracity of hemolysis *in vitro*. The author denies the possibility of the phenomenon and affirms that the damage caused by the hypotonic solution on the red cells is not reparable.—F. CHESSA. *Biochim. terap. sper.*, 25 (1938), 456. (A. C. DeD.)

Hemolytic Activity—Accurate Determination of Relative. The method is based on the comparison of the hemolysis curves of a standard serum and of the serum to be titrated. The curves represent the degree of hemolysis as a function of the hemolytic serum content. Degree of hemolysis, h , expressed as cc. per 100 cc. of a mixture of hemolysin, alexin, red corpuscles and physiological salt solution, is plotted as ordinate. The curves thus obtained are shaped like an unsymmetrical S . Two tangents to these curves, parallel to the axis of abscissas, can be determined *a priori*. One is given by the content of spontaneous hemolysis or hemolysis produced by the presence of alexin, the other is given by the total hemolysis $h = 100$.—PAŦC and M. CHOROKHOFF. *Bull. soc. chim. biol.*, 20 (1938), 947–952; through *Chimie & Industrie*, 41 (1939), 52. (A. P.-C.)

Hemorrhage—Various Types of, Amenable to Vitamin K. A valuable discussion of technical details of the two-stage method of prothrombin determination of Smith, *et al.*, is presented, and the results of this test in numerous jaundiced patients are listed. In all of the cases prothrombin values were subnormal. If these patients were given vitamin K mixed with cholic acid, a prompt rise in prothrombin occurred. Reduction of prothrombin may occur in chronic sepsis, malnutrition and avitaminosis, chronic blood loss, cirrhosis, chronic peptic ulcer and the cachexia of malignant disease, but as a rule the reduction is moderate and probably not of symptomatic importance. However, the possible value of vitamin K in this group of diseases would furnish interesting material for study. On the other hand, certain hemorrhagic disorders are not associated with low prothrombin values, including thrombopenic purpura and hemophilia. The authors conclude that vitamin K cannot be expected to benefit such cases.—J. D. STEWART and G. M. ROURKE. *New England J. Med.*, 221 (1939), 403; through *Abbott Abstract Service*, (1940), No. 593. (F. J. S.)

Histidine—Microdetermination Method for. A micro method for determining histidine is described, consisting of complete bromination of the histidine, extraction of excess bromine by CHCl_3 , adjustment of the p_H of the brominated histidine solution to 4.6 to obtain a violet color, alkalization with KOH, and colorimetric determination of the resultant stable blue color. In applying the method to determination of histidine in the course of studies of the histidase content of organ suspensions or extractions, the tissue protein is first removed by trichloroacetic acid. In applying the method to urine, the urinary pigments and alkaline earth salts must be removed and the diamino acids concentrated. Healthy men excrete 0–42 mg.% histidine in the

urine.—ZENYA KURIHARA. *J. Biochem. (Japan)*, 30 (1939), 205; through *Squibb Abstr. Bull.*, 12 (1939), A-1528. (F. J. S.)

Hormonal Composition from Urine. A process for the obtainment from the urine of women having defunct ovaries of a composition exhibiting the gonadotropic activity of the sex hormone of the anterior lobe of the pituitary gland in that when administered to hypophysectomized animals it is follicle-stimulating in the female and gametogenic in the male, involves adding to the urine a sub-precipitating amount of ammonium sulfate and then a precipitating amount of alcohol, separating the precipitate, adding thereto sufficient water to make a substantially saturated solution of ammonium sulfate, and recovering the undissolved material.—JOSEPH S. LE FRATES, assignor to E. R. SQUIBB & SONS. U. S. pat. 2,137,240, Nov. 22, 1938. (A. P.-C.)

***p*-Hydroxypropenylbenzene—Polymerization Products of, and Their Estrogenic Activity.** A study of the estrogenic activity of anol which has been polymerized either spontaneously or by means of reagents. Anol was prepared from *p*-hydroxybenzoic aldehyde and ethylmagnesium bromide. Spontaneously polymerized anol exerts complete estrogenic activity at a dose of 0.020 mg. and contains a dimer of benzoyl *p*-hydroxypropenylbenzene which is inactive even in large doses. Treatment of anol with formic acid yields a high molecular weight product which is devoid of estrogenic activity. The active substance of polymerized anol is most probably a dimer having a very special chemical constitution.—A. SEMPRONJ, E. MORELLI and A. DANSI. *Biochim. terap. sper.*, 25 (1938), 153–158; through *Chimie & Industrie*, 41 (1939), 118. (A. P.-C.)

Insulin as a Substitute for Tube Feeding. The administration of 10–20 units of insulin before the morning and noon meals every other day created appetite in 29 patients of a psychiatric institution who had persistently refused to eat. The patients improved on this régime, gaining weight. The number of tube feedings was greatly reduced.—JOHN SMITH. *Ohio State M. J.*, 35 (1939), 1210; through *Squibbs Abstr. Bull.*, 12 (1939), A-1514. (F. J. S.)

Insulin Crystals. 2,143,590—A process is employed involving the production of crystals of insulin from an insulin solution or suspension made with noncrystalline insulin and containing insulin and at least one metal of the class consisting of zinc, cobalt, nickel and cadmium, with the metal present in sufficient amount in proportion to the insulin to produce with certainty a high yield of crystals of insulin, and adjusting the preparation to between p_H 5.8 and 6.5 to promote the formation of crystals of insulin. 2,143,591—This patent covers a therapeutic preparation suitable for subcutaneous administration and containing insulin together with from 25 to 250% of its dry weight of a zinc compound which serves to give a prolonged therapeutic effect.—DAVID A. SCOTT, U. S. pat. 2,143,590; and DAVID A. SCOTT and ALBERT M. FISHER, U. S. pat. 2,143,591, Jan. 10, 1939; both pats. assigned to THE GOVERNORS OF THE UNIVERSITY OF TORONTO. (A. P.-C.)

Insulin—Precipitation of, with Rhodamine-B. Insulin is readily precipitated with rhodamine-B at a p_H 7.2. The dye can be extracted from the compound with isoamyl alcohol, leaving the insulin behind.—H. GERSHBERG and J. C. FORBES. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 95. (A. E. M.)

Ionizable Iron—Relative Proportion of, in Cows' and Mothers' Milk. Previous investigation has shown that while Indian foodstuffs contained an

optimum amount of iron only a small fraction of it was ionizable and hence assimilable. Since only ionizable iron in foodstuffs is available for hemoglobin regeneration the present study concerns itself with determining the amount of ionizable iron in certain samples of cows' and mothers' milk. The dipyrindyl calorimetric test for iron which was used for these determinations was outlined in detail. This test showed that the average iron content in cows' milk is 0.635 mg. per 100 cc. milk with most of it available for assimilation. Almost all iron found in mothers' milk is likewise in the ionizable form.—J. C. PAL. *Indian Med. Gaz.*, 74 (1939), 470-471.

(W. T. S.)

Iron—Photometric Determination of, in Blood and Tissues with Sulfosalicylic Acid. Blood (0.1 cc.) or tissue (50 to 300 mg.) is oxidized in a 25 to 50-cc. Kjeldahl flask with a 1:3 mixture of sulfuric and nitric acids, then nitric acid is added only until the nitrous vapors decrease. The flask is removed to a water bath and a few cc. of water added to favor the elimination of nitrous vapors. The contents (2 to 3 cc.) are transferred carefully with water to a 25-cc. volumetric flask. The solution is neutralized with 10% sodium hydroxide solution in presence of Congo red paper; it is then acidified with twice normal hydrochloric acid (blue to Congo red paper), and to the solution are added in order 2 cc. ammonium chloride, 2 cc. of 20% sulfosalicylic acid, 2 cc. of 10% ammonium hydroxide; the solution is diluted to 25 cc. with water and tested photometrically in a 2-cm. cell with an S43 filter. The control cell is filled with a solution containing the same amounts of reagents as the unknown sample. The sensitivity of the reaction reveals iron in a dilution of 1 to 5,000,000. The reaction of iron with sulfosalicylic acid is not affected by the presence of substances resulting from the oxidation of biological materials.—A. DE NIEDERHÄUSERN and E. FERRANINI. *Diagnostica tec. Lab.*, 9 (1938), 94-106; through *Chimie & Industrie*, 41 (1939), 51.

(A. P.-C.)

Iron—Radioactive, and Its Excretion in Urine, Bile and Feces. When radioactive iron in doses of 100-250 mg. as ferrous gluconate was administered intravenously to anemic or normal dogs, about 2-8% of the radioactive iron was eliminated in the urine and feces during 3-15 days. After this initial spillover, the urine contained no radioactive iron, or only traces, while the feces contained 0.05-0.4 mg./day. Blood destruction, produced by subcutaneous injection of acetylphenylhydrazine, caused an increase in fecal administration of radioactive iron to 0.1-1.0 mg./day. The results indicate that the dog excretes iron with difficulty, and that, normally, iron stores are probably controlled via absorption of food iron from the intestine rather than via elimination of body iron.—P. F. HAHN, W. F. BALE, R. A. HETTING, M. D. KAMEN and G. H. WHIPPLE. *J. Exptl. Med.*, 70 (1939), 443; through *Squibb Abstr. Bull.*, 12 (1939), A-1525. (F. J. S.)

Kjeldahl Nitrogen Determination—New Catalyst for. I. Application to the Determination of Nitrogen in Proteins, Tissue Powders and Feces. There is added 20 mg. of a mixture of 1 part of mercury selenite and 24 parts of potassium bisulfate to each cc. of sulfuric acid. The heating time is shortened. The results are practically the same as obtained by the Dumas method.—C. DUMAZERT and Y. MARCELET. *Bull. soc. chim. biol.*, 20 (1938), 201-211; through *Chimie & Industrie*, 41 (1939), 51.

(A. P.-C.)

Kjeldahl Nitrogen Determination—New Catalyst for. II. Determination of Total Urinary Nitrogen and the Residual Nitrogen of Mestrezat and Janet. In the determination of urinary nitrogen the Dumas method gives higher values than the Kjeldahl method as practiced with any of the ordinary cata-

lysts. The difference (called residual urinary nitrogen by Mestrezat and Janet) is practically negligible if about 1 mg. of mercury selenite per cc. of sulfuric acid is used as catalyst together with the usual amount of potassium bisulfate.—C. DUMAZERT and Y. MARCELET. *Bull. soc. chim. biol.*, 20 (1938), 212-216; through *Chimie & Industrie*, 41 (1939), 51.

(A. P.-C.)

Lactoflavin Concentrate. A soluble lead salt such as lead acetate is added to a solution containing lactoflavin, such as one of milk-whey solids, and hydrogen sulfide is passed through the solution to form a precipitate, a filter cake is separated containing adsorbed lactoflavin, a suspension of the filter cake is heated in a solvent for the lactoflavin such as hot water, and at least a portion of the solution obtained is evaporated to obtain a lactoflavin concentrate.—HOWARD F. SEIBERT, assignor to S. M. A. CORP. U. S. pat. 2,139,857, Dec. 13, 1938.

(A. P.-C.)

Lactoglobulin—Crystalline, Determination of Peptide Bonds in.—R. D. HOTCHKISS. *J. Biol. Chem.*, 131 (1939), 387; through *Squibb Abstr. Bull.*, 12 (1939), A-1458. (F. J. S.)

Lead in Biological Materials—Determination of. Destruction of organic matter may be safely effected without loss of lead by ignition, if necessary after addition of sodium phosphate. This avoids the large blank inevitable with wet digestion methods. Lead is separated from other metals by ether extraction of the complex with sodium diethyldithiocarbamate. Copper is held back by having the solution alkaline and containing cyanide; iron is also prevented from forming a complex by the same conditions. Citrate is also added to prevent precipitation of hydroxides and phosphates. When much calcium is present, the extraction is made in acid solution, the extract is ignited and the extraction repeated in alkaline solution. The extract, after digestion with sulfuric acid, is diluted with water and treated with acetic acid and then made alkaline with ammonia. Potassium cyanide, carbon tetrachloride and dithizone are next added. On shaking, the lead complex passes into the solvent layer together with some of the excess dithizone. The latter is removed by shaking with potassium cyanide solution. The red solution of lead complex is finally compared colorimetrically with a standard. Oxidation of the dithizone is prevented by the elimination of iron and copper, and by avoiding bright sunlight.—S. L. TOMPSETT. *Biochem. J.*, 33 (1939), 1231; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 772. (F. J. S.)

Lipids of the Globulins and Albumins of Blood Serum—Comparative Extractibility of the. The lipids of the albumin fraction are in general less firmly bound and more easily extracted by ether after addition of a little alcohol than the lipides of the globulins, but a small fraction of the lipids of the albumins is very firmly bound and resists extraction.—B. DELAGE. *Bull. soc. chim. biol.*, 20 (1938), 892-897; through *Chimie & Industrie*, 41 (1939), 52. (A. P.-C.)

Lysine—Simplified Procedure for the Isolation of, from Protein Hydrolysates. The newly developed method of preparing lysine from protein hydrolysates by direct precipitation as the picrate greatly reduces the isolation time, eliminates electrolysis and ensures a good yield and quality of the hydrochloride. Histidine.2HCl is readily prepared from the same hydrolysates.—E. E. RICE. *J. Biol. Chem.*, 131 (1939), 1; through *Squibb Abstr. Bull.*, 12 (1939), A-1455. (F. J. S.)

Magnesium in Blood Serum—Microdetermination of, Using a Photoelectric Colorimeter. The ash from 0.5 to 2.0 cc. of serum is extracted with 1.0, 0.5

and 0.5 cc. of 0.5% acetic acid and the calcium removed from the combined solutions by precipitation as oxalate. The magnesium is then precipitated by adding ammonium hydroxide and 0.15 cc. of a 2% solution of hydroxyquinoline in alcohol and warming to 70° C. The washed precipitate is dissolved in hot 0.5% acetic acid, a drop of ferric chloride solution is added to form the colored iron-hydroxyquinoline compound and the solution compared with a standard after suitable dilution.—R. WOLFF. *Compt. rend. soc. biol.*, 127 (1938), 1445-1446; through *Chimie & Industrie*, 40 (1938), 1077-1078. (A. P.-C.)

Male Sex Hormone—Method of Extraction, Assay and Dosage of. The male hormone is extracted from mixed urine as androsterone. Tests for androsterone and testosterone are described. The size of the seminal vesicles in castrated rats and of combs of castrated cocks is increased. The international unit of androsterone is 0.1 mg., which when injected for six successive days produces 30% increase in the size of the comb of a capon.—R. GANDOLFO HERRERA. *Prensa Med. Arg.*, 25 (1938), 992; through *Rev. Centro Estud. Farm. Bioquim.*, 28 (1938), 76. (G. S. G.)

Myeloblastic Leukemia—Diagnosis of, by Copper. Myeloblastic leukemia can be diagnosed very easily by the combined use of the Sato-Sekiya's original copper peroxidase method and the Tōhoku Pediatric Method, because the pictures of myeloblasts are essentially different under both methods.—S. KIMURA. *Tōhoku J. Exp. Med.*, 36 (1939), 351. (A. C. DeD.)

Nicotinamide—Colorimetric Determination of. The method is based on the reaction of pyridine derivatives with 2,4-dinitro-*l*-chloro-benzene to form pyridinium salts which are decomposed with alkali and yield yellow-red derivatives of glutacetaldehyde. Since all pyridine derivatives give the reaction, they cause interference in testing for nicotinamide. They are, however, not usually present in animal products, but care must be exercised in making the test on plant products which may contain pyridine alkaloids. The colorimetric comparison is suitably carried out by means of a step-photometer. The method is entirely suitable for determination of nicotinamide in cozymase preparations, in beef livers, etc.—R. KARRER and H. KELLER. *Helvetica Chim. Acta*, 21 (1938), 463-469; through *Chimie & Industrie*, 41 (1939), 247. (A. P.-C.)

Nicotine in Urine—Determination of. Amounts of nicotine in excess of 2 mg. can be determined by extraction with ether, steam distillation of the residue first from acid and then from alkali, and precipitation with Reinecke salt from the second distillate. The nicotine compound is then estimated colorimetrically. A more convenient method, applicable to smaller amounts of nicotine, consists in direct distillation from a small sample of alkalized urine, extraction of the acidified distillate with ether, and development of color with cyanogen bromide and benzidine. By this method recoveries of 87 to 100% of added nicotine were obtained. Smokers excreted 1.4 to 9.8 mg. of nicotine per twenty-four hours and the amount tended to increase with the number of cigarettes smoked. Normal dogs were given intravenous injections of nicotine and its urinary excretion was followed. In eight experiments the amount excreted varied from 4.2 to 12.8% of that administered. It appears that nicotine is partly destroyed in the body, so that the amount excreted by smokers probably represents only a small portion of that absorbed.—A. C. CORCORAN, O. M. HELMER and I. H. PAGE. *J. Biol. Chem.*, 126 (1939), 89; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 773. (F. J. S.)

Night Blindness and Vitamin Deficiency as Evidenced by the New Biophotometer. Biophotometer tests revealed pathological deficiency, borderline deficiency and normalcy respectively, of vitamin A nutrition in 7, 16 and 9 allergic patients, in 6, 18 and 4 hypertensive patients, and in 45, 53 and 2 tuberculous patients.—ROBIN HARRIS and GEORGE W. OWEN. *Mississippi Doctor*, 17 (1939), 334; through *Squibb Abstr. Bull.*, 12 (1939), A-1554. (F. J. S.)

Nitrogen—Determination of, by Kjeldahl Method. A discussion of variations in the Kjeldahl method of nitrogen estimation in organic substances and comparing the practicability of various catalysts.—MARCOS C. BROVELLI. *Rev. Centro Estud. Farm. Bioquim.*, 28 (1938), 67. (G. S. G.)

Ovarian Extracts—Properties of. The effects of residual ovarian extracts and follicular fluid extracts on the uterus of immature albino rats are graphically compared with the effects of estrone and estradiol. From these curves it can be seen that the uterine response to these extracts more nearly resembles that of estrone than estradiol. The effect of these two extracts are parallel.—H. W. MARLOW. *Endocrinology*, 25 (1939), 793; through *Squibb Abstr. Bull.*, 12 (1939), A-1478. (F. J. S.)

Oxalate or Citrate for the Sedimentation Test. Experiments in the blood-sedimentation test have been done under varying conditions with sodium citrate and potassium ammonium oxalate as anticoagulants. They show that the results obtained with oxalated blood are less reliable than with citrated blood.—N. H. SCHUSTER. *Lancet*, 236 (1939), 872. (W. H. H.)

Oxidation-Reduction Potential of Some Wines. The oxidation-reduction potential was determined on the sample after keeping in an hermetically sealed container for eight hours. This is the actual initial potential value. Oxygen was then bubbled through the wine for five minutes at a rate of 4-5 bubbles a second, and the potential was again determined. The initial potentials of the wines examined varied between 15.2 and 18.1, and the second value varied between 17.8 and 21.1. No simple relation was found to exist between the potential values and the principal constituents of the wines. The differences between the first and second potential values, which indicated the degree to which the wine could be oxidized, varied directly with the p_H . The best-tasting wines also showed high differences between the first and second potential values.—E. CANALS and H. BAYLET. *J. pharm. chim.*, 29 (1939), 503-10. (S. W. G.)

Pantothenic Acid and the Filtrate (Chick Antidermatitis) Factor. Properties described for the filtrate (chick antidermatitis) factor are in agreement with the properties of pantothenic acid. Comparison of the chick antidermatitis factor with calcium pantothenate and also with fresh liver shows that a ratio of approximately 5:1 exists between the yeast pantothenic acid "unit" and the chick "filter-factor" unit.—T. H. JUKES. *J. Am. Chem. Soc.*, 61 (1939), 975. (E. B. S.)

Phenol—Absorption of, by Protein in Preparation of Certain Biological Products. Phenol, added to serum as a preservative, is adsorbed on precipitates obtained in the processes of dialysis, isoelectrical precipitation, etc., involved in concentration and purification of antisera. The amount adsorbed is appreciable and should be taken into consideration in calculating the amount to be added to the final therapeutic product.—E. CARDONE and ROBERT MAZZARELLA. *J. Lab. Clin. Med.*, 24 (1938), 137-141; through *Chem. Abstr.*, 33 (1939), 2546. (E. G. V.)

Phenols in Blood—Determination of Volatile. Mix 1 cc. of serum with 1 cc. of two-thirds normal sulfuric acid and 1 cc. of 10% sodium tungstate solution, add 7 cc. of water and filter; wash twice with 5 cc. of water and distil with steam; collect 50 cc. of distillate, add 15 cc. of two-hundredth normal potassium bromide-bromate solution and 5 cc. of 12.5% hydrochloric acid, keep in the dark for 15 minutes and titrate with two-hundredth normal sodium thiosulfate. Run a blank test. The cc. of solution consumed multiplied by 7.837 give the mg. of phenol in 100 cc.—L. NASSI. *Diagnostica Tec. lab.*, 9 (1938), 161-177; through *Chimie & Industrie*, 41 (1939), 52. (A. P.-C.)

Phosphorus of Blood—Organic Acid-Soluble, Simple Method for the Determination of. To 10 cc. of 1:10 dilution of the blood add 5 cc. of barbital buffer solution (p_H 7.4), and incubate at 37° C. for 7 days. The blood phosphatase hydrolyzes the phosphate esters. The amount of inorganic phosphate now found gives the amount of esters when corrected for the inorganic phosphorus initially present.—G. DE TONI. *Biochim. terap. sper.*, 25 (1938), 262-265; through *Chimie & Industrie*, 41 (1939), 459. (A. P.-C.)

Phosphorus—Organic, Spontaneous Hydrolysis of, in Vitro. The content of inorganic phosphorus in the serum of the dog or the horse is augmented when the serums are preserved *in vitro*, in the presence of toluene at a temperature of 37°. The study of the influence of p_H upon these increases in the presence of sodium veronal as a buffer, indicates that, in the case of the dog, the augmentation of inorganic phosphorus is greater when the serums are preserved at a p_H of 7.6, however in the case of horse serum the optimum p_H was found to be near 9.0. The authors consider that this inorganic phosphorus which appeared in the serum when it was preserved *in vitro* was from the enzymatic hydrolysis of the lecithins in the serum. In this hypothesis, the factor which determines the speed of the hydrolysis of the lecithins in the serum is not based on the content of glycerophosphatase, the least in the dog, but should be attributed to the content in the serum of lecithinase or choline phosphatase.—A. VERSTRAETE and R. CLOETENS. *Arch. intern. Pharmacodynamie*, 62 (1939), 133. (W. H. H.)

Physiological Serum Isotonic with Blood—Procedure and Apparatus for the Extemporaneous Preparation of a. The procedure and apparatus are described.—E. CHERICI. *Annali Chim. Farm.*, 16 (1938), 16. (A. C. DeD.)

Progesterone—Preparation of, from Cholesterol. Progesterone is prepared from cholesterol in 2% yield by bromination of cholesterol, oxidation with acid permanganate, debromination with zinc and fractionation by suitable partition between solvents. The product is satisfactory for physiological work. Physiological properties of the product are described.—M. A. SPIELMAN and R. K. MEYER. *J. Am. Chem. Soc.*, 61 (1939), 893. (E. B. S.)

Pyruvic and α -Ketoglutaric Acids—Determination of, in Urine. To determine pyruvic acid, dilute the urine, defecate with metaphosphoric acid, reduce with zinc and sulfuric acid on the water bath, neutralize the excess acid, filter out the zinc hydroxide, treat an aliquot of the filtrate with copper sulfate and slaked lime to remove carbohydrates and in the residual liquid determine lactic acid titrimetrically by the Lieb-Zacherl method. The difference between the lactic acid found before and after reduction is a measure of the pyruvic acid. Determination of α -ketoglutaric acid is based on its oxidation to succinic acid and gravimetric determination of the latter as silver salt.—F. E. KRUSUS. *Suomen Kemistilehti (B)*, 11 (1938), No. 2, 10; through *Chimie & Industrie*, 41 (1939), 48. (A. P.-C.)

