PHARMACEUTICAL ABSTRACTS

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

ABSTRACTORS

CONTENTS

CHEMISTRY

ORGANIC

Alkaloids (Continued)

Codeine—Colorimetric Microdetermination of. The method consists in first extracting morphine and codeine from the opium by means of baryta water, determining morphine colorimetrically, determining the sum of morphine plus codeine, and calculating codeine by difference. The sum of the two alkaloids is determined by means of the color reaction with hypobromous acid which produces a red color with morphine and codeine in presence of an excess of ammonia.—N. IOURACHEVSKI. *Prom. Organ. Khim.* 3 (1937), 29–32; through *Chimie & Industrie* 39 (1938), 314. (A. P.-C.)

Curare—Active Principles of. From curare and the bark of *Strychnos lethalis*, the following alkaloids have been isolated by means of their silicotungstates; strychnolethaline, $C_{22}H_{27}O_4N$ and curalethaline, $C_{25}H_{30}O_7N$.—M. PAULO and BERREDO CARNEIRO. *Compt. rend.*, 206 (1938), 1202. (G. W. H.)

Fluidextract of Ergot. The present chemical method for the evaluation of ergot alkaloids needs revision. Of the 23 samples collected in drug stores and examined chemically, four contained less than 0.1 mg. per cc. of ergot alkaloids expressed as ergotoxine ethanesulfonate, and 11 contained less than 0.3 mg. per cc. The range found was from 0.04 to 0.66 mg. per cc. In general, the low values were identified as old stock. Three samples were examined by both the A. O. A. C. and U. S. P. methods of analysis, respectively, with the following results: 0.33 and 0.18; 0.54 and 0.33; 0.06 and less than 0.12. Results are expressed as mg. per cc. of ergotoxine ethanesulfonate.—E. M. BAILEY. *Conn. Agr. Expt. Sta. Bull.* (New Haven), 401 (1937), 874; through *Chem. Abstr.*, 32 (1938), 7209. (F. J. S.)

Isoquinoline Alkaloides—Hydrohalides of Alkyl Esters of. Hydrohalides of various alkyl esters of isoquinoline alkaloids are obtained by refluxing the methyl halides of the corresponding alkaloids with the desired alcohol in the presence of a suitable ring-cleavage catalyst. The catalyst comprises an electrolyte soluble in the alcohol and having a p_H between that of sodium ethylate and of salicylic acid in the said alcohol. Details are given of the production of the ethyl ester of narceine hydriodide, the ethyl ester of methylhydrasteine hydriodide, the methyl ester of narceine methosulfate; and the propyl, isopropyl, butyl and amyl esters may also be obtained as white or pale yellow crystals.—CARL R. ADDINALL and RANDOLPH T. MAJOR, assignors to MERCK & CO. U. S. pat. 2,104,726. (A. P.-C.)

Mitraversine. The bark of *Mitragyna diversifolia* is powdered, moistened with potassium carbonate solution, and extracted in a soxhlet with benzine. The benzine extract is extracted with dilute formic acid and the acid solution is made alkaline with potassium carbonate. The yellowish precipitate is separated, dissolved in ether which is filtered and then extracted with dilute formic acid. Addition of potassium carbonate solution produces a precipitate which is collected on a Büchner funnel, washed with distilled water, and dried under reduced pressure over sulfuric acid. On redissolving these crude bases in a minimum of ether, yellowish platelets are obtained; by recrystallization from acetone beautiful pearly white crystals are obtained. The crystallized alkaloid of *Mitragyna diversifolia* behaves like mitrinermine both toward Fröhde's and toward Mandelin's reagent. It can be considered that each species of *Mitrogyna* contains a specific alkaloid. Mitraversine differs from both mitrinermine and mitraphylline.—RAYMOND-HAMET and L. MILLAT. *J. Pharm. Chim.*, 25 (1937), 391–398; through *Chimie & Industrie*, 39 (1938), 314. (A. P.-C.)

Morphine and Codeine—Electrolytic Reduction of. The electro-reduction was best carried out at room temperature with a porcelain diaphragm and mechanical stirring. The cathode was a platinized platinum wire gauze; the catholyte was a saturated solution of 150 Gm. morphine-HCl in 10% sulfuric acid. The anode was smooth platinum sheet immersed in 10% sulfuric acid. The current density was 4 amp. per sq. dm.; the current efficiency was 100% initially, but gradually decreased. At the end of the electrolysis, the catholyte was saturated with ether an made alkaline with ammonium hydroxide to separate the free base. The latter was dissolved in methanol and neutralized with gaseous hydrochloric acid: yield of dihydromorphine-HCl, 136 Gm.; m. p. of free base 155–156°. The reduction of 30 Gm. codeine phosphate in water or 10% sulfuric acid was accomplished by the same set-up. When the aqueous electrolyte was adjusted

with phosphoric acid to p_H 5.5, 29 Gm. of dihydrocodeine phosphate were recovered by evaporation to dryness. When the electrolyte was made alkaline and the free base recovered from ether, the residue showed various melting points depending on conditions of drying.—S. TAKAGI and T. UEDA. *J. Pharm. Soc. Jap.*, 56 (1936), 11–12. (R. E. K.)

Opium Alkaloids and Their Derivatives—Determination of, by the Mercurimetric Method. Place 1–3 cc. of the solution to be tested in a centrifuge tube, and add an excess (5–10 cc.) of Mayer-Walzer reagent (potassium iodomercurate without an excess of potassium iodide). Collect the precipitate by centrifuging, wash several times with water acidified with 10% sulfuric acid, decompose the precipitate in the tube with 10–15 cc. of sulfonitric mixture and transfer into a flask. Boil to insure complete decomposition and conversion of the mercury to the sulfate. Make up to 100 cc. with distilled water, add several drops of 2% permanganate and 10–12 drops of 10% sodium nitroprussiate. Titrate the mixture with $N/10$ sodium chloride to the complete clarification of the liquid. The number of cc. of $N/10$ sodium chloride times the appropriate factor gives the amount of alkaloid. The factors are as follows: apomorphine hydrochloride, 0.0263; heroine (diacetylmorphine) hydrochloride, 0.027; dionine (ethylmorphine) ($2H_2O$), 0.0294; narceine, 0.025; pantopon, (total alkaloids as hydrochlorides), 0.021; morphine, 0.0105.—A. IONESCU MATIU and C. ICHIM. *J. pharm. chim.*, 26 (1937), 49–56. (S. W. G.)

Sophora Flavescens—New Alkaloids from. The fresh roots of the Japanese variety of *Sophora flavescens* were extracted with different organic solvents and a small amount of a new alkaloid was isolated. Because this new alkaloid was slightly soluble in ether, it was easily separated from matrin. The composition of the alkaloid is $C_{15}H_{24}O_2N_2 + H_2O$ and the water of crystalization in the compound cannot be removed with heat in vacuum. This indicates that one of the N-atoms is a weaker base than the other. It was also noted that only one molecule of CH_3I could be added to the alkaloid; in all probability one of the N-atom is of a tertiary nature and the other of a lactim nature. The authors named the new alkaloid oxymatrin although its relation to matrin was not established.—H. KONDO, E. OCHIAI and K. TSUDA. *Chem. Zentralb.*, 109 (1938), 77. (G. B.)

Essential Oils & Related Products

Essential Oils. A review.—G. V. PIGULEVSKI. *J. Appl. Chem. Russ.*, 11 (1938), 374–386; through *J. Soc. Chem. Ind.*, 57 (1938), 980. (E. G. V.)

Essential Oils—Analysis of Constituents of. Recent Progress in Chemical Methods Applied to. A critical review of published methods for the determination in essential oils of indices of unsaturation, primary, secondary and tertiary alcohols, ether, esters, aldehydes and ketones, nitrogen-containing compounds (anthranilates) and peroxides.—S. SABETAY and Y. R. NAVES. *Compt. rend. XVII Cong. Chim. Ind.*, (1937), 777–783; through *J. Soc. Chem. Ind.*, 57 (1938), 981. (E. G. V.)

Essential Oils—Evaluation of. Methods for the determination of cinnamon, eucalyptus and chenopodium essential oils are described.—K. KOCH. *Süddeut. Apoth.-Ztg.*, 78 (1938), 365–368; through *Chem. Abstr.*, 32 (1938), 6003. (F. J. S.)

Essential Oils of Brazil—Natural and Synthetic. Oil from *Mentha piperita*, var. *rubescens* (*d* 0.91), contains 45–65% of menthol, 10–15% of menthone, together with thio ether, pinene, limonene (I) and phellandrene; sweet orange rind oil contains 90% of I together with decaldehyde (5–8%); oil from *Cymbopogon citratus* (*d* 0.84–0.9) contains 55–75% of citral; oil from the leaves of *Eucalyptus citriodora* (*d* 0.85–0.92) contains 80–96% of citronellal; lime oil contains 4–6% of citral; a lime known in Brazil as *Lima cheirosa* yields an oil resembling bergamot (*d* 0.89) containing 25% of linalyl acetate; tangerine and manderine oils (*d* 0.85) contain 90% of I with about 1% of ortho methyl amino benzoate, to which their characteristic taste and odor are due.—R. HUFENUESSLER. *Rev. Chim. Ind.*, 7 (1938), 24–28; through *J. Soc. Chem. Ind.*, 57 (1938), 980. (E. G. V.)

Oil of Cade. Steam distillation of the wood of *Juniperus oxycedrus* L. yielded 1.5% of colorless oil with the following characteristics: specific gravity at 15° C. 0.9582, optical rotation at 16° C. −28.34′, refractive index at 20° C. 1.5125, acid value 0.28, ester value 6.31, ester value after acetylation 58.92, ester value after cold formylation 94, insoluble in 85% alcohol, soluble without turbidity in 0.5 volume of 90% alcohol. It contains an oximable ketone.—ÉTABLISSEMENTS ANTOINE CHIRIS. *Parfums de France*, 15 (1937), 309. (A. P.-C.)

Pistacia Terebinthus—Study of the Oil from the Resin of. About 12% of oil was obtained by steam distillation of the fresh resin of *P. terebinthus* from Chio. The following constants were determined: $D^{15°}$ 0.8656, $n^{25°}$ 1.4668, $[\alpha]_D^{20}$ + 38.7. The oil is readily soluble in absolute alcohol, ether, chloroform, benzene, petroleum ether carbon disulfide, liquid petrolatum, glacial acetic acid and ethyl acetate. The solubility in alcohol decreases rapidly as the water content increases. The oil shows a slightly acid reaction. Nitrogen and sulfur are absent. Sulfuric acid (20%) does not cause polymerization. Aldehydes and ketones are absent. A white deposit forms at −80°. Saponification value is 5.6, which corresponds to 1.9% of bornyl acetate. The acetyl value corresponds to 0.77% of alcohol calculated as borneol. The oil was found to consist mainly of dextrorotatory pinene and a hydrocarbon, $C_{10}H_{16}$ (dipentene). Small amounts of free borneol and bornyl acetate are present.—G. TSATSAS. *J. pharm. chim.*, 25 (1937), 595–599.
(S. W. G.)

Glycosides, Ferments and Carbohydrates

Cyanogenetic Constituents of Austrailian and Other Plants. VII. The cyanogenetic constituents of *Lotus australis* is a mixture of two glucosides, the chief of which is new and is shown to be the glucoside of the cyanohydrin of methyl ethyl ketone. This is readily decomposed both by the enzymes naturally occurring in these plants and also by weak hydrolytic agents. It appears to be contaminated with small quantities of linamarin, the cyanogenetic glucoside of the lower homologue, acetone. Pinitol (*d*-methylinositol) has also been isolated. Wild white or Dutch clover also contains lotaustralin and *d*-methylinositol which has been previously isolated from other plants. The chief cyanogenetic constituent of *Ximenia americana* is sambunigrin, a mandelonitrile glucoside already isolated from other plants. The cyanogenetic glucoside has been identified as sambunigrin, previously found in European elder and in other plants. *d*-Methylinositol is also present.—H. FINNEMORE and J. M. COOPER. *J. Soc. Chem. Ind.*, 57 (1938), 162–169.
(E. G. V.)

Ferments—Nature and Action of, and Their Therapeutic Uses. Ferments are defined and their formation, nomenclature, preparation and purification, characteristics and measurement of action are discussed. Hydrolases are divided into (1) proteinases such as pepsin, cathepsin and trypsin and (2) peptidases including dipeptidases, aminopolypeptidases and carbopolypeptidases. Esterases include tannases, chlorophyllases and phosphatases. Carbohydrases are divided into (1) oligosaccharases and glycosidases (common hexosidases, enzymes which act upon low molecular weight sugars or glycosides, (2) polysaccharases (polyases) which attack substances of high molecular weight as starches, glycogen and cellulose. The most important hexosidases are saccharase (invertin or invertase), maltase, lactase, emulsin. Polyases include amylase, cellulase and hemicellulase. The desmolases include yeast zymase (holo or panzymase) and oxidation ferments such as phenoloxydases, peroxidases and catalases and respiratory ferments. A table including 27 commercial ferment preparations is offered.—E. RIEDEL. *Deut. Apoth. Ztg.*, 53 (1938), 216–218, 234–236, 266–269. (H. M. B.)

Hypericum Perforatum L.—New Glucoside of. A new alkaloid was isolated from the plant *Hypericum perforatum* L. This alkaloid was of a glucosidal nature and was named hyperin. The drug was extracted with 90% alcohol and evaporated in vacuum; CS_2 was added to this to remove all the chlorophyll; a small amount of ether was added to the mixture and the liquid heated again to 40° in vacuum. The residue is rubbed with acetone and the crude hyperin separated out; the glucoside which is free of water has the following formula: $C_{21}H_{20}O_{12}$. When the glucoside is hydrolyzed in the presence of dilute acids, a new derivative was obtained and was named quercetin. The hexose radicle which is attached to the quercetin molecule was identified as *d*-galactose; consequently, quercetin is a quercetin-*d*-galactoside derivative. Methylating this compound with diazomethane, it was identified as 3-α-galactoside. Furthermore 2 Gm. of hyperin was dissolved in 100 cc. of absolute methyl alcohol and 130 cc. of ether were added. This mixture was left to stand for at least 24 hours but the process had to be repeated several times until the desired derivative, (tetramethylhyperin), was isolated. This compound separated in white crystals, but is very hygroscopic; when hydrolyzed, by boiling with dilute sulfuric acid it gave a new compound, 5,7,3,4-tetramethylquercetin.—Z. JERSMANOWSKA. *Wiadomosci Farm.*, 64 (1937), 527; through *Chem. Zentrab.*, 109 (1938), 333. (G. B.)

Saponin from the Root of Dioscorea Tokoro, Makino. Two saponins, one crystalline and one amorphous, were previously isolated from this drug (*Arch. exp. Pharm. Path.*, 51 (1904), 221). The present authors obtained only an amorphous "Dioscorea saponin" which was hydrolyzed by 5% sulfuric acid in ethanol to "Dioscorea sapogenin." The latter was extracted by petrolic ether and then fractionally crystallized from methanol. Only one substance was obtained: $C_{27}H_{40}O_3$; m. p. 198–200°; soluble in most organic solvents; α_D^{10} −119.7° in chloroform; Liebermann reaction positive, but no precipitation with digitonin. The presence of an OH— group is shown by ester formation: acetate, m. p. 190°; benzoate, m. p. 237°. The dibromide, m. p. 127°, is formed by the addition of bromine. Reduction of the sapogenin in acetic acid with platinum black gives the dihydro-sapogenin, m. p. 190°, which is precipitated from 95% solution with digitonin and gives an acetate m. p. 102°. But when the hydrogenation takes place in methanol with Pd-MgO the epi-dihydro-sapogenin is formed: m. p. 205°; acetate, m. p. 206°.—K. FUJU and R. MATSUKAWA. *J. Pharm. Soc. Jap.*, 56 (1936), 59–60. (R. E. K.)

Scoparoside (Scoparin)—Study of, from Sarothamnus Scoparius Koch. Scoparoside obtained in a purified form from *Sarothamus scoparius* is a difficultly hydrolyzed heteroside, but it can be hydrolyzed by rhamnodiastase. One molecule of scoparoside, $C_{22}H_{22}O_{11}$, on hydrolysis yields one molecule of rhamnose, $C_6H_{12}O_5$, and one molecule of scoparol, $C_{16}H_{12}O_7$, which is a flavone derivative, very likely a methyl ether of quercitol. Scoparoside crystallizes with two molecules of water of hydration, and melts at 228–230°. Pharmacologic tests are reported, and further tests will be made.—M. MASCRE and R. PARIS. *Bull. sci. pharmacol.*, 44 (1937), 401–415. (S. W. G.)

Starch—Fixation of Certain Sugars by. The fixation of glucose by wheat, potato and rice starches, crude, sterilized or soluble, in 60, 70, 80 and 90% alcohol and in water were studied. Galactose was also used. The authors found that the starches did not fix the sugar in aqueous medium but did fix it in alcoholic media, the amount fixed varying directly with the alcoholic concentration. The maximum fixation occurred in the first twenty-four hours, and the amount of sugar fixed was a function of the quantity of starch present. Wheat starch fixes less glucose than potato or rice starch which fix about the same amount; however, the rice starch which has the smallest grains fixes the glucose very quickly in the first twenty-four hours. Soluble wheat and potato starches show the same properties as the crude starches from which they are prepared. The fixed or adsorbed sugars may be recovered by extracting the starch with hot alcohol for at least five hours. This information may be utilized in determining the glucides in amylaceous media, especially cereals.—A. LEULIER and A. COEUR. *J. pharm. chim.*, 27 (1938), 241–247. (S. W. G.)

Other Plant Products

Carotene in Fats and Oils. Carotene (I) has been detected in crude palm, linseed, soya bean (from various sources), rape, mustard, cottonseed, and egg oils, beef tallow and butter fat by mixing 15 cc. of the oil with 7.5 cc. of light petroleum (boiling point 40–60°) and 2 cc. of pure amyl alcohol and shaking well for 2 minutes with 1 cc. of sulfuric acid (density 1.53) and allowing to settle; if I is present, the acid layer shows a permanent blue color (the vegetable pigment orlean gives only a fugitive blue). I was absent from lard, coconut, palm-kernel and sesame oils and also from arachis oils, samples from China, Bombay, Africa, etc., being tested. The test enables the adulteration of arachis oil with greater than 5% of soya bean oil to be detected approximately quantitatively. Laboratory-extracted arachis oils from Chinese (Manchukuo?) seed showed small hexabromide values (0.2–0.6).—S. H. BERTRAM. *Ole, Fette, Wachse*, 2, No. 8 (1937), 1–2; through *J. Soc. Chem. Ind.*, 57 (1938), 548. (E. G. V.)

Coumarin Derivatives—Synthetic Studies of. Although the formation and decomposition of 3-brom-coumarin have been thoroughly studied, analogous reactions with polyhydroxy coumarin derivatives have not been recorded. One mol of bromine reacted with 4-methyl-daphnetin in acetic acid to give a good yield of brom-3-methyl-4-daphnetin, m. p. 254°. Two mols of bromine gave dibrom-3,4-methyl-4-daphnetin, m. p. 265°, which is entirely stable to boiling water in contrast to coumarin dibromide. Both bromine compounds resinify when boiled with alkali; the expected derivative of coumaron-acid-2 was not obtainable. According to the literature the bromine-atoms of anthrazene-yellow "Bayer" are attached to the benzene nucleus. When prepared according to directions from 4-methyl-daphnetin and four bromine atoms in ethanol at 60°,

the product melted at 265°. The "mixed melting point" of 265° showed it to be identical with the above 3,4-dibrom derivative. Dibrom-3,4-methyl-4-daphnetin gave: dimethyl ether, m. p. 138–139°; dibenzoate, m. p. 197°; dibenzyl ether, m. p. 150–151°, poor yield. 4-Methyl-daphnetin gave: dimethyl ether, m. p. 132–133°, 3-brom-derivative, m. p. 166–167°; diacetate, m. p. 178°; dibenzoate, m. p. 165°, 3-brom-derivative m. p. 184–185°; dibenzyl-ether, m. p. 157°, 3-brom-derivative, m. p. 148–149°. Several bromine derivatives reacted with boiling alkali to give acids: brom-3-methyl-3-dimethoxy-6,7-coumaron-acid-2, m. p. 248° was obtained from the dibrom-dimethyl-ether; methyl-3-dibenzoyl-6,7-coumaron-acid-2 was obtained from both the brom-3 and the dibrom-3,4-methyl-4 daphnetin dibenzoates, m. p. 123°; the dibenzyl-6,7-compound melted at 184–185°. Decarboxylation was successful only in the case of methyl-3-dimethoxy-6,7-coumaron, b. p. 109–111° at 1.2 mm. Attempts to prepare methyl-3-dioxy-6,7-coumaron from the dimethoxy-6,7 compound failed with hydriodic acid and hydrobromic acid; concentrated hydrochloric acid gave the dimer m. p. 127–128°. Two moles of C_2H_5MgI removed only one methyl group, yielding probably the 7-methoxy compound: b. p. 120° at 1 mm., benzoyl compound m. p. 144–145°. However, HCl + C_2H_6OH converted methyl-3-dibenzyloxy-6,7-coumaron-2-acid into methyl-3-dioxy-6,7-coumarone-2-acid ethyl ester, m. p. 191–192°.—T. SAKAI and C. KATO. *J. Pharm. Soc. Jap.*, 55 (1935), 123–128. (R. E. K.)

Cuscuta Reflexa, Roxb.—Chemical Examination of. IV. Extraction from the Seeds of a New Coloring Matter, Flavone Yellow. The shade-dried seeds were finely crushed and the powdered material was defatted by extraction with benzene. The defatted mass was freed from benzene and exhaustively extracted with 96% alcohol. The extract was concentrated to a greenish orange syrup which was freed from chlorophyll by benzene extraction. Tannins were removed by treating the alcohol solution with alcoholic lead acetate. Lead is removed in the usual manner, and the alcoholic solution is evaporated to dryness; the residue is taken up in hot water, treated again with lead acetate, and the yellow precipitate thus obtained is suspended in alcohol and decomposed with hydrogen sulfide. The product isolated by evaporation of the filtrate to dryness is extracted with ether and carbon disulfide and finally yields a crystalline product which was named amarbeline and which analysis showed to be a dioxytrimethoxyflavone. Fusion with potassium hydroxide gives protocatechuic acid and a phenol that is different from phloroglucinol. Dimethylation gives a product that is different from quercitrine and which has been named amarbelitine.—R. R. AGARWAL. *J. Indian Chem. Soc.*, 13 (1936), 531–536; through *Chimie & Industrie*, 39 (1938), 316–317. (A. P.-C.)

Herba Rutæ—Coumarin-Like Constituent of. From Herba Rutæ there has been isolated from 0.5 to 1.0% of a substance possessing lactone properties and an odor resembling coumarin. It melts indistinctly between 120° and 140°. From this fraction there has been separated by means of the chromatographic method pure bergapten. There remains in the mother liquor another substance smelling very much like coumarin, having lactone characteristics, which so far has not been isolated in pure form and which melts 125–127°. Full details of the isolation of the lactone fraction and separation of the bergapten are given. Work is at present in progress to identify the constituent remaining in the mother liquor.—H. MÜHLEMANN. *Pharm. Acta Helv.*, 13 (1938), 45–48. (M. F. W. D.)