Riboflavin—Chemical Aspects of. Riboflavin, the water-soluble yellow-green fluorescent pigment of whey, synonymous with lactoflavin, vitamin G and vitamin B₂, has been known since 1879 as a constituent of milk. Its structure is 6,7-dimethyl-9-d,l-ribityl-iso-alloxazine and it is widely distributed throughout the plant and animal kingdoms. Through its *iso*-alloxazine nucleus it possesses the chemical properties of substituted benzene, an azine dye and a pyrimidine. It possesses a ribityl side chain attached to an N atom in position 9, similar to pentose sugars. Riboflavin forms a phosphoric acid ester (riboflavin-5-phosphoric acid), which combines with protein to yield a yellow oxidation enzyme. This is presumably present in every living cell, at least in all higher forms of life, and is concerned with the chemical reactions involved in cell respiration.—LELA E. BOOKER. *J. Am. Med. Assoc.*, 110 (1938), 1105. (G. S. G.)

Riboflavin—Dietary Sources and Requirements of. Riboflavin and vitamin B₆ are both required for growth and maintenance in the rat, and probably in mammals, including man. There is no specific deficiency disease for riboflavin, but shortage of it stunts growth, causes a lowering of general tone and premature aging. The skin condition is a nonspecific dermatitis different from the floral dermatitis of vitamin B₆ deficiency. It is found in milk, muscle, liver, kidney, eggs, fish eyes, malt, grass, dandelion flowers, marine and fresh water algae, apples, bananas, cottonseed flour, kale, spinach, wheat germ and yeast. It is formed primarily in the green leaves of actively growing plants; dried leaves have less. Milk from animals on fresh pasture contains more than from those on dry forage. Dietary requirements are: children to ten years, 400 units a day, adults 20 units per 100 calories. This is still experimental.—HENRY C. SHERMAN and CAROLINE SHERMAN LANFORD. *J. Am. Med. Assoc.*, 110 (1938), 1278. (G. S. G.)

Riboflavin—Physiology and Pathology of. The pigment in milk, first called lactochrome was later also obtained from liver, heart, kidney, muscles, egg white and yeast. First isolated in crystalline form from milk it was called lactoflavin, now it is commonly called riboflavin. It is yellow with a characteristic green fluorescence. Riboflavin, identified with vitamin G or B₂, has only one physiological function about which there is no dispute, its function in the oxidation processes of the cell. Riboflavin is an essential constituent of the yellow oxidation enzyme that cannot be synthesized by the animal cell. If iron compounds are present, it may be that only a small part of cell respiration is due to this enzyme. The body stores a definite amount of riboflavin and increased intake causes both increased retention and excretion. Everyone needs 2 to 3 mg. daily and overdosage is not toxic. Cataract has been experimentally produced in rats, mice, chickens and monkeys by vitamin G deficiency. Riboflavin has no therapeutic value in the treatment of blacktongue. Deficiency of riboflavin is not a primary cause of pellagra or blacktongue, but may be a complication. It has no effect on pernicious anemia. Adrenalectomy interferes with fat absorption but this is restored to the normal level by administering of either adrenal cortex extract or riboflavin phosphoric acid. The amount of vitamin G in the ration of laying hens determines within limits the amount in eggs and this in turn determines the hatchability of the eggs. Deficiency of vitamin G has little or no effect on the concentration of tissue enzymes.—A. G. HOGAN. *J. Am. Med. Assoc.*, 110 (1938), 1188. (G. S. G.)

Saturnism—Early Diagnosis of, by Determination of Porphyrin. Coproporphyrin eliminated in the urine of men suffering from saturnism comes from the coloring matter in the blood. It is soluble in ether.

The determination is carried out on the ether extract obtained from 50 cc. of the 24-hour urine, by measuring the characteristic red fluorescence of coproporphyrin in ultraviolet light by means of the Zeiss photometer. Experiments carried out on 25 workmen showed that the method is suitable for the early diagnosis of saturnism and can evaluate the hazard to which the workman is subjected. It is better than the usual methods: counting the basophilic erythrocytes, determination of hemoglobin, etc. While the normal value varies between 0.0014 and 0.008 mg. per 100 cc. for normal subjects, in those suffering from saturnism it varies from 0.006 to 0.16 mg. per 100 cc. It rises with the number of white basophilic cells.—M. SCHÄFER. *Arbeitsschutz* (1938), 175–176; through *Chimie & Industrie*, 41 (1939), 269. (A. P.-C.)

Serum Potassium and Serum Calcium in Insulin Shock Therapy. The serum potassium and serum calcium levels were investigated in four patients undergoing treatment by hypoglycemic shocks, the estimations being made before the morning injections of insulin and again at the end of the coma. The "resting" potassium fluctuates, but always above the normal level. During the coma the potassium tends to fall below its pre-coma level. The "resting" calcium only occasionally deviates from the normal, and then always above the normal level. During the coma the calcium tends to remain at its pre-coma level. During coma the K/Ca ratio tends to fall.—J. L. CLEGG. *Lancet*, 236 (1939), 871. (W. H. H.)

Shock Therapy—Biochemical Mechanism of. Schizophrenic patients who are treated with insulin and cardiozol, have chlorides of plasma and of the globular mass of the blood determined before and after shock injections. Insulin and cardiozol do not have an identical mechanism in regulating glucemia. Cardiozol develops glucemia independently of the neuro-humeral phenomena of shock and depends probably on pharmacodynamic action. Both insulin and cardiozol shock include important alterations in plasma and globular chlorides which produce humoral disturbance of phenomena of shock. These modifications are variable but coincide in an elevation of the quotient of globular-plasmatic chloride.—JUAN CUATRECASAS and ARTURO A. BRUNO. *Rev. sud-americana endocrinol. inmunol. quimioterap.*, 21 (1938), 224. (G. S. G.)

Snake Venoms. III. Crotoxin, the toxin isolated from the venom of *Crotalus terrificus*, is a colorless protein containing 4% of sulfur. It possesses neurotoxic properties and exerts a fermentative action on blood lecithin to the same extent as the crude venom; on the other hand, it does not coagulate oxalated blood. The coagulating principle of *Crotalus* venom is therefore different and independent of crotoxin.—K. H. SLOTTA and H. L. FRAENKEL-CONRAT. *Ber. deut. chem. Ges.*, 71 (1938), 1076–1081; through *Chimie & Industrie*, 41 (1939), 116. (A. P.-C.)

Sodium and Chlorine Retention without Renal Diseases. A number of patients have been observed in whom there was nearly complete absence of sodium and chloride from the urine, with very high levels in the blood. Other electrolytes were dealt with normally. There was no evidence of renal disease sufficient to account for the condition, but all cases, where the brain was examined post-mortem, showed some lesion of the central nervous system. It is suggested that either the tubules reabsorbed sodium and chloride independent of their concentration in the blood up to a definite maximum quantity per minute, or that there is an abnormality in the nervous or hormonal control of the kidneys.—E. N. ALLCOTT. *Lancet*, 236 (1939), 1035. (W. H. H.)

Soyasapogenol B—Identity of, and a New Sterol of "Shoyu Oil." The sterol isolated from "shoyu oil" is identical with soyasapogenol B.—K. TSUDA and T. KAZUNO. *J. pharm. soc. Japan*, 58 (1938), 142; through *Chimie & Industrie*, 41 (1939), 527. (A. P.-C.)

Spermatozoa—Metabolism of Human. The metabolism of human spermatozoa in Ringer-glucose is almost exclusively glycolytic and not respiratory. Maximal motility is maintained for many hours under anaerobic conditions but shows a marked tendency to decrease in air or oxygen. This suggests that the presence of oxygen has an inhibiting effect on the normal function of human spermatozoa.—JOHN MACLEOD. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 153. (A. E. M.)

Sterols. LI. Δ^4 -Pregnenone-3. The preparation of Δ^4 -pregnenone-3 from pregnanol-3(α) is given. An improved preparation of pregnanol-3(α) from pregnanol-3(α)-one-20 by the Wolff-Kishner reduction is described.—R. E. MARKER and E. J. LAWSON. *J. Am. Chem. Soc.*, 61 (1939), 586. (E. B. S.)

Sterols. LII. Reduction Products of Progesterone and the Pregnanediones. Hydrogenation of progesterone gives pregnanediol-3(α), 20(β) and allopregnanediol-3(β), 20(β). Hydrogenation in the presence of mineral acids of pregnanedione or allo-pregnanedione yields mainly pregnanediol-3(β), 20(β), or allo-pregnanediol-3(α), 20(β), respectively. The partial hydrogenation of allo-pregnanedione yields allo-pregnanol-3(α)-one-20 and allo-pregnanol-3(β)-one-20.—R. D. MARKER and E. J. LAWSON. *J. Am. Chem. Soc.*, 61 (1939), 588. (E. B. S.)

Sterols. L. The Isolation of Caoutchicol. The isolation of a new alcohol, $3_{30}H_{50}O$, named by the authors "Caoutchicol," is reported. It does not precipitate digitonin. It contains one active double bond and its dihydro derivative yields a ketone on oxidation with chromic acid. It is probably related to lanosterol and agnosterol.—R. E. MARKER and E. L. WITTE. *J. Am. Chem. Soc.*, 61 (1939), 585. (E. B. S.)

Stilboestrol. A New Synthetic Estrogenic Hormone. Stilboestrol, 4,4-dihydroxy- α - β -diethyl stilbene, was said to be active by mouth and capable in every way of replacing the action of the natural estrogenic hormones to which however the stilbene derivative is not chemically related. From a clinical study of the synthetic compound K, has concluded that it may be given in doses as large as 55 mg. without harm other than slight nausea. K. further stated that this drug is ideal for checking functional uterine bleeding and controlling vaginal discharge. In 189 cases in which the female reproductive organs were involved, the best tolerated and most effective dose was found to be 0.1 mg. 2 or 3 times a day. The tablets of stilboestrol are pleasant to take and very acceptable to children.—KARE JOHN KARNAKY. *Southern Med. Jour.*, 32 (1939), 813–815. (W. T. S.)

Sugar in Serum—Determination of Combined. The combined sugar is determined by the difference between the free sugar and the total reduction of the serum after acid hydrolysis. It was found that the method of Fujita-Iwatake (*Biochem. Z.*, 242 (1931), 159–169) gave the best results, especially with mercuric acetate precipitation, since all other procedures yield much higher values after the hydrolysis. Furthermore, to obtain reliable results the acid hydrolysis must be carried out at 100° C. for 4 hours in a stream of carbon dioxide.—R. MERTEN. *Biochem. Z.*, 297 (1938), 304–314; through *Chimie & Industrie*, 41 (1939), 460. (A. P.-C.)

Sulfanilamide—Concentration of, in Human Bile. Sulfanilamide is excreted in the bile and may be considerably concentrated in the gallbladder.—R. BETTMAN and E. SPIER. *Proc. Soc. Exptl. Biol. Med.*, 41 (1939), 449. (A. E. M.)

Sulfanilamide Derivatives—Content of the Central Nervous System of, after Prolonged Absorption. The authors have determined 1162 F in the brain, after fractional absorption of average doses, after several days; in these conditions, the sulfanilamide derivative tends to be distributed equally in the organism; in particular, the brain, cephalorachidic liquid and also in the closely related muscles. The concentrations observed in the tissues and blood are often different. The rate of 1162 F absorption from the digestive tract is not very long as is evidenced by its appearance in the cerebral fluid.—M. RISER and M. VALDIQUIE. *Soc. de Biol.*, Mar. 18, 1939; through *Presse Medicale*, 26 (1939), 491.

(W. H. H.)

Testosterone—Inhibiting Effects of the Salts of, upon Female Lactation. The authors have shown that two or three injections of 10 mg. of testosterone acetate causes stoppage of lactation. They emphasize the interest of this method in obtaining a rapid weaning and from the results obtained the lessening of the usage of the estrogenic hormones.—M. PORTES, J. DALSACE and R. WALLICH. *Soc. de Biol.*, Mar. 18, 1939; through *Presse Medicale*, 26 (1939), 491.

(W. H. H.)

Thiamin Analogs. I. β -(4-Methylthiazolyl-5)-Alanine. The synthesis of an amino acid, β -(4-methylthiazolyl-5)-alanine, which is a theoretically possible precursor of the thiazole half of vitamin B₁, is described. Pea roots are able to convert the substance to the vitamin thiazole, whereas *Phycomyces Blakesleeanus* and *Staphylococcus aureus* do not bring about this transformation to an appreciable extent.—E. R. BUCHMAN and E. M. RICHARDSON. *J. Am. Chem. Soc.*, 61 (1939), 891. (E. B. S.)

Thiamin—Methods of Determination of, and Application to Biological and Clinical Problems. The biological, biochemical and chemical methods of determination of vitamin B₁ are reviewed. The usual polyneuritis and growth methods, the bradycardia method, the bioassay on *Drosophila* and the bioassay on *Phycomyces* are described. The biochemical methods include Peters' catatorulin method and Ocha and Peters' cocarboxylase activation method. Chemical methods described include Kinnersley and Peters' diazosulfanilic acid method, variants using other diazonium compounds, and Jansen's thiochrome method. Applications to determinations in biological fluids include the description of Westenbrink and Goudsmit's thiochrome method for urine. The difficulties encountered in applying this method to determinations in blood are considered, and the use of the phycomyces method for blood determinations is described. The author then describes his own work in determining the thiamin content of the organs of rats and pigeons by the rat growth and by the thiochrome methods at various stages of vitamin depletion, also Leong's determinations of the organ content in rats by the bradycardia method. Forty-five literature references are cited.—H. G. K. WESTENBRINK. *Dansk Tids. Farm.*, 13 (1939), 173. (C. S. L.)

α -Tocopherol. α -Tocopherol synthesized by condensation of trimethylhydroquinone and phytyl bromide has a coumaranic structure. The synthetic product is racemic, whereas the natural product is optically active.—P. KARRER, H. FRITZSCHE, B. H. RINGER and H. SALOMON. *Helvetica Chim. Acta*, 21 (1938), 520-525; through *Chimie & Industrie*, 41 (1939), 118. (A. P.-C.)

Tocopherols—Isolation of, from Wheat Germ Oil. It was possible to separate from wheat germ oil, in addition to α -tocopherol and neo-tocopherol, a third tocopherol. Isolation of α -tocopherol allophanate in a clearly defined crystalline form, has not yet been effected. The analytical values obtained for this compound correspond to those of the allophanate of an alcohol C₂₉H₅₀O₂. Saponification yielded α -tocopherol which was converted into the 3,5-dinitrobenzoate, which crystallizes relatively well.—P. KARRER and H. SALOMON. *Helvetica Chim. Acta*, 21 (1938), 514-519; through *Chimie & Industrie*, 41 (1939), 118. (A. P.-C.)

Uric Acid in Blood—New Method of Determining. Mix the serum with an equal volume of 20% trichloroacetic acid solution and filter. To 5 cc. of filtrate add 5 cc. of 5% phosphomolybdic acid solution and an amount of decinormal sodium hydroxide equal to 1 cc. less than one-half the amount required to neutralize the free acidity of the mixture. The final p_H is not stated. Dilute to 15 cc. and after 5 minutes compare the blue color with that of a uric acid standard similarly prepared. Many drugs interfere with the determination.—R. MACHTOV. *Bull. biologistes pharm.* (1938) No. 40, 61-63; through *Chimie & Industrie* 41 (1939) 49.

(A. P.-C.)

Urine—Comparative Value of Some Diagnostic Reactions of. The silver nitrate reaction of Buscaino was compared with the Ehrlich, Weiss, Donaggio, Petzetakis and De Silvestri reactions. In certain febrile conditions such as typhoid and tuberculosis, the Buscaino reaction seemed superior to the others.—A. GANDELINI and P. MANFRINI. *Diagnostica tec. lab.*, 9 (1938), 313-330; through *Chimie & Industrie*, 41 (1939), 461. (A. P.-C.)

Veronal—Determination of, in Urine. Acidify the urine with a few drops of dilute hydrochloric acid, extract a small quantity with twice its volume of chloroform, filter the extract, place 2 cc. in each of a series of test-tubes, to each add a 0.2% solution of cobalt and lithium acetate in methanol. There appears a violet coloration, the intensity of which depends on the quantity of veronal present, which can be determined colorimetrically.—R. STEINBRÜCK. *Pharm. Zentralhalle*, 79 (1938), 309; through *Chimie & Industrie*, 41 (1939), 249.

(A. P.-C.)

Vitamin A—Absorption of, Riboflavin and Ascorbic Acid Needed for the. Persons showing subnormal dark adaptations can usually be restored to normal by administration of vitamin A, but certain cases are found which do not respond to this treatment. This has led to the belief that vitamin A is not the only factor necessary for the normal regeneration of visual purple. Both riboflavin and ascorbic acid have been suggested as possible accessory factors. Several persons, otherwise normal, having low dark adaptation had been receiving large doses of vitamin A in the form of haliver oil, but had failed to respond. They were then given a dose of 200,000 International units of vitamin A together with 1 mg. of riboflavin, and this combination immediately restored the dark adaptation (as measured by the biophotometer) to normal. In some other individuals, the combination of riboflavin and vitamin A failed to produce this result. These individuals, however, responded when ascorbic acid was added in sufficient amounts to the diet.—M. S. KIMBLE and E. S. GORDON. *J. Biol. Chem.*, 128 (1939), lii; through *Abbott Abstract Service* (1940), No. 592. (F. J. S.)

Vitamin A and A₂—Comparison of, by Distillation. Following molecular distillation of salmon liver oil, the relative yields of vitamin A (I) and vitamin A₂ (II) were plotted against the temperature. The two resulting curves were identical in shape, the

maximum of II being only 3° above that of I. The 3° difference in maximum presumably represents some small alteration in the molecules, *e. g.*, additional double bond or a structural rearrangement; both molecules contain the same number of carbon atoms.—E. LEB. GRAY. *J. Biol. Chem.*, 131 (1939), 317; through *Squibb Abstr. Bull.*, 12 (1939), A-1480. (F. J. S.)

Vitamin A and Vitamin D Contents of Butter. II. **Seasonal Variation.** A series of determinations on monthly samples of butter from Scotland showed the highest concentration of vitamin A to have been found in samples of October, 29.9 International units per Gm. and the lowest in April, 9 units per Gm. The highest values for vitamin D were obtained in June, 0.99 International units per Gm.; the lowest values of 0.08 units per Gm. were obtained in the months of March, April and December. A series of determinations on Danish butters showed similar trends. The variations in vitamin D potency of Scottish butter was related to the amount of sunshine received by the cows on pasture.—H. WILKINSON. *Analyst*, 64 (1939), 17. (G. L. W.)

Vitamin A—Biochemistry of. The author describes the methods of extraction and concentration of vitamin A (and vitamin A₂), discusses its chemical constitution and the structural relations with the β-carotene, its formula of constitution (confirmed by synthesis of Perhydrovitamin A) and the proceedings of its synthesis.—T. CESSI. *Biochim. terap. sper.*, 25 (1938), 467. (A. C. DeD.)

Vitamin A—Determination of, in Tissues and Blood of Various Animals with the Aid of a Photoelectric Photometer. The color intensity of the Carr-Price antimony chloride reaction is measured by means of a specially designed photometer.—V. L. SOLIANIKOVA and G. V. TROITSKI. *Biokhimiya*, 2 (1937), 850-858; through *Chimie & Industrie*, 40 (1938), 1078. (A. P.-C.)

Vitamin A—Relation of, to Health of Infants. Previous studies agree that the average diet is adequate in vitamin A, but give little information as to its degree of adequacy. Information on the margin of safety with respect to vitamin A in the average diet of infants was gained by observation of two groups. One consisted of 51 infants with less than the usual amount of vitamin A in their diet, and another of 53 infants with an excessive amount. The two groups compared well as to state of nutrition and resistance to infections. The experiments ran from November to June. The low group received one-fourth of the amount of vitamin A in the normal diet, the other group receiving four to eight times the average amount. The groups averaged equality in health and nutrition, which indicates that the average diet of infants contains four times as many units as the minimum requirement.—J. M. LEWIS and L. H. BARENBERG. *J. Am. Med. Assoc.*, 110 (1938), 1338. (G. S. G.)

Vitamin A Therapy and Biophotometry. Where the industrial process requires acute and accurate color sense—for example, color matching—an adequate supply of vitamin A is essential for the restoration of visual purple. The biophotometer, which measures the subjects ability to see light and his response to dark adaptation, was used to test the effect of administration of carotene in oil. The results, which were highly satisfactory, are charted and described.—O. H. SCHETTLER, R. F. BISBEE and B. H. GOODENOUGH. *J. Ind. Hyg. Toxicol.*, 21 (1939), 53; through *Brit. Med. J.*, 4084 (1939), 808F. (W. H. H.)

Vitamin B₁—Action of, on Glycemia of Rabbits. The author observed that 0.75 mg. of vitamin B₁ injected intramuscularly into normal rabbits causes

a hypoglycemia; while doses of 2 mg. or more are followed by a slight but marked hyperglycemia.—G. ORTOLEVA. *Biochem. terap. sper.*, 25 (1938), 511. (A. C. DeD.)

Vitamin B₁ and Thyroid. It has been reported that subcutaneous injection of vitamin B₁ protects rats from the weight loss induced by thyroxine injections. This has been confirmed, and it has also been found that pretreatment with the vitamin lessens the rate at which thyroid-fed rats lose weight. Brain tissue from rats receiving thyroid or thyroxine showed the catatorulin effect, not observed with normal animals on the same diet. Hyperthyroid animals show tissue cocarboxylase contents intermediate between those of normal and those of vitamin B₁-deficient animals. Both normal and hyperthyroid animals exhibited increased cocarboxylase in the tissues after injection of vitamin B₁. After seven days of pretreatment with the vitamin, to increase the cocarboxylase level of the tissues, the hyperthyroid animals lost their cocarboxylase more rapidly than normal controls. The maximum possible levels of cocarboxylase appear not to be necessary for full health. The fall of tissue cocarboxylase in hyperthyroidism is not due to loss of phosphorylating capacity.—R. A. PETERS and R. J. ROSSITER. *Biochem. J.*, 33 (1939), 1140; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 768. (F. J. S.)

Vitamin B₁—Bradycardia Test for. An analysis is presented of 1426 responses to the original acid clay International Standard vitamin B₁. Doses of 15, 25 and 40 mg., respectively, gave mean responses in the bradycardia test of 3.10, 4.49 and 5.57 days. The response is proportional to the logarithm of the dose. The limits of error are calculated for various numbers of rats used in a test, and the accuracy is considered satisfactory in comparison with other biological assays. Since the slope of the lines relating response to logarithm of dose are the same for prepared wheat germ and for yeast extract as for the standard, the active material being measured appears to be the same in each case. The precautions to be observed in the test are described. Assays of 12 foodstuffs by this method are presented. The results vary from 0.3 International units per Gm. for a sample of rice to 183 for a rice concentrate. The method is also suitable for crystalline aneurin and hence for the new International Standard.—A. Z. BAKER and M. D. WRIGHT. *Biochem. J.*, 33 (1939), 1370; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 769. (F. J. S.)

Vitamin B₁—Clinical Uses of. After referring to the work of Minot, Strauss, Williams and Minz regarding vitamin deficiencies the author stated that the symptoms of vitamin B₁ deficiency cannot be sharply defined. Some of the supposed deficiencies may be due to other factors while the symptoms of a true B₁ deficiency may be overlooked. The vitamin may be used as an aid to an accurate diagnosis. In spite of the broad significance of thiamin in nature it is not to be expected that conditions not caused by a lack of vitamin B₁ will be benefited by a treatment with this vitamin. It is to be hoped that it will not be exploited as a "cure-all." Twenty-three references were appended.—G. C. SHATTUCK. *Am. J. Trop. Med.*, 19 (1939); through *J. Trop. Med. Hyg.*, 42 (1939), 240. (W. T. S.)

Vitamin B₁ and Manganese—Metabolic Interdependence of. Reciprocal Neutralization of Their Toxic Effects. Excessive amounts of vitamin B₁ interfere with the capacity of female rats to rear their young and with the nursing instinct. This becomes progressively worse in the following generations. Addition of manganese to the diet completely offsets the nocivous effect of the excess of vitamin B₁.

Supplements of manganese alone in amounts of 2 mg. a day result in interference with lactation and cannibalism. The vitamin B₁ requirement of an animal varies with the manganese content in the diet.—DAVID PERLA and MARTA SANDBERG. *Proc. Soc. Exptl. Biol. Med.*, 41 (1939), 522. (A. E. M.)