Sucupira (Bowdichia Virgiloides, Humboldt)—Oil of. The seeds of *Bowdichia virgiloides* Humboldt contain an oleoresin (soluble in alcohol, ether, etc.), but apparently no fat. The oleoresin has a specific gravity at 25° C. of 0.94 to 0.95, an acid value of 9.2 to 12, a saponification value of 5.6 to 7.2, an ester value of 0, an optical rotation of −10° to −12°, and consists of essential oil (rich in caryophyllene), resinolic acid and resenes. The oleoresin is used to treat skin diseases and should serve as an excellent substitute for copaiba oil for internal use.—A. MACHADO. *Rev. Assoc. Brasil. Farm.*, 17 (1936), 117–118; through *Chimie & Industrie*, 39 (1938), 316. (A. P.-C.)

Sumach—Culture of, in Czechoslovakia. In a sumach plantation growing 26,000 bushes of *Rhus cotinus* the ratio of tanning agents to non-tanning agents in the leaves was 12/17 in one-year plants and 25/12.5 in three-year plants. During the third season this ratio changed with the months June 17/15, July 21.6/13.6, September 26/11.4, October 31/12, November 25/14 and in November fallen leaves 21/10; a maximum content of tanning agents was reached when the leaves had a bright red color. The yield of fresh leaves per ha. (10,000 bushes) was 12–15 q. averaging 18% tanning agents and 65% water. In an adjacent plantation growing 9000 bushes of American

sumach (*Rhus thyfina*) the ratio of tanning agents to non-tanning agents in the leaves changed in the following sequence: June 3.3/18, August 9/16, October 18/16.7 and November 25.6/18, a maximum of tanning agents being reached in red leaves. In bushes five to eight years old the yield of fresh leaves per ha. was 35 to 40 q. Few tanning agents (3–5%) were found in the wood, bark, buds and blossoms.—E. BĚLAVSKÝ and J. SLÁMA. *Tech. Hlídka Koželužská*, 13 (1937), 59–60; through *Chem. Abstr.*, 32 (1938), 6495. (F. J. S.)

Tsugalactone (Tsugaresinol)—Constitution of. The authors started out to reconcile the reports of Kawamura, Holmberg and Sjöberg, and of H. Emde concerning tsugalactone (Tsugarisinol) (I) and the sulfite-liquor-lactone (II). The relationship of hinokinin (III), a resin constituent of *Chamæcyparis obtusa*, Sieb., to this lactone was to be investigated. 83 Gm. of I and 630 Gm. of neutral resin were separated from 2.68 Kg. of oleoresin extracted with ether from 540 Kg. of shavings and sawdust of *Tsuga Sieboldii* Carr. The constants of the lactone and its diacetyl, dimethyl and dibrom-dimethyl derivatives agreed with (II). Dimethyl-tsugalactone was oxidized by H. Erdtmann's procedures with identical results. Consequently I is a phenylnaphthalene derivative. Both the $KMnO_4$ and NaOBr oxidations of III give piperonal and piperonylic acid, but no 6-piperonoyl-piperonylic acid or dicarboxylic acids. Consequently III and I have different structures.—S. KEIMATSU, T. ISHIGURO and G. YAMAMOTO. *J. Pharm. Soc. Jap.*, 55 (1935), 226–228. (R. E. K.)

Verbenalin. The description of a modified method for the isolation of verbenalin from *Verbena officinalis* L. is given. Verbenalin obtained by this method remains stable for several years. Its m. p. is 183° and its $\alpha_D^{20} = -180.6°$. There was obtained glucose as the product of hydrolysis of verbenalin by 9% sulfuric acid.—E. BUREŠ and D. ŠUSTEROVÁ-RÍHOVÁ. *Časopis Českoslov. Lékárnictva*, 18 (1938), 65–69; through *Chem. Abstr.*, 32 (1938), 6004. (F. J. S.)

Fixed Oils, Fats and Waxes

Bone Wax—Horsley. The formula for the bone wax which the prominent English surgeon Horsley used in bone operations is as follows: pure white wax 75 Gm., castor oil 25 Gm. and oil of cinnamon 7 drops. Melt the wax on a water bath and add the castor oil. Sterilize in an autoclave for one hour, strain through sterile gauze, add the cinnamon oil and allow to cool in sterile 100 cc. wide-mouthed bottles. Before use, it should be sterilized again in an autoclave or a dry oven.—BÄNNINGER. *Schweiz. Apoth.-Ztg.*, 76 (1938), 325. (M. F. W. D.)

Coconut Oil. I. Pyrolysis. Coconut oil is decomposed readily on boiling, yielding fatty acids, acraldehyde and considerable amounts of unsaponifiable matter, chiefly solids. Catalysts (sodium hydroxide, aluminum chloride, zinc chloride, calcium chloride, iron) hastened and extended the decomposition, the liquid products exhibiting fluorescence and low viscosity, flash and fire points, and containing large proportions of unsaponifiable compounds. Best yields of fluid products were obtained with ferric oxide as catalyst.—J. BANZOW. *Philippine Agric.*, 25 (1937), 817–832; through *J. Soc. Chem. Ind.*, 57 (1938), 681. (E. G. V.)

Fats—Spoilage in. Significance and Limitations of Tests for Detection of. A lecture. Various types of deterioration and tests therefor are discussed.—K. TAUFEL. *Fette u. Seifen*, 45 (1938), 179–183; through *J. Soc. Chem. Ind.*, 57 (1938), 679. (E. G. V.)

Fats—Test for Rancidity of. A spot test, whereby 2:7-diaminofluorene dissolved in glacial acetic acid containing a trace of hemin as catalyst reacts with peroxides present in rancid fats, forming a deep blue quinonoid product, is described. Benzidine reacts similarly but is less sensitive. Epihydrinaldehyde and aliphatic oxy-acids present in rancid fats can be detected by phloroglucinol + hydrochloric acid and by *s*-diphenyl-carbazide dissolved in tetrachlorethane, respectively.—O. FREHDEN. *Mikrochim. Acta*, 2 (1937), 214–217; through *J. Soc. Chem. Ind.*, 57 (1938), 680. (E. G. V.)

Fatty Acids and Soaps—Production of Alimentary Disequilibrium by. Fatty acids, decomposition products of lipids, seem to be a constant cause of alimentary disequilibrium. Addition of glycerin increases the action of the fatty acids except in the case of castor oil. The soaps are less active than the corresponding fatty acids, and are at least partly reabsorbed by the intestinal mucous.—R. LECOQ. *J. pharm. chim.*, 26 (1937), 56–62. (S. W. G.)

Fish Oils. VII. Pigments of Pilchard Oil. Carotene (0.06–0.25), xanthophyll (0.49–0.84), and fucoxanthin (I) (0.16–0.84 mg. %) are present in commercial pilchard oil. I is absent from the oil of canned pilchards.—B. E. BAILEY. *J. Fish. Res. Bd. Canad.*, 4 (1938), 55–58;

through *J. Soc. Chem. Ind.*, 57 (1938), 937. **VIII. Approximate Composition of Fatty Acid of Oil of Pilchards.** A complete analysis of the fatty acids of a sample of oil (iodine value 183.9, saponification value 198.8, n_D^{25} 1.4794) by the methyl ester method gave myristic 5.09, palmitic 14.38 and stearic acid 3.19%, unsaturated acids C_{14} 0.07, C_{16} 11.74, C_{18} 17.67, C_{20} 17.88, C_{22} 13.80 and C_{24} 15.24%. The unsaturation of the six last mentioned acids was 2.00, 2.00, 3.29, 4.12, 8.47 and 10.90 atoms of hydrogen per molecule, respectively.—H. N. BROCKLESBY and K. F. HARDING. *Ibid.*, 59–62; through *Ibid.*, 937. (E. G. V.)

Herring Body Oil—Vitamin A and D Potency of. The vitamin A potency of herring oil is low, practically all being contributed by the liver. Vitamin D is present in both body and liver oil, and its potency is relative for this type of fish. Data on vitamin A and D content in relation to color of the oil are tabulated.—L. I. PUGSLEY. *Progr. Rept. Fish. Res. Bd. Canad.*, No. 35 (1938), 7–8; through *J. Soc. Chem. Ind.*, 57 (1938), 937. (E. G. V.)

Oil of Tagetes Lucida Cav. A distillation test gave an oil with the following characteristics: specific gravity at 15° C. 0.980, optical rotation at 20° C. 0, refractive index at 20° C. 1.5218, acid value 0.28, ester value 22, unfrozen at −20° C. It contains a considerable proportion of estragol.—ÉTABLISSEMENTS ANTOINE CHIRIS. *Parfums de France*, 16 (1938), 28. (A. P.-C.)

Oils and Fats—Calculations in the Investigation of, with Special Reference to Fish Oils. II. Equations have been derived connecting the weight, saponification value and iodine value of a mixture of hydrogenated esters and the same values for the original mixture. These afford a means of testing the basic assumptions of the method of analysis.—F. CHARNLEY. *J. Biol. Bd. Can.*, 2 (1936), 285–297; through *J. Soc. Chem. Ind.*, 57 (1938), 682. (E. G. V.)

Sunflower Seed Oil—Conjugated Hydrogenation of, by Hexyl Alcohol. The composition of the hardened oil obtained by autoclaving the oil with hexyl alcohol in presence of copper-nickel or nickel-iron-silicon dioxide catalysts approaches that of olive oil.—G. A. IVANOVA. *J. Appl. Chem. Russ.*, 11 (1938), 61–64; through *J. Soc. Chem. Ind.*, 57 (1938), 681. (E. G. V.)

Unclassified

Acetyl-D_3-Choline—Preparation and Properties of. To prepare acetyl-D_3-choline, potassium acetate-D_3 is converted into acetyl-D_3 chloride, then into beta-bromoethyl acetate-D_3, and finally into acetyl-D_3-choline bromide (by reaction with trimethylamine). Replacement of 3 hydrogen atoms in acetylcholine by deuterium, without modifying qualitatively the pharmacological properties, decreases the activity very appreciably, especially the parasympathetic exciting action.—H. ERLENMEYER and H. LOBECK. *Helv. Chim. Acta*, 20 (1937), 142–143; through *Chimie & Industrie*, 39 (1938), 319. (A. P.-C.)

Aminobenzoic Esters of Ethanediol and Propanediol—Preparation of Some. By suspending 0.01 mole of the nitrobenzoic esters (*Compt. rend.*, 202 (1936), 497 and 204 (1937), 134) in 40 parts by weight of ordinary ether and adding one part of platinum black, they are reduced in the usual manner. From the corresponding nitro-derivatives of ethanediol, the following were obtained: di-*o*-aminobenzoate, m. p. 126°; di-*m*-aminobenzoate, m. p. 146°; di-*p*-aminobenzoate, m. p. 206°. From the nitro-derivatives of propanediol, the following were obtained: di-*o*-aminobenzoate, m. p. 89°; di-*m*-aminobenzoate, m. p. 94°; di-*p*-aminobenzoate, m. p. 137°. Derivatives of the above are also described.—RENE JACQUEMAIN and GEORGETTE DEVILLIERS. *Compt. rend.*, 206 (1938), 1305. (G. W. H.)

***p*-Aminophenylsulfonamide and its Derivatives.** The author has correlated information on the most important representatives of this class of compounds. The following compounds are described as to structural formula, synonyms, manufacturer, physical properties, reactions, in some cases analyses and indications for use, and the forms in which they are marketed: prontosil red, prontosil soluble, prontosil white, septazine and chemodyn, soluseptazine, uliron and rodilone —K. REBER. *Schweiz. Apoth.-Ztg.*, 76 (1938), 277–280, 289–292. (M. F. W. D.)

Anthelmintics—Liquid. Anthelmintics forming stable emulsions with water contain a polyalkylene oxide such as polyethelene oxide or a derivative and a dissolved anthelmintic liquid such as chenopodium oil. Several examples are given.—MAX BOCKMÜHL and GUSTAV EHRHART, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,111,504, March 15, 1938. (A. P.-C.)

Arsphenamine—Two Forms of the Base of. The alcohol-soluble form of 3,3′-diamino-4,4′-dioxyarsenobenzene (base A) is obtained by precipitation with acetic acid of the alkaline

solution, while the insoluble base B precipitates from the acid solution on rendering the latter alkaline by means of alkali salts of weak acids or by means of ammonia. Both forms give, on oxidation, 3-amino-4-oxyphenylarsinic acid. The two bases, however, have different compositions, react differently with rongalite, have different colors after air-drying, etc. On the other hand, base A gives a neoarsphenamine that is nontoxic toward mice, while base B gives a neoarsphenamine that is toxic.—D. WAGENBERG. *J. Obchtch. Khim.*, 7(1937), 808-814; through *Chimie & Industrie*, 39 (1938), 324. (A. P.-C.)

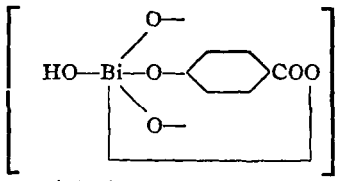
Atophan—Some Synthetic Compounds Related to. Preparation of atophan derivatives by condensation of isatin, in alkaline medium, with coumaranones, or with B-anisoylpropionic acid, or with α- and β-naphthylmethylketones. Isatin is boiled with an excess of alcoholic potash for 20 minutes, an equimolecular quantity of coumaranone is added and the mixture is kept at 70° C. for 3 to 4 hours; the solution is made just acid with dilute hydrochloric acid; the yellow precipitate is separated and purified by formation of the sodium salt. The same procedure is followed with β-anisoylpropionic acid and with the naphthylmethylketones. The yields are generally good.—P. K. BOSE and N. C. GUHA. *J. Indian Chem. Soc.*, 13 (1937), 700–703; through *Chimie & Industrie*, 39 (1938), 324. (A. P.-C.)

Barbituric Compounds—2-Methallyl-Substituted. *2,106,138.* Details are given of the production of the following barbituric acid derivatives: bis(methallyl), ethyl(2-methallyl), butyl(2-methyllayl), propyl(2-methallyl), isoamyl(2-methallyl), (1-methylbutyl) (2-methallyl), (2-methylbutyl) (2-methallyl), isopropyl(2-methallyl), isobutyl(2-methallyl), hexyl(2-methallyl), (2-ethylbutyl) (2-methallyl), and salts such as the sodium salts of these acids, which are suitable for administration as hypnotics, either orally or hypodermically. Production of various intermediate and related compounds also is described. *2,106,139* also relates to the production of such compounds, of the general formula $CO.NH.CO.NX.CO.C(R)CH_2C(CH_3):CH_2$, in which R represents an amyl group having not more than one branching, and X represents hydrogen, an alkali metal an equivalent of an alkaline-earth metal, ammonium, monoalkyl ammonium or dialkyl ammonium. —HORACE A. SHONLE, assignor to ELI LILLY and Co. U. S. pats. 2,106,138 and 2,106,139, Jan. 18, 1938. (A. P.-C.)

Bismuth Alkyl Phthalates. Details are given of the production of bismuth derivatives of lauryl phthalate, undecyl phthalate, stearyl phthalate, decyl phthalate and cetyl phthalate, which are spirocheticides suitable for use in the treatment of syphilis, being of low toxicity and high therapeutic effect.—GEO. W. RAIZISS and LEROY W. CLEMENCE, assignors to ABBOTT LABORATORIES. U. S. pat. 2,110,472, March 8, 1938. (A. P.-C.)

Bismuth Salts of Monoalkyl Polycarboxylates. Bismuth derivatives suitable for treating syphilis are prepared by treating a bismuth compound such as the nitrate (suitably in aqueous solution together with mannitol) with an aqueous alcohol solution of an acid ester of a polycarboxylic acid with an alcohol containing from 10 to 31 carbon atoms. Mixtures of alcohols may be employed. While primary fatty alcohols such as are obtained by the carboxyl hydrogenation of vegetable oils, *e. g.*, coconut oil or cottonseed oil, are preferred, other alcohols may be used, such as the alcohols obtained by the hydrogenation of animal oils such as sperm oil, the alcohols obtained by hydrating olefins produced by the cracking of paraffin wax or the higher alcohols produced in the catalytic hydrogenation of carbon monoxide.—PAUL L. SALZBERG, assignor to E. I. DU PONT DE NEMOURS & Co., U. S. pat. 2,110,473, March 8, 1938. (A. P.-C.)

Dermatol and Analogous Substances—Constitution of. Numerous structural formulæ have been proposed for dermatol, the bismuth subgallate of the D. A. B. VI, but they do not account for the color of the compound or its solubility in alkali. The bismuth salts of mono-phenolic acids, of di- and tri-methoxy acids and of tri-acetyl gallic acid are colorless and precipitate bismuth hydroxide on the addition of alkali. Absorption spectra show maximum absorption at a 1:1 molecular ratio. Dermatol shows no color reaction with ferric chloride, and only a small amount of trimethyl-gallate, but no mono- or dimethyl-ether, is formed by the action of dimethyl sulfate. When isolated at room temperature the substance contains one more molecule of water than the formula given by the D. A. B. This is lost at 65°; a second molecule is lost at 105° and about the equivalent of a third at 155° with decomposition of the organic portion. Addition of barium chloride to the solution in sodium hydroxide precipitates the yellow salt $(C_7H_3O_6\ Bi)Ba$. For these reasons the authors consider dermatol to be a dibasic complex acid having the structure



$H_2 + H_2O$. The same structure applies to the iodine derivatives (Airol) except that an atom of iodine replaces the HO-group attached to the bismuth atom. Compounds of analogous properties, and hence possessing analogous coördinate structures, were obtained from bismuth and pyrogallol, gallic acid methyl ester, gallic acid amide, gallic acid anilide, also from antimony and pyrogallol and gallic acid.—S. TAKAGI and Y. NAGASI. *J. Pharm. Soc. Jap.*, 56 (1936), 31–48. (R. E. K.)

Dibenzofurans—Analgesics from. A number of substituted dibenzofurans were prepared because their structure suggested possible analgesic properties. No physiological tests are reported. The list includes 2-α-amino-ethyldibenzofuran-hydrogen chloride, melting at 222–223°; 2-α-diethylaminoethyl-, a hygroscopic oil with picrate melting at 173–174°; 1-β-diethylaminoethyl-4-, methoxy-, an oil with hydrochloric acid, melting at 187° (decomposition); 2-amino-4-methoxy-, melting at 127–127.5°; 2-β-dimethylaminopropionyl-dibenzofurans, melting at 88–89°; 1-(4-dibenzofuryl)isoquinoline, melting at 137–138°; and numerous intermediates and condensation products.—P. T. PARKER. *Iowa State Coll. J. Sci.*, 12 (1937), 148; through *Squibb Abstr. Bull.*, 11 (1938), A-891. (F. J. S.)

Ether Versus Chlorofrom. Historical review with two hundred references.—H. E. HOFF. *New Engl. J. Med.*, 217 (1938), 579–592; through *Chem. Abstr.*, 32 (1938), 5157. (F. J. S.)

Formaldehyde—Process for Making. Methanol is partially dehydrogenated by passing the methanol in the presence of water over a catalyst consisting of reduced copper or silver, at a temperature between 450° and 750° C., and recovering formaldehyde from the effluent vapors.—JAMES F. EVERSOLE, assignor to UNION CARBIDE and CARBON CORP. U. S. pat. 2,111,584, March 22, 1938. (A. P.-C.)

Glutamic Acid and Glutamates—Production of. Glutamic acid (I) and the glutamates are obtained by treating the finely-divided seaweeds *Ulva latissima*, *Porphyra vulgaris* or *Alaris esculenta* with mineral acid (10% hydrochloric acid at 100°) and precipitating I as hydrochloride or as copper complex.—J. SCHINDELMEISER. Brit. pat. 481,898; through *J. Soc. Chem. Ind.*, 57 (1938), 626. (E. G. V.)

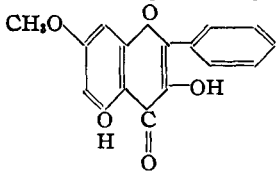
Glycerol—Synthetic and Fermentation. Methods for the synthesis of glycerol and the production of glycerol by fermentation of sugars are reviewed.—ANON. *Allgem. Oel- u. Fett-Ztg.*, 35 (1938), 62–66, 103–105; through *J. Soc. Chem. Ind.*, 57 (1938), 624. (E. G. V.)

***o*-Hydroxyquinoline Benzenesulfonate.** This compound, which melts at about 116° to 118° C., is an antiseptic suitable for internal or external use. Details are given of different methods of manufacture.—JOSEPH EBERT, assignor to FARASTAN CO. U. S. pat. 2,107,856, Feb. 8, 1937. (A. P.-C.)

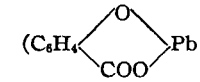
Indazolones. Details are given of the production of antipyretic compounds such as 1-methyl- and 1-ethyl-2-phenyl-4,5,6,7-tetrahydroindazolone-3 or analogous propyl, butyl, amyl, allyl or bromoallyl derivatives.—JOHN LEE, assignor to E. R. SQUIBB & SONS. U. S. pat. 2,104,348, Jan. 4, 1938. (A. P.-C.)

Insecticidal Emulsions. A stable insecticidal emulsion comprises about 3% of a soap of a high molecular weight fatty acid and an alkoylamine, about 1.2% by weight of polyhydric alcohol, about 14% by weight of water, about 12% of lead arsenate and the balance consisting of hydrocarbon oil. The emulsion remains sufficiently stable for spraying on dilution with further water up to about 300 times the volume of the emulsion.—ARTHUR G. KAUFMANN, assignor to TIDE WATER ASSOCIATED OIL CO. U. S. pat. 2,114, 125, April 12, 1938. (A. P.-C.)

Izalpinin Dimethyl ether and Norizalpinin—Synthesis of. More recent experiments have established phloroglucin, acetic and benzoic acids as fusion products of izalpinin. Structural inferences were confirmed by syntheses as follows: myricetin-hexamethyl ether (m. p. 153°) was obtained from natural myricetin (m. p. 350°) (*Myrica rubra*) and dimethyl sulfate; hydrolysis with 10% alcoholic potassium hydroxide produced oxy-2,4,6,ω-trimethoxy-acetophenone (m. p. 102°). The usual fusion (8 hours at 200°) of the latter with benzoic anhydride and sodium benzoate yielded galangin-trimethyl ether = izalpinindimethyl ether (m. p. 194°). Demethyla-

tion with hydriodic acid produced galangin = norizalpinin (m. p. 217°). Identity of synthetic and natural substances were proved by mixed melting points. From these facts and the reactions of the natural substance izalpinin is oxy-5-methoxy-7-flavonol = galangin-7-methyl ether having the structure  —Y. KIMURA and M. HOSHI. *J. Pharm. Soc. Jap.*, 55 (1935), 229–232. (R. E. K.)