Vitamin B₁—Simplified Determination of, by the Thiochrome Method. Mix the substance with a solution of potassium ferricyanide and 3 cc. of 10% sodium hydroxide solution, shake 1 minute, add 10 cc. of isobutanol and shake again for 2 minutes, transfer to a separatory funnel, let stand, filter the upper layer through paper, and compare the intensity of fluorescence of the filtrate (solution of thiochrome) in a nephelometer with that of a standard solution of thiochrome.—G. HONGO. *J. Pharm. Soc. Japan*, 58 (1938), 69-71; through *Chimie & Industrie*, 41 (1939), 118. (A. P.-C.)

Vitamin B₁ (Thiamin, Aneurin)—New Color Reaction for. Contrary to Vilella and Leal (*S. A. B.*, 12 (1939), A-1450), Y. has found that thiamin or thiamin chloride does not give a blue color with the Fiske and Subbarow ammonium molybdate-sulfuric acid-amino-naphthosulfonic acid reagent generally used for the determination of phosphorus. Y. has also found that the vitamin gives no blue color when the amino-naphthosulfonic acid is replaced by stannous chloride as the reducing agent in the above reagent. It is concluded that thiamin does not interfere with phosphorus determinations and that the blue color observed by V. and L. was probably due to impurities.—G. E. YOUNGBURG. *Science*, 90 (1939), 566; through *Squibb Abstr. Bull.*, 12 (1939), A-1581. (F. J. S.)

Vitamin B₆ Deficiency in Chicks. The symptoms of vitamin B₆ (2-methyl, 3-hydroxy, 4,5,di-hydroxy-methyl-pyridine) deficiency in chicks consists of slow growth, depressed appetite and inefficient utilization of food, followed in some cases by spastic convulsions and death. The symptoms were prevented by addition of the synthetic vitamin to the diet.—THOMAS H. JUKES. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939) 180. (A. E. M.)

Vitamin C, Calcium Ascorbate and Gluconate—Comparative Physico-Chemical Study of. The interferometric method showed that the quantity of calcium gluconate fixed by blood serum is relatively small, and this may be related to the low ionic dissociation of the salt. The affinity of serum proteins toward vitamin C and its compounds increases with the biological activity and ionic dissociation of the product studied. In the presence of vitamin C and calcium ions there seems to be a reaction between the protein fractions modified by the calcium ions and other fractions modified by the vitamin.—R. JONNARD and S. L. RUSKIN. *Compt. rend. soc. biol.*, 128 (1938), 266-268; through *Chimie & Industrie*, 41 (1939), 117. (A. P.-C.)

Vitamin C in Maté. The publication in *Semana Medica* of the finding that maté (*Ilex paraguayensis*) is a source of vitamin C resulted in Paraguayan soldiers receiving large rations of maté. A study of guinea pigs on a diet deprived of vitamin C verified the value of maté as a preventive and curative.—C. GATTI, et al. *Arch. farmacol. sper.*, 62 (1936), 37; through *Rev. quim. farm.*, 2 (1937), 145. (G. S. G.)

Vitamin C—Intradermal Test for. It has been previously shown that the vitamin C content of the skin is dependent on the vitamin C nutrition in the body. Also it has been observed that the relative amount of vitamin C in the skin may be determined by injecting a small quantity of the dye, 2,6-dichlorophenolindophenol, intradermally and noting the time required for the color of the dye to disappear. The present report deals with a study con-

ducted to determine the validity of the skin test for vitamin C by using guinea pigs, the diet of which could be carefully controlled. The experimental procedure and the technic employed for determining this were outlined. It was observed that if the guinea pigs were placed on a scorbutic diet the time of decolorization of the dye increased approximately at the same rate the body weight diminished. When the same guinea pigs were fed a normal diet or given ascorbic acid the decolorization time decreased and the body weight rose at fairly equal rates. The weight curves and decolorization time curves again followed each other when the vitamin C supplement was withdrawn. In another set of experiments it was shown that the intradermal test is likewise significant from a quantitative standpoint. In some tests involving the use of nine healthy male subjects it was found that the administration of 700 mg. of ascorbic acid markedly increased the excretion of ascorbic acid in the urine and decreased the decolorization time of the dye.—SACHSCHIDANANDA BANERJEE and B. C. GUHA. *Indian Med. Gaz.*, 74 (1939), 335-340. (W. T. S.)

Vitamin C in Urine—Determination of. The ascorbic acid is oxidized with norit to dehydroascorbic acid which is converted into its 2,4-dinitrophenylhydrazine derivative. This is separated by centrifuging and is decomposed with hydrochloric acid and stannous chloride to yield furfural, which is estimated colorimetrically with aniline acetate in comparison with a standard prepared from pure ascorbic acid. The urines from 50 normal subjects have been examined by this method and by indophenol titration. In a number of instances the osazone furfural method gave a zero figure for ascorbic acid, although the subject was apparently receiving an adequate diet. In every case the indophenol titration method gave positive results. Where values above zero were obtained by the osazone furfural method, the corresponding indophenol titration values were from 0 to 297% higher. It is considered that values by the indophenol method below about 30 mg. of ascorbic acid per liter of urine are not significant, since urine devoid of ascorbic acid can show reducing values of this magnitude.—J. H. ROE and J. M. HALL. *J. Biol. Chem.*, 128 (1939), 329; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 774. (F. J. S.)

Vitamin C—New Method for the Colorimetric Determination of. The new method for the determination of ascorbic acid is based on the fact that ascorbic acid reduces trivalent iron to bivalent iron in stoichiometrical ratio under appropriate conditions. The amount of ferrous compound formed may be determined photometrically by means of the complex compound with α,α' -dipyridyl. A number of ascorbic acid determinations gave results with errors of -0.36% and +0.10%, respectively. Further investigations will show whether the method is suitable for the determination of ascorbic acid in fruit juices and physiologic liquids.—E. SCHULEK and J. FLODERER. *Angew. Chem.*, 52 (1939), 615; through *Squibb Abstr. Bull.*, 12 (1939), A-1522. (F. J. S.)

Vitamin C—New Method for the Determination of, with Weiss Step Photometer. To determine ascorbic acid in colored solutions, 5-10 cc. of the test solution stratified over 5 cc. nitrobenzene or xylene is treated with a solution of 2,6-dichlorophenol indophenol tablets in excess of the amount which would be bleached by the vitamin present. After a short reaction period, the residual indicator color is transferred to the nitrobenzene or xylene layer by swinging the tube slowly, and this color is measured with a Pulfrich photometer. The color is determined because it is more stable in the organic solvents. The amount of ascorbic acid in the sample

may be calculated, as shown by the difference between the amount of indicator employed and the amount of indicator remaining after reaction with the vitamin.—F. BUKATSCH. *Z. physiol. Chem.*, 262 (1939), 20; through *Squibb Abstr. Bull.*, 12 (1939), A-1581. (F. J. S.)

Vitamin C—Prevalence of Deficiency of, in Medical Patients. One hundred adult medical patients who had been hospitalized for the treatment of various diseases were studied to determine the level of ascorbic acid in the blood. In spite of the fact that all the specimens were run within 15 minutes after the blood had been taken from the vein, a large number of low values was found. Thirty-eight patients showed less than half the normal amount of vitamin C in the blood, yet they all belonged to a group which, because of economic security, might have been supposed to have a very low incidence of dietary insufficiency. In correlating the nature of the disease with the deficiency, gastro-intestinal disease or dysfunction was the most prominent associated condition, being present in about 84% of the patients with low ascorbic acid levels. Forty per cent of the deficient patients had peptic ulcers. Economic ability to secure a proper diet does not assure its being obtained.—J. D. CROFT and L. D. SNORF. *American J. Med. Sci.*, 198 (1939), 403; through *Abbott Abstract Service*, (1940), No. 590. (F. J. S.)

Vitamin D (Crystalline) from Tuna Fish Liver Oil. The 3,5-dinitrobenzoate of D vitamin from tuna fish liver yields crystalline vitamin, colorless needles that melt at 82° to 84° C. like vitamin D₃, C₂₇H₄₄O, and having an identical extinction curve. This vitamin forms an addition product (that melts 124° C.) with the irradiation product of *iso*-7-dehydrocholesterol. Vitamin D₂ does not give such a compound. The activity of the product made was 40,000 International units per mg. These results contradict the work of Zucker and co-workers (*Naturwissenschaften*, 26 (1938), 11).—H. BROCKMANN and ANNELEISE BUSSE. *Naturwissenschaften*, 26 (1938), 122-123; through *Chimie & Industrie*, 40 (1938), 941. (A. P.-C.)

Vitamin K. A review with 36 references.—M. A. LESSER. *Drug and Cosmetic Ind.*, 45 (1939), 239-295, 304. (H. M. B.)

Vitamin K Activity in the Benzoquinone Series. Benzoquinone, toluquinone, trimethylquinone and duroquinone are not antihemorrhagic at the one mg. level. Phlorone appears to be the simplest compound with vitamin K activity investigated to date. It was a potency of one unit/mg., *i. e.*, approximately two thousand times less potent than the most active vitamin K substance found to date, 2-methyl-1,4-naphthoquinone. The speed of action and period of efficacy of the latter and of phlorone are practically identical, unit for unit. Two tables of data are given.—S. ANSBACHER and E. FERNHOLZ. *J. Biol. Chem.*, 131 (1939), 399; through *Squibb Abstr. Bull.*, 12 (1939), A-1484. (F. J. S.)

Vitamin K—Determination of. Single-comb white Leghorn chicks are placed at hatching on a vitamin K-free diet for one week. Supplements of vitamin K are then included in the diets for a further two weeks. The clotting ability of the blood is then measured by the "prothrombin time" method of Quick. The blood is drawn directly into a tube containing oxalate, without special precautions to prevent contamination with tissue juice. An extract of chicken breast muscle is prepared as a clotting agent (thrombokinase), and before use is mixed with an equal volume of 0.025*M* solution of calcium chloride; 0.1 cc. of oxalated blood and 0.2 cc. of clotting solution are placed in a small vial in a bath at 39° C., and the time required for the film to be-

come gelatinous is noted. For comparison, the direct blood clotting times for blood taken from a wing vein were also noted. The measurements of prothrombin time were quicker to make and much more consistent than the simple blood clotting times, probably owing to elimination of thrombokinase and Ca ion variations. For both values the reciprocal of the time varied linearly with the logarithm of the dietary vitamin K level. Plasma prothrombin times could also be used, but this measurement offered no advantages over that of blood prothrombin time.—H. J. ALMQUIST and A. A. KLOSE. *Biochem. J.*, 33 (1939), 1055; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 775. (F. J. S.)

Vitamin K₁—Constitution and Synthesis of. Chromium dioxide oxidation of vitamin K₁ yielded phthalic acid, indicating that the benzenoid ring of the vitamin carries no side chain; also 2-methyl-1,4-naphthoquinone-3-acetic acid, showing that the quinone nucleus has a methyl group in 2-position and that the side chain in 3-position has an ethylenic linkage between the second and third carbon atoms from the quinone ring. These conclusions were confirmed by the chromium dioxide oxidation products of the diacetyl dihydro derivative of vitamin K₁, *i. e.*, diacetyl dihydro derivative of the quinone acid and 2,6,10-trimethyl-14-pentadecanone. That vitamin K is 2-methyl-3-phytyl-1,4-naphthoquinone has also been proved by synthesis. Thus phytol bromide was condensed with 2-methyl-1,4-naphthoquinone to give dihydro vitamin K₁, which was oxidized by atmospheric oxygen to vitamin K₁. The diacetyldihydro derivative of this vitamin K₁ proved identical in composition, melting point, crystalline form and biological activity with the same derivative of the natural vitamin. The degradation products of the synthetic and natural vitamins were also found identical. Vitamin K₁ was also synthesized by condensation of phytol and 2-methyl-1,4-naphthoquinone in the presence of zinc chloride. Experimental details are given.—D. W. MACCORQUODALE, L. C. CHENEY, S. B. BINKLEY, W. F. HOLCOMB, R. W. MCKEE, S. A. THAYER and E. A. DOISY. *J. Biol. Chem.*, 131 (1939), 357; through *Squibb Abstr. Bull.*, 12 (1939), A-1484. (F. J. S.)

Vitamin K₂—Isolation of. Pure vitamin K₂, melting between 53.5-54.5°, has been isolated from extracts of fish meal which had been subjected to two or more putrefactions, by adsorptions on zeolite (Decalso) and silicates (Permutit), elutions with benzene and/or petroleum ether and recrystallizations from ethyl alcohol-methyl acetate, methyl acetate and petroleum ether. It assayed approximately 600 units/mg., using the quantitative three day method, but more frequently a much more rapid method in which 2-3 chicks are given a single oral administration of the test material and the coagulation time determined eighteen hours later. The dependability of this short period assay substantiates the value of Ansbacher's six hour method (*S. A. B.*, 11 (1938), A-1500). The pure vitamin has been reductively acetylated to the diacetate of vitamin K₂, melting point 59.5-60°, with half the potency of the parent compound. It seems probable that vitamin K₂ is a 2,3-disubstituted 1,4-naphthoquinone, the formula acceptable for the present being C₁₀H₁₄O₂. The authors have begun the preparation of 2- and 2,3-substituted 1,4-naphthoquinones.—R. W. MCKEE, S. B. BINKLEY, S. A. THAYER, D. W. MACCORQUODALE and E. A. DOISY. *J. Biol. Chem.*, 131 (1939), 327; through *Squibb Abstr. Bull.*, 12 (1939), A-1484. (F. J. S.)

Vitamin P. The original clinical work upon which the existence of vitamin P was based is criticized on the ground that the subjects chosen were unsatisfactory for the determination of capil-

lary fragility. Similarly, the guinea pig experiments of Szent-Gyorgi could not be repeated by others, nor indeed by Szent-Gyorgi himself. Nevertheless, the author believes he has now established, by the use of more suitable clinical cases, the reality of vitamin P. Capillary fragility was determined by two methods, using respectively positive and negative pressure, with the same results. The subjects suffered, owing to dietary habits, from general vitamin deficiency. Decrease of capillary fragility could be brought about by orange or lemon juice, in some cases after no improvement had resulted from administration of vitamins including ascorbic acid. Crude and purified flavanone preparations from orange juice and peel were similarly effective.—H. SCARBOROUGH. *Biochem. J.*, 33 (1939), 1400; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 771. (F. J. S.)

Vitamin-Containing Fish or Vegetable Oils—Molecular Distillation of Oils Such as. A process of molecular distillation involving the preliminary steps of treating the material prior to distillation comprises introducing an inert gas or inert vapor of an easily volatilizable material into a natural glyceride oil, at a temperature sufficiently low that the inert gas or vapor does not react with the oil, in order to displace absorbed air and volatile materials and then subjecting the treated oil while in the form of a thin film to a vacuum of less than 0.1 mm. to remove residual gases and odoriferous material.—KENNETH C. D. HICKMAN, assignor to DISTILLATION PRODUCTS, INC. U. S. pat. 2,136,774, Nov. 15, 1938. (A. P.-C.)

Vitamin-Containing Oils from Livers. A process of extracting livers containing oils rich in vitamins A and (or) D comprises treating the livers with a water solution, adding caustic alkali in amount sufficient to liberate the oil from the solid but insufficient to cause a substantial amount of saponification, causing an emulsion to separate from an aqueous solution and treating the emulsion to remove therefrom an oil high in vitamins A and (or) D and containing substantial amounts of saponifiable oil.—FERDINAND H. YOUNG and HUGH D. ROBINSON, assignors to ABBOTT LABORATORIES. U. S. pat. 2,136,481, Nov. 15, 1938. (A. P.-C.)

Vitamin Content of Liver Oils of Brazilian Fish without Gills. A study was made of Brazilian fish without gills to determine the vitamin value, if any, of their livers. The absence of an anatomical structure, such as gills, might have a possible influence on the irradiation of the fish. The oils studied gave color reactions indicating vitamin content. A series of oils from several species of this type of fish was tested and many oils were found to be richer in vitamin A content than cod liver oil. Others were of less value. Further study is recommended but certain of these fish may definitely be used as sources of vitamin A.—GENNEVILLE HERMADORF and OSWALDO L. PECKOLT. *Rev. quim. farm.*, 2 (1937), 151. (G. S. G.)

Vitamin Factors—Action of, on the Hydræmia and Chloræmia in Foster Children. According to the results of their experiments the authors ascribe to the vitamin factors, A, B, C and D a regularizing action upon the hydræmia and chloræmia in foster children, especially in those supplied with artificial feeding. They consider this action as a function of both vegetative nervous and endocrine systems.—M. PINCHERLE and G. GELLI. *Biochim. terap. sper.*, 25 (1938), 504. (A. C. DeD.)

Vitamin Food Products. 2,150,315—A concentrate of fat-soluble vitamins is homogenized in cream or evaporated milk; the homogenized emulsion is sterilized and is then dispersed in liquid food products. 2,150,316—A vitamin D carrier is emulsified with cream or evaporated milk, and the emulsion is

canned and sterilized.—ANDRÉ E. BRIOD and BION R. EAST, assignors to NATIONAL OIL PRODUCTS CO. U. S. pats. 2,150,315 and 2,150,316, March 14, 1939. (A. P.-C.)

Vitamins—Less Well Known. Factor H in fresh animal tissues is necessary for trout, fox and mink. Miscellaneous growth factors are arginin in peanut meal and soy, the factors in plant and grass juice, various extracts of varied livers, including the Y factor. Yeast factors and rice polishings in alcoholic or aqueous extracts are also included. Factor J found in fruit, especially St. John's berries, cures pneumonia in guinea pigs. The blood-clotting factor vitamin K is fat-soluble, it is important in chicks, and is found in fats of hog's liver and hemp seed. Vitamin K is also necessary for the production of prothrombin. Vitamin P in lemon juice and red peppers is probably a derivative of vitamin C. Nicotinic acid is effective in human pellagra. Toxic substances are found in cottonseed meal, egg white, fish, clove, oats, etc., even in cod liver oil. There is a thin borderline between toxicity and vitamin deficiency. A uniform system of nomenclature is needed, but much of the study is still incomplete and experimental.—C. M. McCAY.—*J. Am. Med. Assoc.*, 110 (1938), 1441. (G. S. G.)

Wheat Germ Oil and Tumor Formation. Neither crude nor purified wheat germ oil extract produced tumors in rats even after prolonged treatment.—E. DINGEMANSE and W. F. VAN ECK. *Proc. Soc. Exptl. Biol. Med.*, 41 (1939), 622. (A. E. M.)

ANALYTICAL

Acetone and Acetophenone—Kinetics of the Bromination of, in Aqueous Acetic Acid. A kinetic study of the bromination of acetone and of acetophenone in different mixtures of water and acetic acid (ranging from pure water to 90% acetic acid) has shown that the changes in velocity are to be ascribed to simultaneous variations in the energy of activation and the PZ term of the equation $k = PZe^{-e/rt}$. A similar phenomenon has been observed in a number of other reactions by Hinshelwood and his co-workers. For the base-catalyzed change the relationship between E and $\log PZ$ is approximately linear. In both base- and acid-catalyzed prototropy the values of the parameters fall and finally rise again as the acetic acid content of the medium is increased.—TREVOR G. BONNER, DAVID P. EVANS and H. B. WATSON. *J. Chem. Soc.*, (1939), 1353–1356. (W. T. S.)

Acetyldimethyldihydrothebaine Hydrochloride (Acedicone)—Reactions of. The substance gives with sulfuric and oxalic acids the same color reactions as morphine; it gives also identically the formaldehyde-sulfuric acid reaction of Marquis. With codeine it has in common the reactions for the methoxyl group and the reaction of Schryver. Like codeinone, it gives on evaporation with *p*-dimethylaminobenzaldehyde a red residue, soluble in alcohol with yellow color. Reaction common with thebaine: the solution in hydrochloric acid reduced with zinc gives a diazo compound with *p*-nitroaniline which after the addition of alkali turns violet-blue. This reaction is suitable for colorimetric determination. The reduced solution gives the same reaction as morphine in a hydrochloric acid solution of vanillin.—J. A. SANCHEZ. *Rev. farm. (Buenos Aires)*, 79 (1937), 451–460; through *Chimie & Industrie*, 41 (1939), 311. (A. P.-C.)

Acidimetry and Alkalimetry—A New Indicator for. A pigment was extracted from petals of *Delphinium orientale* by boiling with water for 2 hours; the aqueous extract was evaporated to syrupy consistency, diluted with alcohol and the precipitate formed was filtered out, dissolved in water and recrystallized by adding alcohol. A 0.5% aqueous solution of the

pigment was used as an indicator for titrating acids and bases. The indicator is pink in acid, blue in neutral and green in alkaline solution. The p_H interval for the blue color is 4.20 to 6.30, for the green 6.30 to 8.30.—G. T. GALFAIAN. *J. Prikl. Khim.*, 11 (1938), 110-112; through *Chimie & Industrie*, 41 (1939), 455. (A. P.-C.)

Aldehydes and Ketones—Identification of, by Estimation of Hydrazine Nitrogen According to the Jamieson Method. The Jamieson method for hydrazine is applicable to the determination of hydrazine nitrogen in semicarbazide and the semicarbazones of a number of aldehydes and ketones. The method failed in the case of furfural semicarbazone. The method is successful for *p*-bromophenylhydrazine but not for thiosemicarbazide. Sugar osazones gave anomalous results.—G. B. L. SMITH and T. G. WHEAT. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 200-201. (E. G. V.)

Alkoxy Groups—Microdetermination of. A modified and improved apparatus and procedure for the quantitative microdetermination of alkoxy groups are described. They are equally well adapted to solids, semi liquids and liquids with boiling points above, at or below that of hydriodic acid, irrespective of the number of alkoxy groups. Accurate analytical figures are obtained by virtue of better solution of the substance, more gradual and longer heating and thorough absorption.—A. ELEK. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 174-177. (E. G. V.)

Aluminum and Beryllium—Separation and Determination of, Using Tannin. Moser and Niessner's method for the separation and determination of aluminum and beryllium using tannin will give satisfactory results with careful regulation of the p_H of the solution and time of digestion.—M. L. NICHOLS and J. M. SCHEMPF. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 278-280. (E. G. V.)

Ammonia, Amino Nitrogen, Amides, Peptides, Adenylic Acid, Nitrates and Total Nitrogen—Methods for the Determination of Submicro Quantities of. A large number of determinations may be carried out simultaneously with these methods, using 0.1-0.2 cc. aliquots and all ending in an electrometric titration with a glass electrode. A previous microdetermination method was adapted to 1-2 cc. aliquots of dilute solutions and ended in a colorimetric measurement (*S. A. B.*, 8 (1935), 1021).—H. BORSOOK and J. W. DUBNOFF. *J. Biol. Chem.*, 131 (1939), 163; through *Squibb Abstr. Bull.*, 12 (1939), A-1458. (F. J. S.)

Ammonia—Colorimetric Determination of, with Thymol-Hypobromite Reagent. The semimicro-method for estimating 20-0.5 γ of ammonia per liter with an experimental error of about 1-2%, is based on the formation of a stable, non-flocculating, non-bleaching red solution when the reaction product of ammonia and thymol plus hypobromite is dissolved in isopropyl ether. This color is determined colorimetrically, using a Pulfrich photometer.—P. A. HANSEN and V. NIELSON. *J. Biol. Chem.*, 131 (1939) 309; through *Squibb Abstr. Bull.*, 12 (1939), A-1458. (F. J. S.)

Ammonia—Titration of, in Microdetermination of Nitrogen. The difficulties involved in reading the colors obtained by the micro-Kjeldahl procedure are discussed. The author states that it is practically impossible to obtain a canary-yellow color when the procedure using heat recommended by Pregl is followed: a salmon color is obtained when theoretically the canary-yellow should be observed. It is necessary to operate with an acid medium while hot in order to drive off the carbon dioxide liberated from the sodium hydroxide solutions on heating. A titration in two steps is proposed: the first part

of the titration is carried out on the boiling acidified liquid, then the container is cooled under a tap and the titration is completed in the cold. The dissociation of the ammoniacal salts is thus avoided and the error is kept down to about 0.4% for samples containing as little as 1.0 mg. of nitrogen.—M. NICLOUX. *Bull. soc. chim. biol.*, (Mar., 1939); through *J. pharm. Belg.*, 21 (1939), 574. (S. W. G.)