Lactones Occurring in Dictamuns Albus L. from Korea. Four lactones were obtained from the root bark and separated as follows: The precipitate obtained from the concentrated alcoholic extract was fractionated with lukewarm acetone into less soluble fraction (A) and a soluble fraction (B). Repeated recrystallization of A from ethyl acetate gave crystalline dictamnolide (I), m. p. 303°. The mother solution contained I and obakulactone (II). After saponification with potassium hydroxide, the ether insoluble II became crystalline (decomposing at 292–93°; $[\alpha]_D^{23}$ − 123.7° in acetone), identical with a specimen from *Phellodendron amurense* Rupr. The ether solution contained dictamnolic acid (III), decomposing at 259–260°. B was saponified with sodium hydroxide, acidified with hydrochloric acid, dissolved in ether and the ether solution shaken with sodium carbonate solution to give extract (C). After distillation of ether, more of II crystallized first, then fraxinellone (IV) separated: m. p. 120°; $[\alpha]_D^{19}$ −39.6°. C was acidified, taken up in ether, decolorized with a little carbon and evaporated; obakunonic acid (V) crystallized: decomposing at 208–209°, identical with authentic specimen. The mother solution contained more III. The approximate yields from 15 Kg. of *D. albus* L. were: I, 5 Gm.; II, 7 Gm.; V, 1.5 Gm.; IV, 16 Gm.; and phytosterol (m. p. 143°) 3.5 Gm. Dictamnolide ($C_{24}H_{30}O_9$) is tasteless: $[\alpha]_D^{21}$ −43.3°; somewhat soluble in acetone, ethyl acetate, otherwise insoluble; no methylene-dioxy or methoxy groups; two lactone groups, of which one is a γ-ring; one lactone group saponifies, giving dictamnolic acid: crystallizing with four molecules of water from ethyl acetate; decomposing at 259–260°; $C_{28}H_{32}O_{10}$; $[\alpha]_D^{19}$ + 28°; bitter, generally soluble. The four lactones are very difficult to separate, in particular dictamnolide and obakulactone readily form mixed crystals resembling the dictamnolactone of Thoms. Dictamnolactone and obakulactone are identical.—T. KAKU and H. RI. *J. Pharm. Soc. Jap.*, 55 (1935), 219–221. (R. E. K.)

Lead—Organic Complexes of. On adding a boiling solution of lead chloride to an alcoholic solution of salicylic acid, a white precipitate is formed which is an equimolecular complex  . It is washed with alcohol and air-dried. This complex is a strong acid, its aqueous solutions being acid to methyl orange and bromphenol blue. Titrated electrolytically, they show approximately the same normality as sulfuric acid solutions. The di-sodium salt has been prepared by the action of sodium ethylate. A review of other complexes is given.—MICHEL LESBRE. *Compt. rend.*, 206 (1938), 1481. (G. W. H.)

Mercapto Compounds—Gold, Silver and Bismuth Alicyclic. Various details are given of the production of therapeutic compounds such as alkali metal salts of gold mercaptocyclopentyl acetic acid or barbituric acid or of silver mercaptocyclopentyl carboxylic acid or of the corresponding bismuth compounds.—EUGEN MUELLER, assignor to WINTHROP CHEMICAL CO. U. S. pat. 2,111,151, March 15, 1938. (A. P.-C.)

Mercury Salts—Aromatic, of an Oxygen Acid of a Halogen. Organic mercury compounds useful as antiseptics and germicides are prepared from oxygen acids of halogens, particularly of the chlorate type, by replacement of an acidic hydrogen with an HgR group in which R = aryl, particularly phenyl, and in which none of the carbon atoms is directly linked with any element other than hydrogen, carbon and mercury. Phenyl mercuric chlorate, melting point 192–194°, bromate, melting point 165–174°, and iodate, sinters 228°, are claimed.—C. N. ANDERSEN. U. S. pat. 2,067,894; through *J. Soc. Chem. Ind.*, 57 (1938), 590. (E. G. V.)

9-Methoxy-5-Keto-5,6,7,8-Tetrahydrophenanthrene—Synthesis of. Sodium β_1-methoxy-β_2-naphthoylacetic ether upon treatment with methyl bromacetate gives a 95% yield of methyl β_1-methoxy-β_2-naphthoyl succinate, m. p. 118°. The latter upon treatment with boiling dilute

sulfuric acid gives rise to a mixture of neutral and acid bodies which are separated by solution in sodium carbonate from which the acids precipitate in yellowish brown crystals. Washed with methyl alcohol, they leave β_1-hydroxy-β_2-naphthoyl-3-propionic acid, yellow crystals from alcohol, m. p. 202°. Its methyl ether crystallizes in yellow needles, m. p. 105°. Methyl sulfate transforms it into a mixture of methyl-β_1-methoxy-β_2-naphthoyl-3-propionate and β_1-methoxy-β_2-naphthoyl-3-propionic acid, m. p. 161°. The *p*-nitrophenylhydrazone of this acid melts at 187°, the methyl ester at 166°. The acid is reduced to β_1-hydroxy-β_2-naphthoyl-4-butyric acid, white needles, m. p. 131° and with methyl sulfate converted to β_1-methoxy-β_2-naphthoyl-4-butyric acid, m. p. 94°. This acid is readily cyclicized by the action of phosphoric anhydride in benzene. The 9-methoxy-5-keto-5,6,7,8-tetrahydrophenanthrene is purified by distillation under reduced pressure and after crystallization from methyl alcohol melts at 83°. Its oxime melts at 165°, its *p*-nitrophenylhydrazone at 170°.—HENRI WAHL. *Compt. rend.*, 206 (1938), 683. (G. W. H.)

Obakunone, Obakulactone and a New Constituent of Phellodendron Amurense Rupr. From the analyses of various derivatives the formulæ of obakunone has been established as $C_{26}H_{30}O_7$. Extensive data have been tabulated to show that the two pairs obakunone and casimirolide, obakunonic acid and casimiroic acid are identical. The fraction of material decomposing at 270–280° from the bark of *Phellodendron amurense* Rupr. was saponified and separated by ether into obakulactone (decomposing at 292–293°) and dictamnolic acid (decomposing at 259–260°; $[\alpha]_D^{20}$ + 28°). Consequently it was inferred that the lactone dictamnolide was originally present.—T. KAKU and H. RI. *J. Pharm. Soc. Jap.*, 55 (1935), 222–223. (R. E. K.)

Oils—Therapeutic Refining of. The oil is dissolved in a solvent that does not dissolve soap. Alcohol is added to an extent not exceeding 5% of the volume of the solution and then sufficient caustic alkali to saponify the free fatty acids. The soap which separates removes acrid substances and foreign coloring matter from the oil.—WM. S. JONES, assignor to E. R. SQUIBB & SONS. U. S. pat. 2,113,942, April 12, 1938. (A. P.-C.)

Phenols—Alkyl Derivatives of. In forming products such as thymols, a phenol and an alcohol are caused to react together in the presence of a heteropoly acid such as phosphotungstic acid (suitably in the amount of 1 to 10% by weight of the reacting materials) which serves as a condensing agent, *e. g.*, with *m*-cresol and isopropyl alcohol at 160° C.—SIEGFRIED SKRAUP, assignor to SCHERING-KAHLBAUM A. G. U. S. pat. 2,103,736, Dec. 28, 1937. (A. P.-C.)

Phenylacetic Acids—Preparation of Some. The preparation of several substituted phenylacetic acids was undertaken for synthetic studies of the papaverine alkaloids. Following Dakin's suggestion the usual method of synthesizing phenyl acetic acids was modified by substituting acetyl glycine for hippuric acid in the formation of intermediate azlactones through condensation with aldehydes. By this means the troublesome separation of benzoic acid from the desired phenylpyruvic acids is avoided. Glycine was acetylated by a large excess of anhydride at 70–80°: m. p. 205–206° recrystallized from ethanol, yield 76% from ClAc-H. Azlactones were obtained by condensing 1 mole aldehyde and 1 mole acetyl glycine in presence of 1 mole fused $NaC_2H_3O_2$ and 3 moles $(Ac)_2O$: methyl-2-veratral-4-oxazolone-5, m. p. 167°, yield 48% after 5 hours at 155°; piperonal compound, m. p. 181°, yield 54% after 5 hours at 155°; anisal compound, m. p. 114°. The oxazolones were decomposed by 25% barium hydroxide solution (15% ethanol) by 4 to 7 hours heating at 100°. The crystalline pyruvic acids were liberated from the barium salts with dilute hydrochloric acid: Methoxy-4-phenyl pyruvic acid, decomposing at 184–186°; dimethoxy-3,4-acid, decomposition 187°, yield 89%; methylenedioxy-3,4-compound, decomposing at 215° crystallized from dilute ethanol or 209° from ethyl acetate, yield nearly 100%. Oxidation of these acids to the phenyl acetic acids proceeded in regular manner.—S. SUGASAWA and T. TSUDA. *J. Pharm. Soc. Jap.*, 55 (1935), 198–202. (R. E. K.)

Polysaccharides—Methylation of. The polysaccharides like starch and cellulose, were methylated with dimethylsulfate, suspended in ammonia gas and treated with sodium; and this mixture was left standing for about 6 hours at a temperature of −40°. The methylcellulose which is obtained is snowwhite and insoluble in cold water; it is of a fibrous nature and it becomes slightly viscous when chloroform is added to it.—K. FREUDENBERG and H. BOPPEL. *Ber. der Deutsch. Chem. Gesel.*, 70 (1937), 1542; through *Chem. Zentralb.*, 109 (1938), 74. (G. B.)

Quinic Acid—Preparation of, from Chlorogenic Acid, and Optical Properties. Catalytic reduction with Pd is preferable to Na-Hg for the preparation of dihydroclorogenic acid. 50 Gm. of the latter refluxed with 20 cc. of 2% hydrochloric acid yielded hydrocaffeic acid (m. p. 138–

139°) and 1.8 Gm. of quinic acid, recrystallized from water, m. p. 174°. The latter acid may be obtained directly from chlorogenic acid by saponification. Crystallographic data by reflection goniometer: symmetry, mono-clinic hemihedral; a:b:c = 0.6039:1:0.6001; β = 131° 24.6′; double refraction, negative. A figure showing crystal form and a diagram of the crystal axis are given in the Japanese text.—A. WATANABE. *J. Pharm. Soc. Jap.*, 56 (1936), 13–14.

(R. E. K.)

Shikimic Acid and Derivatives—Salts of. II. Salts of Ammonium and Substituted Ammonias. A few of these, previously prepared, were again prepared and analyzed. Methods for a considerable number of others are given together with an analysis for most of them. Following are those reported: shikimates of ammonium, methylamine, *n*-propylamine, *n*-amylamine, benzylamine, ephedrine, aniline, *o*-toluidine, hydrazine, pyridine, quinine, quinidine, codeine and strychnine.—HSING-HAN LEI. *J. Am. Pharm. Assoc.*, 27 (1938), 393. (Z. M. C.)

Stearic Acid—Formation of Oleic Acid by Catalytic Deshydrogenation of. By passing vapors of methyl stearate entrained in a current of ethylene over a nickel catalyst at 200°, 23% of stearic acid was converted into oleic acid. Under the same conditions, methyl palmitate gives no sign of deshydrogenation.—LOUIS MARGAILLAN and XAVIER ANGELI. *Compt. rend.*, 206 (1938), 1662. (G. W. H.)

Sulfanilamide—Purification of. 4-Aminobenzenesulfonamide for therapeutic purposes is purified by precipitating the free base from a crude salt in aqueous solution. Salts with acids are precipitated by a mild alkali (sodium carbonate), salts with bases by reducing the alkalinity (for example, by adding ammonium salts).—I. G. FARBENIND. A.-G. Brit. pat. 480,059; through *J. Soc. Chem. Ind.*, 57 (1938), 589. (E. G. V.)

Sulfone—Manufacture of. 3-Chloro-4-hydroxycyclotetramethylene sulfone, melting point 163–164°, is obtained in good yield by treating an aqueous solution or suspension of the 3:3-$(OH)_2$-compound (I), in the presence, if desired, of an organic solvent, for example, acetic acid, ethyl alcohol and an acid-binding agent (calcium carbonate), with gaseous or aqueous chlorine at moderate temperature. For example, I (100) dissolved in water (500 parts) at 40° is treated with chlorine (61) at 40–50°.—A. CARPMAEL. Brit. pat. 481,673; through *J. Soc. Chem. Ind.*, 57 (1938), 627. (E. G. V.)

BIOCHEMISTRY

Acidophilus Product and Method of Making It. Casein is precipitated from a substantially sterile heated milk solution. The mixture is cooled to about body temperature, inoculated with a suitable culture of *B. acidophilus* and allowed to incubate. The mixture is agitated to free *B. acidophilus* from the precipitate; the greater portion of the precipitate is separated from the mixture, and the greater portion of the *B. acidophilus* is separated from the liquid to form a mass of *B. acidophilus*.—STEWART M. FARR. U. S. pat. 2,119,739, June 7, 1938. (A. P.-C.)

Adrenal Cortical Hormone—Effect of, on Carbohydrate Stores of Fasted Hypophysectomized Rats. Injections of adequate amounts of either cortical extract or of the crystalline compound B of Kendall will not only prevent the depletion of the carbohydrate stores of fasted hypophysectomized rats, but will also restore them after they have been depleted by fasting.—C. N. H. LONG and B. KATZIN. *Proc. soc. exptl. biol. med.*, 38 (1938), 516. (A. E. M.)

Adrenaline—Determination of. Adrenaline in biological materials may be determined by comparing the blue color resulting from its reduction of arsenomolybdic acid with that given by a standard solution. The solution to be tested should contain between 0.1μ Gm. and 0.5μ Gm. of adrenaline, and be neutral or faintly acid. Blood should be run into an equal volume of 10% trichloracetic acid as rapidly as possible after removal from the body, since a substance indistinguishable by this test from adrenaline, is produced on keeping. Other tissues should be dropped into trichloracetic acid, using 1 cc. per Gm. of tissue, and then cut up finely and filtered. A suitable portion of the filtrate is placed in a centrifuge tube, two drops of alcohol-free phenolphthalein reagent (0.1 Gm. in 100 cc. of $N/100$ sodium hydroxide) are added, and the mixture neutralized with $N/1$ sodium hydroxide. One drop of $N/1$ sulfuric acid is added and 2 cc. of a suspension of aluminum hydroxide; the mixture is shaken and centrifuged for two minutes. The supernatant fluid is poured into another tube, 1 cc. of aluminum hydroxide suspension per 5 cc. of solution and 1 drop of phenolphthalein reagent are added, the mixture is made just alkaline (p_H 8.5) with sodium hydroxide, shaken and centrifuged. The supernatant liquid is discarded and about 3 cc. of

water, made just alkaline to phenolphthalein with sodium hydroxide, poured on to the precipitate; this mixture is centrifuged and the liquid discarded. The precipitate on which adrenaline is now adsorbed, is dissolved in 2 cc. of water and 0.35 cc. of $N/1$ sodium hydroxide. After two minutes, 2 cc. of a freshly prepared sulfurous acid reagent (2 cc. of 20% crystalline sodium sulfite solution with 14 cc. of 50% v/v sulfuric acid) is added, the mixture is poured into a tube containing 0.7 cc. of arsenomolybdic acid reagent, heated in a boiling water bath for five minutes, cooled, diluted to 5.5 cc. with water and the color is compared, after twenty minutes, against that obtained from a suitable standard solution of adrenaline treated in a similar way on the same day. The arsenomolybdic acid is prepared by dissolving 12 Gm. of crystalline sodium molybdate and 2 Gm. of sodium arsenate in water, filtering, diluting to 100 cc. and adding 8 cc. of sulfuric acid. A blank test must be carried out and the color given by the blank subtracted from that given by the test and also that given by the standard. Since other substances, if present, may interfere, a specific test for adrenaline must then be made by suspending the aluminum hydroxide precipitate obtained in 2 cc. of water, dividing into two portions, to one being added 0.35 cc. of $N/1$ sodium hydroxide and to the other 0.35 cc. of water containing one drop of $N/1$ sulfuric acid, the remainder of the test, as described, being carried out on each portion. The color given by the alkali-treated portion is two to 3.5 times as intense as that given by the acid-treated portion when not less than 0.04μ Gm. of adrenaline has been adsorbed by the aluminum hydroxide.—F. H. SHAW. *Biochem. J.*, 32 (1938), 19; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 638. (F. J. S.)

Anti-Anemic Preparations—Production of. Aqueous or alcoholic extracts of liver, etc., possessing anti-anemic properties are treated at p_H not greater than 7 with an adsorbent (fuller's earth), from which, after separation from the extract, the active material is removed by treatment with a dilute alkaline solution.—B. D. THORNLEY. Brit. pat. 473,064; through *J. Soc. Chem. Ind.*, 57 (1938), 590. (E. G. V.)

Arsenic Compounds—Fixation "In Vivo" of, by Red Blood Corpuscles. The following conclusions are given: (1) *Trivalent Arsenic.*—The blood corpuscles fix organic and inorganic compounds of arsenic. The arsenic seems to be fixed very rapidly, being completely fixed by the corpuscles after some time. (2) *Pentavalent Arsenic.*—The blood corpuscles do fix pentavalent arsenic compounds, but the fixation is quite slow and complete fixation cannot be verified. The quantity of arsenic fixed increases gradually with time. This type of arsenic compound reacts with blood in a manner opposite to that of trivalent arsenic compounds. Trivalent arsenic compounds were found to be fixed by red blood corpuscles with the same intensity *in vitro* and *in vivo*. Pentavalent arsenic compounds were not fixed by the red blood corpuscles *in vitro*, but were progressively fixed *in vivo;* the arsenic being found in the trivalent state. This indicates that the pentavalent arsenic is gradually reduced to the trivalent form which is immediately fixed.—J. THURET. *J. pharm. chim.*, 28 (1938), 60–68. (S. W. G.)

Ascorbic Acid—Colorimetric Method for the Determination of. To 5.0 cc. of sulfanilamide (5.00 mg. %), 1.0 cc. of sodium nitrate (0.050%) and one cc. of sulfosalicylic acid (20.0%) were added. The solution was allowed to stand 1 to 3 minutes, 10.0 cc. of a fresh 10% acetic acid solution containing varying concentrations (0.100 to 0.400 mg.) of the vitamin were added. After 5 minutes 7.4 cc. of 1-dimethyl-naphthylamine solution (1.0 cc. diluted to 500 cc. with 95% alcohol) were added and the solution was mixed. After 10 minutes, but within 50 minutes the colors developed were compared in a colorimeter with appropriate standards, prepared by diminishing the sulfanilamide concentration and replacing the vitamin solution by vitamin-free 10% acetic acid. In the standardization work, weighed samples of the crystalline vitamin were dissolved in 10% acetic acid, and aliquots were diluted to appropriate concentrations. These solutions were prepared fresh for each series of determinations. Fresh nitrate solutions were made up daily, although these solutions are stable for at least 2 to 3 days. Merck's reagent grade sulfosalicylic acid was used, although sulfuric acid appears to be equally satisfactory.—J. V. SCUDI and H. D. RATISH. *Ind. Eng. Chem., Anal. Ed.*, 10 (1938), 420–423. (E. G. V.)

Ascorbic Acid—Inhibition of the Benzidine Test by. Ascorbic acid not only prevents the benzidine test for blood but when added to a test already showing a strong positive reaction it quickly reverses the test by reducing the blue product to a colorless state. It still interferes with and reverses the test after oxidation with potassium permanganate until it gives no evidence of reducing power by the I titration method, the oxidized ascorbic acid still acting as a weak reducing agent with respect to the blue oxidation product of benzidine. Even moderate amounts in the

urine introduce serious errors in the chemical test for blood but for ordinary clinical work the interference may be avoided by performing the test only on an ether extract of acidified urine. The intensity of any benzidine reaction to blood in the presence of ascorbic acid may be stated roughly to be directly proportional to the concentration of hemoglobin and inversely to the concentration of ascorbic acid.—R. KOHN and R. M. WATROUS. *J. Biol. Chem.*, 124 (1938), 163–168; through *Chem. Abstr.*, 32 (1938), 6280. (F. J. S.)

Ascorbic Acid—New Synthesis of. The method is based on the condensation of aldoses with glyoxylic esters in alkaline medium. Ascorbic acid is obtained, together with a lactone, with liberation of a molecule of alcohol. The free aldoses can be replaced by derivatives (acetyl or others) which are converted into the aldoses under the conditions of the synthesis.—B. HELFERICH and O. PETERS. *Ber. Deut. Chem. Ges.*, 70 (1937), 465–468; through *Chimie & Industrie*, 39 (1938), 323. (A. P.-C.)

Atebrin—Determination of Small Quantities of, in the Blood. The method of Chopra and Roy (*Indian Med. Gaz.*, 70 (1935), 504–505) is modified by drying the blood overnight in a dessicator containing sulfuric acid, and subsequently using 0.5 cc. of amyl alcohol instead of 1 cc. in the extractions for the color comparisons.—R. N. CHOPRA and A. C. ROY. *Indian J. Med. Research*, 24 (1936), 487–488; through *Chimie & Industrie*, 39 (1938), 717. (A. P.-C.)

Bilirubin—Simplified Photometric Methods for the Determination of, in Blood. A method for bilirubin determination is described which depends upon the extinction of a blue bilirubin azo-dye formed by the addition of alkali, which is measured with the filter S 61 in the orange-red light of the Pulfrich photometer. The determination gives accurate results with 0.25 to 0.50 cc. serum.—L. JENDRASSIK and P. GROF. *Biochem. Z.*, 297 (1938), 81–89; through *Chem. Abstr.*, 32 (1938), 8465. (F. J. S.)

Biochemical Oxygen Demand Bottle and Filling Tube. A half-pint milk bottle fitted with glass stopper is adapted for the purpose.—B. D. ARCHER. *Water Works, Sewerage*, 83 (1936), 102; through *J. Soc. Chem. Ind.*, 57 (1938), 595. (E. G. V.)

Blood Urea—Simplified Method for the Determination of. By the use of a glycerol urease extract, a phosphate buffer and a Nessler's solution with a minimum of alkali, direct nesslerization can be carried out without clouding, even though a protective colloid is not used.—F. L. HAWK and J. E. ANDES. *Am. J. Clin. Path., Tech. Suppl.*, 2 (1938), 153–157; through *Chem. Abstr.*, 32 (1938), 8466. (F. J. S.)

Chlorides in Biological Fluids. The chloride ion is isolated as silver chloride by a usual well-known method. The silver chloride is then dissolved in 10% ammonia and precipitated by a reagent consisting of 100 mg. powdered $K_4FeC_6N_6.3H_2O$ in 2 cc. glacial acetic acid diluted to 100 cc. with 1% ammonium sulfate. The silver ferrocyanide formed under these conditions has a homogeneous, stable, reproducible turbidity which Exton and Rose measure in a calibrated electroscopometer. Pieric acid is used in deproteinizing. 0.20 cc. blood is sufficient for a determination. —W. G. EXTON and A. R. ROSE. *Am. Soc. Biol. Chemists, proc.*(3/30–4/2/38); through *Squibb Abstr. Bull.*, 11 (1938), A-1011. (F. J. S.)

Cholic Acid—Determination of. I. Levulose-Hydrochloric Acid Method. When dry bile acids are mixed with an equal amount of levulose and heated at 70° with concentrated hydrochloric acid a beautiful carmine color develops which is practically specific for cholic acid. although proteins give this reaction, their alcohol extracts are negative. The reaction is, therefore, proposed for determination of cholic acid. As standard a 0.05–0.10% alcohol solution of cholic acid is used. More than 1 mg. cholic acid cannot be determined. The optical temperature condition for the color development is 20 minutes at 40°, the color remaining unchanged for 1–1½ hours. For the determination of 0.3–1.0 mg. cholic acid, 1.0 mg. is employed for the standard and 1.0 mg. levulose; for the determination of 0.1–0.5 mg., a 0.5 mg. cholic acid standard is used and 0.5 mg. levulose, under which conditions the best color development is obtained.—Y. OHYANA. *J. Biochem.* (Japan), 27 (1938), 351–362; through *Chem. Abstr.*, 32 (1938), 8465. (F. J. S.)

Collargol-Saponin Anemia of Rabbits—Suitability of, for the Evaluation of Liver Preparations. Anemia developed in rabbits by means of collargol-saponin can be influenced by liver preparations, but is not suitable for quantitative measurements, since the reactions are divergent and irreproducible. Exact evaluation of liver preparations should be made by clinical investigations.—L. KEMÉNY. *Ber. ungar. pharm. Ges.*, 14 (1938), 305–315; through *Chem. Abstr.*, 32 (1938), 5156. (F. J. S.)

Creatine—Determination of, with the Lange Photoelectric Colorimeter. Soup extracts, etc., are evaporated down with hydrochloric acid, and the residue is dissolved in water. The solution is exactly neutralized with 0.5 *N* sodium hydroxide, and 1% aqueous potassium permanganate containing 2.5% of sodium chloride is added in slight excess, the excess being destroyed with sodium peroxide. The solution is filtered from manganese oxides; 0.5 *N* sodium hydroxide + 0.1 cc. of saturated aqueous picric acid are added and the solution is colorimetered. Separate samples are similarly treated with 0.2 and 0.4 cc. of picric acid, respectively, and the amount of creatine is calculated from the sum of the three measurements.—K. WOIDICH. *Osterr. Chem.-Ztg.*, 41 (1938), 42–43; through *J. Soc. Chem. Ind.*, 57 (1938), 584. (E. G. V.)

Dihydroxyestrin—Skin Absorption of, in Humans. Dihydroxyestrin is absorbed through the skin of the human female and exerts an estrogenic effect upon the epithelium of the vaginal mucosa. This is shown by the transformation of the vaginal smear, following inunction with adequate amounts of ointment containing dihydroxyestrin, from the "negative" phase, in cases of advanced estrogen deficiency, to a "positive" phase characteristic of normal ovarian activity.—UDALL J. SALMON. *Proc. soc. exptl. biol. med.*, 38 (1938), 481. (A. E. M.)

Endocrine Compounds. A discussion.—A RICHARD BLISS, JR. *Drug Cosmetic Ind.*, 43 (1938), 36–37, 42, 55. (H. M. B.)

Estrogenic Hormones—Detection of, in Urine of Pregnant Women. The hormones after extraction are dissolved in chloroform. The chloroformic solution is placed in contact with an equal volume of a cold mixture of 1 volume of concentrated sulfuric acid and 2 volumes of glacial acetic acid. After standing 3–4 hours, the yellow sulfuric layer shows a greenish fluorescence. Examined spectroscopically, this fluorescence appears formed from a large band comprising the orange, the yellow and a part of the green; the axis of the band is very near 5733A. The following phenanthrene derivatives were studied under the same conditions and found to react differently; cholesterol, ergosterol, irradiated ergosterol, vitamin D_2, androsterol and strophanthin.—HENRI BIERRY and BERNARD GOUZON. *Compt. rend.*, 206 (1938), 943. (G. W. H.)

Estrogenous Products. From a plant material such as *Butea Superba* tubers, by a process involving extraction with alcohol, there is isolated a product exerting biological effects similar to those of the follicular hormones and having the general formula $C_{19}H_{22}O_6$ and a melting point of approximately 276° C. when crystallized from methanol. Its efficiency on application *per os* is approximately one-half its efficiency on subcutaneous application. It is distinguished from the follicular hormones by its chemical properties, especially by its sensitivity toward strong alkaline solutions.—WALTER SCHOELLER, MAX DOHRN and WALTER HOHLWEG, assignors to SCHERING-KAHLBAUM A.-G. U. S. pat. 2,112,712, March 29, 1938. (A. P.-C.)

Fat Metabolism—Pancreas Preparation for Controlling. By the treatment of fresh beef pancreas with acidified alcohol there is obtained a preparation suitable for oral administration and which is soluble in 60% alcohol, insoluble in ether and in a mixture of equal volumes of ether and 90% alcohol, and which is substantially free from choline and from lecithin.—LESTER R. DRAGSTEDT, JOHN VAN PROHASKA and HERMAN P. HARMS. U. S. pat. 2,115,418, April 26, 1938. (A. P.-C.)

Flavines and Purpuroflavines. Condensation of 2,6-dihydroxy-4,5-diaminopyrimidine with the aldol of diacetyl produces a compound which was called pseudo-lumichrome and which is considered to be typical of the synthesis of vitamin B_2 in nature. Orthocondensation of the same diamine with *o*-quinones offers a new possibility of synthesis of flavines. By condensation with the alloxanes a new series of compounds was obtained, which was named purpuroflavines.—B. HEPNER, I. KELNER, A. SIMONBERG and HÉLÈNE KALTMAN. *Compt. Rend. 17me Congr. Chim. Ind., Paris*, (Sept.–Oct. 1937), 228–230. (A. P.-C.)

Follicle Hormone and Derivatives Thereof—Production of Solutions of. The solutions are made by dissolving it in a concentrated aqueous solution (30%) of urethane.—RICHTER GEDEON VEGYESZETI GYAR R. T. Brit. pat. 487,267; through *J. Soc. Chem. Ind.*, 57 (1938), 982. (E. G. V.)

Folliculin and Dihydrofolliculin in the Urine of Pregnant Mares. It is known that dihydrofolliculin or estradiol can be obtained by reduction of folliculin or estrone. The authors have succeeded in separating it from the urine of pregnant mares in sufficiently large quantities to make commercial extraction possible and worth while.—MELLE. D. VAN STOLK and R. LEROY DE LENCHÈRE. *Compt. Rend. 17me Congr. Chim. Ind., Paris*, (Sept.–Oct. 1937), 469–470. (A. P.-C.)

Food Concentrates—Preparation of. In the preparation of fruit (for instance, pineapple) concentrates, with retention of the vitamins, enzymes, etc., the pulverized fruit is mixed with non-crystallizable sugar syrup and subjected to an air pressure of 90 pounds per square inch. The mass is then concentrated at 36° in vacuum, and finally by a current of warm air, to 20% of water.—B. P. PILORZ and B. J. BUTLER. U. S. Pat., 2,066,574; through *J. Soc. Chem. Ind.*, 57 (1938), 977. (E. G. V.)

Gastrin. Minced dog's stomach was extracted with 0.1*N* hydrochloric acid by boiling. The neutralized and centrifuged extract is precipitated with 10% trichloracetic acid and then precipitated with 10% trichloracetic acid and the precipitate is washed with 10% trichloracetic acid solution, acetone, benzene, ether and dried *in vacuo*. The pyloric extract caused in animals after injection a copius secretion of gastric juice of high acidity and low peptic power. Fundic preparation elicited a slight pancreatic secretion but none from the gastric glands. Duodenal extract was highly stimulating on pancreas and bile flow, but little efficacious on the gastric secretion.—S. A. KOMAROV. *Proc. soc. exptl. biol. med.*, 38 (1938), 514 (A. E. M.)

Glucose—Absorption of. The glucose absorption in Thiry-Vella fistula of normal dogs is not increased by insulinic hypoglycemia, nor is it hindered by pyperglycemia from intravenous administration if sugar.—L. BELLINI and F. PESCETTO. *Biochim. terap. sper.*, 16 (1938), 201. (A. C. DeD.)

Hemoglobin and Pepsin—Properties of, in Solutions of Urea and Other Amides. Native isoelectric horse hemoglobin (I) in dilute unbuffered solutions is totally dissociated into molecules of half the normal molecular weight when high concentrations of urea (III) or other amines are present. On removal of the amides by dialysis, part of the I fractions reassociate to normal protein, part aggregate into still larger molecules and part precipitates irreversibly. Pepsin (II), unlike I, is not dissociated by amides. I and II suffer no changes in specific properties on solution in III.—J. STEINHARDT. *J. Biol. Chem.*, 123 (1938), 543; through *Squibb Abstr. Bull.*, 11 (1938), A-932. (F. J. S.)

Heparin—Standardization of. Anticoagulants show toward plasma coagulation qualitative and quantitative differences. The determination of the coagulation-inhibition curve is therefore necessary for the measurement of the activity of heparin and its standardization is discussed.—T. ASTRUP. *Enzymologia*, 5 (1938), 12–16 (in German); through *Chem. Abstr.*, 32 (1938), 7675. (F. J. S.)

Hormone Preparations—Potency of Certain Commercial. The authors present their results of a number of commercial hormone preparations assayed during the course of their study of assay methods of estrogenic, gonadotropic and adrenal cortex hormones. The substances investigated were estrogenic substances (hydroxy-ketonic-estrin, tri-hydroxy-estrin), gonadotropic, substances originating from pregnancy urine, placentæ and the pituitary, adrenal cortex preparations and growth hormone preparations. The oil preparations of the estrogenic substances contained the labelled content, while great discrepancies in biologic activity were found in the aqueous preparations. Since no standard method for the assay of gonadotropic substances has been adopted, the manufacturer's method was used. The results of the assay of ten commercial preparations are tabulated. The urinary and placental preparations contained approximately the labelled number of units, according to the method of assay employed. The pituitary products contained little or no activity. The rat was used as a test animal for assaying the activity of ten commercial adrenal cortex preparations. Only two preparations contained the labelled potency. Four growth hormone preparation products of two manufacturers were assayed, using the methods described by them in the circular accompanying the package. The preparations contained considerably less than the indicated potency. The authors present two general criticisms. *First*, extracts of the anterior lobe, both gonadotropic and growth, and aqueous estrain preparations, appear to deteriorate upon standing. This problem deserves study, and if the time during which the activity is retained can be determined it would be well to place an expiration date on the containers. *Secondly*, in view of the lack of uniformity in assay methods and units, the leading firms should agree upon uniform methods of assay and upon standard units.—F. C. D'ARMOUR and M. C. D'ARMOUR. *Endocrinology*, 22 (1938), 583; through *Am. J. Pharm.*, 110 (1938), 203. (A. C. DeD.)

Hormones—Method of Preparing. A purified aqueous solution of gonadotropic hormones, obtained from the blood or uterine tissue of mares during early pregnancy, is treated with

sufficient disodium or dipotassium phosphate to maintain the p_H above 7.5 during manipulation and filtration and to give a final product (after acidification to the desired p_H) that will be substantially isotonic with the blood. The solution is filtered through a Mandler or a Pasteur-Chamberland bacteriological filter, and is then acidified with phosphoric acid or with sodium or potassium acid phosphate so that the final solution will be sufficiently acid to best preserve the hormones without being objectionable for parenteral administration and will be substantially isotonic with blood.—EDWIN L. GUSTUS, assignor to The UPJOHN CO. U. S. pat. 2,120,405; June 14, 1938. (A. P.-C.)

Hormones—Relations between the Potency and Chemical Composition of. A review.—L. RUZICKA. *Chimie & Industrie*, 38 (1937), 1059–1072. (A. P.-C.)

***l*-β-Hydroxybutyric Acid—Practical Method of Preparation and Isolation of.** Rats are fed 0.237 Gm. of butyric acid per 100 Gm. daily by stomach tube. To the pooled urines add copper sulfate to obtain 20% concentration, then 0.5 Gm. calcium hydroxide per Gm. of copper. The reaction must be slightly alkaline to litmus. Filter and evaporate to a syrup. Acidify with 50% sulfuric acid avoiding excess and keeping the temperature below 10°. Mix with plaster of Paris and stir to form a coarse meal. Extract with ether, evaporate the latter and dissolve in a small quantity of water. Treat with Norite and divide into two equal portions. Neutralize one with calcium carbonate, the other with zinc carbonate. Filter both and mix together. The calcium-zinc double salt begins to crystallize immediately and comes out completely within 24 hours after addition of hot ethyl alcohol. The free acid is obtained by decomposition with acid, setting with plaster of Paris and extracting with ether.—HARRY BLUNDEN. *Proc. soc. exptl. biol. med.*, 38 (1938), 466. (A. E. M.)

Industrial Fermentations. A review.—F. BOINOT. *Tech. Ind. Chim.*, No. 277 (1938), 60–67; through *J. Soc. Chem. Ind.*, 57 (1938), 966. (E. G. V.)

Insulin—Preparation of, and Its Derivatives. Methods used at the Bacteriological Institute of Buenos Aires for preparing insulin products on a commercial scale are described. Since protamine is difficult to obtain, considerable histone-insulin is used in place of protamine-insulin. The histone is obtained from thymus.—J. R. MENDIVE. *Folia biol.*, 82 (1938), 347–351; through *Chem. Abstr.*, 32 (1938), 7665. (F. J. S.)

Lipoid Phosphorus (Lecithin)—Determination of, in the Blood. Extract 1 cc. of blood with 25 cc. of alcohol-ether according to Bloor, evaporate 10 cc. of the extract, and ash at 180° C. with 1 cc. of a mixture of 7 parts of concentrated sulfuric acid and 3 parts of concentrated nitric acid, followed by 30% hydrogen peroxide. Transfer the perfectly clear mixture with 10 cc. of water to a tube calibrated at 15, 20 and 25 cc., add 1 cc. of 5% ammonium molybdate solution, 1 cc. of 0.5% hydroquinone in 15% sodium bisulfite, and heat the mixture 10 minutes in boiling water. Cool, dilute appropriately and compare the color with that of a standard to which 0.5 cc. of concentrated sulfuric acid has been added before color development. Chloroform was found to extract only about half as much lecithin as the alcohol-ether mixture.—R. N. CHOPRA and A. C. ROY. *Indian J. Med. Research*, 24 (1936), 479–486; through *Chimie & Industrie*, 39 (1938), 717. (A. P.-C.)

Lysates—Chemical Characteristics of, According to Tucshnow. Lysates were prepared from a series of organs from cattle, including the thyroid, prostate, testicle, corpus luteum, ovary, mammary gland, pancreas, anterior and posterior lobes of the pituitary body, liver, spleen and suprarenal capsule, and also from hog skin. The amount of total nitrogen consumed during a definite period of pepsin digestion at a constant temperature is recommended as a criterion for the standardization of the stimulating fractions. The addition of glycerol rather than alcohol is more satisfactory for the preservation of lysates administered orally. The lysates sometimes differ sharply from one another as regard their content in solids, in organic matter, ash and total nitrogen, and also as to their viscosity and surface tension. In the estimation of the therapeutic effect of the lysates and especially in assigning dosage these differences in composition must be considered. The so-called plastic fraction of the lysate contains no valuable plastic material. This fraction, it would appear, represents excess inert matter in lysate therapy.—M. Y. GALVYALO. *Trav. acad. militaire med. armee rouge U. R. S. S.*, 2 (1935), 295–304; through *Chem. Abstr.*, 32 (1938), 7211. (F. J. S.)

Magnesia—Comparative Action of, on Some Glucides and Some Heterosides. Glucose can be eliminated from an exclusively aqueous medium by means of magnesia. The elimina-

tion is due not only to fixation of the glucose, but also to considerable destruction, the magnesia acting as a strong base. Other sugars such as levulose and lactose undergo a similar destruction; destruction of sucrose is less. Polyols, such as sorbitol and mannitol, resist to the same extent as sucrose; mannitol is even simply fixed by the magnesia without undergoing destruction. The glucosides such as the two methyl-*d*-glucosides undergo no change.—MELLE. M. JOLY. *J. Pharm. Chim.*, 25 (1937), 457–465; through *Chimie & Industrie*, 39 (1938), 254. (A. P.-C.)

Mercury—Simplified Procedure for the Determination of, in Urine. A modification of the Winkler method (*C. A.*, 30, 53) is described in detail, which is more rapid than the original and equally accurate. Urine is digested with concentrated nitric acid and potassium permanganate until a brown or violet color is permanent. The manganic oxide is decomposed with solid potassium nitrite and the excess nitrite removed with hydroxyl-amine sulfate crystals. The mercury is determined by the diphenyl-thiocarbazone technic.—A. O. GETTLER and R. A. LEHMAN. *Am. J. Clin. Path., Tech. Suppl.*, 2 (1938), 161–164; through *Chem. Abstr.*, 32 (1938), 8466. (F. J. S.)

Milk—Method for Determining the Action of Certain Organisms on Nitrogen Distribution in. A method is outlined which was found to be quite satisfactory for the study of the action of certain bacteria on nitrogen distribution in milk, as occurring after protein cleavage brought about by bacterial action. The amount of protein converted to amino acids by the organisms in a given length of time could be determined. The process of hydrolysis broke down those protein complexes which might eventually be transformed by the organism into amino acids. By determining the nitrogen distribution in a definite quantity of digested milk, it was possible to indicate the results of the nitrogen conversion on a percentage basis.—G. H. MCFADDEN and H. H. WEISER. *Am. J. Pharm.*, 110 (1938), 154. (A. C. DeD.)

Mineral Salts in Public Water Supplies—Physiological Aspects of. The physiological effect of copper, aluminum, arsenic, lead, iron, sodium, potassium, zinc, selenium, boron, manganese, radium, silver, barium, hard waters, caustic alkalinities, flouride, iodide, chloride, sulfate, carbonate ions, total solids and pyridine from by-product ammonium salts in drinking waters and their safe limits are discussed. The presence of inorganic salts is more important to industry than for drinking water as very few have been proved detrimental to public health at the concentration at which they normally occur in drinking water, and if excessive (except lead and flourine) the taste factor would prevent ingestion. It is concluded that the copper, caustic alkalinity and zinc limits defined in Appendix IV, U. S. Public Health Service Water Standards, could safely be made less strict, the lead limit maintained, and the limits might be applied to flourine, barium and selenium.—S. S. NEGUS. *J. Amer. Water Works Assoc.*, 30 (1938), 242–264; through *J. Soc. Chem. Ind.*, 57 (1938), 595. (E. G. V.)

Nicotinic Acid—Colorimetric Determination of, in Foodstuffs. The method described is based on the yellowish green color produced by the pyridine ring when caused to react with aqueous bromo cyanide and aqueous aniline. Values reported for 12 foodstuffs vary from 1.48 mg. % for white maize to 62.50 mg. % for dried brewer's yeast. The low value for maize indicates that deficiency of nicotinic acid is an important defect of Indian diets based on rice or millet.—M. SWAMINATHAN. *Nature*, 141 (1938), 830; through *J. Soc. Chem. Ind.*, 57 (1938), 974. (E. G. V.)

Oestrone—Colorimetric Estimation of. The author has previously described a colorimetric estimation of oestrone based on treatment with phenolsulfonic acid followed by heating to develop the color. The present work describes a modification of the original method whereby extracts of mare's urine can be determined by the following technic. Urine is acidified with sulfuric acid and boiled. After the addition of alcohol the urine is extracted with benzene, which is evaporated off, and the residue dissolved in a small volume of acetone. This solution is diluted with water, heated and treated with a solution of β-naphthol-sulfonic acid to develop the color which is measured in a photoelectric colorimeter. A blank is performed after treatment with hydrogen peroxide to determine the residual color. The possibility of applying the method to human urine is discussed. A statistical examination of the results is made and an error of only 2% is claimed for the method.—S. KOBER. *Biochem. J.*, 32 (1938), 357; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 642. (F. J. S.)

Organic Acids—Determination of Urinary, by Hehner's Method. Hehner's procedure has been modified, and the results obtained by this procedure are compared with results obtained by the Van Slyke and Palmer method.—P. FLEURY and CARON-CLAEYSEN. *J. pharm. chim.*, 26 (1937), 241–255. (S. W. G.)

Polluted Water—Treatment of Organically. Organically polluted water (or other liquid) is passed through a bed of scrap iron. Chlorine and diffused air are passed simultaneously with the liquid through the bed of iron, forming ferric chloride *in situ*. The resultant liquid is subsequently treated with hydrated lime and the treated liquid is passed to a settling zone.—OLIVER M. URBAIN and WM. R. STEMEN, assignors to CHARLES H. LEWIS. U. S. pat. 2,116,053, May 3, 1938. (A. P.-C.)

Pregnandiol—Method for the Isolation of, from the Urine of Pregnant Mares. The essential points of the procedure are: liberation of the free form of pregnandiol from its conjugated form by enzyme action during incubation, the insolubility of pregnandiol in aqueous solution such as urine, the purification by precipitation from alkaline acetone.—PAUL G. WEIL. *Proc. soc. exptl. biol. med.*, 38 (1938), 503. (A. E. M.)

Progesterone—Conversion of Cholesterol into. Fernholz and Butenandt converted 3-oxy-bis-nor-cholenic acid, procured by the oxidation of stigmasterol, into progesterone. The present authors sought to attain the same hormone from cholesterol and reported the preparation of 3-oxy-bis-nor-cholenic acid from that source. Three-oxy-cholenic acid, m. p. 240°, was obtained in the usual manner. Its methyl ester, m. p. 147°, was converted by CH_3-Mg-I into nor-cholestenediol-3, 24; m. p. 192° (corr.). The diacetate, m. p. 136° (corr.) was oxidized in acetic acid by CrO_3 and then saponified to nor-cholenic acid, which did not crystallize and was consequently methylated at once. CH_3-Mg-I converted this ester to bis-nor-cholestenediol-3, 23: m. p. 209° (corr.); diacetate, m. p. 136° (corr.). Chromic acid oxidation yielded acetoxy-3-bis-nor-cholenic acid, m. p. 241° (corr.), which was changed to the 3-oxy-derivative, m. p. 306° (corr.) by alkaline saponification. These end results agree well with the values recorded by Fernholz.—K. FUJII and T. MATSUKAWA. *J. Pharm. Soc. Jap.*, 56 (1936), 93–94. (R. E. K.)

Protein Materials for Normalizing Blood Conditions. A composition sutable for use in normalizing blood conditions is derived by subjecting 15 Gm. of protein obtained from the lymphatic glands of an animal, diluted with 100 Gm. of distilled water, to exposure for 5 hours to the action of 0.5 Gm. of amylopepsin, 1 Gm. of pepsin and 25 drops of hydrochloric acid, exposing the mixture for 5 hours to the action of pancreatin, dializing the mixture for 10 hours, filtering and drying the filtrate.—CARMELO BALDINI. U. S. pat. 2,116, 377, May 3, 1938. (A. P.-C.)