Amyl Alcohol Content of Distilled Spirits—Determining the. The fusel oil, separated from the distilled spirit by distillation and subsequent extraction with carbon tetrachloride, is determined by esterification with acetyl chloride. After the reaction is completed, the excess acetyl chloride is decomposed and titrated. The difference in titer between the sample and a blank gives the moles of acetic acid removed by esterification with the higher alcohols.—S. T. SCHICKTANZ and A. D. ETIENNE. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 390-393. (E. G. V.)

Antimony—New Method of Determining. The method of Weller (*Ann. Chem. Pharm.*, 213 (1882), 364), which is based on the reaction $SbO_3 + 2I + 6H \rightarrow Sb + 3H_2O + I_2$, is accurate provided sufficient potassium iodide and hydrochloric acid are used. It is recommended to use 5 times as much potassium iodide as antimony and to make the solution contain 12 to 15% of hydrochloric acid.—J. PENS. *Bull. soc. chim. Belg.*, 47 (1938), 129-134; through *Chimie & Industrie*, 41 (1939), 241. (A. P.-C.)

Antipyretics—Qualitative Separation of. II. The differences in solubility in ether and in chloroform and the differences in hydrogen ion concentrations of the aqueous phase permit of separating salicylic acid, phenacetin, antipyrine, caffeine and dimethylaminoantipyrine in the pure state, and of identifying quinine and the sulfate ion by means of the ordinary reactions. The same method can be used for determining quantitatively salicylic acid, phenacetine and quinine with an accuracy of a few per cent.—A. BÜRGIN. *Pharm. Acta Helv.*, 13 (1938), No. 2, 34-38; through *Chimie & Industrie*, 41 (1939), 313. (A. P.-C.)

Arsenic Compounds—Pharmaceutically Important. IV. Stability of Arsenites Toward Atmospheric Oxygen and Its Use in the Estimation of Mercuric Chloride. Experiments show that sodium metarsenite solutions without an excess of alkali undergo gradual oxidation by atmospheric oxygen. An arsenite solution warmed on a water bath is more rapidly oxidized than a boiling arsenite solution. In the former case atmospheric oxygen reaches the surface of the liquid more readily than in the latter, since the escaping steam tends to keep the air from the liquid.—K. BRAND and E. ROSENKRANZ. *Pharm. Zentralkalle*, 79 (1938), 377-383; through *Chimie & Industrie*, 41 (1939), 456. (A. P.-C.)

Arsenic—Detection of, in Organic Arsenic Compounds. By applying the U. S. P. method which uses mercuric bromide paper as a reagent for arsine, positive tests were obtained with neo-arsphenamine, soluarsphenamine and arsylene-sodium; sodium cacodylate, atoxyl, asarctin and acetylamino-*p*-oxyphenylarsinic acid gave negative results.—L. ROSENTHALER. *Pharm. Acta Helv.*, 13 (1938), 2; through *Chimie & Industrie*, 41 (1939), 114. (A. P.-C.)

Arsenic Test—Modification of Bettendorff's. II. Catalyzed by Mercury. Continuing a previous paper, the authors present the reagents, procedure and tables of experimental data. The investigation of these reactions will be continued.—W. B. KING and F. E. BROWN. *J. Am. Chem. Soc.*, 61 (1939), 968. (E. B. S.)

Ascorbic Acid—Determination of. Because of the difficulty in obtaining a rapid check on the use of the

electrometric titrimeter to determine ascorbic acid in colored extracts, substances were studied with which it was possible to use the usual indophenol method. If the titration curve is drawn using the titrimeter, the values derived therefrom agree consistently with those of the ordinary visual titration. The indicating eye alone cannot be used, since the change in e. m. f. in the reaction is not rapid enough to cause a noticeable blink. Reducing substances, other than ascorbic acid, which are usually found in fruit juices, did not interfere with the end point.—M. M. KIRK and D. K. TRESSLER. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 322-323. (E. G. V.)

Balances—Analytical, in Quantitative Micro-analysis. Many analytical balances possess precisions ranging from ± 10 to ± 50 micrograms and can be used as substitutes for microchemical balances in the performance of microanalysis. The method of weighing developed by Bunge and Kuhlmann, which is employed with microchemical balances, is recommended for general use with analytical balances; the calculated deflection is explained as that ideal deflection which would be directly observed, if it were possible to free the method of single deflection from manipulatory distortions. The question of the minimum size of sample required for attaining a specified precision of the analytical result is treated mathematically.—A. A. BENEDETTI-PICHLER. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 226-229. (E. G. V.)

Barium and Calcium—Determination of. If a solution containing barium and calcium is treated with a mixture of ammonium sulfate and ammonium oxalate, barium sulfate and calcium oxalate are precipitated. Treatment of the well-washed precipitate with normal hydrochloric acid causes solution of the latter precipitate and the dissolved oxalic acid can be titrated with permanganate. The residual barium sulfate can be weighed. Analysis of 18 synthetic mixtures containing 0.008 to 0.232 Gm. of one of the constituents gave results for barium and calcium which were within 0.002 Gm. of the truth.—K. BARTSCH. *Z. Analyt. Chem.*, 111 (1938), 342-343; through *Chimie & Industrie*, 41 (1939), 242. (A. P.-C.)

Barium—Colorimetric Method for Determining. To the neutral solution, containing barium, are added 3 drops of glacial acetic acid followed by 10 cc. of 30% ammonium acetate solution. The solution is then heated to boiling and slight excess of 10% ammonium chromate added dropwise with vigorous stirring. After 30 minutes digestion the supernatant liquor is decanted through a sintered-glass crucible. The precipitate is then thoroughly washed with hot water, dissolved in 10 cc. of cold hydrochloric acid (1 to 1), and diluted to 100 cc. The resultant solution is used for colorimetric comparison.—H. A. FREDIANI and B. J. BABLER. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 487-489. (E. G. V.)

Bismuth Ion—Color Reaction for the. Thiocetamid gives with the bismuth ion, on a porcelain plate, a yellow color; on filter paper there is obtained a characteristic, yellow or orange, narrow, slightly wavy circle. The reaction can be carried out in presence of metals of the fourth group; under these conditions there is obtained a double circle, the periphery of which is brown and irregular. It is probable that $(\text{BiO})_2\text{SC}:\text{NH}(\text{CH}_3)$ is formed as a result of the reaction between a univalent BiO and thiocetamide. Members of Group III and copper give indications with the same reagent.—N. V. VAVILOV. *J. Prikl. Khim.*, 11 (1938), 356-363; through *Chimie & Industrie*, 41 (1939), 43. (A. P.-C.)

Bismuth—Volumetric Determination of, as Hydro-Iodobismuth Complex of Hydroxyquinoline.

A critical study of Berg and Wurm's method which consists of precipitating bismuth as $\text{C}_6\text{H}_7\text{OH.HBiI}_2$ by means of an excess of hydroxyquinoline in sulfuric acid solution and potassium iodide. For very small quantities of bismuth it is advisable to carry out the determination indirectly by titrating the excess of iodide with potassium iodate. When the concentration of chlorides in the final solution is greater than decinormal, the results are low.—I. M. KOLTHOFF and F. S. GRIFFITH. *Mikrochim. Acta*, 3 (1938), 46-51; through *Chimie & Industrie*, 41 (1939), 453. (A. P.-C.)

Burets—Auxiliary Sliding Scale for. Many routine titrations, which required only a relatively small volume of standard solution, may be expedited by taking readings from an attached sliding scale rather than using graduations provided on the buret. The slide consists of a small brass strip to which are soldered two brass springs that clip the buret. Division marks, similar to those on the buret, are made in ink on a piece of white paper glued to the brass strip. In use the zero mark of the slide is set initially to coincide with the bottom of the meniscus and, after reaching the end-point, the titer is read directly from the final reading on the auxiliary scale.—A. A. HIRSCH. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 431. (E. G. V.)

Caffeine in Tea—Rapid Method for the Determination of. Treat 2 Gm. tea (No. 4 mesh) with 10 cc. water in a glass-stoppered flask (100-150 cc.) and heat for 5 minutes on a water bath. Add 5 cc. ammonia (10%), cool, add 80 Gm. chloroform, shake vigorously until an emulsion is formed. Allow to stand at least $\frac{1}{2}$ hour and as a rule the emulsion still obtains. Add 9-12 Gm. anhydrous sodium sulfate in portions and shake vigorously after each addition. The drug clumps together and the chloroform beings to separate. When this occurs in sufficient amount, pour the chloroform through a funnel provided with a small loosely packed cotton plug into a 100-cc. flask. A slight turbidity in the filtrate does no harm. The green or brown liquid is then treated with 0.5-1 Gm. sodium sulfate and shaken down several times. After 5 minutes add about 0.5-0.6 Gm. of charcoal and repeat the addition in 5-minute intervals until 3 portions have been added. In $\frac{1}{2}$ hour, if the charcoal has settled and the supernatant liquid is colorless, filter into a 50-cc. flask through a filter tube provided with an asbestos plug or through an Allihn tube with a glass plate (G-2) preventing evaporation as much as possible. The neck of the flask receiving the filtrate should be as narrow as possible. A weighed quantity of the filtrate is put into a weighing bottle (40 Gm. = 1 Gm. drug) and the chloroform is evaporated off on a water bath. Treat the residue with 2-3 cc. absolute alcohol and again evaporate; after drying for 10-15 minutes on a water bath or 10 minutes at 105°C . in a drying oven, cool and weigh. A discussion of the steps in the procedure follows.—R. FISCHER. *Scientia Pharm.*, 10 (1939), 102-103. (H. M. B.)

Calomel Ointment—Assay of. The following method is recommended: Weigh accurately about 2 Gm. of the ointment into a 250-cc. beaker from a closed weighing dish; add 50 cc. sulfuric acid solution (10% v./v.) and heat on a water bath for 2 hours. Cool and add 50 cc. of petroleum ether, stir the solvent and aqueous layer by swirling to dissolve the ointment base. Allow the layers to become clear as possible and decant the petroleum ether into a Gooch crucible previously ignited for 1 hour, keeping most of the particles in the beaker and repeat the petroleum ether washing. Heat 25 cc. of alcohol to the aqueous layer in the beaker and mix thoroughly, allow the particles to settle, filter the liquid through the Gooch crucible and retain the particles in the beaker. Wash the particles with

two 50-cc. portions of alcohol, transferring them to Gooch crucible with the second portion, complete the transfer with two 50-cc. portions of chloroform, washing the sides of the beaker with a policeman. Dry the Gooch crucible in the oven for 1 hour at 90° C. cool and weigh. Heat the crucible slowly at first for 0.5 hour to ignition temperature of a Bunsen flame, cool and weigh. The difference in weight before and after sublimation represents the weight of calomel in the original samples.—REPT. AMER. PHARM. ASSOC. LAB. *Bull. Natl. Formulary Committee*, 7 (1939), 335-337. (H. M. B.)

Carbon and Hydrogen Determinations. A method for filling absorption tubes is discussed whereby combustion time can be materially lessened for semimicro samples and for micro samples. The substitution of silver supported on asbestos for silver wool increases the efficiency of the combustion tube in the removal of halogen. Combustions under increased pressure ensure completeness of oxidation and removal of halogen, sulfur, nitrogen, etc. Absorptions under pressure ensure complete removal of water and carbon dioxide.—S. STEVEN BRODIE. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939) 517-518. (E. G. V.)

Carbon—Determination of, in Organic Compounds. A new design of the combustion vessel is described which removes all possibility of leaks at the point of union between the combustion vessel and the extraction chamber.—A. K. PARPART and A. J. DZEMIAN. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 107. (E. G. V.)

Carbon Dioxide—Photometric Method for the Determination of. The method depends upon measuring the change in light transmission of a solution of p_{H} indicator (methyl red) through which the gas is bubbled. Only one gas of known carbon dioxide content is required in order to be able to apply a simple equation to the determination of the carbon dioxide content of gases of unknown composition.—R. J. WINZLER and J. P. BAUMBERGER. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 371-375. (E. G. V.)

Carbon Electrodes—Preparation of, for Spectrographic Analysis. A tool is described which produces craters of uniform wall thickness and variable depths. It is particularly helpful in preparing electrodes for volatilization of samples of plant ash. Another tool drills and points electrodes for determining mercury in plant tissue.—A. T. MYERS and B. C. BRUNSETTER. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 218-219. (E. G. V.)

Carbon Monoxide—Determination of Small Quantities of, in Gas and Air. For carbon monoxide contents of 0.1% and more, the best method is the wet iodine pentoxide method; but it requires the use of special apparatus. It gives good results provided the gas sample is first treated with fuming sulfuric acid. For lower carbon monoxide contents (0.1 to 0.003% by volume) the blood (hemoglobin) method gives good results.—H. A. J. PIETERS and K. PENNERS. *Het Gas*, 58 (1938), 252-257; through *Chimie & Industrie*, 41 (1939), 270. (A. P.-C.)

Cherry Juice—Evaluation of a New Monograph for. The values found by experiment are comparable to other accepted standards; malic acid is the most important constituent influencing the taste and the following assay for it is recommended: To 10 cc. of juice, add 1 Gm. of calcium carbonate, heat the mixture on a water bath for 15 minutes. Remove the precipitate by filtration and to the filtrate add 1 cc. of ammonia test solution and 15 cc. ammonium oxalate test solution. Heat the mixture for 15 minutes on a water bath and filter, wash the residue on the filter with three 10-cc. portions of warm distilled water and then into 30 cc. of sulfuric acid

(1:3). Heat the mixture to 60° C. and titrate the oxalic acid with 0.1 N potassium permanganate. (Each cc. 0.1N KMnO₄ = 0.0067 Gm. malic acid.) The constants such as specific gravity, total solids, total ash and volatile acids are important and are reported as well as tests for coal tar dyes, reducing sugars, color names of the juice and of alkaline dilutions of the juice. Refractive index is not indicative; a monograph is recommended.—REPT. AMER. PHARM. ASSOC. LAB. *Bull. Natl. Formulary Committee*, 7 (1939), 302-309. (H. M. B.)

Chlorates—Identification of. The author suggests the following microchemical reaction for the identification of chlorates: Add a drop of a 1% aqueous solution of methylene blue to a 1% solution of a chlorate; beautiful birefringent prisms result which are strongly refractive, show right extinction and color addition in the long direction. Dichroism from blue to rose. The crystals are 200 microns and larger. The reaction is useful in distinguishing perchlorates and chlorates and can be used for the identification of chlorates in the absence of other salts.—F. AMELINK. *Pharm. Weekblad*, 76 (1939). (E. H. W.)

Chlorates—Volumetric Determination of, by the Volhard Method After a Preliminary Reduction with Zinc in Acid Solution to Chlorides. Mix 50 cc. of approximately decinormal chlorate solution with 3 Gm. of zinc dust and 5 cc. of concentrated sulfuric acid; shake for 5 minutes, dilute to 100 cc., filter through a dry paper, reject the first 5 cc.; to 50 cc. of filtrate add 50 cc. of decinormal silver nitrate, shake till the precipitate settles, add 2 cc. of ferric alum solution and titrate slowly with decinormal potassium thiocyanate solution. The accuracy of the method is 0.28%.—N. A. TANANAYEV and M. S. VOCHTCHINSKAIA. *J. Prikl. Khim.*, 11 (1938), 120-122; through *Chimie & Industrie*, 41 (1939), 455. (A. P.-C.)

Chlorine—Colorimetric Determination of, with *p*-Aminodimethylaniline. A spectrophotometric study of the *p*-aminodimethylaniline method for the colorimetric determination of residual chlorine has shown the characteristics of the colored system and confirmed reports of others on certain factors affecting the application of the method. A change in concentration of the methyl red solution for standards is recommended. The sensitivity varies from 0.01 ppm. at the lower limit to 0.03 at the higher concentrations. This method seems to have no advantage over the more familiar *o*-tolidine method unless one prefers matching purple rather than yellow hues.—D. H. BYERS and M. G. MELLON. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 202-203. (E. G. V.)

Chloropicrin—Colorimetric Determination of Small Quantities of, in Air, Water and Foodstuffs. The method is based on the color produced when chloropicrin reacts with dimethylaniline in the presence of oxygen. Various modifications of the procedure are described according to the nature of the material to be tested. An extraction with benzene is recommended for determining the chloropicrin in water. Shake 10 cc. of the aqueous solution with 2 cc. of a 50% solution of dimethylaniline in benzene, drain off the aqueous solution and repeat the treatment with fresh reagent; after repeating this 5 times, heat with hydrogen peroxide (30%) using 1 drop for each cc. of extract. Dry foodstuffs can be digested with benzene and the extract treated with the reagent. Fats are preferably dissolved in xylene and the solution distilled until the last portion of distillate gives no color with dimethylaniline.—W. DECKERT and B. PRATHHAVANIJA. *Z. Analyst. Chem.*, 113 (1938), 182-189; through *Chimie & Industrie*, 41 (1939), 270. (A. P.-C.)

Chloropicrin—Determination of, in Treated Grain. The method is based on the reaction of chloropicrin with an alcoholic solution of sodium sulfite with formation of nitromethane disulfonic acid and sodium chloride, and titration of the latter by the Volhard method. The chloropicrin is first distilled from the grain by heating the latter for 2 hours at 60° C. while passing a current of air through it.—S. GRUB. *Mukomolié*, 13 (1938), No. 3, 15-16; through *Chimie & Industrie*, 41 (1939), 560.

(A. P.-C.)

Chromium in Plant Material—Control of the Cyanogen Bands of the Graphite Arc When Estimating. The ultimate line of chromium, 4254.34 Å., in the spectrum of plant material in a graphite arc is usually obscured by cyanogen bands. It was found that these could be suppressed and the line easily observed if the sample was previously mixed with twice its weight of lead oxide. For quantitative work it was found more satisfactory to ash the samples after the addition of lead oxide. The molybdenum line 3902.96 was used as an internal standard, 5 parts per million of molybdenum being added to the samples. A satisfactory correlation was found between increments of chromium and the density of the chromium line as measured with a microphotometer.—F. L. ASHTON. *J. Soc. Chem. Ind.*, 58 (1939), 185-187.

(E. G. V.)

Cinnamic Derivatives—Bromine Value of. The authors prepared dibromophenylpropionic acid by treating cinnamic acid in ethereal solution with a slight excess of bromine. After forty-eight hours at room temperature the almost totally decolorized solution was transferred to a decantation flask and the excess of bromine was removed by a dilute solution of sodium thiosulfate. The ethereal solution was washed with water, dried with anhydrous sodium sulfate, then evaporated. The crude product obtained in a yield of 90% was purified by twice crystallizing from alcohol. The compound melted at 200°. The following procedure was used for the assay: Twenty cc. of a 0.05*N* solution of the brominated compound was refluxed with concentrated potassium hydroxide solution for seven to eight hours and the potassium bromide formed was determined by the Charpentier-Volhard method. The authors also note that the bromine in this particular compound may be determined by adding 0.1*N* silver nitrate, shaking for several minutes and titrating the excess silver nitrate. The bromination of benzyl cinnamate and cinnamyl cinnamate (styracine) are also discussed.—A. LESPAGNOL, R. HERLEMONT and G. STERN. *J. pharm. chim.*, 29 (1939), 447-59.

(S. W. G.)

Cobalt from Manganese—Separation of. The separation is based upon the precipitation of manganese as phosphate and its separation from cobalt in the presence of ammonium citrate.—J. G. FAIRCHILD. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 326-327.

(E. G. V.)

Colchicum Corm—Assay of. Methods studied were found to involve many extractions with increased percentage error. Farr and Wright's process (*Pharm. J.*, 85 (1910), 578) as well as Davies' (*Yearbook Pharm.*, (1921), 393) yield high results. Direct extraction with chloroform seems to offer possibilities.—MALCOLM S. TRUPP. *Bull. Natl. Formulary Committee*, 7 (1939), 339-343.

(H. M. B.)

Color Reaction—New, between Polyphenols and Thiocyanates. Place in a porcelain evaporating dish or watch glass a few crystals of polyphenol to be examined, add a few drops of alkaline 10% thiocyanate and 1 cc. concentrated sulfuric acid. A color develops and it is distinct for each phenol examined. Resorcin produces orange-red; pyro-

gallol, carmine-red; phloroglucin, yellow to orange; thymol, salmon-pink; and naphthol, emerald-green. Color reactions are specific.—C. H. LIBERALLI. *Rev. quim. farm.*, 2 (1937), 134.

(G. S. G.)

Copper—Determination of, in Paris Green. A method has been developed for the use of ceric sulfate as the standard oxidant in the determination of copper in Paris green, and the results have been favorably compared with those obtained by the iodide method. The advantages of the ceriometric method over the iodide method are: it is more rapid and much less tedious, as fewer steps are involved; in the titration the end-point is much more easily detected because of the distinct change in color; the solutions of the indicators, *o*-phenanthroline ferrous complex and sodium diphenylamine sulfonate, are stable for many months in contrast to the unstable starch solution; and although ceric sulfate is generally regarded as being somewhat expensive, the cost of the amount used in a determination is less than that of the potassium iodide required in a determination by the iodide method.—J. H. MEHLIG and T. P. MARSH. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 213-214.

(E. G. V.)

Copper—Fractional Reactions of. To the cupric solution at p_H 0.5 add some lead and boil 3 to 5 minutes to precipitate the copper on the lead; decant off the solution, wash the lead-copper with water and dissolve off the coating by heating with a few drops of concentrated nitric acid; dilute with water, add 0.5 cc. of saturated sodium acetate and a few drops of potassium ferrocyanide. This method will detect 0.01 mg. of copper in 1 cc. Another method of testing is based on the liberation of iodine on addition of potassium iodide at a suitable p_H ; this method is sensitive to 0.001 mg. of copper in 1 cc.—N. A. TANANAIEV and S. I. PALBY. *J. Prikl. Khim.*, 11 (1938), 131-134; through *Chimie & Industrie*, 41 (1939), 455.

(A. P.-C.)

Diphenylcarbazone as a Mercurimetric Indicator. Determination of Bromides. Solutions of potassium bromide or chloride were mixed with 0.1 cc. of a 1% solution of diphenylcarbazone in ethanol, treated with several drops of fifth-normal nitric acid, and treated with decinormal mercuric nitrate in the cold. The first excess of mercury gave a violet color with diphenylcarbazone, which indicator is specific for mercury ions. The best results were obtained when the solution was fifth-normal in nitric acid. The presence of copper, iron, lead, zinc and manganese did not affect the accuracy of the bromine determinations if the solutions had decinormal acidity. Microtitrations with five hundredth-normal mercuric nitrate were satisfactory up to a concentration of 0.08 mg. of bromine ion per cc.; in more dilute solutions the presence of other metals and the nitric acid affected the end-point and gave low results.—J. TRTILEK. *Coll. Trav. Chim. Tchecoslovaquie*, 10 (1938), 97-102; through *Chimie & Industrie*, 41 (1939), 244.

(A. P.-C.)

Dipotassium Periodate as a Primary Standard in Acidimetry. Dipotassium periodate, $K_2H_3IO_6 \cdot 3H_2O$, can be obtained pure and reacts quantitatively with strong acids according to the equation $H_3IO_6 + H = IO_4 + 2H_2O$, the end-point being marked by a sharp change in color of methyl red. As its molecular weight is relatively high, it is suitable as an acidimetric standard.—L. MALAFRADE. *Compt. rend. 18me Congr. Chim. Ind.*, Nancy (Sept.-Oct. 1938), 91-92.

(A. P.-C.)

Drugs—Contributions to the Examination of. IX. Changes are suggested in the monographs of the following pharmacopœial products: lactyl-*p*-phenitidin, solution of calcium chloride and paraldehyde and dry sodium phosphate of the supplement. A complete procedure for the assay of Noviform is offered. It is recommended that paraldehyde be

stored in small brown bottles completely filled and in a cool place.—KONRAD SCHULZE and ERHARD SCHOLZ. *Deut. Apoth. Ztg.*, 54 (1939), 856-870. (H. M. B.)

Fluorine—Determination of, in Wine. A simplified procedure for the determination of fluorine in wine has been worked out by applying the principles of the Willard and Winter method. It was found that a fixative need not be added previous to the ashing of the sample, since wine ash serves as a fixative for fluorine, thus eliminating a possible chance of error. By the use of a 125-cc. distilling flask a single steam distillation over perchloric acid yielded a distillate free from interfering ions. A sharp end-point was obtained by carefully adjusting the acidity of the solution prior to the titration with thorium nitrate giving consistent and reliable results. While this is not a micromethod, it can be used to determine as little as 0.01 mg. of fluorine.—H. G. REMPEL. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 378-380. (E. G. V.)

Fluorine—New Spectrographic Method Suitable for the Toxicological Detection of. The method is based on the detection of the silicon spectrum in a melt of lead-boron glass. Crucible-like shapes of this glass are prepared, and silicon tetrafluoride, obtained with sulfuric acid and quartz sand from the sample, is absorbed in a few drops of potassium hydroxide placed in the crucible. After the evolution of silicon tetrafluoride from the fluorine-containing substance is complete, the crucible and contents (potassium hydroxide with absorbed silicon tetrafluoride) are melted in a platinum container. The silicon distributes itself homogeneously in the melt. The silicon spectrum is then obtained by interpolation between the spectra of two potassium-containing lead-boron glasses. The method permits the determination of as little as 0.040 to 0.050 mg. of silicon, corresponding to 0.110 to 0.120 mg. of fluorine.—W. PAUL. *Pharm. Zentralhalle*, 79 (1938), 332-335; through *Chimie & Industrie*, 41 (1939), 52. (A. P.-C.)

Halogens—Modified Beilstein Tests for, in Volatile Organic Compounds. A piece of clean copper screen 10 cm. square, with about 8 meshes to the inch of fairly heavy wire, is clamped 4 cm. above an ordinary Bunsen burner. The flame is allowed to burn on both sides of the gauze until all trace of green color disappears. The liquid to be tested for halogen is then added drop by drop from a separatory funnel to a warmed 125-cc. flask through which the gas supply to the burner passes. The presence of halogens is evidenced by the appearance of a green color in the flame. With careful observation in a darkened room the limit of sensitivity was found to be 0.005% of vinyl chloride which corresponds to about 30 parts per million of chlorine. Under the same conditions 0.025% of vinyl chloride gave a strong green flame.—W. L. RUGH. *Ind. Eng. Chem., Anal. Ed.* 11 (1939), 250. (E. G. V.)

Heater—New Style of Chemical. The heater can be used as an ordinary hot plate or as an air bath when provided with a removable heat-reflecting jacket. It is an excellent substitute for water, oil or glycerol baths as it eliminates liquids. The air-bath temperature may be maintained within a few degrees by use of a rheostat.—W. MASTER. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 452. (E. G. V.)

Hydrogen Ions—Galvanometric Method for the Titration of. The proposed method is based on the property possessed by electrodes consisting of the same amphoteric metal of giving rise to a difference in potential when immersed in solutions possessing different hydrogen ion concentrations. In practice, the solution to be titrated is brought into contact with a reference solution of known p_H through a saturated potassium chloride solution. Antimony

electrodes connected through a sufficiently sensitive measuring apparatus are immersed in the two solutions.—A. P. SERGHEIEV and A. N. IAVORSKI. *J. Prikl. Khim.*, 11 (1938), 113-116; through *Chimie & Industrie*, 41 (1939), 455. (A. P.-C.)

Hygroscopic Substances—Handling of, in the Microchemical Determination of Carbon and Hydrogen. The apparatus described consists of a jacketed tube, so arranged that it may be kept at constant temperature, and a weighing bottle of special design. The sample is dried, weighed and introduced into the carbon and hydrogen combustion tube without coming in contact with moisture at any stage of the operation.—C. J. RODDEN. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 405. (E. G. V.)

Iodide in the Presence of Chloride—Titration of, with Silver Nitrate, Using Rose Bengal as Adsorption Indicator. The titrations were carried out in stoppered bottles which were vigorously shaken. The end-point was taken as the point at which the dyestuff was removed from the supernatant liquid and adsorbed on the precipitate. When chloride is present, from 3 to 4 parts per thousand more of silver nitrate is required to precipitate the iodide than is required for the iodide alone. This corrects a previous statement by the author.—A. J. BERRY. *Analyst*, 64 (1939), 112. (G. L. W.)

Iodide—Volumetric Oxidation of, to Iodate by Sodium Chlorate. Dissolve a weighed portion of the sample, calculated to contain 0.04 to 0.07 Gm. of iodide, in freshly boiled distilled water, cooled to room temperature. Buffer with 1 cc. of 2M acetic acid and 9 cc. of 2M sodium acetate and add starch solution. Titrate with 0.1 or 0.2N sodium chlorate solution until a discharge of the blue color indicates that all the iodine, first formed by oxidation of the iodide, has been converted to iodate. Add a small excess of chlorate. Back-titrate with 0.02M potassium iodide to a permanent amber. One cc. of 0.2 N sodium chlorate is equivalent to 0.004231 Gm. of iodine.—L. F. YNTEMA and T. FLEMING. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 375-377. (E. G. V.)

Kalmia Angustifolia—Phytochemical Study of. The literature is briefly reviewed and experimental work reported. The report is well summarized by the authors as follows: The total ash, acid-insoluble ash, moisture and the inorganic constituents of the drug have been determined. A hydrocarbon, an alcohol and sitosterol were found in the petroleum ether extract. Ursolic acid and traces of andromedotoxin (phlorhizin) and arbutin were identified in the ether extract. Phlorhizin was identified in the chloroform extract. In the alcohol extract, catechol tannins, phlobaphene and arbutin were identified. The total tannins were determined to be 6.51%, the total content of andromedotoxin (phlorhizin) was found to be 0.066% and the total content of arbutin was found to be 0.93%.—M. L. JACOBS and W. R. LLOYD. *Jour. A. Ph. A.*, 28 (1939), 408. (Z. M. C.)

Lactic Acid—Determination of, in Pharmaceutical Preparations Containing Lactates. The lactic acid is oxidized by means of potassium permanganate in boiling solution. The acetaldehyde formed is entrained by means of a current of air and absorbed in a solution of potassium metabisulfite to form the corresponding bisulfite compound. The excess sulfite is oxidized with hundredth normal iodine in presence of starch indicator, the sulfite is liberated from its aldehyde combination by means of sodium bicarbonate added in small successive portions, and after each addition the liberated sulfite is titrated with iodine. One cc. of hundredth normal iodine = 0.45 mg. of lactic acid.—A. KICHLER and G. SAIKO. *Pharm. Monatsh.*, 18 (1937), 221-222; through *Chimie & Industrie*, 41 (1939), 111-112. (A. P.-C.)

Lead—Microchemical Detection and Determination of. After its separation from other elements, the lead is converted to the nitrate and dissolved in a known quantity of water. A piece of filter paper is accurately and uniformly saturated with this solution and then dried in the air or in the oven. A drop of hydriodic acid solution is then applied to a piece of this prepared paper and the yellow spot thus obtained compared with spots similarly obtained using solutions containing from 0.01 to 1 mg. of lead per cc. The hydriodic acid solution is prepared by introducing H_2S into a mixture of iodine and water. After filtering, the excess H_2S is removed by boiling.—N. D. COSTEANU. *Mikrochimica Acta*, (1938), 236; through *Pharm. Weekblad*, 76 (1939), 42.

(E. H. W.)

Magnesium—Microdetermination of. This method is based on the formation of an insoluble crystalline compound with *o*-oxyquinoline, which is decomposed with an excess of standard hydrochloric acid, and the excess of acid not required is titrated with standard alkali. The solution of the magnesium salt is neutralized to neutral red with *N*/1 sodium hydroxide. One cc. of the *N*/1 alkali, 1 cc. of a saturated solution of sodium potassium tartrate and 0.4 cc. of a 5% solution of oxyquinoline in alcohol are then added. The mixture is placed on a boiling water bath for five minutes. The precipitated magnesium compound is centrifuged and washed several times with water until free from alkali; then it is dissolved by gentle warming in 4 cc. of *N*/40 hydrochloric acid and the excess of acid titrated with *N*/100 sodium hydroxide, using neutral red as indicator. The method can be applied to the determination of magnesium in blood serum. The serum is evaporated to dryness on a water bath and the residue ignited. The ash is taken up with a little hydrochloric acid, the calcium is removed by precipitation as oxalate, and the filtrate containing the magnesium is evaporated to dryness. The residue is taken up with hydrochloric acid and the magnesium precipitated and determined as above.—M. DALAVILLE and M. OLIVE. *Ann. Chim. Anal.*, 20 (1938), 286; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 277. (S. W. G.)

Manganese—Colorimetric Determination of, with Periodate. A spectrophotometric study shows that the periodate method for the determination of manganese colorimetrically is a most satisfactory one with very few limitations. Sulfuric, nitric or phosphoric acid may be present in widely varying amounts. A large excess of periodate may be used without interfering with the color. The color system follows Beer's law. The color is stable in diffuse light for at least two months. A study of the effect of fifty-six of the common ions was made. A few seriously interfere with the color, but in the course of determination most of these would be removed.—J. P. MEHLIG. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 274-277. (E. G. V.)

Mannite—Determination of, in Manna and Official Manna Preparations. The method of Badreau (*J. pharm. chim.*, 24 (1921), 12) for the determination of mannite by polarimetry was studied and methods were devised for determination of mannite in manna and in official manna preparations. Mannite is weakly levorotatory in aqueous solution, but on adding sodium arsenite the solution becomes strongly dextrorotatory, with a constant rotatory power: $[\alpha]_D = 46.88^\circ$. The difference in the two rotation values is proportional to the amount of mannite in the solution. *Method for Manna:* One Gm. of manna is dissolved in water in a 50-cc. volumetric flask and made to volume. Then the solution is shaken with talcum and filtered. Two 20-cc. aliquots of the filtrate are placed in 50-cc. volumetric flasks. One flask is made to volume with

water and the rotation observed in a 2-dm. tube. The other is made to volume with a solution of sodium arsenite (198 Gm. As_2O_3 and 132.5 Gm. of anhydrous sodium carbonate per liter). The solution is vigorously shaken and filtered, then placed into a 2-dm. polariscope tube and the rotation observed. The difference of the two readings is the rotation angle, α . Calculation:
$$\frac{\alpha \times 50 \times 100}{[\alpha]_D \times l \times m} = x$$

where x is the amount of mannite per 100 Gm. of manna, l is the tube length in dm., $[\alpha]_D = 46.88^\circ$, and m is the quantity of manna weighed out. *Method for Mannite in Syrupus Sennae Mannatus:* 15.00 Gm. of the manna syrup are weighed into a 100-cc. volumetric flask, 60-70 cc. of water and 5 cc. of basic lead acetate solution are added. The solution is made to volume, stirred well and filtered. To 50 cc. of the filtrate is added 5 cc. of sodium carbonate solution to precipitate the excess of lead. The solution is filtered, decolorized with bone coal and again filtered. Two 20-cc. aliquots of this filtrate are taken and treated as in the determination of manna above. Each 20 cc. is equivalent to 2.7272 Gm. of the syrup. The rotation angle, α , is corrected for the ordinary sugar present by adding 0.05° . Tests in which the formula for the syrup was made up without the manna and a known amount of mannite added, indicated that the results tend to run a little high (av. 102.1%). *Method for Mannite in Infusium Sennae Compositum:* Identical to the method for the syrup above except that 10.00 Gm. of the infusion are weighed out in place of the 15.00 Gm. of syrup. Here 20 cc. of the final filtrate is equivalent to 1.8181 Gm. of the original senna mixture. No correction for ordinary sugar is made. In results obtained by making up the formula without the manna and adding a known amount of mannite, the average mannite found was 99.8% of the quantity introduced.—A. JERMSTAD and B. FRETHEIM. *Dansk Tids. Farm.*, 13 (1939), 106. (C. S. L.)

Mercury—Determination of Small Quantities of. Small amounts of mercury can be determined in an acid solution by precipitating with Reinecke's reagent, $NH_4[(SCH)_2Cr(NH_3)_2]$ as pale rose amorphous $Hg[(SCH)_2Cr(NH_3)_2]$, which by ignition gives chromous oxide, Cr_2O_3 . The determination can be made in presence of all the heavy metals except silver, gold and thallium.—N. S. KROUPENIO. *Zav. Lab.*, 7 (1938), 161-162; through *Chimie & Industrie*, 41 (1939), 456. (A. P.-C.)

Methanol and Isopropanol—Determination of, in Presence of Ethanol. The principle of the method consists in adding 30% sodium hydroxide solution into 10 or 20 cc. of the alcohol (previously adjusted to a specific gravity corresponding to 80% ethanol by volume) until a turbidity appears at $20^\circ C$. The methanol or isopropanol content is found from a curve plotted from results obtained with standard known mixtures. The method has been tested with methanol and isopropanol, but is equally applicable to other impurities. It is essential that the aqueous ethanol contain only one impurity.—E. CHARLES. *Compt. rend. 18me Congr. Chim. Ind., Nancy*, (Sept.-Oct. 1938), 38-42. (A. P.-C.)

Methyl Bromide—Analytical Methods for. Methods are presented for determining methyl bromide in air and in products for which it is used as a fumigant. The Beilstein test made with a commercial methanol torch serves for rapid detection, and with artificial standards may be employed for semiquantitative estimation in the range 50 to 500 p. p. m. More accurate results are obtained by means of ethanalamine hydrolysis and bromide determination. The Kolthoff-Yutzy procedure is used for amounts in the above range, and the Volhard titration for greater concentrations. For the

analysis of fumigated products, the Kolthoff-Yutzy method is applied after ashing with alcoholic potassium hydroxide in the presence of sodium chloride. Recoveries average 96% on knowns with 1 mg. of bromide per 10 Gm. of material.—V. A. STENGER, S. A. SHRADER and A. W. BESHGETOOR. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 121-124. (E. G. V.)

Microanalysis—Quantitative Organic Elementary, without a Microbalance. The standard micro-methods of quantitative organic elementary analysis allow a wide range in the amount of sample used, from about 20 mg. as the maximum. The amount of sample to be taken for analysis depends upon the sensitivity and the precision of the balance employed. This relationship has now been established. Not only can microbalances of less than standard sensitivity and precision be used, but an assay or even an ordinary analytical balance can be substituted for the standard microbalance, if its sensitivity and precision are not less than 0.025 mg. Minor changes in some of the microprocedures, but no changes in the standard microapparatus and equipment are necessary. Thus the lack of a microbalance need no longer delay the adoption of standard quantitative organic microchemical methods.—J. B. NIEDERL, V. NIEDERL, R. H. NAGEL and A. A. BENEDETTI-PICHLER. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 412-414. (E. G. V.)

N. F. Ointments—Adaptation of Assay Methods for Some of the. I. Ointment of Potassium Iodide. The U. S. P. XI assay method for potassium iodide could not be applied for this determination because the sodium thiosulfate in the preparation interferes. The following modified method was found to be adaptable: Accurately weigh about 5 Gm. of ointment and place in a crucible of about 50 cc. capacity containing 5-10 Gm. of anhydrous potassium carbonate, cover the ointment with a sufficient amount of the carbonate. Heat the crucible and contents gently over a Bunsen flame until the ointment is liquified and then gradually increase the temperature not to exceed dull redness until the ointment is completely carbonized. Extract the residue with boiling distilled water and wash on a filter until the last washing acidified with nitric acid yields no precipitate with silver nitrate test solution. Heat the combined filtrate and washings (about 150 cc.) to boiling and add 20-25 cc. of 5% potassium permanganate solution until the hot solution remains a permanent pink. Add just enough alcohol to remove the pink tint and cool to 25° C. Then add sufficient distilled water to make exactly 250 cc., filter the mixture through a filter which has not been previously moistened, rejecting the first 50 cc. To 50 cc. of the subsequently clear filtrate add about 2 Gm. potassium iodide, acidify with diluted sulfuric acid and titrate with 0.1N sodium thiosulfate using starch test solution as an indicator. (Each cc. 0.1 N Na₂S₂O₃ = 0.002767 Gm. KI).—ROBERT TZUCKER and WILLIAM B. BAKER. *Pharm. Arch.*, 10 (1939), 33-36. (H. M. B.)

Nickel—Colorimetric Determination of. A method has been developed for the colorimetric estimation of nickel as its ammonia complex. The color of the complex is stable, and is very little influenced by added ammonium salt.—G. H. AYRES and F. SMITH. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 365-367. (E. G. V.)

Nitrate—Spectrophotometric Determination of. The determination of very small amounts of nitrate with Griess's reagent (sulfanilic acid and α -naphthylamine in acetic acid solution) has been studied with a recording spectrophotometer and found to be one of the more accurate colorimetric methods. The same reagent has been used successfully for the determination of nitric oxide in concentrations well

below 10 parts per million. The possible use of the colorimetric method in several other connections has been pointed out.—H. A. LIEBHAFSKY and E. H. WINSLOW. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 189-190. (E. G. V.)

Nitric Ion—Identification Reactions of. The author reviews many reactions used for the identification of the nitric ion. The following test is recommended: Place several particles of the sample in a dry tube. (If the sample is a solution, evaporate to dryness.) Add 10-12 drops of 1:10 solution of nitrobenzene in sulfuric acid, and 1 drop of nitrobenzene. After three minutes, add 5-8 cc. of acetone and 3 cc. of 1:1 dilution of sodium hydroxide test solution, then mix. The acetone at first has a yellow tint which fades and then suddenly acquires a violet or violet-red color. The reaction is sensitive to 0.01 mg. and is not given by other oxidizing agents. Nitrites do not interfere, but chlorides should be removed with silver sulfate.—M. PESEZ. *Bull. biol. pharm.*, 44 (1939); through *J. pharm. Belg.*, 21 (1939), 504. (S. W. G.)

Nitrogen—Dumas Method for Organic. Several modifications of the standard Dumas assembly have been made, with the result that the apparatus described can be depended upon to gain consistently good results with relatively unstable liquid compounds.—F. SHEA and C. E. WATTS. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 333-334. (E. G. V.)

Nitrogen—Estimation of, by the Kjeldahl Method. The nature of the action of selenium is discussed.—A. A. SREENIVASAN and V. SADASIVAN. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 314-315. (E. G. V.)

Nitrogen—Needle Valve for the Micro-Dumas Determination of. The value described allows closer metering of the gas stream than is possible by adjustment of the stopcock.—E. B. HERSHBERG and L. SOUTHWORTH. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 404-405. (E. G. V.)

Organic Qualitative Analysis—Microtechnic of. In the development of the microtechnic of qualitative organic analysis, after the preliminary examination and solubility tests the next step is to work out the classification reactions for compounds containing carbon, hydrogen, oxygen. These reactions, including the fuchsin test, the Molisch test, titration for acids, ferric chloride and alkali solubility for phenols, saponification for esters, phenylhydrazine for ketones and sodium and solubility tests for alcohols, are described.—F. SCHNEIDER and D. G. FOULKE. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 111-114. (E. G. V.)

Oxalic Acid—Determination of. The method is suitable for urine and other solutions containing as little as 10 mg. of oxalic acid per liter. A 400 to 450-cc. sample is acidified with hydrochloric acid and extracted for 72 hours in a continuous extractor. If the time is shortened, extraction is incomplete. The ether is evaporated and the oxalic acid determined in the residue by the previously described micromethod (*Bull. Soc. Chim. Biol.*, 11 (1929), 46-57).—A. LEULIER and J. DORCHE. *Bull. soc. chim. biol.*, 20 (1938), 939-945; through *Chimie & Industrie*, 41 (1939), 251. (A. P.-C.)

Oxalic Acid—New Color Test for. To 5 cc. of a solution containing about 0.01% oxalic acid add 0.5 cc. concentrated hydrochloric acid and a strip of pure zinc; heat to boiling and allow to stand about 3 minutes to reduce the oxalic acid to glyoxylic acid; decant the solution into another test-tube, add 5 drops of 1% phenylhydrazine hydrochloride solution, heat almost to boiling, then cool under the tap. When cold, add an equal volume of concentrated hydrochloric acid and 5 drops of 5% potassium ferricyanide solution (as oxidizing agent); a bright red color develops in a few seconds. Iron is the only

common ion which interferes; if it is present, use dilute hydrogen peroxide or a persulfate, perborate, peroxide or chlorate in place of potassium ferricyanide.—M. PAGET and R. BERGER. *Bull. biologistes pharm.*, (1938), No. 40, 70-72; through *Chimie & Industrie*, 41 (1938), 50. (A. P.-C.)

Oxidation-Reduction Reactions—Potentiometric Studies in. VII. Determination of Aromatic Compounds with Potassium Chlorate. Phenol, *p*-nitroaniline, diphenylamine and quinone have been determined at 25° by titrating them potentiometrically against standard potassium chlorate in the presence of hydrochloric acid, using platinum electrode coupled with a saturated calomel electrode.—BALWANT SINGH and SOHAN SINGH. *J. Indian Chem. Soc.*, 16 (1939), 346. (F. J. S.)

Oxidation-Reduction Reactions—Potentiometric Studies in. VI. Iodometric Determination of Organic Acids. Oxalic acid, tartaric acid, citric acid, malic acid and glycollic acid have been determined by the iodometric method. The liberated iodine was titrated potentiometrically against sodium thiosulfate solution at 10°, using a platinum electrode coupled with a saturated calomel electrode. The e. m. f. was found to decrease steadily with the addition of standard sodium thiosulfate. At the equivalence point, there was a sharp fall in potential in each case.—BALWANT SINGH and SOHAN SINGH. *J. Indian Chem. Soc.*, 16 (1939), 343. (F. J. S.)

Oxygen—Determination of Dissolved, in Aqueous Solutions. An electrometric titration procedure is described.—G. A. PERLEY. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 240-242. (E. G. V.)

Pharmaceutical Preparations—Use of Capillary Analysis for the Testing of. Procedure and apparatus are described and the examination of 2 volatile oils, 4 tinctures and 1 spirit is reported.—R. KRESZ. *Deut. Apoth. Ztg.*, 54 (1939), 842-844. (H. M. B.)

Phenobarbitone—Variations in the p_H of Solutions, in Presence of Certain Pyrazolonic Compounds. In aqueous solution the acidity of phenobarbitone is already appreciable at relatively high concentrations, increases slightly on dilution and passes through a maximum at a concentration of 0.2208%, at which the p_H is 5.737; on further increasing the dilution the hydrogen ion concentration decreases. Antipyrine, generally considered as a monobasic substance, behaves as an acid-reacting compound in aqueous solution. The p_H curves start at 3.43 for a concentration of 1%; on increasing the dilution the p_H rises rapidly to 4.27 for a concentration of 0.0625%; it then drops again from a concentration of 0.039%, and at 0.019% reaches a value of 3.61; from there on the p_H increases and is approximately that of the water used for dilution. In aqueous solution pyrimidon acts like an alkaline-reacting substance. At a concentration of 1% the p_H is 7.72; on increasing the dilution the p_H decreases fairly regularly until it indicates a slight acidity (p_H of 5.96 at a concentration of 0.0019%). The p_H curves of binary phenobarbitone-antipyrine and phenobarbitone-pyrimidon mixtures begin at 5.64 and 6.57, respectively, for a 1% concentration and decrease regularly as the dilution increases. In a mixture of 1 molecule of phenobarbitone, 1 molecule of antipyrine and 2 molecules of pyrimidon the p_H value is 6.42 for a 1% concentration; it then decreases, slowly at first (p_H 6.26 for a concentration of 0.0625%) and then more rapidly, the minimum (5.43) being obtained for a concentration of 0.0009%; it then tends toward neutrality.—P. ANTONIO. *Boll. chim.-farm.*, 77 (1938), 1-14; through *Chimie & Industrie*, 41 (1939), 309. (A. P.-C.)