Proteins—Precipitation of, in Milk. Maximum precipitation of casein occurs at p_H 4.6–4.8, varying with the milk sample. The proper mixture of aqueous acetic acid-sodium acetate to give this point is 1.0 cc. of 10% aqueous acetic acid and 1.0 cc. of *N* sodium acetate, which gives 1.0–1.4% more nitrogen than the usual acetate buffer method and 2.4–3.8% more than in the *A. O. A. C.* method. Semi-micro-methods of determining the nitrogen in aliquot portions of the filtrate, instead of determining the nitrogen in the precipitate and filter paper, are suggested. Total protein is precipitated with a final concentration of 12% trichloracetic acid at room temperature. Lower concentrations give slightly less protein. Globulin, free from casein and albumin, is precipitated by saturation with magnesium sulfate of the filtrate from the determination of casein. Acidifying the magnesium sulfate filtrate gives albumin, while precipitation of total protein-proteose with trichloracetic acid gives proteose-nitrogen by difference.—S. J. ROWLAND. *J. Dairy Res.*, 9 (1938), 30–41; through *J. Soc. Chem. Ind.*, 57 (1938), 579. (E. G. V.)

Provitamins—Activating. Provitamin material such as ergosterol is introduced into a gaseous region, such as one of nitrogen, across which a voltage gradient is applied for producing a gaseous brush discharge about the provitamin material for conversion into antirachitic vitamins. An apparatus is described.—BENJAMIN KRAMER, SAMEUL NATELSON and ALBERT E. SOBEL. U. S. pat. 2,112,242, March 29, 1938. (A. P.-C.)

Sexual Hormone Derivatives—Production and Purification of. Crude female or male sexual-hormone oils are purified and converted into more potent products by treatment in boiling alkaline solution with sodium thiosulfate. The hormone derivative is removed by means of an organic solvent, then dissolved in ethyl alcohol after evaporation of the solvent, and separated from this solution with water.—RICHTER GEDEON VEGYESZETI GYAR R. T. Brit. pat. 487,352; through *J. Soc. Chem. Ind.*, 57 (1938), 982. (E. G. V.)

Sterol Derivatives. For obtaining ketones corresponding with acids of the general formula $R(CH_3)CHCO_2H$ in which *R* stands for a polycyclic hydroaromatic radical, such as 3-hydroxybisnorcholenic acid or 3-acylhydroxybisnorcholenic acid, the acid chloride of the acid may be caused to react with an alkali azide such as that of sodium preferably in aqueous acetone solu-

tion so as to form the corresponding azide, heating the latter to convert it into the isocyanate, converting the isocyanate into the amine, as by the use of 60% sulfuric acid, and oxidizing the amine. If the amine is treated with sodium nitrite the corresponding amine nitrite is formed and, by heating, the corresponding alcohol is obtained which may be oxidized to the ketone with chromic acid or potassium permanganate. Various details of procedure are given, and products are obtained which may be used as, or for preparing, medicaments.—MAX BOCKMÜHL and HEINRICH RUSCHIG, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,108,646, Feb. 15, 1938. (A. P.-C.)

Sterol Derivatives—Manufacture of. 3-Hydroxybisnorallocholanic acid (I) is converted by oxidation into the keto-compound, melting point 244°, which is reduced by pladadium-hydrogen to a steroisomeric 3-epiacetoxybisnorallocholanic acid (II); this is converted by standard methods into compounds of the androsterone series having a greater physiological activity than those derived directly from I. For example, the methyl ester of II is treated with phenyl magnesium bromide, the product (III) is dehydrated and oxidized (ozone), and the resulting ketone is subjected to the same cycle of reactions with the production of 3-epiacetoxyoetioallocholanone (IV), melting point 164°. Oxidation of the carbinol III or of its dehydration product with chromic acid anhydride-acetic acid gives 3-epiacetoxyoetioallocholanic acid (V), the methyl ester (CH_2N_2) of which is also converted by the Grignard reaction, dehydration and ozonization into IV. The chloride of V is converted successively into azide and carbimide; this is hydrolyzed (60% sulfuric acid) to 17-amino-3-epihydroxyandrostane (VI) or converted into its acetyl derivative by heating with water. Interaction of VI with nitrous acid gives dihydroandrosterone, melting point 221°.—I. G. FARBENIND. A.-G., Brit. pat. 478,583; through *J. Soc. Chem. Ind.*, 57 (1938), 589. (E. G. V.)

Sterols, Hormones and Vitamin D.—Ten Years of Research on. A review, with 84 references.—L. M. HEILBRON. *Chimie & Industrie*, 39 (1938), 19–30. (A. P.-C.)

Sulfanilamide—Determination of, in Biological Media. The colorimetric determination with dimethyl-α-naphthylamine after diazotization is unsatisfactory owing to the difficulty of obtaining satisfactory batches of this substance; furthermore, the blood from cases of hepatitis with jaundice slowly develops a color which has been mistaken for sulfanilamide poisoning. The color reaction with chromotropic acid is more satisfactory and the method of determination suggested is to add to 5 cc. of blood filtrate prepared by the Folin-Wu method, 1 cc. of 0.1% solution of sodium nitrite and 1 cc. of $N/10$ hydrochloric acid. After three minutes 1 cc. of 1% solution of sodium carbonate is added to make the solution neutral to litmus, followed immediately by 1 cc. of 0.05% solution of chromotropic acid; after shaking once the color is compared with a standard in a colorimeter. The recovery of sulfanilamide is constant at 81% (±3%). Similar consistency was obtained using trichloracetic acid-precipitated blood, but the increased acidity must be titrated to neutrality with $N/10$ sodium hydroxide, since sodium carbonate addition leads to p_H variations. Urine specimens must not be preserved with formalin, which leads to formol condensation with the sulfanilamide, but otherwise the determination is similar to that of blood.—J. V. SCUDI. *J. Biol. Chem.*, 122 (1938), 539; through *Quart, J. Pharm. Pharmacol.*, 11 (1938), 643. (F. J. S.)

Sulfate—Total, Estimation of, in Blood Serum. Dilute 2 cc. serum with 6 cc. water, add 2 cc. of 20% trichloroacetic acid, mix thoroughly and filter through a dry ashless filter after 15 minutes. Place 2 cc. of the filtrate in a 15 cc. centrifuge tube, add 0.4 cc. concentrated hydrochloric acid, hydrolyze for two hours in a boiling water bath and evaporate to dryness in vacuum at 100°. Dissolve the residue in 2 cc. of 2% trichloroacetic acid and precipitate the sulfate with 5 cc. of a 0.5% acetone solution of benzidine. After thorough mixing place the tube in a stoppered wide-mouth bottle, keep over night in a refrigerator, wash the precipitate and determine the sulfate colorimetrically by the method of Cuthbertson and Tompsett (cf. *C. A.* 26, 1019), omitting the addition of 15% sodium hydroxide. The hydrochloric acid which usually interferes in the determination of total sulfates by the benzidene method is removed by the vacuum evaporation. If the sample is abnormally high in phosphorus, the residue from the vacuum evaporation should be dissolved in 2 cc. of 3% trichloroacetic acid. The method gave very satisfactory recovery of 0.002–0.004 mg. sulfate sulfur added to serum filtrate.—N. C. DAS GUPTA. *Indian J. Vet. Sci.*, 8 (1938), 119–125; through *Chem. Abstr.*, 32 (1938), 8463. (F. J. S.)

Suprarenal Cortical Hormone. For purifying the suprarenal cortical hormone, impure solutions of the hormone in organic solvents such as benzene are extracted with strong concentra-

tions of strong acids such as sulfuric (the solvents used being immiscible with water.—KAROLY G. DAVID, assignor to the firm N. V. ORGANON. U. S. pat. 2,115,621, April 26, 1938. (A. P.-C.)

Testosterone—Esters of. Esters of generally protractive effect, such as the propionate, butyrate, isobutyrate, valerinate, isovalerinate, caproate, benzoate and similar esters of 17-alkyl testosterones and of dihydrotestosterone are produced, suitably in pyridine as a vehicle for the reaction of the corresponding acid or anhydride and oxyketone.—KARL MIESCHER, ALBERT WETTSTEIN and CAESAR SCHOLZ, assignors to SOCIÉTÉ POUR L'INDUSTRIE CHIMIQUE À BÂLE. U. S. pat. 2,109,400, Feb. 22, 1938. (A. P.-C.)

Tomatoes. Experiments on albino rats failed to furnish any evidence that tomatoes or tomato juice have cancerigenic properties.—ANDRÉ KLING and N. SAMSSONOW. *Bull. Soc. Sci. Hyg. Aliment.*, 25 (1937), 355–360. (A. P.-C.)

Urine—Study of the Division of Organic Sulfur in. The adialyzable portion of the urine is represented as containing: (1) Substances giving soluble lead salts, sulfonic peptides (66% of total adialyzable sulfur); (2) Substances giving soluble lead salts after oxidation, dithio peptides (22%); (3) Substances giving insoluble lead salts before and after oxidation, thio peptides (12%). The division of organic sulfur in normal urine is given as follows: sulfonic polypeptides, thiocyanic acid 2.6% and taurocarbamic acid 61.4%; cystinic polypeptides with a small amount of cystine 25%; methionic polypeptides with a small amount of methionine 11%.—C. LEFEVRE and M. RANGIER. *J. pharm. chim.*, 27 (1938), 204–220. (S. W. G.)

Vitamin A—Oxidation of, in the Oils and Its Prevention. Vitamin A was more quickly oxidized in unsaturated oils. The oxidation of vitamin A increased with the degree of unsaturation. The hydrogenated sardine oil prevented the oxidation of vitamin A. When hydroquinone, pyrogallol, catechol and α-naphthol were added to the oils, the oxidation of vitamin A was markedly prevented. The addition of thymol, tannic acid and creosote to the liver oil gave a slight effect, while that of organic acids rather accelerated the oxidation. When the liver oil was treated with the smoke produced from the burning oak tree, the autoxidation of the oil was retarded and thereby the oxidation of vitamin A was prevented.—Y. MASUDA. *J. Agr. Chem. Soc. Japan*, 14 (1938), 518–524; through *Chem. Abstr.*, 32 (1938), 7211. (F. J. S.)

Vitamin A—Spectrographic Studies on the Antimony Trichloride Reaction for. II. Influence of Oxidizing Agents on the Reaction. A definite maximum of the 603 mμ band of the antimony trichloride reaction with cod liver oils could not be obtained either by controlled oxidation or by the addition of oxidants before or after addition of the antimony trichloride. The addition to the reagent of small amounts of chlorine, bromine or antimony pentachloride resulted in higher 603 mμ absorption values than were obtained by any other method for all oils in all stages of oxidation. The ratio of $E_{603\ m\mu}$ to $E_{572\ m\mu}$ increased and approached that of pure vitamin A preparations, 1.92. Apparently the inhibition of the 603 mμ band was almost completely removed by the oxidizing reagent. The addition of bromine (0.1 Gm./liter) to the antimony trichloride solution gave the best results. The relation between the biological value and $E_{603\ m\mu}$ followed the equation: B. V. = 6.5 $(E_{603\ m\mu})^{0.75}$.—O. NOTEVARP and H. W. WEEDON. *Biochem. J.*, 32 (1938), 1054–1063; through *Chem. Abstr.*, 32 (1938), 8467. (F. J. S.)

Vitamin A_2—Physico-Chemical and Biochemical Study. Fresh-water fish liver oils contain, together with vitamin A, a homologue with an adsorption band after treatment with antimony trichloride having a maximum at 693mμ. This oil appears to be a specific product of the liver metabolism of certain species of fresh-water fish, since this homologue is never found in the liver of mammals or other land animals, but yet is readily adsorbed form the intestine of these animals. The absence of this vitamin in animals other than fish is explained simply by the absence of vitamin A_2 from the food. Vitamin A_2 gives with antimony trichloride a two-banded spectrum with maxima at 693 and 650mμ, but in unsaponifiable fractions the latter band is entirely masked; in some natural and in partly saponified oils it may be seen owing to the presence of some inhibitor which diminishes the intensity of the 693mμ band. This 650mμ band causes some considerable adsorption at 620mμ and thus the vitamin A determined by adsorption at this wave-length consists to some degree of vitamin A_2. The ultra-violet adsorption spectrum shows bands at 345 and 280x.—E. LEDERER and F. H. RATHMANN. *Biochem. J.*, 32 (1938), 1252; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 637. (F. J. S.)

Vitamin C Content of Liver and Muscle of Some Indian Fresh-Water Fish. The vitamin C content of the muscle and liver of different Indian fresh-water fish was estimated by extracting

5- or 10-Gm. samples with trichloroacetic acid and titrating with 2,6-dichlorophenol-indophenol. The contents in mg. per 100 Gm. are tabulated for 12 varieties. In bigger fish of a given species, both the liver and muscle are poorer in vitamin C. After standing for 30 minutes in 5% trichloroacetic acid, the vitamin C content is not greatly diminished. The highest content (160 mg. per 100 Gm.) was found in the liver of *Labeo rohita* and the lowest (16 mg. per 100 Gm.) in that of *Wallago attu*. The muscle of *Clupea ilisha* contained a maximum of 27.65 mg. per 100 Gm. and that of *Wallago attu* a minimum of 6.0 mg. per 100 Gm.—M. N. RUDRA. *J. Indian Chem. Soc.*, 13 (1936), 740–742; through *Chimie & Industrie*, 39 (1938), 323. (A. P.-C.)

Vitamin C—Determination of, in Milk. The preparation of 2:6-dichlorophenol-indophenol from 2:6-dichlorobenzoquinonechloroimide and phenol is described. The test is carried out on 10 cc. of milk to which 25 cc. of 0.1*N* sulfuric acid have been added. The mixture is titrated with a 0.02% solution of the dye until a faint pink color exists for thirty seconds. The dye is standardized against a 0.02% solution of ascorbic acid (I). Blanks are carried out on the milk after oxidizing I with 2 p. p. m. of copper as copper sulfate for 12–24 hours. Details of the calculations are given.—O. F. GARRETT. *J. Milk. Tech.*, 1 (1938), 37–39, No. 3; through *J. Soc. Chem. Ind.*, 57 (1938), 970. (E. G. V.)

Vitamin C—Importance of, in Nutrition. Use in Soldiers' Rations. A review of the salient points of a paper by R. Vetter and W. Winter appearing in *Zeitschrift für Vitaminforschung*, 7 (1938), No. 2 April including the following topics: adult requirements of vitamin C, natural sources of vitamin C, example of the estimation of the daily vitamin C uptake in foods, C avitaminosis and some military diets with suggestions for adding vitamin C.—J. THOMANN. *Schweiz. Apoth.-Ztg.*, 76 (1938), 413–418. (M. F. W. D.)

Vitamin C—Oxidation of, Protective Action of Sugars as Regards. When aqueous solutions containing 25 mg. of ascorbic acid per 100 cc., and at a p_H value of 3.45, were allowed to stand at 20° C., 80% of the vitamin had been destroyed at the end of 120 hours. If 5% of sugar (mono- or di-saccharides) was added, the destruction of the vitamin was considerably retarded; *e. g.*, with glucose, the loss was only 27% after 120 hours. The phenomenon is observed even at high temperature (100° C.) and at various ascorbic acid and glucose concentrations. The protective action of glucose at high temperature was also observed on cow milk to which had been added 2.5 mg. of ascorbic acid per 100 cc.—A. MUNILLA and F. BOGELSINGER. *Arch. Soc. Biol. Montevideo*, 7 (1937), 281–288; through *Chimie & Industrie*, 39 (1938), 517. (A. P.-C.)

Vitamin C—Stability of, in Dried Hipberry Powder. Biological and chemical investigation showed that dried hipberry powder, kept in an airtight metal box, retained its full antiscorbutic activity during 6 months. About 2 months later, some loss in activity of the powder was observed, the loss, however, may have been due to the frequent opening of the box during the investigation and to the increase in the amount of air over the powder.—N. SHEPILEVSKAYA. *Voprosy Pitaniya*, 6 (1937), No. 1, 65–71; through *Chimie & Industrie*, 39 (1938), 773. (A. P.-C.)

Vitamin C—Synthesis of, Starting from Sucrose. The process comprises 8 stages: (1) inversion of sucrose by dilute acid into glucose and fructose; (2) reduction of the invert sugar into sorbitol and mannitol by means of sodium amalgam; (3) oxidation of these alcohols by means of bromine water into a mixture of glucose, mannose, fructose, gulose and sorbose; (4) fermentation with brewers' yeast which destroys the dextrorotatory sugars and leaves the levorotatory sugars; (5) conversion of the gulose and sorbose into *l*-gulosazone by means of phenylhydrazine; (6) decomposition of the osazone into *l*-gulosone by means of benzaldehyde; (7) oxidation of the gulosone by means of bromine water into 2-keto-*l*-gulonic acid; (8) esterification of this acid by means of trimethyl *o*-formate, enolization of the ester by means of sodium methylate and neutralization with alcoholic hydrochloric acid.—P. P. T. SAH. *Ber. Deut. Chem. Ges.*, 70 (1937), 498–499; through *Chimie & Industrie*, 39 (1938), 323. (A. P.-C.)

Vitamin D_4—Crystalline. The product from the irradiation of 22-dihydroergosterol yielded vitamin D_4 dinitrobenzoate, $C_{35}H_{48}N_2O_6$, which melts at 135° to 136° C. and has a specific rotatory power at 18° C. (in acetone solution) of 94.5°. On saponification, crystalline vitamin D_4 was isolated, $C_{28}H_{46}O$ which melts at 107° to 108° C., has a specific optical rotation at 18° C. of −89.3° and shows an absorption maximum at 265 mμ. A structure for vitamin D_4 is given analogous to that of vitamin D_2.—A. WINDAUS and G. TRAUTMANN. *Hoppe-Sayler's Z. Physiol. Chem.*, 247 (1937), 185–188; through *Chimie & Industrie*, 39 (1938), 518. (A. P.-C.)

Vitamin L. Rats show deficient lactation, but normal growth, pregnancy and parturition, on a diet containing 75 Gm. mixture of polished rice powder, 10 Gm. butter, 10 Gm. fish protein and 5 Gm. McCollum's salt mixture, adequately supplemented with acid earth adsorbate of yeast extract (vitamin B complex). In order to secure normal lactation, the diet must be supplemented by factor L_1 and factor L_2, two hitherto unidentified substances. L_1 has been separated from beef liver extract by removing vitamin B complex by adsorption on acid earth at p_H 3–4, precipitating from the non-adsorbable fraction with barium hydroxide and methyl alcohol, removing water-soluble matter (glycogen) from the precipitate, and finally precipitating from the aqueous solution with $WO_3.2H_3PO_4$. This crude precipitation proved active in amounts of less than 50 mg. per rat per day. Factor L_2 was obtained from baker's yeast by similarly removing from the extract vitamin B complex, precipitating from the filtrate with $WO_3.2H_3PO_4$ and again with silver nitrate and barium hydroxide. The precipitation was effective in daily amounts of 15 mg. per rat. Beef liver does not contain L_2 while baker's yeast seems devoid of L_1. The exact physiological rôle of L-factors is not clear. However, if the lactation mechanism is established at the first birth in the presence of the L-factors, these are no longer needed for the second lactation in so large an amount. These factors must be regarded as vitamins, since they are provided only by diet and must be effective in very minute amounts. It is therefore proposed to call them vitamin L_1 and vitamin L_2, together consitituting vitamin L complex.—W. NAKAHARA, F. INUKAI and S. UGAMI. *Science*, 87 (1938), 372; through *Squibb Abstr. Bull.*, 11 (1938), A-929. (F. J. S.)

Vitamins—Functional Therapeutics with Minute Doses of. A general discussion, dealing more particularly with the minuteness of the amounts of vitamins required by the animal organism.—H. SIMONNET. *Rev. Pathol. Comp. Hyg. Gén.*, 37 (1937), 58; through *Bull. Soc. Sci. Hyg. Aliment.*, 25 (1937), 427–429. (A. P. -C.)

Vitamins—Knowledge of. The new vitamins, L_1 and L_2. A review of the vitamin B complex with special reference to the work of Nakahara, Inuka, Kato and Ugami on the lactation factors, L_1 and L_2.—A. RICHARD BLISS, JR. *Drug Cosmetic Ind.*, 42 (1938), 714–715. (H. M. B.)

Wine and Cinchona Appetizers. Methods used in France at the present time for their manufacture are outlined. The composition (solids, alcohol, alkaloids) of 12 of the best-known French brands (not named) is given. French regulations concerning these products are briefly discussed.—A. GUILLAUME and MISS SCHWEITZER. *Ann. Fals.*, 30 (1937), 485–491. (A. P.-C.)

Yeast Nutriment Containing Liver Oil. Oil is extracted from soya beans. The residue is impregnated with liver oil. Sugar solution and yeast is added and the mixture is maintained at 50° to 60° C. to autolyze the yeast into a semi-fluid state. The resulting product is mixed with yeast powder and dried.—MATAJIRO KAWATA, assignor to KABUSHIKI KAISHA WAKAMOTO HONPO EIYO TO IKUJI NO KAI. U. S. pat. 2,120,410, June 14, 1938. (A. P.-C.)

Zinc in—Methods of Determining Small Quantities of, Foodstuffs. For quantities of zinc greater than 0.5 mg., Galetti's method as modified by Kohn and Keydi can be used; it consists in precipitating the zinc as ferrocyanide complex by means of potassium ferrocyanide containing a certain amount of potassium ferricyanide, in presence of diphenylamine as oxido-reduction indicator. In titrating amounts of zinc less than 1 mg., it is advisable to add 1 to 2 mg. of zinc and then correct the result for the amount added. Spacu's method is more complicated, even if modified to make the final determination colorimetrically. Under certain conditions, however (modification involving evaluation of the volume of the precipitation), it can be used for routine analyses.—I. D. SIMONOVICH. *Voprosy Pitaniya*, 6 (1937), No. 1, 113–122; through *Chimie & Industrie*, 39 (1938), 765. (A. P.-C.)

ANALYTICAL

Acetaldehyde—Determination of, in Wines. A modified Ripper procedure, a modified hydroxylamine procedure, and the Jaulmes and Espezel procedure of determining aldehydes were compared. In pure acetaldehyde solutions the three procedures gave comparable results. In the presence of 12% of alcohol (added as 95% grain alcohol) the recovery by the modified Ripper procedure was reduced, although it could be increased by increasing the reaction time. In the presence of sulfites only the Jaulmes and Espezel procedure gave fairly complete recovery. However, in no case was the recovery as complete as reported for higher concentrations of aldehyde.—M. A. JOSLYN and C. L. COMAR. *Ind. Eng. Chem., Anal. Ed.*, 10 (1938), 364–366. (E. G. V.)

Acetylsalicylic Acid—Physical, Chemical and Pharmacological Study of. An experimental comparison of two samples of German and of Italian manufacture, respectively, showed them to be identical in all respects.—P. DI MATTEI. *Arch. Ital. Sci. Farmacol.*, 5 (1936) 385–415; through *Chimie & Industrie*, 39 (1938), 722. (A. P.-C.)

Alcohol in Liqueur Wines and Vermouth—Determination of, by Oxidation with Chromic Acid. After distillation of the sample a portion of the distillate is oxidized with potassium dichromate and sulfuric acid under standard conditions. The excess of potassium dichromate is titrated with ferrous ammonium sulfate.—L. PARONETTO. *Annali. Chim. Appl.*, 28 (1938), 164–169; through *J. Soc. Chem. Ind.*, 57 (1938), 966. (E. G. V.)

Allyl Mustard Oil—Volumetric Estimation of, in Spiritus Sinapis. Kaiser's ammonium sulfate salting out method is first applied to the sample, and the separated oily layer is then treated with ammonia, thus converting the mustard oil into thiosinamine which is soluble in water. The respective volumes are readily observed after some practice.—C. A. ROJAHN and A. STEICHELE. *D. Apotheker-Ztg.*, 51 (1936), 1751–1752; through *Chimie & Industrie*, 39 (1938), 718. (A. P.-C.)

Arsenic and Copper—Determination of, in Insecticides. Iodometric determination of arsenic is preferred. Copper is best determined by electrolytic precipitation.—R. DE CASTRO AYRES DO NASCIMENTO. *Rev. Chim. Ind.*, 7 (1938), 100–108; through *J. Soc. Chem. Ind.*, 57 (1938), 961. (E. G. V.)

Arsenic in—Comparative Evaluation of Methods for Determining, Drug Mixtures. The accuracy and practicability of a number of methods are compared.—A. SMIRNOVA. *Sovet. Farm.*, 5 (1934), 30–35, No. 7; through *J. Soc. Chem. Ind.*, 57 (1938), 980. (E. G. V.)

Ascorbic Acid—Determination of, by Means of the Colorimeter. The determination of the end-point is the chief difficulty in the titrimetric estimation of ascorbic acid. The colorimetric method here proposed eliminates this. Two-, 5- or 10-cc. samples are placed in 150-cc. Erlenmeyer flasks, and 20 cc. twice-distilled water, 1 cc. glacial acetic acid (I), and 2 cc. sodium oxalate solution (II) saturated in the cold are added. Then an excess of 0.001 *N* Tillmans reagent (III) is run in from a buret and allowed to act for one minute on the sample. The solution is then extracted with 25 cc. pure $Ph(Me)_2$ (IV) and the layers are allowed to set. In a second flask are placed 22–30 cc. twice-distilled water, according to whether 2, 5 or 10 cc. of sample was taken, then 2 cc. II, 1 cc. I and an amount of 10% phosphoric acid corresponding to that used in preparing the sample are added. Then III is added as above and the solution extracted with IV. The solutions are dried with anhydrous sodium sulfate and compared in the colorimeter. The difference between reading on the blank and that for the sample gives the number of cc. III used for the sample. The agreement of the method with that of Tillmans is very close. Details are given for the preparation of gladiolus leaves for the determination of ascorbic acid.—F. FOLKMANN. *Österr. Chem.-Ztg.*, 41 (1938), 193–194; through *Chem. Abstr.*, 32 (1938), 6180. (F. J. S.)

Balsams, Resins, Gum Resins and Tinctures. A review dealing with general information, uses, tests and properties.—L. LABAUNE. *Riechstoff-Ind. u. Kosmetik.*, 13 (1938), 91–102. (H. M. B.)

Cacothelin as a Reagent for Ascorbic Acid. The yellow color of an aqueous solution of cacothelin is changed to a lilac by reducing agents. Ascorbic acid produces this change in a few minutes at room temperature in the presence of hydrochloric acid; thus 4.5 cc. 1:1000 ascorbic acid solution +0.5 cc. *N* hydrochloric acid plus several drops 0.2% aqueous solution cacothelin so react, under like conditions cysteine and glutathione require heating in a water bath; this reaction is given at water bath temperature by ascorbic acid at a concentration of 1:10,000, but not by cysteine and glutathione, and is also given at that temperature by 4 cc. 1:50,000 ascorbic acid plus 1 cc. 37 % hydrochloric acid. Hydrogen sulfide may produce the color change, but is removed on heating with hydrochloric acid. Oxidizing agents (hydrogen peroxide, $K_3FeC_6N_6$, $Hg(OAc)_2$, quinone) interfere with the reaction.—L. ROSENTHALER. *Z. Vitaminforsch.*, 7 (1938), 126–128; through *Chem. Abstr.*, 32 (1938), 6280. (F. J. S.)

Calcium Gluconate—Tests for the Purity of. The properties of calcium gluconate are described. Identity tests include the detection of calcium, gluconic acid by the method of Fischer and Passmore (*Ber. Deut. Chem. Ges.*, 22 (1889), 2728) and optical rotation of 6.5° (in 10% solution). Tests for 13 impurities which might occur in calcium gluconate are described. Quantitative tests include determination of moisture (which should not exceed 0.1%) and of calcium (de-

scribed in detail).—S. HERMANN and P. NEUSCHUL. *Chem. Ztg.*, 60 (1936), 1036–1037; through *Chimie & Industrie*, 39 (1938), 719. (A. P.-C.)

Calcium Hypophosphate—Determination of, by Means of Potassium Permanganate. Tests on aliquot portions of a solution of calcium phosphate tested with potassium permanganate according to the Italian Pharmacopœia show that dilution increases the potassium permanganate consumption and causes high results.—E. PRINCIVALLE. *Ann. chim. applicata*, 27 (1937), 538–539; through *Chem. Abstr.*, 32 (1938), 6175. (F. J. S.)

Choline and Acetylcholine—Estimation of. Choline was estimated by first precipitating it as the reineckate and then as the enneaiodide, which was determined colorimetrically. In determining acetylcholine, it was first necessary to remove the choline. This was possible through use of the different solubilities of the above salts of the two compounds. The sensitivity of the method for acetylcholine was 1 in 10^6 and for choline 5 in 10^6. The recoveries of acetylcholine from concentrated tissue extracts were 90–100%. There was good agreement between the results obtained by this method and by the biological method.—F. H. SHAW. *Biochem. J.*, 32 (1938), 1002–1007; through *Chem. Abstr.*, 32 (1938), 8467. (F. J. S.)

Citric Acid—Quantitative Precipitation of. When a solution of citric acid, containing suitable amounts of calcium and phosphate, is made alkaline, the citric acid is quantitatively precipitated. Calcium must be present in excess of the amount necessary to react with phosphate and citrate. Increasing amounts of phosphate are required to precipitate larger amounts of citrate.—A. C. KUYPER. *J. Biol. Chem.*, 123 (1938), 405; through *Squibb Abstr. Bull.*, 11 (1938), A-886. (F. J. S.)

Cod Liver Oil—Iodine Value of Medicinal. The iodine value for cod liver oil given in the Belgian Pharmacopœia (140 to 156) is too low; the value of 155 to 175 is recommended. The method of Hanus gives higher values than that of Hübl. The following test for the presence of vitamin A is recommended: to 5 cc. of purified chloroform (washed with water and dried with anhydrous potassium carbonate) in a test-tube add 2 drops of cod liver oil then 2 cc. of a saturated solution of antimony trichloride in chloroform; an intense blue color is produced and persists for 5 to 10 minutes, then changes to violet and finally to brown. A longer period of contact in determining the iodine value is suggested. N. BERGER.—*J. Pharm. Belgique*, 18 (1936), 993–996, 1011–1013; through *Chimie & Industrie*, 39 (1938), 716. (A. P.-C.)

Codeine—Colorimetric Microdetermination of. Morphine (I), codeine (II) and narceine are isolated from opium and I is determined by the methods of Ginzberg and Yurashevskii. The I plus II content is determined as follows: add 1 cc. of 2% hydrochloric acid, diluted to 10 cc. with water, to 5 cc. of solution. Repeat with 3 cc. of standard 0.05% I solution of the same acetic acid concentration (*loc. cit.*) as the test solution, add 4 cc. of bromine to 5 cc. of 10% sodium hydroxide and dilute to 50 cc. with water; add 2 drops of this solution to each solution, followed by 2 drops of 3% hydrogen peroxide. Add 1 cc. of 25% aqueous ammonia to each solution after 25 seconds. Add 5 cc. of test solution to the standard and 5 cc. of water to the test solution (to compensate for coloration of the extract) and compare the colorations. The actual I content is deducted from the apparent I content. The difference times 1.83 equals the II content. A modification for analysis of poppy heads is described.—N. YURASHEVSKII. *Org. Chem. Ind.* (U. S. S. R.), 3 (1937), 29; through *Squibb Abstr. Bull.*, 11 (1938), A-1091. (F. J. S.)

Comb Fern—Extract of. Roots of *Nephrodium cristatum* (L.) Michx. yield 6–9.9% of ether extract which is mostly liquid but occasionally salve-like. The average content of crude filicin in the crude drug is 2.32 and 30.11% in the extract which also contains 44.1 fat and 11.99% resins. The crude filicin consists chiefly of albaspidin (melting at 151–152°) with small quantities of flavaspidic acid and aspidin. The nonvolatile acids consist of oleic 82.29 and linolic 17.71%. The resin has acid number 52.3, saponification number 217.5, ester number 165.2, iodine number 78.6. The toxic action of the extract on fishes (*Carassius vulgaris*) is more pronounced than that of worm fern.—J. MAIZITE. *Acta Univ. Latviensis, Kim. Fakultat. Ser.*, 4 (1938), No. 1–5 (in Lettish 115–128a, in German 129b–d); through *Chem. Abstr.*, 32 (1938), 7213. (F. J. S.)

Copper—Determination of, in Biological Material. The method herein described for the determination of copper in biological material consists, fundamentally, of the addition of a saturated solution of sodium pyrophosphate solution to a solution of the ashed organic material and then adding a 1% carbamate solution and amyl alcohol. The carbamate forms a complex with the copper which is removed by pipetting off the alcohol layer. The copper is determined quanti-

tatively by comparing the yellow copper complex with a standard copper complex solution.—C. D. STEUSSIJ. *Biochem. Z.*, 296 (1938), 355; through *Squibb Abstr. Bull.*, 11 (1938), A-125. (F. J. S.)

Coramine, Cardiazol and Orthoform—Preparation of Iodobismuthates of. These salts are obtained by the use of Dragendorf's iodobismuthate reagent. In the case of coramine (diethylamide of pyridine carboxylic acid) there is obtained a fine precipitate resembling the iodobismuthates obtained with alkaloids, but containing more bismuth (27% as compared with 23.2% in the quinine salt). The iodobismuthates of cardiazol (pentame thylenetetrazol) and of orthoform (methyl-*m*-amino-*p*-hydroxybenzoate), on the other hand, contain 21.8 and 18.0% bismuth, respectively.—A. MIHALOVICI and L. ULLMANN. *Bul. Soc. Stiinte Farm. Romania*, 1 (1936), No. 4, 36–39; through *Chimie & Industrie*, 39 (1938), 722. (A. P.-C.)

Drop Analysis—Use of, for Investigation of Medicaments. II. New Test for Amines, with Especial Consideration of *p*-Phenylenediamine, and a New Reaction for Proteins. The formation of colored Schiff's bases with furfuraldehyde (I) or *p*-$NMe_2.C_6H_4.CHO$ (II) in glacial acetic acid provided a micro-test for primary and secondary amines. I gives mainly red to violet, and II orange-yellow to red, products. Colors and limiting sensitivities for numerous amines are tabulated. Amino acids, but not tertiary amines, also react. The tests can be used with advantage in detecting adulteration of drugs and remedies; an example in which the adulterant was *p*-$C_6H_4(NH_2)_2$ is quoted. Primary aromatic amines can be detected by the formation of brown, red or violet condensation products with a saturated acetic acid solution of 5-nitroso-8-hydroxyquinoline or, with less sensitivity, with a 10% glacial acetic acid solution of *p*-$NMe_2.C_6H_4.NO$. Condensed-ring systems such as $C_{10}H_7.NH_2$ react best. Primary and secondary amines also yield colored condensation products with a saturated solution of chloranil in dioxane; sensitivities and colors are tabulated. Amino acids and proteins do not react, but phenols interfere by giving red to violet colors. Free inorganic and organic bases must first be neutralized with acetic acid. Aldehydes and carbohydrates are without effect. This test can be used on paper. II in glacial acetic acid provides a test for proteins in presence of concentrated hydrochloric acid.—O. FREHDEN and L. GOLDSCHMIDT. *Mikrochim. Acta*, 1 (1937), 338; through *Squibb Abstr. Bull.*, 11 (1938), A-942. (F. J. S.)

Drugs—Researches on. Comments are made on the monographs for aristol, caffeine citrate, solution of antimony chloride, lithium salicylate, manganese hypophosphite and manganese lactate of the 5th Supplement and precipitated calcium carbonate of the German Pharmacopœia VI.—KONRAD SCHULZE and WOLFGANG HAUPT. *Deut. Apoth. Ztg.* 53 (1938), 796–798. (H. M. B.)

Ebur Ustum Album. Bone ash preparations are examined. Assay results for calcium oxide, phosphate, magnesium oxide, nitrogen and iron are tabulated. Methods of determining fluorine, arsenic and cyanide in bone ash are considered. A monograph on bone ash citing purity rubrics is issued by the Danish Apothecaries Control Laboratory and formulæ of the Danish Apothecaries Society for granules and tablets of bone ash are cited. Fluoride is determined by the colorimetric method of Sanchis (*Ind. Eng. Chem., Anal. Ed.*, 6 (1934), 134.) after distilling the fluoride from the ash acidified with sulfuric acid (indicator: zirconium nitrate and sodium alizarine sulfonate). After fusing the ash with ammonium nitrate and dissolving the melt in hypophosphite, arsenic is determined with stannous chloride. Cyanide is detected by the usual test with ferrous sulfate in a distillate from the ash with sulfuric acid.—K. K. JENSEN. *Arch. Pharm. og Chemi.*, 45 (1938), 483. (C. S. L.)

Ether—Purification of. Aldehydes are removed from ether by heating the ether with a solution of an aryl hydroxide in a solvent comprising in major proportion a nonvolatile water-miscible alcohol.—WALTER G. CHRISTIANSEN and WM. A. LOTT, assignors to E. R. SQUIBB & SONS. U. S. pat. 2,121,019, June 21, 1938. (A. P.-C.)

Fats—Determination of Glycerol in. The "direct saponification" method (refluxing with aqueous potassium hydroxide for 1¼ hours) works well for highly acid oils, but fails, owing to incomplete saponification, with oils of low free acidity. The *A. O. C. S.* proposed method is better, but the same trouble is liable to occur in the case of cottonseed and hydrogenated cottonseed oils. Saponification of the oil in a Carius tube seems to offer possibilities, but more work is needed to overcome certain difficulties, including the introduction of silicon dioxide by corrosion of the glass. A rapid accurate modification of the "direct" method is proposed, in which the saponification of

the sample is accelerated by addition of small amounts of stearic acid (I) or bentonite as catalyst. so that it requires only 20 minutes at 100–105° to attain completion. The *A. O. C. S.* Committee method for the oxidation and titration of the liberated glycerol with ferrous ammonium sulfate is preferred to the iodometric method. A correction is added stating that the fat containing I should be heated to 110–120° for tallow and coconut oil and to 140–150° for cottonseed oils, by immersing in an oil bath at 160–150° for 1 and 3 minutes, respectively.—A. F. NELSON, P. DECOURCY, H. MATHEWS and C. J. ROBERTSON. *Oil and Soap*, 15 (1938), 10–14, 44; through *J. Soc. Chem. Ind.*, 57 (1938), 680. (E. G. V.)

Ferric Chloride—Complete Removal of, from Solution. The sample is oxidized to convert ferrous to ferric iron. It is transferred to the extraction apparatus with 100 cc. of 8 to 9 N hydrochloric acid, the apparatus is set up with 200 cc. of diisopropyl ether in the flask, and the ether is set to boil. The vapors condense to a liquid which falls through the funnel and escapes at the bottom of the extraction vessel. The droplets make their way to the surface of the ferric chloride solution and, saturated with ferric chloride, finally spill over into the flask. When very large amounts of iron are being removed, it may be necessary to replace the diisopropyl ether after about an hour in order to reduce foaming. Beads are added to reduce bumping. The operation is complete in about 16 hours (over night), but all but a minute amount of iron is probably out at the end of 8 hours. The process is carried out in a weak artificial light or in darkness.—S. E. Q. ASHLEY and W. M. MURRAY, JR. *Ind. Eng. Chem., Anal. Ed.*, 10 (1938), 367–368. (E. G. V.)

Fluidextract of Ergot and Its Reactions. Sixteen fluidextracts were examined for appearance, odor, reaction, density (20° C.), dry residue, Mayer's reaction, cornutin reaction, Oettel's reaction and hydrochloric acid glass rod test. Results are given in a table.—W. PEYER. *Deut. Apoth. Ztg.*, 53 (1938), 823–824. (H. M. B.)

Fluorine Compounds—Insecticidal, Methods of Analysis of. A description of the methods for the determination of "active constituents" of sodium fluoride, sodium and barium fluosilicates and cryolite used as insecticides, and also for determining the behavior of suspensions of the powders in a liquid medium.—F. CHERPILLOD and J. DELEUZE. *Compt. Rend. 17me Congr. Chim. Ind., Paris* (Sept.-Oct. 1937), 613–618. (A. P.-C.)

Gas Analysis—New Absorption Vessel for. The new absorber combines the principles of the Hahan and of the Orsat. The gas is led into the vessel through a tube which opens near the bottom, and passes upward through the reagent in small bubbles which collect in the upper portion of the chamber; a series of horizontal baffles or disks are provided around the inlet tube, which fulfil the same function (but more efficiently) as the vertical tubes in the Orsat, or the glass beads or similar devices provided in other apparatus to increase the contact surface between the gas and reagent. Comparative tests showed the superiority of the new absorber over the Orsat and the Hahn.—MME. C. ROY-POCHON. *Compt. Rend. 17me Congr. Chim. Ind., Paris* (Sept.-Oct. 1937), 448–450. (A. P.-C.)

Glycerol—Analysis of. Non-volatile organic matter is determined by weighing 7–8 Gms. in a Petri dish and evaporating to dryness at 170° in an electric oven. 1–2 cc. of water are added to the residue and evaporated, first at 100° and then at 170° to constant weight. Determinations in the Petri dish give high results.—AVERKO-ANTONOVITSCH and G. KUZNETZOVA. *Maslob. Shir. Delo*, 11 (1935), 607–608; through *J. Soc. Chem. Ind.*, 57 (1938), 935. (E. G. V.)

Glycerol Lyes—Normal and Abnormal Impurities of. The impurities generally occurring in glycerol lyes do not interfere with the production of a glycerol suitable for nitrating or for pharmacopœial purposes. An abnormally high sulfur content, due chiefly to the use of hydrosulfite for the decolorization of fats, renders the purification of glycerol lyes much more difficult, and it would be highly advisable to revise the specifications established in 1911 which do not provide for a maximum hydrosulfite content.—J. PEPIN-LEHALLEUR. *Compt. Rend. 17me Congr. Chim. Ind., Paris*, (Sept.-Oct. 1937), 44–46. (A. P.-C.)

Indicator—New, for Pharmaceutical Investigations. A mixture of alizarinsulfonic acid and methylene blue is suitable for the investigation of the purity of distilled and twice distilled water, and for the alkalimetric and acidimetric determinations of alkaloids in drugs. The mixed indicator shows a light green color in acid medium changing to bright violet in alkalies.—E. PERCS. *Ber. ungar. pharm. Ges.*, 14 (1938), 26; through *Squibb Abstr. Bull.*, 11 (1938), A-891. (F. J. S.)

Iodine—Determination of, in Small Amounts of Thyroid Substance. A simple and rapid method for the determination of a few γ of iodine in thyroid material has been devised, requiring

no elaborate equipment. Combustion of 1–25 mg. of the dry thyroid substance (or 5–100 mg. fresh tissue) is carried out with potassium hydroxide (0.5–1.0 cc. saturated solution) and potassium nitrate (1–5 drops 10% solution) in a 13 x 100 mm. rimless Pyrex test-tube. The contents are dried in an oven at 110°. The open end of the tube is then attached by an asbestos seal to the enlarged end of the intake tube of a 125-cc. pyrex gas washing bottle containing a dilute solution of alkali. Gentle suction is applied at the outlet end of the absorber, while the lower portion of the combustion tube, containing the charge, is heated to cherry redness in a Bunsen flame for 10–20 minutes. After the destruction of the organic matter, the combustion tube is broken into small fragments in the neck of a 125-cc. Claissen flask by a four-cornered tapering steel tool especially designed. The salts in the distilling flask are dissolved in the liquid from the gas washing bottle and an appropriate volume of water with which the absorber has been washed. The iodine is then distilled and the determination completed as described by Stimmel and McCullagh. [*S. A. B.*, 9 (1936), A-1953.] The accuracy of the method has been tested with potassium iodide, thyroxin, diiodotyrosine and thyroid material of known iodine content. The values for iodine check closely (± 5.0%) with those obtained by the analysis of larger amounts of material by the Kendall iodine method. The procedure has been successfully applied to the analysis for total iodine and for the thyroxin iodine fraction of the thyroid glands of rats subjected to a variety of experimental conditions.—N. F. BLAU. *Am. Soc. Biol. Chemists, proc.* (3/30–4/2/38); through *Squibb Abstr. Bull.*, 11 (1938), A-1010. (F. J. S.)

Iodine—New Method for Determination of, in Five Cubic Centimeters of Blood or Other Biological Material. A microcombustion tube and distillation method for isolating the iodine in 5 Gm. of biological material (containing more than 0.2 γ) is described. The electrometric titration method used is so refined that it appears to be 1000 times as sensitive as the starch-iodide method.—J. F. MCCLENDON, A. C. BRATTON, R. V. WHITE and W. C. FOSTER. *J. Biol. Chem.*, 123 (1938), 699–710; through *Chem. Abstr.*, 32 (1938), 8464. (F. J. S.)

Lead Ions—Detection of, in Lead Compounds of the Homeopathic Pharmacœpeia. The several tests are carried out with official reagents yielding sulfide, sulfate and iodide precipitates, respectively.—G. HOFFMANN. *Süddeut. Apoth.-Ztg.*, 78 (1938), 347–348; through *Chem. Abstr.*, 32 (1938), 6003. (F. J. S.)

Lead—Standardization of Methods for the Determination of, in Food Products. The colorimetric method based on the production of a brown color by the addition of sodium sulfide to the lead solution gives the most accurate results, and it is more rapid and sensitive than the chromate method. The recommended technic consists in destroying organic matter with sulfuric-nitric acid mixture, concentrating to eliminate nitric acid, diluting with alcohol-water mixture and allowing to settle 24 hours, filtering, dissolving the lead sulfate in boiling sodium acetate solution containing 1% of 30% acetic acid, making alkaline with sodium hydroxide, adding gelatin as protective colloid, adding sodium sulfide solution, making to definite volume and comparing colorimetrically with similarly treated standard solutions.—E. N. SERGEEVA. *Voprosy Pitaniya*, 6 (1937), No. 1, 103–112; through *Chimie & Industrie*, 39 (1938), 765. (A. P.-C.)

Menthyl Acetate and Acetylized Peppermint Oil—Hydrolysis of. Report is made of a study in which the volume of alcoholic potassium hydroxide was reduced below the 50 cc. specified by the U. S. P. and temperatures were varied. Velocity of the hydrolysis reaction has been observed to be about doubled for a ten-degree increase in temperature. There was lack of agreement in the results for acetylized peppermint oil indicating either counter reactions or side reactions between potassium hydroxide and constituents other than menthyl acetate. It is apparent that a fair excess of base is necessary and that heating to fairly high temperature is necessary for at least one hour to insure concordant results.—LAWRENCE H. BALDINGER. *J. Am. Pharm. Assoc.*, 27 (1938), 581. (Z. M. C.)