Phenol—Estimation of. A rapid colorimetric method of estimating minute quantities of phenol,

e. g. in urine, has been based on the color produced on coupling diazotized *p*-nitraniline with the phenolic substance in the presence of sodium carbonate. The reagent consists of a solution of about 0.1 Gm. of *p*-nitraniline in 1 ml. of concentrated hydrochloric acid, diazotized with saturated potassium nitrite solution at 80° C. until colorless, and diluted with 5 cc. of water. About 2 to 5 cc. of the distillate contained phenol are saturated with sodium carbonate in a Nessler cylinder and treated with 5 to 7 drops of the reagent. The solution is made up to the mark, and the color is compared with known standards similarly prepared. The method gives good results with solutions containing from 0.2 to 5 ppm. of phenol. The three cresols give colors of different intensity, and the method is therefore not satisfactory for mixed cresols, but if an actual sample of a mixture that has been swallowed is available, an estimation in terms of the mixture can be made.—ANNUAL REPORT OF THE CHEMICAL EXAMINER (1937), GOVERNMENT OF MADRAS. *Analyst*, 64 (1939), 120. (G. L. W.)

Phosgene—Micro Test for. Place 1 drop of the solution to be tested in a micro-crucible, add a minute fragment of phenylhydrazine cinnamate and after 5 minutes add 1 drop of 1% copper sulfate solution. Phosgene reacts to form diphenylcarbazide which gives a red-violet copper salt. As little as 0.0005 mg. of phosgene can be detected.—V. ANGER and S. WANG. *Mikrochim. Acta*, 3 (1938), 24-26; through *Chimie & Industrie*, 41 (1939), 271. (A. P.-C.)

Phosphates—New Method for the Volumetric Determination of, in Organic Liquids. To 25 cc. of urine in a centrifuge tube add 5 cc. of a 10% solution of lead acetate containing a little free acetic acid. Centrifuge and wash the precipitate repeatedly with boiling water until the washings give no test for lead. Determine phosphate in the precipitate by the previously described method (*Compt. rend. acad. sci.*, 205 (1937), 49-52).—E. CATTelain and P. CHABRIER. *Bull. soc. chim. biol.*, 20 (1938), 128-130; through *Chimie & Industrie*, 41 (1939), 50. (A. P.-C.)

Photoelectric Chemistry. The colorimetric determination of manganese by the periodate method and the determination of chromium by diphenyl carbazide have been studied with the object of adapting them to photoelectric colorimetry. An optical method for the separation of interfering ions is discussed in connection with the manganese method.—G. P. ROWLAND. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 442-445. (E. G. V.)

Pipets—Duplicating. The advantages of a pipet having two bulbs, both marked, are enumerated.—F. E. HOLMES. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 188. (E. G. V.)

Potassium—Determination of, with Hexanitrodiphenylamine Reagent. Gravimetric and volumetric procedures are given for the determination of macro- and microquantities of potassium as dipicrylamine; and a colorimetric procedure for the determination of microquantities (10 to 100 gamma).—I. M. KOLTHOFF and G. H. BENDIX. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 94-98. (E. G. V.)

Premna Odorata Blanco—Phytochemical Study of. This plant belongs to the family of *Verbenaceae*, it is widely distributed in the Philippines and medicinal properties are attributed to it. A decoction of its leaves gives relief in asthma and its aqueous infusion is used as a carminative and pectoral. Its leaves soaked in oil or water are used as local applications and smoked leaves also relieve asthma. Chemical study has been made to determine the medically active oleoresin which is its most efficacious preparation. The plant gives a negative test

for alkaloids, saponins, tannin and cyanogenetic substance. The leaves were extracted with various solvents (petroleum ether, ether, chloroform, alcohol, water) and gave a resinous extract. Leaves extracted with hot alcohol and steam distilled gave a volatile oil and resin. The unsaponifiable portion of the resin indicated melissyl alcohol, palmitic, stearic and linolenic acids.—PURIFICACION SUNCOSUACO and PATROCINIO VALENZUELA. *Rev. Filip. Med. Farm.*, 29 (1938), 207. (G. S. G.)

Procaine—Determination of. Evaporate a mixture of 0.081 Gm. of procaine (3 mols.), 0.03 Gm. of vanillin (2 mols.) and 1 cc. of half-normal hydrochloric acid on the water bath. Dissolve the residue in 5 cc. of distilled water. In the same manner treat an unknown solution of procaine. Take 1 cc. from each solution and compare in the microcolorimeter. The procaine forms with vanillin in the presence of chlorine ion a stable yellow colored compound.—G. F. REICHHARDT. *J. Prikl. Khim.*, 11 (1938), 387-388; through *Chimie & Industrie*, 41 (1939), 314. (A. P.-C.)

Quantitative Organic Microanalysis—Standard Solutions in. The purpose of the paper is to show that for all the ordinary requirements in titration of small quantities of material only 3 standard solutions are necessary: 0.01*N* potassium iodate acid, 0.01*N* sodium hydroxide and 0.01*N* sodium thio-sulfate. In all acidimetric or alkalimetric titrations, potassium acid iodate can be substituted for 0.01*N* hydrochloric acid and the same solution can serve for the standardization of 0.01*N* sodium thiosulfate as well as for sodium hydroxide. The use of the biodate solution simplifies organic microchemical analysis particularly since the microbalance is not necessary for the standardization and preparation of the standard solutions. A series of titrations is described covering the titration with sodium carbonate, titration of benzoic, cinnamic and salicylic acids, determination of aminoind nitrogen in myristamide, tyrosine and *p*-toluamide, titrimetric determination of halogen, titration of *o*-chlorobenzoic acid and 3,5-dibromopyridine, determination of sulfur in sulfonal and in sulfosalicylic acid and determination of iodine in potassium iodide. The agreement of the cited results of determinations made in the triplicate all show as close agreement as is shown in titrations; most of them appear to be within 0.2% of the quantity actually present (3-7 mg. samples).—J. B. NIEDERL, VICTOR NIEDERL and M. BITINGON. *Mikrochemie*, 25 (1938), 143-150; through *Chem. Abstr.*, 33 (1939), 1630. (F. J. S.)

Quinaldinic Acid as a Reagent for Copper, Zinc and Cadmium. Slowly add 20 cc. of reagent solution (5 Gm. sodium quinaldinate in 250 cc.) to a boiling solution of the copper (zinc or cadmium) solution properly buffered with acetic acid-sodium acetate buffer. After 45 minutes filter, wash, dry at 125° C. and weigh. Complete precipitation occurs with copper at p_H 2.5 to 6.96; with zinc at p_H 2.3 to 6.5; with cadmium at p_H 3.9 to 7.2. The method is suitable for the determination of each metal alone but unsuitable for the determination of one in the presence of either or both of the others.—R. J. SHENNAN. *Analyst*, 64 (1939), 14. (G. L. W.)

Quinine Salts—Determination of, in Presence of Methylene Blue. The quinine content of solutions for injection containing methylene blue (Paludin) cannot be determined by the usual gravimetric or volumetric procedures. In the presence of dilute hydrochloric acid the alkaloid can be precipitated with silicotungstic acid which does not affect methylene blue under these conditions. The precipitate absorbs the dye and so the determination must be made by ignition at 1000° C. and calculation on the basis of the silicotungstic anhydride.—J. G. SO-

BRINHO. *Boll. chim.-farm.*, 77 (1938), 145-148; through *Chimie & Industrie*, 41 (1939), 313-314. (A. P.-C.)

Rotenone—Approximate Determination of, in Derris. The Goodhue value (that is, a figure based on the intensity of color developed in the Goodhue test) of derris extract is shown to depend fairly closely on the "pure" rotenone content, but the correlation is rather more accurate when "crude" rotenone contents are used. Nevertheless, the Goodhue value can be used to determine approximate "pure" rotenone contents. Extracts containing only a small amount of rotenone give abnormally low Goodhue values and their presence in blends can thus be detected.—R. S. CAHN and J. J. BOAM. *J. Soc. Chem. Ind.*, 58 (1939), 194-196. (E. G. V.)

Selenium—Determination of, in Tissues and Feces. Horn's modification of the codeine sulfate reaction for the detection of selenium has been applied to the quantitative determination of minute amounts of selenium in animal tissues and feces. The dry sample is digested with sulfuric acid and mercuric oxide, cooled, made to volume and centrifuged. To a portion of the clear digest is added codeine sulfate solution and an interval of 7 hours in the absence of light is allowed for development of the blue color, after which time the transmission of light is determined in the Zeiss-Pulfrich photometer with the use of the yellow filter S-57. The amount of selenium present is easily calculated from standard curves obtained in a similar manner, using digests of normal tissues or feces containing added sodium selenite.—R. A. GORTNER, JR., and H. B. LEWIS. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 198-200. (E. G. V.)

Silica Gel as a Desiccant. The author discusses the commercial "Blauw Gel" prepared by N. V. Droogtechniek en Luchtbehandeling and gives data comparing it with sulfuric acid and unslaked lime as a desiccant.—C. G. VAN ARKEL. *Pharm. Weekblad*, 76 (1939), 59. (E. H. W.)

Spectrographic Analysis—Identification of Lines in Qualitative. Charts giving a wave-length scale, an iron arc reference spectrum and analysis lines for 47 elements are constructed for the region 2500 to 5150 Å. by use of a quartz Littrow spectrograph. Directions are given for using charts in spectrographic qualitative analysis. Reproductions of charts may be used as accurate wave-length and analysis scales for any quartz spectrograph.—W. C. PIERCE, O. R. TORRES and W. W. MARSHAL. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 191-193. (E. G. V.)

Spectrophotometric Methods in Modern Analytical Chemistry. Spectrophotometry is a branch of physical chemistry sorely neglected by the analytical chemist. Its advantages lie in the elimination of comparison solutions, the direct calibration of an instrument by a few simple measurements, the ability to determine independently the constituents of a mixture of colored substances, the precise evaluation of the errors of a method and the extension of measurements to the invisible regions of the spectrum. Speed is an advantage of colorimetric analysis not lost in spectrophotometric analysis. A brief résumé is given of the various types of instruments available, the important errors and limitation of the present methods, and finally examples of the results which may be obtained with actual analytical problems.—S. E. O. ASHLEY. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 72-79. (E. G. V.)

Stopcock—Improved Three-Way. Troublesome leaks in the conventional three-way stopcock, due to the fact that the two holes are so close together, have been overcome by placing the two

holes through the plug at right angles to each other; the openings are thus spaced 90° apart.—M. A. SMITH and F. L. HAYES. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 397. (E. G. V.)

Sulfate—Determination of, in Highly Sulfonated Organic Substances such as Hydrocarbons, Fatty Acids, Etc. Total sulfate (A) is determined as barium sulfate by ashing and igniting 3–4 Gm. of the product with 1:1 barium carbonate-barium oxide mixture, adding the residue to water containing bromine, adding 15–20 cc. of 30% aqueous hydrochloric acid, boiling for 10 minutes, and filtering off the barium sulfate. Sulfate combined with inorganic radicals (B) is determined by extracting 10 Gm. of the product with 100 Gm. of butyl alcohol, dissolving the residue in water, and precipitating the sulfate as barium sulfate. Sulfate combined with organic radicals equals A minus B. This method is also recommended for the analysis of Turkey-red oil.—H. GERBER and J. SPORLEDER. *Textilber.*, 20 (1939), 212; through *J. Soc. Chem. Ind.*, 58 (1939), 462. (E. G. V.)

Tablets of Ephedrine Hydrochloride and Solution of Ephedrine Sulfate—Improved Assay Method for. The following revised method is offered for the ampuls of ephedrine sulfate: Transfer an accurately measured volume of the solution containing about 0.25 Gm. of the sulfate, to a separatory funnel or a continuous extraction apparatus, add sufficient distilled water to make about 10 cc. and then 3 cc. 0.5N sodium hydroxide, and extract the alkaloid completely in the extraction apparatus or by shaking with 6 successive portions of ether using 20, 15, 10, 10, 10, 10 cc., respectively. Collect the ether extracts in a separatory funnel, wash the combined extracts with 5 cc. water and transfer the washing to a second funnel. Extract the water washing with 10 cc. of ether and add this to the combined ether extracts in the first funnel. Discard the residual water. Extract the combined ethereal solutions with 15 cc. of 0.1N sulfuric acid, followed by 10 cc. and 5 cc. of water. Collect these extractions in a beaker and gently evaporate on a water bath until ether is evaporated. Cool and titrate the excess acid with N/50 sodium hydroxide using methyl red T.S. as the indicator. Each cc. of 0.1N H₂SO₄ is equivalent to 0.01651 Gm. ephedrine. In the assay of the solution of ephedrine sulfate transfer 10 cc. of the solution accurately measured to a separatory funnel and proceed with the assay as above beginning with "or a continuous extraction apparatus." In the assay of the tablets of ephedrine hydrochloride weigh not less than 20 tablets, reduce them to a fine powder without appreciable loss and transfer a portion equivalent to 0.2 Gm. of the hydrochloride, accurately weighed, to a separatory funnel and proceed as above beginning with "or a continuous extraction apparatus."—REPT. AMER. PHARM. ASSOC. LAB. *Bull. Natl. Formulary Committee*, 7 (1939), 337–339. (H. M. B.)

Tartar Emetic on Leaf and Fruit Surfaces. Iodine-starch test papers have been prepared for the purpose of obtaining distributional and semi-quantitative analyses of leaf surfaces for tartar emetic. The test is sensitive to 0.9 microgram per square centimeter. Known quantities of tartar emetic have been deposited on paper as a standard of comparison. Substances that reduce iodine interfere with the test for tartar emetic.—D. STARR. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 519–521. (E. G. V.)

Thalious Carbonate as a Standard in Volumetric Analysis. The author recommends thalious carbonate as a primary standard for acidimetry and oxidation-reduction solutions. The compound was prepared by saturating a solution of thallium hydroxide with carbon dioxide. In titrations against

acid, methyl orange screened with xylene cyanol FF was used as indicator. The solution at the end-point had p_H 3.8. In titrations against potassium iodate in a high concentration of hydrochloric acid the reaction is indicated by the equation $Tl_2CO_3 + KIO_3 + 8HCl = 2TlCl_3 + KCl + ICl + 4H_2O + CO_2$. The end-point was determined by the aid of chloroform. The results compared well with those determined using potassium bicarbonate and potassium iodide, respectively. A. J. BERRY. *Analyst*, 64 (1939), 27. (G. L. W.)

Thalious Carbonate as an Acidimetric Standard. Tests to determine the purity of thalious carbonate as a primary standard in acidimetry have been described. The results obtained by standardizing hydrochloric acid in various ways agree very closely with those obtained using thalious carbonate recrystallized in platinum.—E. JENSEN and B. NILSEN. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 508. (E. G. V.)

Tyrosine and Other *p*-Substituted Phenols—Modification of the Gerngross-Voss-Herfeld Reaction Which Permits a Photometric Microdetermination of. The Gerngross-Voss-Herfeld test is a violet-pink color which disappears in a few minutes. The test is sensitive but in its original form did not follow Beer's law. By the addition of a little ferric alum, the color persists for a day or so and follows Beer's law. To 2 cc. of an aqueous solution of tyrosine, tyramine, etc., or to the deproteinized blood filtrate, add 1 drop of a 1% solution of α -nitroso- β -naphthol, heat to boiling, add 3 drops of concentrated nitric acid and again heat to boiling; as soon as the reddish violet coloration appears, add 2 cc. of saturated ferric alum solution, heat to boiling and allow to stand for 1 hour, then measure the color in a Pulfrich colorimeter. Good results were obtained with cells 1 cm. thick and filter S50.—A. MACIAG and R. SCHOENTAL. *Mikrochem.*, 24 (1938), 250–252; through *Chimie & Industrie*, 41 (1939), 460. (A. P.-C.)

Universal Buffer Over the p_H Range 2.0 to 12.0. The following solutions are required: (1) N sodium hydroxide made by diluting 58 cc. saturated sodium hydroxide with carbon dioxide-free water to 1 liter; (2) Phosphoric acid made by diluting 35 cc. of 85% acid to 1 liter and standardizing against the sodium hydroxide solution; (3) citric acid made by dissolving 70 Gm. crystals in 1 liter and also standardizing against the sodium hydroxide; (4) 0.1N hydrochloric acid made by diluting 18.019 Gm. constant-boiling acid to 1 liter; (5) boric acid crystals. A stock solution is prepared by measuring into a 1-liter flask the amounts of solutions 2 and 3 equivalent to 100 cc. N sodium hydroxide, adding 343.0 cc. N sodium hydroxide and 3.54 Gm. boric acid and diluting to volume with carbon dioxide-free water. The volumes of 0.1N hydrochloric acid to be added to 20 cc. of this stock for various p_H values between 2 and 12 are tabulated, the buffer is diluted to 100 cc. with carbon dioxide-free water. Between p_H 3 and 11 the buffer capacity is practically linear, and addition of 5 cc. 0.1N hydrochloric acid or sodium hydroxide per 100 cc. shifts the p_H about 1 unit. The effect of dilution or concentration and of temperature variations (15–25°) is discussed.—T. TEORELL and E. STENHAGEN. *Biochem. Z.*, 299 (1938), 416–419; through *Chem. Abstr.*, 33 (1939), 2433. (F. J. S.)

Urotropin—Methods for the Determination of. The acidimetric method is accurate, but relatively long, because the formaldehyde must be precipitated. The iodometric method is much less accurate, the errors being $\pm 2.5\%$. The Marotto-Stefano iodometric method with distillation is too cumbersome; and the same is also true of the Collins-Hanzlike method which also involves a distillation.

The argentometric method is more accurate than the first-mentioned iodometric method, but less than the others; the results are generally 1.3% too high.—H. ELLERT. *Acta Polonica Pharm.*, 1 (1937), No. 1, 11-19; through *Chimie & Industrie*, 41 (1939), 520. (A. P.-C.)

Vitamin B₁—Chemical Determination of. II. The sensitivity of the reaction between vitamin B₁ and diazotized *p*-aminoacetophenone is increased by the presence of phenol or ethyl alcohol, or preferably both. These substances also prevent the inhibition of the reaction caused by salt, for example, so that determinations can be carried out on solutions prepared by elution of permutit with salt solutions. Biological materials may be extracted with water at *p*_H 4.5 for thirty minutes at 70° C., or with 80% methyl alcohol, followed by concentration under reduced pressure. The vitamin is concentrated by passing the solution through a column of washed permutit, and eluting it with potassium chloride solution adjusted to *p*_H 2, the column being heated by steam during the elution. The eluate is treated with alcohol and phenol, neutralized to thymol blue, and diazotized *p*-aminoacetophenone is added. After standing overnight, the solution is extracted with xylene and the color of the extract compared with that of a standard prepared similarly.—D. MELNICK and H. FIELD, JR. *J. Biol. Chem.*, 127 (1939), 515; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 773. (F. J. S.)

Vitamin B₁—Chemical Determination of. III. The phosphorylated forms of aneurin give colors with diazotized *p*-aminoacetophenone, but these are not extracted by xylene. Hydrolysis must therefore precede determination of total vitamin B₁. In the case of dried yeast, this hydrolysis can be effected by means of an enzyme present, by allowing the yeast to stand with water at *p*_H 4.5 for twelve hours at 45° C. Dried yeast may contain as much as 75% of its aneurin in the phosphorylated form. The phosphatase present in dried yeast may be used to hydrolyze co-carboxylase (aneurin pyrophosphate) in other biological materials. Determinations of total aneurin by this method on yeast, yeast extract, rice polish concentrate and wheat germ, showed substantial agreement with biological determinations.—D. MELNICK and H. FIELD, JR. *J. Biol. Chem.*, 127 (1939), 531; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 774. (F. J. S.)

Zinc Cacodylates. The cacodylate was formed by mixing together 138 Gm. of cacodylic acid, 40.5 Gm. of zinc oxide and 250 cc. of water, filtering the solution after several hours; one part gave crystals of Zn[(CH₃)₂AsO₂]₂·7H₂O when evaporated at 15° C.; the other yielded the monohydrate when crystallized after evaporating the solution to half its volume at 50° C. under an absolute pressure of 70 mm. The reaction between barium cacodylate and zinc sulfate yielded the same hydrates upon similar treatment.—R. THIOLLAIS and MELLE. H. PERDREAU. *Bull. Soc. Chim. France*, 4 (1937), 1896-1898; through *Chimie & Industrie*, 41 (1939), 312. (A. P.-C.)

PHARMACOGNOSY

VEGETABLE DRUGS

Abutuas. A pharmacognostic study of *Abutua grande* (*Chondodendron platyphyllum*) with plates of sections of the root; also of another root erroneously called *Abutua grande* or *Pareira brava*. Other roots have also been described as *Pareira brava*, leading to substitution of drugs in compounding prescriptions.—NARCISO SOARES DA CUNHA. *Tribuna farm.* (Brazil), 6 (1938), 79. (G. S. G.)

Derris and Cubé Roots—Colorimetric Evaluation of. In evaluating derris and cubé roots it is now possible—by making use of colorimetric procedures and a determination of rotenone by the usual method to obtain at least approximate values for deguelin and toxicarol—by the Goodhue modification of the Gross and Smith color test to arrive at an estimate of the insecticidal value, and by the Meyer color test to get a rough idea of the total materials of the rotenone type.—H. A. JONES. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 429-431. (E. G. V.)

Ergot. A description of this drug is given.—L. PRANDSTRALLER. *Il farm. ital.*, 6 (1938), 766. (A. C. DeD.)

Hedeoma Denudata—Pharmacognostic Study of. This is a variety of mint. The article gives a brief description of its botanical features. The oil expressed from its leaves, flowers and roots has the characteristics of menthol.—HENRIQUE LUIS LACOMBE. *Tribuna farm.* (Parana), 6 (1938), 129. (G. S. G.)

Histology of Drugs by the Transparency Method. II. III. Leaf-Drugs of the Japanese Pharmacopœia. V. Histological characteristics of the leaves of *Prunus macrophylla*, *Arctostaphylos uva-ursi*, *Eucalyptus globulus*, *Mentha arvensis*, *Digitalis purpurea*, *Cassia angustifolia* and *C. acutifolia* are described.—J. TAKATORI. *J. Pharm. Soc. Japan*, 58 (1938), 176-178, 178-182; through *J. Soc. Chem. Ind.*, 58 (1939), 993. (E. G. V.)

Mallotus Philippinensis—Pharmacognostic Study of. This is a member of the family *Euphorbiaceæ*. A reddish brown powder from its capsules is listed in pharmacopœias as Kamala. It has anthelmintic and antiherpetic properties and also has commercial value as a dye-stuff for silk. It has been used from remotest antiquity. The tree is 5 to 10 meters high; the branches have pale brownish bark covered with dense short reddish brown hairs. The leaves are articulated, alternate, petiolate; petioles are covered with rusty colored hairs; the blade is oblong ovate, coriaceous with two obscure glands at the base, and its lower surface is covered with fine hairs. The flowers are dioecious; the female in lax, spike-like terminal and axillary racemes; the male in clusters of 3, in axils of small lax, and arranged in spike-like axillary racemes. The fruit is trigonus-globular 6 to 9 mm. in diameter. The pericarp is tough, greenish, covered with bright crimson glands which are readily detached in the matured fruit. The fruit dehisces in three bulbs, each bulb containing one seed, dark purple-brown, with smooth surface. Kamala, a powdered preparation of the glands, is a fine brick-red mixed with greyish yellow fragments of the capsule, leaves, and grey stellate hairs. It is inodorous and nearly tasteless, flammable, insoluble in water, soluble in alcohol, ether, chloroform and benzol. It floats on water and sinks in oil or turpentine. The alcoholic solution added to water gives a melon-like odor and when heated gives an aromatic odor. Its microscopic structure is described and illustrated. Its chemical composition is resin, wax, tannin, starch, sugar, citric and oxalic acids. The pharmacologic effect is similar to male fern. It irritates the gastro-intestinal tract, increasing peristaltic movements. Its therapeutic use is anthelmintic and antiherpetic. It is also used externally in scabies and other skin affections. It is used extensively as a rich orange-brown dye for silk.—JOSÉ K. SANTOS. *Rev. Filip. Med. Farm.*, 29 (1938), 405. (G. S. G.)

Medicinal Plants Which Grow in Sicily. The following plants are described: *Apium graveolens*, *Artemisia arborescens*, *Aquilegia vulgaris* and *Arctium lappa*.—E. FLACCOMITO. *Il farm. ital.*, 6 (1938), 770. (A. C. DeD.)

Passiflora Quadrangularis L.—Pharmacognostic Study of. Extracts of this drug, tinctures or infusions are used as a sedative especially on the central nervous system. It has certain likenesses to opium and in the Antilles it is called "Holland laudinum." The leaves contain a glucoside and an alkaloid. The plant is variously called *P. alata*, *P. pyriformis*, *P. brasiliiana*, *P. maliformis*, *P. incarnata*, *P. rubris*, etc. The difference in morphology of *P. quadrangularis* and *P. alata* lies in six small glands on the ventral side of the petiole in the former, and four in the latter. Another investigator notes a species with 2 to 4 glands. The fruit, commonly called "maracuja" or "marahuya" or fruit of "marahu," is a yarrow used for a drink.—ARTUR LOURENCO VIANNA. ANON. *Tribuna farm.*, 6 (1938), 120. (G. S. G.)

Pili Cynosbati. The Hair of the Rosebush Pseudocarp. The pharmacognosy with illustrations is thoroughly discussed. Twelve references are given.—B. AUGUSTIN. *Scientia Pharm.*, 10 (1939), 137-140. (H. M. B.)

Pumpkin Seed—Constituents of. Successive extraction of the ground seed with petroleum ether, chloroform, alcohol, water and dilute hydrochloric acid gave a series of extracts. The petroleum extracts contains a green oil with characteristic odor, amounting to 37.5% of the undecorticated seed and containing 1.8% of unsaponifiable residue. Cucurbitasterol was separated by fractional crystallization. The same extract contains a small quantity of a compound of sterolic nature, melting at 211° to 212° C., which seems to be a glucoside of the above-mentioned sterol. The chloroform extract also contains cucurbitasterol, as well as a hydrocarbon which appeared to be melene, C₃₀H₆₂. The alcohol extract contains lecithin, inorganic phosphorus, sucrose and fructose. The water extract contains proteins, from which was separated a small amount of pectin, and also aminoacids (α -amino- β -hydroxyglutaric acid). The hydrochloric acid extract contains chiefly phosphates, and more particularly inositolphosphoric acid.—A. LENDLE. *Arch. Pharm.*, 276 (1938), 45-53; through *Chimie & Industrie*, 41 (1939), 313. (A. P.-C.)

Rhubarb—A Pharmacognostic Commentary on. The root or rhizome of rhubarb is the part of the plant used as a drug. The official species should be the only one tolerated. It should have 28% ash as maximum and not more than 50% insolubility.—CARLOS STELLFELD. *Tribuna farm.*, 6 (1938), 91. (G. S. G.)

PHARMACY GALENICAL

Cream of Tartar—Manufacture of. The first English process for the manufacture of cream of tartar from argols and tartars by conversion into Rochelle salt followed by precipitation of the acid tartrate by means of sulfuric acid, and the second process from tartaric acid made from the English process described previously, are outlined, and control tests are discussed.—J. W. BLACK. *Ind. Chem.*, 15 (1939), 270-271, 276; through *J. Soc. Chem. Ind.*, 58 (1939), 911. (E. G. V.)

Emulsifying Machinery. An experimental investigation of the emulsification of a refined paraffin oil in a 2% potassium oleate solution when using a Hurrell smooth-faced colloid mill indicated the fineness of the emulsion to be approximately proportional to the speed of the mill and to increase somewhat with decreasing gap. A given specific surface can be produced with the least expenditure of power by operating at the highest speed and lowest throughput.—F. A. COOPER. *Trans. Inst. Chem. Eng.*, 16 (1938), 131-138; through *J. Soc. Chem. Ind.*, 58 (1939), 897. (E. G. V.)

Extracts—Experience with the Preparation of, with the Evacuator. A discussion.—RANDEBROCK and MEYER. *Deut. Apoth. Ztg.*, 54 (1939), 822-823. (H. M. B.)

Galenical Preparations of the Danish Formulary ("DAK Præparater 1939")—Notes on the. Comments are made on the galenical monographs of the Danish Apothecaries Control Laboratory Formulary ("DAK Præparater 1939"). Items discussed are: Aqua Hamamelidis, Ext. Fluidum Cola Examaratum, Aminoiod, Cascara Aromatica, Elixir Hydrastini Comp., Granulatum Laxans, Solutio Aminophyllini, Suppositoria Aminophyllini, Syrupus Guarea, Syrupus Lobeliae Comp., Syrupus Scilla Comp., Tablettæ Acidi Acetylsalicylici cum Caffeino, Tab. Calcii Amygdalatis, Tab "Capacetyl," Tab. Natrii Biphosphatis, Tab. "Salcaleobrom" cum Iodo et Theobromini Calcii Salicylatis. Also general notes on pills, tablets and troches, bacilli, Hydrargyri Phenylacetatis, Solutio Ephedrimi cum Adrenalino, Tablettæ Hydrargyri Phenylacetatis.—K. K. JENSEN. *Arch. Pharm. Chemi.*, 46 (1939), 541. (C. S. L.)

Magnesium Carbonate Pharmaceutical Preparations—Effervescent. Normal magnesium carbonate is used with a fruit acid such as citric acid (suitably also with sugar, potassium bicarbonate and oil of lemon).—DAVID LEVIN, assignor to J. T. BAKER CHEMICAL CO. U. S. pat. 2,147,743, Feb. 21, 1939. (A. P.-C.)

Sulfosalicylic Acid—Improvements in the Manufacture of. The excess sulfuric acid is removed from the finished product (prepared by the Hirsch method) by means of barium carbonate mixed with 6 to 10 times its weight of water. After 24 hours the clear solution is decanted, and the precipitate is washed with hot water. Barium is precipitated in the clear filtrate by the calculated amount of sulfuric acid; the solution is filtered and the filtrate is evaporated in vacuum to crystallization.—P. PARCHOMENKO. *Chem. Listy*, 32 (1938), 292-293; through *Chimie & Industrie*, 41 (1939), 529. (A. P.-C.)

Tablet Formulæ of the Swedish Formulary (Medicinal Bok) (1937)—Composition of New. The following tablet formulas are cited and discussed. Tab. acetarsoli, acetarbromali, acetphenolisatini, allypromoni, allypropynali, ammonii chloridi, benzolchloramini, calcii chloridi, calcii glyconatis, carbonis, diallymoni, diemalphenacetini, digitalis, ephedrini, hexamethylentetramini cum ammonii chlorido, neocinchopheni, neocinchopheni compositæ, papaverini, sulfanilamidi, tannalibini, toluolchloramini. The decomposition times of these products are cited.—B. SUNDBERG. *Farm. Revy*, 38 (1939), 485, 493, 501. (C. S. L.)

PHARMACOPŒIAS AND FORMULARIES

British Pharmacopœia—Revision of. In connection with revision of the British Pharmacopœia, the Pharmacopœial Commission has issued a report of the Committee on Pharmacy and Pharmacognosy for criticism and suggestion.—ANON. *Perfumery Essent. Oil Record*, 31 (1940), 25. (A. C. DeD.)

Medicinal Plants of the German Homeopathic Pharmacopœia—North American. The *Conifera* including *Abies nigra* and *A. canadensis* are reviewed. Seventeen references are given.—HERBERT SCHINDLER. *Deut. Apoth. Ztg.*, 54 (1939), 769-771. (H. M. B.)

Pharmacopœia Revision. The reports of the Committee on Pharmacy and Pharmacognosy of the Pharmacopœia Commission have been published and some important changes are recommended to be made in the forthcoming issue of the Pharmacopœia. In pharmacognosy the monographs on

belladonna leaf and root, cinchona and nux vomica have been revised, and much more precise details of the microscopical characters of these drugs are given. Some important changes both in character and nomenclature are to be made.—ANON. *Chemist and Druggist*, 131 (1939), 581. (A. C. DeD.)

Pharmacopœias of America. The Republics having national pharmacopœias at present are: Argentina, Brazil, Chile, United States, Mexico and Venezuela. The U. S. P. is used by: Cuba, Costa Rica, Puerto Rico, Panama and Santo Domingo; that of France in: Bolivia, Ecuador, Guatemala, Haiti, Honduras, Paraguay, Salvador, Uruguay and Peru. Nicaragua uses both and Santo Domingo also uses the French. Colombia uses both and also the British. Other European possessions in America use the pharmacopœias of their respective nations. Effort is being made to unify usages, or to compile a Pan American Pharmacopœia and commissions for this purpose and for an international standard have been suggested. But the latest editions of the pharmacopœias of several countries show much similarity; and the Pan American Sanitary Congress has subcommissions on the pharmacopœia which recommends that editors in each country coördinate nomenclature, synonyms, physical and chemical terms, standards of purity, assay and value of drugs and medicaments.—FRANCISCO GIGNOLI. *Rev. farm.* (Puerto Rico), 3 (1938), 889. (G. S. G.)

NON-OFFICIAL FORMULÆ

Cleansing Creams. These creams are usually of two types, the emulsified or cold cream type and the hydrocarbon mixture. Details of manufacture are offered and the importance of ozokerite and petrolatum to replace some of the crystalline waxes is discussed. The following formulas are offered: (1) mineral oil 54.0, ozokerite 10.0, beeswax 10.2, water 25.0, borax 0.8; (2) mineral oil 65, petrolatum 15, paraffin wax 10, ozokerite 10; and (3) mineral oil 65, hydrous lanolin 15, petrolatum 10, ozokerite 10.—H. HELFER. *Drug and Cosmetic Ind.*, 45 (1939), 42-43, 47. (H. M. B.)

Cosmetic Manual. Vanishing Creams. Vanishing creams are intended for use as foundation products to be applied to the skin in order to hold powder and to improve adhesion, and as starting points for other mixtures such as hand creams, brushless shaving creams, suntan creams, etc. They are oil-in-water products with stearic acid or one of its fat-like hydrophylic esters as the major emulsified ingredient and with comparatively little other fat or oil constituents. Basic constituents include excess stearic acid, soap and water and oftentimes glycerin. Pearliness in these creams is thought to be due to the formation of minute crystals of stearic acid or acid stearate. The general procedure of manufacture is given. Formulæ for simple creams (4 formulæ) and for those containing ammonia (6), titanium oxide (1), sodium hydroxide (2), triethanolamine (10), potassium hydroxide (8), potassium or sodium carbonates (17), borax (3), two or more alkalis (25), gums (6) and monostearates as glyceryl or glycol (4) as special types as well as ingredients are discussed.—JOSEPH KALISH. *Drug and Cosmetic Ind.*, 45 (1939), 30-33, 49. (H. M. B.)

Hand Cream Formulæ. Hand creams are modified vanishing creams which may be harder but must spread readily and not show any rolling; glycerin and emollients are valuable additions. The standard creams (10 formulæ) are vanishing creams based on the stearic acid and with the addition of various types of emollients; cholesterin and lecithin are often included. Glyceryl monostearate creams with and without pigments (6 formulæ), those with gums (5), protective pastes to be used before under-

taking dirty work (3), heavy water-in-oil types (3) and hand jellies (2) are discussed.—JOSEPH KALISH. *Drug and Cosmetic Ind.*, 45 (1939), 298-9, 305. (H. M. B.)

Hands—Care of the. Lacquers for nails and solvents for the same are discussed. Formulæ (21) are offered for nail varnishes, varnish removers, cuticle removers, cuticle oil, special creams for brittle and stiff nails, polishing agents (powders, creams and sticks), white (nail and moon), bleaches, and a balm for injured hands are offered and discussed.—HUGO JANISTYN. *Riechstoff Ind. Kosmetik*, 14 (1939), 175-177. (H. M. B.)

Hands—Modern Care of the. The usual cosmetic agents for the care of the hands especially the skin are liquids, creams and pastes and the following types, their constituents and methods of preparation are discussed: "Swedish toilet glycerins" (3 formulas), glycerin jelly (1), pectin jelly (1), citro-glycerin (1) and creams of various sorts (15). Nail lacquers (3 formulas) finger washes (2), cuticle remover (1), cuticle oil (1), nail creams (2), nail polishes (4), nail white (1) and stain removers (3) are described.—HUGO JANISTYN. *Riechstoff Ind. Kosmetik*, 14 (1939), 137-144. (H. M. B.)

DISPENSING

Calcium Linolenate. Attention is directed to the presence of vitamin F in linseed oil and lard. Believing that a better understanding of the pharmacologic action of these substances in ointments and liniments was needed, a study was undertaken. An ointment was prepared with the aim of blending lipids of the skin in a lard base reinforced with vitamin F. Clinical use showed their effectiveness but lard's tendency to rancidity presented difficulty since a rancid ointment may be irritating. Also use of linseed oil in sufficient quantity to give desired percentage of vitamin F yielded a fluid product. A more concentrated form was necessary and calcium salt of linseed oil fatty acids was selected. For the sake of brevity this is spoken of as linolenate. Method of preparation is stated and properties are discussed. A formula for a suitable vitamin F base without rancidity, with good absorption is submitted. Some of the cases in which it is indicated are cited.—KATHRYN GLENNON. *Jour. A. Ph. A.*, 28 (1939), 305. (Z. M. C.)

Cinnamomum Japonicum—Fat of the Seeds of, as a Substitute for Cacao Butter. Fat from the seeds of *Cinnamomum japonicum* Sieb has the following physical properties: melting point 32° to 34° C. solidifying point 30° C., acid value 0.2, saponification value 273.2 and iodine value 3.3. It is colorless, tasteless and nonirritating, and is therefore suitable for the manufacture of suppositories.—T. KARIYONE and H. IWAO. *J. Pharm. Soc. Japan*, 58 (1938), No. 3, 55; through *Chimie & Industrie*, 41 (1939), 316. (A. P.-C.)

Coal-Tar Disinfectants—Miscibility with Water. A method is described whereby water-immiscible coal-tar disinfectants can be made water miscible or water soluble by mixing them with 50% sulfonated castor oil. The bactericidal efficiency of these mixtures is governed by the amount of the active bactericide present and is directly proportional to such concentration.—L. GERSHENFELD and BERNARD WITLIN. *Am. J. Pharm.*, 111 (1939), 314. (R. R. F.)

Emulsifying Agents. Water-in-oil emulsions are prepared by the use of saponinens, especially betulin, ursolic and oleanolic acids, or their sodium salts, as emulsifying agents.—C. E. SANDO. U. S. pat. 2,076,794; through *J. Soc. Chem. Ind.*, 58 (1939), 919. (E. G. V.)

Emulsifying Base—New Dermatological. An emulsifying base, which will act with equal efficiency on dry and oily skins in the treatment of seborrhea of the scalp, acne, impetigo and allied conditions, contains liquid paraffin, 3 parts; white petroleum jelly, 2 parts; together with 2 parts of a mixture of higher fatty alcohols (hexadecyl and octadecyl) containing 10% of acid phosphoric esters of the alcohols. The advantages are that it is neutral and stable in the presence of acids, alkalis, metals and salts, even those which are strong electrolytes; it emulsifies with water, and ointments prepared with it may be mixed with water, and lightly massaged into the skin, leaving a smooth surface admirable for a cosmetic base; and serous discharges no longer act as a barrier between the medicament and the skin. It is very suitable for the preparation of ointments for use on moist infected areas as in bullous impetigo. The penetrative power of the higher fatty alcohols causes medicaments to be readily transferred through the skin, and they must be used in lower concentrations than in older bases of the vaseline and lanolin types. None of the substances commonly used in dermatology is incompatible with the new base, which is therefore of wider application than ointment bases containing triethanolamine and its derivatives. Cleansing after the use of this base is best carried out with water containing some weak antiseptic such as boric acid; paraffin or oils are undesirable and may lead to irritation. Both oil- and water-soluble medicaments can be applied simultaneously.—P. B. MUMFORD. *Brit. J. Dermatol.*, 50 (1938), 540; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 306. (S. W. G.)

Incompatibilities in Prescriptions. II. A Survey of the Frequency of Occurrence of Various Types in Incompatibilities. Incompatibilities appearing in a prescription forum from 1932 were studied. Frequency of occurrence of various types were determined. Physical and chemical incompatibilities occur with about equal frequency and together make up almost all; therapeutic incompatibilities are seldom the source of difficulty to the pharmacist. Most frequently occurring physical incompatibilities are incomplete solution, precipitation, separation of an immiscible liquid and liquefaction of solid ingredients. The most common chemical incompatibilities are formation of a precipitate, evolution of a gas, color changes, explosive combinations and cementation of ingredients.—WILLIAM J. HUSA and CHARLES H. BECKER. *Jour. A. Ph. A.*, 28 (1939), 1048. (Z. M. C.)

Iridæa Laminarioides—Phytochemical Study of. Red, green and brown algae of twenty-three varieties were selected for preliminary work. These are classified as to family, species, description and whether gelling or not. The study covers occurrence, collection of material, analytical data, extractives. Pharmaceutical work attempted to substitute the extract from *I. laminarioides* for some gels and gums used in official preparations. The falling ball method of Nichols was used for testing. Preparations tried were glycerite of tragacanth, jelly of ephedrine sulfate and an emulsion of olive oil. The products were not as attractive as when tragacanth is used, the color resembling agar products. Consistency was similar if 2.5 times as much *Iridæa* extract as tragacanth was used. Emulsions tended to separate more readily than those made with tragacanth or acacia.—JOHN ALAN ELLEGOOD. *Jour. A. Ph. A.*, 28 (1939) 294. (Z. M. C.)

PHARMACEUTICAL HISTORY

Apothecaries of Old Vienna. Historical.—ANON. *Wien. Pharm. Wochschr.*, 72 (1939), 514-518. (H. M. B.)

Apothecaries of Ostmark as Writers and Poets. IX. A biography dealing with Karl Spitzweg.—RODERICH WALD. *Wien. Pharm. Wochschr.*, 72 (1939), 550-551, 559-562. (H. M. B.)

Apothecaries of Silesia—Privileged. One hundred and twelve such apothecaries are listed, the oldest dating to 1264.—WILHELM BRACHMANN. *Deut. Apoth. Ztg.*, 54 (1939), 844-845. (H. M. B.)

Apothekers of Ostmark as Writers and Poets. VIII. Ludwig Merkle is discussed.—RODERICH WALD. *Wien. Pharm. Wochschr.*, 72 (1939), 468-472. (H. M. B.)

Celandine—History and Nomenclature of.—KARL DANIEL. *Wien. Pharm. Wochschr.*, 72 (1939), 522-524. (H. M. B.)

Lusol—History of. ARPAD TÖRÖK. *Wien. Pharm. Wochschr.*, 72 (1939), 518-520. (H. M. B.)

Spatulas—Ancient. An interesting article on spatulas, derived from Greek, Greco-Roman and Roman models, kept in the National Museum at Naples, the Antiquarium of Pompeii, the Antiquarium and National Museum of Medical Art at Rome, the Vatican and in groups and isolated examples in collections throughout Italy is given. They are an interesting illustration of the origin of pharmaceutical instruments.—U. TERGOLINA-GISLANZONI-BRASCO. *Il farm. ital.*, 6 (1938), 760. (A. C. DeD.)

Squibb Ancient Pharmacy. Pharmacy in retrospect. The authors describe this historic pharmacy. The article is well illustrated.—GEORGE URDANG and F. W. NITARDY. *Jour. A. Ph. A.*, 28 (1939), 1055. (Z. M. C.)

PHARMACEUTICAL LEGISLATION

Alcohol—Denatured, for Scientific Purposes in the Laboratory. German government regulations are discussed.—WALTER MEYER. *Seifensieder-Ztg.*, 65 (1938), 791-792; through *Chem. Abstr.*, 33 (1939), 1557. (E. G. V.)

Animal Fats. The Import of Goods (Prohibition No. 11) Order, 1939, adds oils, fats and greases derived wholly from animals (other than marine animals), except butter, lard and food oils, to the list of commodities the importation of which is prohibited except under license. The object of the Order is not to restrict supplies of fats, but to secure proper control, keep prices steady and ensure the best use of the importations. The Ministry of Food is providing for centralized purchasing of the commodities in question, with the assistance of the existing importing concerns.—ANON. *Perfumery Essent. Oil Record*, 31 (1940), 17. (A. C. DeD.)

Hops and Hop Preparations. The Board of Trade is now prepared to issue licenses for a limited quantity of hops, hop oil and extracts and other similar preparations made from hops. Applications should be made to the Ministry of Food, Division III A, Great Westminster House, Horseferry Road, London, S. W. 1., who, in consultation with the Permanent Joint Hops Committee will advise the Board of Trade on the licenses to be issued.—ANON. *Perfumery Essent. Oil Record*, 31 (1940), 25. (A. C. DeD.)

PHARMACEUTICAL ECONOMICS

Agar Industry—Japanese. Official production figures are not available, but estimates indicate that the 1938 agar crop in Japan was below normal, and that the 1939 crop will be somewhat smaller than that of 1938. The combination of small crops and low stocks has resulted in steadily rising prices. Since July 1938, the price for Kobe No. 1 stock has risen from 250 yen per 100 kin to the July 1939 quotation of 500 yen. Although prices declined slightly during the months of August, September

and October 1938, and again in March 1939, there was a marked rise in price in December 1938, and again in May 1939. The tendency is still upward.—ANON. *Chemist and Druggist*, 131 (1939), 582.

(A. C. DeD.)

Cinchona Bark Industry—World's.—ANON. *Bull. Imp. Inst.*, 37 (1939), 18–31, 183–196; through *J. Soc. Chem. Ind.*, 58 (1939), 884. (E. G. V.)

Hospital Pharmacist and the Diabetic. The author discusses at some length the considerable list of medications and other needs of the diabetic and shows the place the pharmacist has in supplying them.—MITCHELL STOKLOSA. *Jour. A. Ph. A.*, 28 (1939), 1044. (Z. M. C.)

Lemongrass Plots—Experimental. Distillation of lemongrass oil from *Cymbopogon citratus* cultivated at Amari during 1934 and 1936 showed that it is probably not an economic crop. Close planting was advantageous and the citral content of the oil was directly proportional to the rainfall during the growth of the grass, which was cut 10 times during the year.—R. R. LE G. WORSLEY. *Bull. Imp. Inst.*, 37 (1939), 180–182; through *J. Soc. Chem. Ind.*, 58 (1939), 994. (E. G. V.)

Medicinal Exports—U. S. A. Exports of medicinal, pharmaceutical and biological products during September advanced sharply to more than \$2,000,000 in value—the highest figure attained in this trade during any month in recent years. Outstanding gains were recorded in exports of serums and antitoxins for human use. The increase was largely due to heavier purchases by the United Kingdom, shipments to which were valued at \$195,000 in September, as compared with \$19,000 in September 1938.—ANON. *Chemist and Druggist*, 131 (1939), 582. (A. C. DeD.)

Opium Imports—U. S. A. Details of imports of raw opium for the years 1934, 1936 and 1938, showing countries of shipment, are given in a table. Imports during January–June 1939 totalled 92,968 lb., valued at \$386,710.—ANON. *Chemist and Druggist*, 131 (1939), 585. (A. C. DeD.)

Pharmacy and Relief Medicine in Pennsylvania. The author relates how the problem of giving adequate medical assistance to persons on relief has been handled by the authorities in Pennsylvania.—E. P. GUTH. *Jour. A. Ph. A.*, 28 (1939), 1041. (Z. M. C.)

Prescription Survey—1939. A summary of the replies obtained from 80 pharmacists in 28 states to the questions "Is the nature of prescriptions changing?" and "How are prescriptions distributed through time and customers?" indicates that of the 24,259 prescriptions compounded 8,634 or 35.59% were for a sole proprietary ingredient, 1022 or 4.21% were for mixtures of proprietaries only, that there is a growing tendency of physicians to prescribe for proprietaries alone, that the average store filled 11.55 prescriptions per day, 80.85 a week and 346.55 a month.—J. H. GOODNESS. *Drug and Cosmetic Ind.*, 45 (1939), 296–297, 305. (H. M. B.)

Prescriptions at Your Finger Tips. The author discusses promotion of a prescription business and describes some details that have helped improve his own.—KELLY E. BENNETT. *Jour. A. Ph. A.*, 28 (1939), 1051. (Z. M. C.)

Seychelles Oils—Notes On. The annual report of the Department of Agriculture, Colony of Seychelles, for the year 1938 is given.—ANON. *Perfumery Essent. Oil Record*, 31 (1940), 13.

(A. C. DeD.)

MISCELLANEOUS

Cosmetic Manual. Vanishing Creams. These creams may be of the liquifying type which do not contain water and of the emulsified type containing

a large proportion of mineral oil. Products containing emolllients (27 formulæ), of the cold cream type (14), lanolin type (14) and vanishing cream type (13) are discussed.—JOSEPH KALISH. *Drug and Cosmetic Ind.*, 45 (1939), 555–556, 561. (H. M. B.)