Methanol—Determination of. The principle of the method consists in subjecting the ethanol and methanol to moderate oxidation by potassium permanganate in sulfuric acid solution to convert them to the corresponding aldehydes, and estimating formaldehyde colorimetrically through the violet color produced with morphine. The technic is described in detail. Crude, unrectified, fermentation alcohol from rye and potatoes was found to contain consistently small quantities of methanol (of the order of 0.1% or less); alcohol obtained by fermentation of cellulosic wastes contained appreciable amounts of methanol.—JEAN GRAMADZKIS. *Compt. Rend. 17-me Congr. Chim. Ind., Paris* (Sept.–Oct. 1937), 794–797. (A. P.-C.)

Methyl and/or Isopropyl Alcohol—Method for the Identification of, in Alcoholic Preparations. Methods are reviewed and the xanthogenate reaction and the corresponding iodine values are recommended as a means of identification of the above alcohols in preparations.—WALTER MEYER. *Riechstoff-Ind. u. Kosmetik.*, 13 (1938), 131–135. (H. M. B.)

Methylxanthine—Some Microchemical Reactions of. Denigé's method for identifying methylxanthines is recommended. By the use of this method crystals of methylxanthines were identified in mate leaves and in guarana.—C. GUIMARÃES and O. P. PÓVOA. *Pub. pharm. rev. trimestr.* (São Paulo), 3 (1938), 13–15, 17–20; through *Chem. Abstr.*, 32 (1938), 5577. (F. J. S.)

Microsublimation—Detection of Organic Dyestuffs by. Many organic pigments can be identified by microscopical examination of the sublimate by short heating to 210–300°. Dyestuffs that contain sulfonic acid groups, or form laquers with metals or are linked with tannin, katanol, tamol or phosphotungstate do not usually sublime. Some of the characteristic sublimates given by the following are described and illustrated: Indian yellow G, Dianil yellow G, Hansa yellow 10G, 5G, 3G, G, GGR extra, GR, Lithol fast-yellow RN, Helio fast-yellow 6GL, Lithol fast-orange RN, Lithol fast-scarlet B, Permanent-red FRL, Autol-red BL and RLP, Brilliant-indigo BASF and various indanthrene dyes.—A. KUTZELNIGG and E. FRANKE. *Mikrochim. Acta*, 3 (1938), 33–36, 37–45; through *J. Soc. Chem. Ind.*, 57 (1938), 890. (E. G. V.)

Morphine—Methods of Determination of, in Opium Proposed by the League of Nations. A criticism of the method proposed by the League and of Coutinho's suggestions and modifications.—V. MACRI. *Fitoterapia*, 14 (1938), 50–53; through *Chem. Abstr.*, 32 (1938), 6398. (F. J. S.)

Morphine—Nephelometric Determination of, with Vanadium Molybdic Acid. A detailed discussion, including both the theoretical and practical basis, is presented of the previously described method of quantitative determination of morphine which is based upon measuring the turbidity produced in an aqueous acid solution treated in steps, with ammonium molybdate and ammonium vanadate [*S. A. B.*, 9 (1936), A-779]. A nephelometer is used to measure the turbidities induced by these two agents. By this method morphine can be determined even when mixed with *o*-acetyldihydrocodeinone (Acedicon), apomorphine, brucine, quinine, cinchonine, cocaine, codeine, dihydrocodeinone (Dicodid), ethyl morphine-hydrochloride (Dionine), dihydrohydroxycodeinone-hydrochloride (Eucodal), nicotine and strychnine. Only those alkaloids which are very similar to morphine, *e. g.*, heroine and dihydroketomorphine-hydrochloride (Dilaudid) behave similarly when precipitated in such a step-like manner. The limits of this nephelometric determination of morphine are 8 and 40γ morphine-hydrochloride per cc. of solution. For 10γ morphine the error of this method is about ±20%, but this error decreases as the amount of morphine increases, being about ±10% for 20γ morphine and remaining constant at this value up to 40γ. An application of this method to the determination of morphine in urine is given.—W. DECKERT. *Z. anal. Chem.*, 112 (1938), 241; through *Squibb Abstr. Bull.*, 11 (1938), A-979. (F. J. S.)

Novocaine—Determination of. A yellow coloration is given by novocaine (I) with vanillin (II) (maximum intensity 3 molecules of I to 2 molecules of II); the intensity of the coloration is only approximately dependent upon the concentration of I.—G. F. REICHARDT. *J. Appl. Chem. Russ.*, 11 (1938), 387–388; through *J. Soc. Chem. Ind.*, 57 (1938), 977. (E. G. V.)

Oil of Anise—Volumetric Determination of, in Liquor Ammonii Anisatus. S. offers the following procedure: Weigh a cassia flask and add 3–3.5 Gm. of liquid petrolatum weighed accurately. Then weigh exactly 30.0 Gm. of the liquor (= 1.0 Gm. of the oil), add some drops of methyl orange and acidify carefully with dilute sulfuric acid. Add 2.5 Gm. glycerin and sufficient sodium bromide until some remains undissolved. Place the flask on a water bath at 40° C. for 1 hour. Shake vigorously at the beginning so that the oil of anise is taken up by the liquid petrolatum. After warming add sufficient warm concentrated sodium bromide solution until the petrolatum layer is in the neck of the flask and shake until all droplets have risen. (Volume of the liquid petrolatum + oil) − volume of the liquid petrolatum = volume of the oil × specific gravity = weight of the oil.—W. STÜWE. *Deut. Apoth. Ztg.*, 53 (1938), 874. (H. M. B.)

Peptic Activity—Method of Assaying, According to the Italian Pharmacopœia. From repetitions of the assays for peptic activity according to the United States, British, Japanese and Italian pharmacopœias and from numerous modifications of the assays it has been shown that operation at 40° with an acidity of 0.277% hydrochloric acid and a 2.9% content referred to egg white and by digestion for six hours gives an assay corresponding to that of U. S. P. X. Various

recommendations for suitable modification of F. I. V are proposed.—E. ROVIDA. *Boll. chem. farm.*, 76 (1937), 500, 503; through *Chem. Abstr.*, 32 (1938), 6803. (F. J. S.)

Perchloric Acid—Explosion Hazards in the Use of. A description and discussion of the precautions which should be taken when perchloric acid is used for wet combustion in conjunction with either nitric or nitric-sulfuric acids. The essential points to be observed are: (1) preliminary attack by nitric acid, and (2) dilution in an inert vehicle (large excess of perchloric acid or reasonably large amount of sulfuric acid).—ERNEST KAHANE. *Compt. Rend. 17me Congr. Chim. Ind., Paris*, (Sept.-Oct., 1937), 471–475. (A. P.-C.)

p_H—Precision Colorimetric Determination of. The theory of colorimetry with one- and two-color indicators is discussed in detail, and corrections are worked out for deviations from the Lambert-Beer law. Eleven commercial sulfonephthalein type p_H indicators have been studied in the Pulfrich photometer and their constants determined. The effect of impurities in the indicator is discussed.—C. DU RIETZ and S. HAHNEL. *Svensk Kem. Tid.*, 49 (1937), 284; through *Squibb Abstr. Bull.*, 11 (1938), A-742. (F. J. S.)

Phosphoglyceric Acid—New Method for the Determination of. The method depends on the fact that the optical rotation of 3-phosphoglyceric acid is increased 60-fold in a molybdate solution; this makes it possible to determine even 0.1 mg. of the substance (= 0.04 mg. phosphorus pentoxide). α-Glycerophosphoric acid, hexosemono- or diphosphoric acid, adenylic acid and free sugars do not show this behavior. However, malic, tartaric or lactic acid interfere, and the solution examined should not contain much of these substances. The procedure consists simply in determining the rotation of a neutralized trichloroacetic filtrate before and after the addition of ammonium molybdate. If much interfering substance is present, it is recommended first to precipitate with an equal volume 25% lead acetate in a medium acid to litmus but neutral to Congo red and dissolve the washed precipitate in dilute sulfuric acid.—O. MEYERHOF and W. SCHULZ. *Biochem. Z.*, 297 (1938), 60–65; through *Chem. Abstr.*, 32 (1938), 8465. (F. J. S.)

Podsol Soil—Study of the Iron in, by Means of an Improved Dipyridyl Method. An accurate determination of the ferrous and ferric iron content of a colored soil extract is possible by the direct application of the dipyridyl method when an Evelyn photoelectric colorimeter and a suitable light filter are employed.—W. J. DYER and W. D. MCFARLANE. *Can. J. Research Sect. B*, 16 (1938), 91; through *Squibb Abstr. Bull.*, 11 (1938), A-743. (F. J. S.)

Potassium—Microscopical Determination of, with Naphthol Yellow S. Using an aqueous solution of naphthol yellow S saturated at 20° in the microscopical determination of potassium, the limit of concentration has been found to be 7.5 mg. per cc. Permitting 3 minutes for crystallization and using a 0.5% reagent solution, the limit of identification is 1.9 micrograms and the limiting proportion of ammonium to potassium is 200 to 1. Magnesium, sodium lithium, ammonium and cesium ions do not form insoluble compounds with the reagent and do not affect the test. Rubidium forms crystals similar to those of potassium. This test therefore fails in the presence of rubidium. Although silver, lead and cupric ions yield crystals characteristically different from those of potassium, these ions may tend to mask its presence. Small amounts of free strong acids prevent the formation of the insoluble salts, although appreciably large amounts of acetic acid have no effect. Neutralization of the acidic solutions by means of potassium-free sodium hydroxide permits the use of the test.—H. A. FREDIANE. *Ind. Eng. Chem., Anal. Ed.*, 10 (1938), 446–449. (E. G. V.)

Procaine and Cocaine—Simple Method for Differentiating between, with the Use of Wood. When a wooden splinter is dipped into a procaine solution and then moistened with a drop of an organic or inorganic acid it is colored an intensive orange. This reaction is not obtained with cocaine solution.—V. P. KALASHNIKOV. *Trav. acad. militaire med. armee rouge U. R. S. S.*, 2 (1935), 264–267; through *Chem. Abstr.*, 32 (1938), 7211. (F. J. S.)

Procaine—Determination of. Evaporate a mixture of 0.081 Gm. of procaine (three molecules), 0.03 Gm. of vanillin (two molecules) and 1 cc. of 0.5 *N* 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 one 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. REIKHARDT. *J. Applied Chem.* (U. S. S. R.), 11 (1938), 387–388 (in German 388); through *Chem. Abstr.*, 32 (1938), 5580. (F. J. S.)

Quantitative Analysis Based on Spectral Energy. An explanation is given for certain limitations of the commonly used internal standard method, and energy of spectral emission is suggested for measurement of concentration in place of intensity. Experimental work shows that the energy of spectral emission in a carbon arc is directly proportional to the weight of element causing the emission. For quantitative analysis, therefore, it is only necessary to determine energy per unit weight of element on known samples, and apply this value in the analysis of unknowns. This procedure permits working over the entire range from the lowest limit of sensitivity up to 100%. The presence of other elements appears to have no effect on the analysis. The average error was found to be 8.3% and the maximum error was 18.5%.—M. SLAVIN. *Ind. Eng. Chem., Anal. Ed.*, 10 (1938), 407–411. (E. G. V.)

Selenium—New Qualitative Test for. It was found that the thiocyanate ion will reduce the selenite ion in hydrochloric acid solutions. Selenium is precipitated as red metallic selenium in high concentrations of selenium, as a yellow-green precipitate at low concentrations, or as an almost white precipitate at exceedingly low concentrations. The precipitate is usually very fine. Hydrogen sulfide is a product of the reaction which is slow and incomplete in concentrations less than 6*N* with respect to hydrochlorie acid, but is rapid and quantitative in higher concentrations. Heating to 60° speeds up the reaction. The reaction is capable of detecting one part selenium in 38 million parts of solution and may be carried out in the presence of the common metals except bivalent iron, bivalent tin and trivalent antimony.—H. A. LJUNG. *J. Elisha Mitchell Sci. Soc.*, 53 (1937), 229; through *Squibb Abstr. Bull.*, 11 (1938), A-791. (F. J. S.)

Shaker for Quantitative Adsorption Experiments. A simple effective shaker has been devised for quantitative adsorptions from aqueous solutions. Built almost entirely of Meccano parts, the machine allows shaking of unstoppered vessels without loss of their contents, and the simultaneous shaking of a large number of vessels for any length of time. With a shaking radius of about one inch and proper regulation of the speed, a heavy adsorbent such as fuller's earth can be kept effectively in a suspension in a maximum of seven cc. solution in a 15-cc. centrifuge tube, or of 15 cc. solution in a 25-cc. tube. The machine as used by Fisher for the development of methods for the estimation of creatinine and glycocyamine, has given satisfactory service with minimum attention for over two years. It runs smoothly and efficiently at a maximum crank speed of over 180 r. p. m. with 16 pairs of gears in train, powered by a $^1/_{30}$ horse power electric motor.—R. B. FISHER and A. E. WILHELMI. *Biochem. J.*, 32 (1938), 609; through *Squibb Abstr. Bull.*, 11 (1938), A-845. (F. J. S.)

Silicic Acids and Saponins—Occurrence of, in the Boraginaceæ. A colorimetric method and a method for the determination of total and soluble silicic acid are described.—R. JARETZKY and H. I. ERIMBORN. *Deut. Apoth. Ztg.*, 53 (1938), 648, 801. (H. M. B.)

Silver Residues—Regeneration of. R. proposes the following: Mix the residue with an equal part of calcined soda and heat over a blast lamp until no more carbon dioxide is produced, cool and scrape the salt mass from the pellets and boil with dilute hydrochloric acid. Collect the silver on a piece of pure tile and fuse with a little borax. A yield of 93.24% was obtained from a silver chloride residue.—P. ROM. *Pharm. Monatsh.*, 19 (1938), 113. (H. M. B.)

Solanidine T and Solanidine S. Like Solanidine T, Solanidine S gives with digitonin a precipitate characteristic of sterols. Dehydrogenation of solanidine S and vacuum distillation gives a fraction passing between 160° and 170° C. which partly solidifies in crystals. Separation of the oily portion and recrystallization gives white crystals melting at 118° to 120° C.—H. ROCHELMEYER. *Arch. Pharmazie*, (1936), 543–545; through *Chimie & Industrie*, 39 (1938), 723. (A. P.-C.)

Spirit of Camphor. *Camphor Determination.*—Weigh 20 Gm. in a cassia flask, add 30 cc. saturated salt solution, 30 cc. water and 3 cc. benzene accurately measured. Close the flask and shake the contents vigorously for $^1/_2$ minute and then fill to the upper mark with water. Shake until the contents are thoroughly mixed and after 15 minutes read off the benzene layer. The increase in the volume of the layer × 5 = % camphor. *Alcohol content.*—Transfer the contents of the cassia flask to a separatory funnel, rinse the flask with water and transfer to the separatory funnel. After the separation of the layer, run the aqueous layer into a tared flask and determine the weight of the liquid. Weigh exactly $^1/_2$ of the liquid into a distilling flask and distil off 18 cc., salt out the alcohol with about 10 Gm. calcium carbonate and measure the volume. *Methanol*

test.—Take the remaining half and distil 2–3 cc. and test for methyl alcohol in the usual way.—KURT HANDKE. *Deut. Apoth. Ztg.*, 53 (1938), 853–854. (H. M. B.)

Sulfanilamide—Microscopic Identification of. Place a drop of BzH on a microscope slide and stir in about 1 mg. of powdered sulfanilamide (I); stir the mixture occasionally for about 1 minute or until the reaction product appears, then examine under the microscope at 100 diameters. The reaction product appears as small smooth plates having the outline of a parallelogram, which grow to a good size within several minutes. The parallelograms have an acute angle of 68° and an obtuse angle of 112°. Place a drop of cinnamon oil on a microscope slide, stir in about 1 mg. of I and examine under the microscope at about 100 diameters, using strictly axial illumination. After several minutes the reaction product appears in the form of plate-like crystals. As the plates rotate they disappear from view when the flat faces are presented to the observer and exhibit maximum visibility or "relief" when the crystals present an edge view to the observer.—M. L. YAKOWITZ. *J. Assoc. Official Agr. Chem.*, 21 (1938), 351; through *Chem. Abstr.*, 32 (1938), 6401. (F. J. S.)

Sulfate—Rapid Potentiometric Method for Determination of. It is a little persulfate is added to a solution containing sulfate ions and the solution is titrated with 0.1*N* barium chloride with a shiny platinum electrode and calomel half cell in an electrometric set up, a break in the titration curve is obtained at the end-point. The magnitude of the break can be increased by adding some methyl alcohol. Methyl alcohol alone suffices also to give an electrometric end-point. The best results are obtained when the initial concentration of the methyl alcohol is 25–60% and the sulfate ion concentration 0.05–0.25*N*. Although the results are reproducible, the end-point is indicated when about 95% of the sulfate has been precipitated. The titration cannot take place in the presence of sulfite, sulfide or thiosulfate.—B. E. CHRISTENSEN, H. WYMORE and V. H. CHELDELIN. *Ind. Eng. Chem., Anal. Ed.*, 10 (1938), 413–414. (E. G. V.)

Sulfur—Rapid Determination of, in Organic Compounds. A simplification of the apparatus of Grote and Krekeler [*Angew. Chem.*, 46 (1933), 106] is useful in the rapid analysis (20 minutes) of iron pyrites, burnt ores and iron sulfide, and of sulfates of aluminum, manganese and cobalt. The presence of gypsum causes low results compared to those obtained by the Lunge method; otherwise the results are in agreement with those obtained by the method of Lunge or with the apparatus of Grote and Krekeler. The method consists essentially in the oxidation of the inorganic sulfur to sulfite by heating in a quartz tube in a stream of air. The sulfite is absorbed in hydrogen peroxide and titrated with sodium hydroxide. An illustration is given.—ALFONS SCHÖBERL and H. SENF. *Z. anal. Chem.*, 112 (1938), 171; through *Squibb Abstr. Bull.*, 11 (1938), A-894. (F. J. S.)

Suprarenal Gland Extracts—Standardization of Preparations of. The increase in serum Na^+ of normal rabbits which had received intravenous injections of suprarenal preparations can be used as an index of the potency of the preparations.—G. TÖRÖK. *Magyar Orvosi Arch.*, 39 (1938), 109; through *Chem. Abstr.*, 32 (1938), 6397. (F. J. S.)

Tinctura Strophanthi—Adulteration of. The adulteration of this tincture can be easily determined with Kofler's micro melting point apparatus as well as with Fischer's microsublimation apparatus.—W. BRANDRUP. *Süddeut. Apoth.-Ztg.*, 78 (1938), 312; through *Chem. Abstr.*, 32 (1938), 6003. (F. J. S.)

Trinitroglycerin—Determination of, in Officinal Solution of. The authors criticize the procedure given in the French Codex and recommend the following method: Introduce 10 cc. of the alcoholic solution of trinitroglycerin, 2–3 Gm. of powdered Devarda's alloy, 100 cc. of water, and 25 cc. of saponification solution into a flask and connect with a trapped condenser. When the liberation of hydrogen is almost complete, distil and collect the ammonia in 20 cc. of *N*/10 sulfuric acid. Determine the excess acid with *N*/10 sodium hydroxide, using sodium alizarin sulfonate or methyl red indicator. One cc. of *N*/10 sulfuric acid is equivalent to 0.00757 Gm. of trinitroglycerin. The solution should contain 0.98–1.02% of trinitroglycerin.—H. CARON and D. RAQUET. *J. pharm. chim.*, 28 (1938), 30–33. (S. W. G.)

Veronal and Luminal—Separation and Identification of. The extraction of veronal and gardenal (luminal) from blood and urine has been accomplished by different methods. Sublimation of the barbiturates obtained seems to be the best method for their purification. The authors describe a simple apparatus permitting a quantitative sublimation of small quantities of the substance. The method of Peltzer (extraction in methylic solution with the aid of trichloroacetic

acid) appears to be very good; it gives better results than when tribromoacetic acid is used. The Stas-Otto method gives poor results because of impurities which are difficult to eliminate.—J. KREPELKA and V. SVARE. *Collect. trav. chim. Tchecosl.*, 8 (1936), 191; through *J. pharm. chim.*, 28 (1938), 35. (S. W. G.)

Water—Purifying Contaminated. A cyclic flow of water is established from and to the zone of contamination through a filter bed of alkaline-earth carbonate such as calcium carbonate in granular form and there is added to the contaminated water, before passing through the filter, a metal salt, such as alum, forming in the water a hydrated oxide gel coagulant.—EDWARD P. SCHINMAN, assignor to PERMUTIT CO. U. S. pat. 2,114,576, April 19, 1938. (A. P.-C.)

"Wood's Light" and Urea Derivatives and Substances with a Pyrazole Nucleus. The "Wood's light" obtained by passage of ultraviolet rays through nickel oxide glass screens, providing radiations of 3650 A., serves to distinguish by fluorescence the antineuralgic specific, *Alpha*, from products formed by the association of antipyrine with pyramidon and the barbital and from simple mixtures of these substances.—A. PEROTTI. *Boll. chim. farm.*, 77 (1938), 209–212; through *Chem. Abstr.*, 32 (1938), 6803. (F. J. S.)

Yohimbine Tablets—Analysis of. The method of the Swiss Pharm. should be modified as follows: mix 1 to 5 tablets with 6 cc. of water in a 100-cc. flask so as to obtain a pasty mixture, add 2 cc. of sodium carbonate solution and 50 Gm. of ether and shake for 15 minutes; add 2 Gm. of gum tragacanth and shake again until the ether is clear; filter 40 Gm. of the solution through cotton into a tared Erlenmeyer flask, distill off the ether, dissolve the residue in 5 cc. of decinormal hydrochloric acid and titrate the excess acid with decinormal alkali using methyl red as indicator.—H. MÜHLEMANN. *Pharm. Acta Helvetiae*, 11 (1936), 332–333; through *Chimie & Industrie*, 39 (1938), 716. (A. P.-C.)

PHARMACOGNOSY

VEGETABLE DRUGS

Ailanthus Glandulosa. Ailanthus is suggested, as a substitute for quassia wood, as a parasiticide for cultivated plants. The leaves contain tannin and are used as an adulterant of sumac leaves; the bark is used for therapeutic purposes; the wood contains 44% of easy-bleaching cellulose. By extraction of the wood with petroleum ether, fats (1–1.5%), phytosterol and alcohols of high molecular weight were obtained; by successive extraction with ether, and distillation of the solvent at a reduced pressure, resinous matter, tannins and hydrocarbons were obtained; by a third extraction with alcohol, tannin, saponin, quassin and quercetin are obtained; and by a fourth extraction with water, at 40°: a mucilage, sugars and vanillin (0.1–0.15%) were obtained. The residue contains cellulose, lignin, mineral matter (calcium, magnesium, potassium salts). Dry fiber (raw) 30–33%; ash 2.78%.—A. M. BERNASCONI. *Fitoterapia*, 14 (1938), 61–70; through *Chem. Abstr.*, 32 (1938), 8473. (F. J. S.)