Deodorant Powder Suitable for Use on Bandages, Etc. Zinc peroxide and kaolin are used together, suitably with zinc oxide, talcum and precipitated calcium carbonate.—HENRY E. MELTON, assignor to C. E. JAMIESON AND CO. U. S. pat. 2,144,632, Jan. 24, 1939. (A. P.-C.)

Detergents—Free and Combined Alkali in. The alkalinity of detergents should be differentiated into combined, weakly combined, almost free and free alkali, the first three replacing the old, erroneous conception of combined alkali. These new classifications are defined and discussed, and examples are quoted.—C. BERGELL. *Seifensieder-Zig.*, 66 (1939), 385–386; through *J. Soc. Chem. Ind.*, 58 (1939), 963. (E. G. V.)

Detergents—Properties of. Japanese and German products are compared.—S. UENO and S. IZUHA. *J. Soc. Chem. Ind., Japan*, 42 (1939), 163B; through *J. Soc. Chem. Ind.*, 58 (1939), 856. (E. G. V.)

Perfumes—Solid. Notes on their composition are given.—H. S. REDGROVE. *Perfumery Essent. Oil Record*, 31 (1940), 24. (A. C. DeD.)

Plaster Bandage—Surgical. A strip of textile material has incorporated with it a mixture formed of the dry materials (*e. g.*, 14 parts of plaster of Paris, 4 of cassava starch and 4 of potato starch) and an accelerator such as potassium sulfate and borax to regulate the speed of setting of the mixture when moistened. Such a plaster is hard setting but easily disrupted and removed by treatment with water at a temperature safe for application to the human body.—JOHN K. AUDLEY-CHALES, assignor to FRANK WORRALL. U. S. pat. 2,144,675, Jan. 24, 1939. (A. P.-C.)

Shaving Cream—Antisudorific Deodorizing. Cream bases of various compositions are used with an admixture of a powerfully astringent metallic salt such as zinc sulfate and with a protective colloid such as gum tragacanth to prevent the salt from breaking down the cream base.—GRACE W. CARLSON, assignor to VICTOR H. ROEHRICH. U. S. pat. 2,145,583, Jan. 31, 1939. (A. P.-C.)

Shaving Cream—Brushless. A plastic emulsion is formed containing oleaginous material such as stearic acid together with aqueous material and a chemical compound (such as the sodium salt of the sulfuric acid ester of lauryl alcohol) comprising an oleophilic group containing at least 8 carbon atoms and a hydrophilic group, having good wetting and lubricating properties, being miscible with water, penetrating the greasy layer of the skin, and facilitating the softening of the hair.—WOLF KRITCHEVSKY, assignor to RIT PRODUCTS CORP. U. S. pat. 2,144,884, Jan. 24, 1939. (A. P.-C.)

Shaving Preparation—Nonlathering. A stable composition in stick-like form for application to the moistened skin is formed of an intimate mixture of a stable oxygen-producing substance (such as magnesium peroxide), a binder (such as gum arabic), and a water-soluble filler (such as lactose) serving to facilitate the access of water to the oxygen-producing substance when the composition is moistened. The oxygen-producing substance is present in amount capable of conditioning the beard for shaving by the application of the composition for a short time and then washing away before shaving. A small proportion of hydrogen peroxide-carbamide also may be added.—VICTOR DZIALOSCHINSKY and GEORGE DEUTSCHLAND, assignors to

MAX GOLDMANN. U. S. pat. 2,143,060, Jan. 10, 1939. (A. P.-C.)

Soap and Soap Powders—Determination of Fatty Acids in. Fatty acids set free by treatment with sulfuric acid are dissolved in brom-naphthalene (I) and the decrease in index of refraction of I is determined. The method is described and a table (based on results with fatty acids from Persil) is given to simplify calculation.—R. LIEBETANZ. *Seifensieder Ztg.*, 66 (1939), 467-468; through *J. Soc. Chem. Ind.*, 58 (1939), 963. (E. G. V.)

Suture Package. A suture package comprises a receptacle containing a preserving solution (such as one containing alcohol) subject to evaporation on exposure to the air, a hermetically sealed container of rubber hydrochloride immersed in the preserving solution and a suture and a second preserving solution within this container. The container is resistant to osmotic action by the preserving solutions.—JAMES A. AUSTIN, assignor to HENSEN-SALSBERY LABORATORIES, INC. U. S. pat. 2,142,707, Jan. 3, 1939. (A. P.-C.)

Triethanolamine—Salts of. II. Detergency. Fatty acid salts of triethanolamine have been suggested as substitutes for soap in commercial and cosmetic use because of their low alkalinity. An apparatus is described for determining the extent of soiling of cloth. Salts of triethanolamine were subjected to washing tests: Laurate, oleate, myristate and palmitate had detergent action but none had as great detergent action as ordinary soap. Some commercial mixed fatty acids were tested also.—GEORGE W. FIERO. *Jour. A. Ph. A.*, 28 (1939), 284. (Z. M. C.)

PHARMACOLOGY, TOXICOLOGY AND THERAPEUTICS

PHARMACOLOGY

Antihormone Effects in Pancreatic Diabetes. Two completely depancreatized dogs given intraperitoneal injections from a dog treated over 9 months with anterior pituitary extract showed a marked decrease in the degree of glucosuria. Two completely depancreatized dogs injected with anterior pituitary extracts for 30 days showed after cessation of extract injection a much less severe diabetes during fasting than before the treatment. The metabolic behavior of the four dogs was much like that of depancreatized-hypophysectomized animals.—F. C. DOHAN and F. D. W. LUKENS. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 167. (A. E. M.)

Antihormone Production—Influence of Age of Animal and Nature of Injected Hormone Preparation on. Mature rats produce more antihormone principle in response to injections of anterior pituitary-like gonadotropic preparations than rats which are immature when treatment is begun. Of two gonadotropic preparations tested, the one containing a large amount of protein evoked less antihormone production but more precipitins than the one containing less antigenic material.—ALBERT S. GORDON, IRVING LEVENSTEIN and HARRY A. CHARIPPER. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 121. (A. E. M.)

Aphrodisiac—Seed of Avocado as an. The avocado is said to have aphrodisiac properties which rest in the seed rather than in the pulp. An infusion or macerate of the seed of avocado in rum provides an excellent stimulant and is said to accentuate genital functions. The seed contains ethereal and fixed oils, tannin, resins, gums, albuminoids, starch, cellulose, sugar, alkaloids, minerals and moisture. The alkaloid is probably responsible for the aphrodisiac action and extracted in crystalline form and injected intravenously in experimental animals, it

produced erection and ejaculation. The cultivated avocado has scarcely any perceptible aphrodisiac property; the greater amount in the wild species is probably due to climate and soil.—CARLOS STELLFELD. *Tribuna Farm.*, 6 (1938), 59. (G. S. G.)

Autonomicomimetic Drugs—Reaction of the Isolated Sphincter of the Pupil to. By means of an improvement in technic, the authors have been able to record the movements of the sphincter of the iris of the dog, cat and rabbit *in vitro*. In accordance with expectation, acetylcholine, mecholyl and pilocarpine consistently and physostigmine occasionally caused contraction. Atropine depressed the sphincter and rendered it less sensitive to the cholinergic drugs. Physostigmine "sensitized" somewhat to both acetylcholine and mecholyl, but not to pilocarpine. The catechol derived sympathomimetics, epinephrine, epinine, cobeprin and arterenol consistently, and non-catechol derivatives occasionally, relaxed the sphincter. It was suggested that the non-catechol derivatives may act peripheral to the receptive mechanism. Cocaine failed to give any relaxation. The muscolotropic drugs, histamine and barium chloride, proved inconsistent stimulants of the iris muscle, shown to be reactive by its subsequent response to electric spark stimulation. Finally, it is suggested that the pupil is no fit object for the proof of the presence of the various sympathins, for both should cause dilatation of the pupil, the one by stimulation of the dilator, the other by inhibition of the sphincter. Epinephrine is capable of doing both of these in dilution greater than 1:5,000,000.—M. GUNTER and M. G. MULINOS. *Arch. intern. Pharmacodynamie*, 62 (1939), 33. (W. H. H.)

Benzedrine and Avertin. In animal experiments the authors have shown that benzedrine, in a dosage of 3 mg. per Kg., both shortens the duration of normal anesthesia and protects from lethal doses. Both pulse and respiration are much improved. In five individuals a similar shortening of the avertin effect was shown after 20 mg. of benzedrine given either intravenously or subcutaneously, with improvement of pulse, respiration and blood pressure. Further investigations are to be reported.—J. MICHELSON and M. VERLOT. *Current Researches Anesthesia and Analgesia*, 18 (1939), 59; through *Brit. Med. J.*, 4083 (1939), 758F. (W. H. H.)

Cobra Venom—Prolonged Administration of, in Relation to Kidney and Liver Function. Large doses of cobra venom administered to rabbits for 7 to 22 weeks failed to cause any impairment in the function of kidneys or liver.—DAVID I. MACHT and DOROTHY BROOKS. *Proc. Soc. Exptl. Biol. Med.*, 41 (1939), 418. (A. E. M.)

Cocaine—Vasoconstrictor Action of. Experiments performed on the conjunctival and aural vessels of rabbits leads the author to conclude that the vasoconstriction action of cocaine is a dual one. It tends to sensitize smooth muscle of the blood vessel wall to tonic sympathetic discharges and it has an epinephrine-like action on the sympathetic receptors of the smooth muscle cell.—WILLIAM H. CROSBY. *J. Pharmacol.*, 65 (1939), 150. (H. H. B.)

Cratægus Oxyacantha—Physiopharmacognosy and Pharmacology of. A review with formulæ for the fluidextract and tincture and in prescriptions with doses. Seventeen references are given.—HANS BRAUM. *Deut. Apoth. Ztg.*, 54 (1939), 891-892. (H. M. B.)

Cyclopropane—Studies of. V. The Effect of Morphine, Barbitol and Amytal upon the Concentration of Cyclopropane in the Blood Required for Anesthesia and Respiratory Arrest. Small doses of morphine, barbitol and amytal given to dogs

prior to the administration of cyclopropane diminished the amount of this gas necessary for the production of surgical anesthesia without however reducing the concentration necessary to produce respiratory arrest. With large doses of these premedicants partial summation was encountered in all stages and at respiratory arrest.—BENJAMIN H. ROBBINS, J. H. BAXTER, JR., and O. GARTH FITZHUGH. *J. Pharmacol.*, 65 (1939), 136-142.

(H. B. H.)

Desoxycorticosterone—Progesterone-Like Activity of. Desoxycorticosterone resembles progesterone in that it produces progestational proliferation in the endometrium of immature rabbits and induction of estrous receptivity response in spayed guinea-pigs. Desoxycorticosterone is $1/6$ to $1/10$ as potent as progesterone.—J. VAN HEUVERSWYN, V. J. COLLINS, W. L. WILLIAMS and W. U. GARDNER. *Proc. Soc. Exptl. Biol. Med.*, 41 (1939), 552.

(A. E. M.)

Digitalis—Biological Assay of. Methods of assay are reviewed and that of Knaffl-Lenz is recommended.—R. MARRI and F. CIAPPI. *Biochim. terap. sper.*, 26 (1939), 203-216; through *J. Soc. Chem.*, 58 (1939), 993.

(E. G. V.)

Digitalis—Biological Assay of Commercial Samples of. The Hatcher cat method was used on samples of digitalis at three-year intervals. The concentration of the tinctures was found to be unchanged, but their pharmacologic activity was reduced.—J. A. PREMOLI. *Rev. Col. Farm. Nac. Rosario*, 5 (1938), 70; through *Rev. centro estud. farm. bioq.*, 28 (1938), 78.

(G. S. G.)

Digitalization in Patients with Auricular Fibrillation—Physiological Adaptations in Cardiac Slowing by Digitalis and Their Bearing on Problems of. The mechanism whereby digitalis caused cardiac slowing in 10 patients suffering with auricular fibrillation was investigated. It was found that this slowing was the result of two actions, one a vagal factor (abolished by atropine), and the other an extravagal factor (not abolished by atropine). Initially the slowing seems to be due to reflex stimulation of the vagus; as the dose is increased this reflex is depressed and the slowing becomes then due to the extravagal factor influencing conduction between the auricles and the ventricles.—H. GOLD, N. T. KWIT, H. OTTO and T. FOX. *J. Pharmacol.*, 67 (1939), 224.

(H. B. H.)

Diuretics and Diuresis. A review discussing the theories of kidney function and the theories of action of diuretic drugs. The action of drugs of the xanthine group, of saline diuretics and of the mercurial diuretics, novsauroil, salyrgan and esidron, are discussed. The value of the combination of theophylline and the organic mercurial in esidron is stressed.—T. GEILL. *Arch. Pharm. Chemi*, 46 (1939), 433.

(C. S. L.)

Ficus Pumila L.—Latex of. A review of all the pharmacological and pharmacochemical literature on the latexes of the genus *Ficus* is given. It was shown that the latex of *Ficus pumila* L. possesses proteolytic activity. The latex has been resolved into six proximate constituents besides water. Of these, two are crystalline substances with sharp melting points. The proteolytic activity of the latex is present in its protein fraction and is totally destroyed by a temperature of 85-90° C., for 5 minutes. The crude latex and also the protein fraction obtained from it digests certain species of parasites. The active principle present in the protein fraction does not hemolyze rabbit's blood.—C. F. ASENJO. *Puerto Rico J. Pub. Health and Trop. Med.*, 15 (1939), 141.

(A. C. DeD.)

Furfural—Some Pharmaceutical Applications of. Pharmacological tests on the derivatives of cincho-

phen showed that the phenyl derivative is more active as a uric acid eliminant than the furyl derivative in the ratio of 100 to 70.—A. MANGINI. *Ann. chim. applicata*, 28 (1938), 34-39; through *Chimie & Industrie*, 41 (1939), 312.

(A. P.-C.)

Heterocyclic Compounds—Local Anesthetic Properties of Certain. The authors found that the β -amino-ketones containing thiazole and furane nuclei were too irritating when tested by the rabbit cornea method to be of any value as a local anesthetic. Four pyrazoline derivatives belonging to the type known to possess local anesthetic properties were examined more extensively. Three were more potent and less toxic than cocaine and were not at all irritating. When the *o-n*-butoxy-group was introduced into the substituent phenyl nuclei the beneficial effect on the properties of the molecule as a whole was affected. The unsaturated piperidino-ketones from which the pyrazolines were prepared also had a local anesthetic action which proved to be more irritant than cocaine.—G. A. LEVY and H. B. NISBET. *J. Pharmacol.*, 65 (1939), 129.

(H. B. H.)

Hormonal Induction of Abortion. Ovulation was induced during pregnancy by a single intravenous injection of 10 rat units of pregnancy urine extract. Abortion commonly occurred in rabbits injected about the middle of pregnancy. On the other hand, in animals injected at the beginning of the second trimester, interruption of gestation did not occur.—FRANKLIN F. SNYDER and HERBERT KOTEEN. *Proc. Soc. Exptl. Biol. Med.*, 41 (1939), 432.

(A. E. M.)

Larvicides—Action of Certain Assamese Plants as. Of all the plants enumerated duranta, xanthoxylum and gardenia are all larvicides and lethal in reasonable dilutions. The larvicidal action of *Polygonum flaccidum* was not marked. *Tephrosia Vogelii* was far the best and its solutions were lethal to larvae up to a dilution of 1 in 2,000. These plants all grow in Assam in profusion, and can be used as auxiliary larvicides to oil and Paris green in suitable situations. Duranta is also an excellent shade plant for malarigenous drains. Polygonum is useful as a shade plant for small surface drains. Tephrosia may also be included in the same category. Gardenia and xanthoxylum, while excellent larvicides, are not useful for shade planting, but only for their larvicidal action. The larvicidal action of acetone dilutions of the seeds of *Tephrosia Vogelii* is very marked and is due to degueline, an isomer of rotenone.—D. MANSON. *J. Malaria Inst. India*, 2 (1939), 85.

(A. C. DeD.)

Local Anesthesia—Factors Influencing the Duration of. It was found that the duration of action of local anesthesia as tested by the human wheel method is more dependent on the concentration of the anesthesia than on the total quantity of the drug administered. Practically this indicates that the most economical method for using local anesthetics clinically is to administer them in small quantity at frequent intervals, at relatively high concentrations.—H. K. SINHA. *J. Pharmacol.*, 66 (1939), 42-53.

(H. B. H.)

Magnesium—Effect of, on the Response of the Uterus to Posterior Pituitary Hormones. On the isolated guinea pig uterus it was found that magnesium chloride increased the response to posterior pituitary hormones. In making tests of the oxytocic activity of samples of posterior pituitary the degree of this activity will depend on the magnesium concentration of the uterine bath. Magnesium chloride decreases the uterine response to histamine and to ergobasine tartrate.—A. M. FRASER. *J. Pharmacol.*, 66 (1939), 85-94.

(H. B. H.)

Male Hormone—Anticarcinomic Action of. Repeated injections of testosterone propionate, even

in small doses, seemed to decrease slightly the incidence of cancer in mice treated with methylcholanthrene.—J. FLACKS and A. BER. *Compt. rend. soc. biol.*, 128 (1938), 506-509; through *Chimie & Industrie*, 41 (1939), 318. (A. P.-C.)

Male Sexual Hormone. VIII. Activators of Male Hormone. A study of the activity of some synthetic diol palmitates. Daily injection of 30 mg. of glycol dipalmitate increases considerably the action of testosterone. Injection of 20 mg. of propyleneglycol dipalmitate produces a similar effect. On the other hand, 30 mg. of glycol monopalmitate has hardly any intensifying effect on the action of testosterone. Injection of 5 mg. of glycol dipalmitate and of 2.5 mg. of trimethyleneglycol dipalmitate seems to exert a slight inhibitory effect on the action of testosterone.—A. OGATA, S. HIRANO and T. KON. *J. Pharm. Soc. Japan*, 58 (1938), 57-58; through *Chimie & Industrie*, 41 (1939), 318. (A. P.-C.)

Morphine Salt of Campho-10-Sulfonate—Chemical and Pharmacological Research of the. The author states that the morphine salt of campho-10-sulfonate has the formula $C_{19}H_{16}O_4S \cdot C_{17}H_{19}NO_3 \cdot 2H_2O$. Pharmacological properties of this salt have also been described.—S. BERLINGOZZI and R. BENIGNI. *Annali Chim. Farm.*, 16 (1938), 7. (A. C. DeD.)

Pilocarpine—Influence of, upon Epinephrine Output. Accelerating action of pilocarpine upon the epinephrine discharge from the suprarenals appears in a somewhat small degree if given to the animal under anesthesia, and it becomes manifest much earlier than in the non-anesthetized animal, and continues for a much shorter time. With a small dose of pilocarpine the epinephrine discharge rate, estimated by means of the cava pocket method, becomes definitely smaller than the initial rate, which is much larger than the basal rate in the non-anesthetized, non-laparotomized animal.—T. HIRANO. *Tôhoku J. Exptl. Med.*, 37 (1939), 119. (A. C. DeD.)

Prepituitary Extracts—Measure of the Gonadotropic Activity of. The measure of the gonadotropic activity of prepituitary extracts has been effected by three sharply specific methods: (1) Determination of the percentage of estrus with a certain number of hypophysectomized rats, its execution is rather difficult. (2) Measure of the increase of the crest of the prepubescent cock, this technic is relatively easy but its results are less precise. (3) Measure of the increase in weight of the testicles with the impubescent cock, this is the most precise but the most onerous method.—RAYMOND CAHEN and PIERRE ARDOINT. *Compt. rend.*, 209 (1939), 490. (G. W. H.)

Progesterone and Other Hormones—Effect of, on Liver Glycogen. Progesterone as well as cortical extract raised the glycogen levels in the liver of intact fasting ferrets. Pseudopregnancy probably enhanced the effectiveness of progesterone. In a small number of rats cortical extract had a similar effect, while progesterone, testosterone propionate and stilboestrol gave little if any response.—ROBERT GAUNT, JOHN W. REMINGTON and ABRAHAM EDELMANN. *Proc. Soc. Exptl. Biol. Med.*, 41 (1939), 429. (A. E. M.)

Prostigmin—Vasodilating Action of. Studies were made on man and the prostigmin was given either subcutaneously or orally ($1/2$ mg. subcutaneously, 15 mg. orally). It was found that prostigmin produces a dilatation of the skin vessels. The mechanism of this action is probably that of "ferment blockade" of the choline-esterase.—SAMUEL PERLOW. *J. Pharmacol.*, 66 (1939), 66-72. (H. B. H.)

Rabbit Blood—Depressor Action of. When freshly defibrinated blood of a rabbit is introduced

intravenously into a cat, rat or guinea pig, under urethane, there occurs in the arterial blood pressure two successive falls, the first rather short, usually a relatively small fall, and the second prolonged, usually considerable, which starts about forty to fifty seconds after the injection and is accompanied sometimes by bradycardia. The red cell of rabbit, intravenously injected, causes the second of the same events, and if it be hemolyzed, it causes also a profound fall of pressure, but in the time relation coincides with the first fall. The blood serum evokes only the first fall in the pressure. Thus, the second, profound fall of pressure is probably due to hemolysis of the rabbit blood in the blood circulation system of the cat. Interference with the suprarenals, splanchnic nerves, vagi, spleen, spleen with the liver arteries and portal vein, or atropine do not affect the appearance of both of the falls of pressure.—K. FUJII. *Tôhoku J. Exp. Med.*, 35 (1939), 384. (A. C. DeD.)

Sympathomimetic Amines—Quantitative Comparison of Responses of Isolated and of Intact Intestine to Seven. Isolated rabbits' intestine and intestinal fistula in unmedicated dogs were used to test the activity of seven amines. Both types of preparations responded similarly proving the similarity of both smooth muscles and demonstrating the peripheral direct action on the muscle of the intestinal wall. If, the concentration of adrenaline necessary to produce response is 1, the necessary concentration of *dl*-arterenol is 1.5 to 4, of cobefrin 2.5 to 10, *l*-neosynephrin 4 to 100, of epinine 10 to 25, of kephrine 25 to 100 and of *dl*-synephrine 500 to 2500.—K. W. AUMANN and W. B. YOUMANS. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 111. (A. E. M.)

Thyroxine and Heart Action. The toxic effects of thyroxine, given subcutaneously or intravenously as the sodium salt, upon the cat heart were more pronounced with small repeated doses than with large single doses. Characteristic electrocardiographic changes included high and sharp P and T waves, negative T, reduced R and auricular block. The morphological alterations of the heart muscle were not related to the electrocardiographic changes and were present in severe and mild intoxication. The action of thyroxine on the heart is believed by B. to be an indirect effect, exerted *via* the general toxic effects of the hormone.—H. BAUER. *Arch. exptl., Path. Pharmacol.*, 193 (1939), 642; through *Squibb Abstr. Bull.*, 12 (1939), A-1576. (F. J. S.)

Vitamin A—Pharmacology and Therapeutics of. Disorders which are due to deficiency of vitamin A are nutritional night blindness, xerophthalmia, keratomalacia and a definite follicular keratosis of the skin. Treatment and prophylaxis of these with vitamin A is well established. Night blindness is the earliest symptom usually used for diagnosis; xerophthalmia and keratomalacia, the symptoms of severe deficiency, are less susceptible to treatment by vitamin A or carotene. Absorption of vitamin A and carotene may be inhibited by complications or defects in the gastro-intestinal tract. There is antagonism between thyroxine and vitamin A but further investigation is needed on the influence of vitamin A on the thyroid. So far there is no evidence that urinary lithiasis is a derivative of vitamin A deficiency. Vitamin A deficiency can cause sterility. There is no striking effect on the cellular elements of the blood. It is used in the treatment of burns, wounds and ulcers but is no better than the commonly used oil dressings. No justification exists at present for calling vitamin A the anti-infective vitamin. So far there is no danger of hypervitaminosis in an overdosage of fish liver oils. Any untoward effects are more likely due to allergy.—S. W. CLAUSEN. *J. Am. Med. Assoc.*, 110 (1938), 144. (G. S. G.)