Cinchona Bark (Cinchona)—Cultivation of, in the Dutch East Indies. A review of the cultivation of cinchona, including a discussion of natural enemies of the trees, and the economic outlook. Treatment of the bark is not accurately known but may be summarized as follows: (1) mixing of the pulverized bark with lime, (2) extracting the alkaloids with mineral oil (quinine dissolves readily, other alkaloids difficultly), (3) extraction of the oil with dilute sulfuric acid, (4) filtration of the acid solution through animal charcoal, (5) neutralization with soda (crude quinine sulfate separates), (6) separation of accompanying alkaloids (secret process), (7) crystallization (secret process).—G. L. A. v. BLUCHER. *Tropenpflanzer*, 41 (1938), 231–245; through *Chem. Abstr.*, 32 (1938), 7666. (F. J. S.)

Citrus Fruits—By-Products from. Among the commercial citrus fruit products are calcium citrate (citric acid), lemon oil, orange oil, orange and lemon juice, peel products such as candied peel and marmalades and pectin. The preparation of the essential oils of oranges and lemons by either hand pressing or steam distillation and the preparation of calcium citrate and citric acid from the juice of lemons have been started on a small scale in India. Preparations of pectin have not been started, as it offers some specific problems.—J. L. SARIN. *Ind. and News Ed. J. Indian Chem. Soc.*, 1 (1938), 59–62; through *Chem. Abstr.*, 32 (1938), 7663. (F. J. S.)

Drying Principles and Methods. A discussion.—V. P. VICTOR. *Drug Cosmetic Ind.*, 43 (1938), 46–49. (H. M. B.)

Ergot of Rye, Claviceps Purpurea (Fries) Tul.—Quantitative Variations in the Total Alkaloid Content in the Course of the Evolutional Cycle of. Analytical methods previously detailed showed that the alkaloidal content of ergot is zero during the period of mycelial development, that during the period of mycelial invasion it increases parallel with the formation of sclerotium until a maximum is reached from which it decreases again when the ergot has reached a length of about 2 cm. Hibernation (storage) as well as fructification reduce the alkaloidal content. Maximum alkaloidal content is obtained in Belgian ergot harvested in the second half of August.—F. STERNON. *Bull. Acad. Roy. Méd. Belgique*, 1 (1936), 463–469; through *Chimie & Industrie*, 39 (1938), 719. (A. P.-C.)

"Hausbock" Bettle as a Pest of the Apothecary. The pest and its habits are described.—W. MADEL. *Deut. Apoth. Ztg.*, 53 (1938), 840. (H. M. B.)

Herba Betonicæ—New Adulteration of. The possibility of distinguishing between this herb and *Stachys alpina* in cases of admixture or adulteration is discussed, with the suggestion that if the hairs, isolated from the under side of leaf fragments, yield the lignin reaction with aniline sulfate the true drug is present, since the adulterant gives no such reaction.—F. BERGER. *Pharm. Zentralhalle*, 77 (1936), 749–751; through *Chimie & Industrie*, 39 (1938), 716. (A. P.-C.)

Mikania Hirsuitissima D. C.—Contribution to Study of. The macroscopic and microscopic characters of the plant have been thoroughly studied. Different extraction procedures in the cold with diluted hydrochloric acid, dilute alkali, chloroform, benzol and methyl alcohol are reported. The following conclusions are given: The name of *Herva dutra* is erroneous for the designation of the plant *Mikania hirsutissima*. The drug is often adulterated with *Serjania cuspidata* Camb, *M. laniginosa* D. C. The principal constituents of *M. hirsutissima* are: resinoids, 2% in the leaves; catechuic tannoids, 5% in the whole plant; saponins, traces. The leaves and twigs do not contain any glycoside split by emulsin, and give negative tests for alkaloids. The diuretic and the anti-albuminoid properties probably reside in the resin and essential oil.—J. P. G. DA CRUZ and C. H. LIBERALLI. *Rev. Flora Med.*, 4 (1938), No. 7; through *J. pharm. Belg.*, 20 (1938), 596. (S. W. G.)

Morphine—Fermentative Oxidation of, in the Latex of the Opium Poppy. The decrease of the morphine content in the latex of the opium poppy during drying is due to the oxidation of morphine by a peroxidase. Pseudomorphine, the first oxidation product, does not accumulate in the latex, but undergoes a further change, the nature of which is still unknown. The addition of 1% potassium fluoride to the latex completely stops the destruction of morphine; the process is also somewhat checked by acidifying to a p_H of 3.0. Along with the morphine, the narcotine and papaverine contents also decrease on drying or storage of the latex.—V. I. NILOV, V. P. NILOVA and A. T. TROCHTCHENKO. *Biokhimia*, 1 (1936), 165–182; through *Chimie & Industrie*, 39 (1938), 719. (A.P.-C.)

Myrrh. A gum resin odorous and resinous which is obtained from *Cassia gummifera* which is grown in Ethiopia. It is known as Marrar in Arabia and its name is often associated with that of incense. The Greek knew it as Myrrha (or Mirna), after the daughter of Cynirus, king of Cyprus. It is of good quality, in commerce it is found in the form of heavy, reddish, irregular tears, semi-transparent, fragile, glossy and having an oily fracture. The larger tears, when broken, have opaque and yellowish lines internally. Myrrh has a bitter, acrid and aromatic taste and is used in the composition of perfumes and ointments; it was used in the preparation of consecretion oil by the Hebrews; it is mentioned in the Bible, under the name of Mur, as a constituent of Holy Oil. In the Orient, in the Majestic Temple, the Priest had to burn it morning and night in honor of the Divinity. The plant of Myrrh grows spontaneously when cultivated; there are several varieties: the official, or Herabol is a product of *Commiphora abyssinica* which is found in Arabia and on the coast of Somaliland. The Myrrh obtained in India seems to be, according to some, inferior and that from Arabia and Abyssinia is called "googula." The principle merchants for exporting are from Adrianopoli, Smirna, Tunisi, Benares and Aden. The Myrrh exudes through incisions made on the tree,the Myrrh is in the form of a milky liquid which when it evaporates transforms into reddish tears. In Italy it is usually obtained after a rainy period, by making longitudinal incisions on the trunk. This drug is important in the application of medicine, particularly chronic bronchial catarrh. It is used in teeth caries, as an antiseptic, emmenagogue and aperitive. It may be applied alone, or else associated with aloe, iron, etc. It is entered in the composition of various pharmaceutical products, varnishes, dentrifice and toilet waters. The

principal constituents of the drug are the various resins, gummy or mucilaginous, essential oil and various salts; which have the pharmacologic and therapeutic properties.—A. LISANTI. *Il farm. ital.*, 6 (1938), 495. (A. C. DeD.)

Paprika. Varieties of the spice-bearing *Capsicum annuum* are described. The fruit is rich in ascorbic acid, the juice containing 0.20–0.25%, and fully ripe fruit 0.1–0.2%. The red color is due to carotene and capsanthene. The pungent constituent is caosaicin (about 0.7%). The grading of the material is described. The ash content should be not greater than 6.5%. A preserve of marmalade character containing 0.4% of vitamin-C is produced in Hungary.—H. S. REDGROVE. *Food Manuf.*, 13 (1938), 199–201; through *J. Soc. Chem. Ind.*, 57 (1938), 974. (E. G. V.)

Substitute Drugs—Contribution to the Study of Native. Fifty-one references. HEINS HARMS. *Deut. Apoth. Ztg.*, 53 (1938), 921–923. (H. M. B.)

Typha (Tabua) as a Medicinal Plant. The rhizome of *Typha dominguensis* Kunth grown in a clay soil has starch 11.55, albumin 0.35, fatty oil 0.29, resin 0.85, essential oil 0.13, gummy substance 0.88, tannin 5.45, glucose 1.22, inorganic salts 1.73, organic acids 0.25, cellulose 8.68 and water 68.6%; the composition varies with the kind of soil. The fatty oil consists principally of palmitic and oleic acids and contains an unidentified toxic principle which has purgative and emetic properties. The essential oil (d_{20} 0.9065–0.9165, n_{20} 1.4885 $[\alpha]_{20}$ −5°20′ + 7°45′) consists principally of thymol together with α-pinene, a phenol $C_8H_{11}O_2$, and a lactone $C_{14}H_{22}O_2$. This oil acts (*in vitro*) as a medium anthelmintic. The resin (d. 1.06–1.11, acid number 22–36, saponification number 60) has diuretic properties. Ash contains 35% potassium oxide and 20–28% silicon dioxide. Empirically prepared infusions have proved efficacious in cases of ascites, and appear to be of value in the treatment of rheumatism, eczema and verminosis.—F. W. FREISE. *Rev. flora med.* (Rio de Janeiro), 4 (1938), 519–525; through *Chem. Abstr.*, 32 (1938), 7213. (F. J. S.)

PHARMACY

GALENICAL

Adrenaline—Ampuls of, Preparation of, and a Pharmacological and Chemical Investigation of. (II). A detailed study of the effect of the presence of air, carbon dioxide, nitrogen and oxygen in ampuls containing solution of adrenaline is given. Experimental investigation of the action of heat and the use of chemical preservatives such as sodium bisulfite and sodium sulfite is also described.—W. LÜHR and H. G. RIETSCHEL. *Pharm. Zentralhalle*, 79 (1938), 212–218. (N. L.)

Atropine and Hyoscyamine—Notes on the Stabilities of, in Solution. Reference is made to somewhat varying reports in the literature. Experimental work aimed to determine what changes pure hyoscyamine and atropine undergo in solution of chloroform or ether. Results indicated greater stability in ether. Continued heating on a water bath causes partial disappearance indicating that heat is definitely a factor in losses from ether solutions. When chloroform is used some form of destruction may also occur.—H. H. FRICKE and K. L. KAUFMAN. *J. Am. Pharm. Assoc.*, 27 (1938), 574. (Z. M. C.)

Cod Liver Oil and Its Ointments—Influence of the Chlorination of, on the Vitamin A content. An article dealing extensively with the action of cod liver oil, methods of vitamin determination, chlorination of the train oil and the vitamin content of the chlorinated product, the chlorination of an ointment and paste and the vitamine content of the same. Chlorination of the oil with chlorine water giving a product containing about 4% chlorine, the vitamin is almost completely destroyed; with 0.2–1% there is a loss of more than 1/3 of the vitamin; under 0.2% there is a decrease and below 0.1% the loss is only about 10%. Chlorination by means of chlorine gas yielding an oil with a chlorine content of 3.5 and 6.75%, the loss is 60%; chloramine yielded no chlorinated product. An ointment containing 30% oil and 360 units of vitamin and a zinc oxide paste containing 25% oil and 300 units were prepared. If the ointment is made from chlorinated oil there is no further loss in vitamine content than already produced in the oil; in the case of the paste, however, the vitamine content is lessened additionally about 1/2.—DILLER. *Deut. Apoth. Ztg.*, 53 (1938), 869–874; 887–889. (H. M. B.)

Galenical Preparations—Active Principles in. The stability of the active principles in galenical preparations is considered. Graphs show the rate of loss of activity of Dakin's solution,

senega saponin, ascorbic acid solutions, hypnophen solutions (sodium phenylethylbarbiturate), fluidextract of ergot, ergometrine solutions and infusions and tinctures of digitalis. The author proposes that the pharmacopœias should have a statement of the average time after preparation to the loss of 10% of the activity of official preparations and that the preparation should not be dispensed after that period. All drugs should bear a label statement of the date of preparation. New preparations should be offered for official acceptance only with accompanying data on their stability.—S. A. SCHOU. *Arch. Pharm. Chemi.*, 45 (1938), 471. (C. S. L.)

Neoarsphenamine—Effect of Glycine and Ascorbic Acid on the Oxidation of. Treating 1% solution of arsphenamine with 10% solution of glycine or with 0.6% solution of ascorbic acid prevented the formation of the brownish color of oxidized neoarsphenamine by hydrogen peroxide.—I. KAROLYI. *Orvosi Hetilap*, 82 (1938), 738–739; through *Chem. Abstr.*, 32 (1938), 7665. (F. J. S.)

Neoarsphenamine—Stability of, Effect of Moisture and Age on the.—T. F. PROBEY and W. T. HARRISON. *U. S. Naval Med. Bull.*, 36 (1938), 429–434; through *Chem. Abstr.*, 32 (1938), 7663. (F. J. S.)

Procaine—Improved Solution of, for Anesthesia. Solutions A (*N* hydrochloric acid 1. cc. + procaine-hydrochloride 48.0 Gm. + distilled water 1 liter) and B ($Na_2HPO_4.12H_2O$ 30.3 Gm. + KH_2PO_4 0.6 Gm. + sodium chloride 8.0 Gm. + distilled water 1 liter) keep indefinitely if sterile and stored in brown resistance glass bottles. For injections, equal volumes of A and B are mixed and sufficient adrenaline chloride is added to make the concentration 1:50,000, resulting in p_H 7.5. The low p_H of the procaine solution insures only neglible decomposition of the procaine. Na:K = 70:1 provides sufficient potassium for good therapeutic latitude of the procaine. It has been used in 2000 cases with excellent results.—A. T. WILLIAMSON, R. R. DALBY and C. ELLISON. *Brit. Dental J.*, 64 (1938), 85–91; through *Chem. Abstr.*, 32 (1938), 8074. (F. J. S.)

Prothrombin—Purification of. Prothrombin is precipitated from diluted plasma at p_H 5.3 by addition of acetic acid and is then adsorbed on magnesium hydroxide from a solution of this precipitate in sodium chloride. The compound is eluted with carbon dioxide and the eluate purified by prolonged dialysis against distilled water. A relatively stable and highly potent water-soluble material is obtained. If dried, it can be kept indefinitely and the product is considerably more active per unit of dry material than any previously described.—W. H. SEEGERS, H. P. SMITH, E. D. WARNER and K. M. BRINKHOUS. *J. Biol. Chem.*, 123 (1938), 751–754; through *Chem. Abstr.*, 32 (1938), 8464. (F. J. S.)

Resinoids and Extracts—Apparatus Used in the Preparation of. Descriptive with seven illustrations (French text on pages 128–131).—A. M. BURGER. *Riechstoff-Ind. u. Kosmetik*, 13 (1938), 102–105. (H. M. B.)

White Oil—Stabilized. A small proportion of an alkyl aminophenol in which the alkyl group contains from 1 to 4 carbon atoms is dissolved in highly refined viscous petroleum oils to prevent them from deteriorating and forming acid compounds.—ROBERT E. WILSON, assignor to STANDARD OIL CO. U. S. pat. 2,123,457, July 12, 1938. (A. P.-C.)

PHARMACOPŒIAS AND FORMULARIES

Danish Dispensatory, 1938. The new Dispensatorium Danicum, 1938, replaced on Aug. 1, 1938 the edition of 1934. Twenty new drugs and chemicals and 45 new preparations are described. Various alterations in old formulas are noted. The dispensatory now cites, besides the official drugs of the Dan. Phar., 41 additional drugs and chemicals and preparation methods for 320 compounded preparations. Certain nomenclature changes are noted. Various short prescription names have been authorized.—E. V. CHRISTENSEN. *Arch. Pharm. Chemi*, 45 (1938), 535. (C. S. L.)

Finnish Pharmacopœia—Sixth Edition of the. A commentary.—ANON. *Pharm. Monatsh.*, 19 (1938), 114. (H. M. B.)

French Codex—Maximum Doses of the. A critical discussion indicating faulty posology, particularly in different preparations containing similar active ingredients.—J. GOLSE. *Bull. trav. soc. pharm. Bordeaux*, 76 (1938), 122–132. (S. W. G.)

French Pharmacopœia. A concise review of the latest revision is given.—ANON. *Siecle Med.*, (Mar., Apr., 1938); through *J. pharm. Belg.*, 20 (1938), 375–377, 393–396. (S. W. G.)

Hungarian Pharmacopœia IV—Ointments of. The directions for investigation of pharmaceutical ointments in various countries are compiled and compared. For the rapid and prac-

tical determination of some data, new methods with simplified directions are given.—M. BARTFAY. *Magyar Gyogyszeresztud. Tarsasag Ertesitoje*, 14 (1938), 459–559; through *Chem. Abstr.*, 32 (1938), 8695. (F. J. S.)

NON-OFFICIAL FORMULÆ

Liquid Creams. The composition and problems involved in manufacture are discussed. The following tested formulas are offered: (1) glyceryl monostearate 2.5, sorbitol 5.0, vegetable oil 1.5, perfume 0.3, preservative 0.1, water 90.6; (2) stearic acid 1.5, potassium hydroxide 0.2, quince seed 1.0, karaya 0.3, glycerin 15.0, cetyl alcohol 0.5, lanolin 1.0, perfume 0.5, preservative 0.1, water 79.9; (3) stearic acid 2.0, triethanolamine 0.4, glycerin 10.0, karaya 0.5, perfume 0.2, preservative 0.1, rose water 35.0, water 51.8; and (4) stearic acid 0.8, beeswax 1.0, triethanolamine 0.2, borax 0.1, cocoa butter 1.5, lanolin 0.8, glycerin 5.0, perfume 0.6, preservative 0.1 and water 89.9.—JOSEPH KALISH. *Drug Cosmetic Ind.*, 42 (1938), 722–723. (H. M. B.)

Transparent Soaps—Preparation of. A description with several formulæ.—EKMANN. *Riechstoff-Ind. u. Kosmetik.*, 13 (1938), 106–109. (H. M. B.)

Tylose Emulsions. Tylose, a cellulose derivative is described and the following formulas are offered in which it is used as an emulsifying agent: *Cod liver oil Emulsion.*—Cod liver oil 40 Gm., cinnamon water 10 Gm., glycerin 7.5, calcium hypophosphite 0.5, saccharin 0.01, benzaldehyde 0.015, tylose S-400, 1 Gm., water 100 Gm.; *Emulsion of Paraffine with 2% Tylose.*—Tylose SL 5, 20 Gm., water 480 Gm., nipagin M 0.5, sugar 100, liquid paraffin 400 Gm., benzaldehyde 2 drops. Place the tylose and 230 Gm. of boiling water in a liter flask, shake well, cool in a refrigerator for 12 hours. Mix the cold tylose mucilage with a cold solution of the nipagin and sugar in a large flask and add the liquid petrolatum in several portions with vigorous shaking and then add the benzaldehyde and shake for $^1/_2$ to 1 hour.—H. KAISER and W. KERN. *Deut. Apoth. Ztg.*, 53 (1938), 702–705. (H. M. B.)

DISPENSING

Cinchona Bark and Fluidextract of Cinchona—Extraction of. Percolation tests carried out with different hydro-glycerinic mixtures, acidified with hydrochloric, formic and phosphoric acids, showed that phosphoric-glycerin-water mixtures give best results from the standpoint of yield and of stability of the extracts.—H. KRÖGER and A. MAYRHOFER. *Scientia Pharm.*, 7 (1936), 141–149; through *Chimie & Industrie*, 39 (1938), 722. (A. P.-C.)

Collyria. The methods of determination and adjustment of p_H and isotonicity of preparations for treating the eyes are discussed.—M. O. HOLLAND. *Am. Professional Pharmacist*, 4 (1938), 20–24; through *Chem. Abstr.*, 32 (1938), 7665. (F. J. S.)

Dental Pharmaceuticals. Prescriptions are given for dental abrasive capsules, preparations to increase or decrease salivation, hemostatic agents and analgesics.—L. G. FREEMAN. *Am. Professional Pharmacist*, 4 (1938), 25–27; through *Chem. Abstr.*, 32 (1938), 7665. (F. J. S.)

Drugs Containing Air and Deærated—Extractibility of. Extraction of a drug by percolation with a solvent is clearly accelerated by first putting the container under vacuum. The liquid must then be made to flow very slowly and uniformly (1 drop per minute for 100 Gm. of drug) in order that the active principles may be dissolved completely and the successive liquid layers may be progressively poorer in extracted material and shall not mix. If the rate of flow is too rapid, total extraction can be obtained only by using large quantities of solvent or by increasing the length of the tube.—E. KESSLER. *Pharm. Ztg.*, 81 (1936), 1308–1309; through *Chimie & Industrie*, 39 (1938), 716. (A. P.-C.)

Ferrous Iodide Cod Liver Oil—Preparation of. A very pure ferrous carbonate is prepared by action of a sodium carbonate solution on a solution of pure ferrous sulfate in an atmosphere of carbon dioxide. This ferrous carbonate, which is white or greyish, but not green, is converted by means of oleic acid into ferrous oleate which is perfectly soluble in cod liver oil. A solution of the ferrous oleate in cod liver oil is then mixed with an iodized cod liver oil in such proportions that the iron and iodine are present in the proper ratio to form ferrous iodide. The product has a slightly maroon color, and keeps better than the one prepared by direct addition of ferrous iodide. Sulfocyanide, sodium salicylate and Denigès' alloxanthine reagent are not suitable for testing this product for the presence of ferric iron—C. MASINO. *Boll. Chim. Farm.*, 75 (1936), 605–612; through *Chimie & Industrie*, 39 (1938), 717–718. (A. P.-C.)

Ipecacuanha Preparations—Aqueous. Reference is made to the recent summary on this subject by F. Gestirner in which connection it is now generally admitted that ipecacuanha infusions are only satisfactorily possible by the use of relatively large quantities of water. If a concentrated infusion is wanted, a double 1-hour extraction on the steam bath is necessary with addition of a small amount of hydrochloric acid. For stabilizing 10% alcohol will suffice. Since alcohol precipitates a portion of the alkaloids, experiments are indicated for other preservatives. The method of H. Madsen is again recommended.—B. SCHWENKE. *Pharm. Zentralhalle*, 7 (1936), 673–675; through *Chimie & Industrie*, 39 (1938), 720. (A. P.-C.)

Medicines to Be Applied to Mucous Surfaces—Vehicle for. A clear oil liquid comprises a normally liquid fatty oil such as cottonseed or olive oil, a well purified normally liquid mineral oil substantially nonvolatile at room temperature, and the reaction product of triethanolamine with several times its volume of oleic acid, proportioned to form a mixture which clings to mucous surfaces and forms a jelly-like mass by taking up aqueous secretions from such surfaces.—FRANK J. BICKENHEUSER, assignor of 75% to GELLOCIDE CORP. and of 25% to GEORGE F. COLLINS, SR. U. S. pat, 2,1414,369, April 19, 1938. (A. P.-C.)

Restitution Fluid—Danish. The Danish Apothecaries Society cite a formulæ for a Liquor Restitutionem Danicus containing thymol, camphor, oil of cajuput and ammonia in an ether-alcohol-water menstrum.—ANON. *Arch. Pharm. Chemi*, 45 (1938), 499. (C. S. L.)

Spiritus Saponis (Swiss Pharmacopœia V). The author shows by titrations that the saponification of the olive oil by the alkali requires about 10 hours for completion when carried out in the cold according to the Swiss pharmacopœial requirements. The finished product gives a bright red with phenolphthalein in spite of using pharmacopœial chemicals and great care in preparation. The color with phenolphthalein slowly fades in from 2 weeks to 1 month depending upon the amount of carbonate in the alkali. If the preparation is made by shaking in a large bottle with frequent opening of the stopper, carbon dioxide is taken up converting the carbonate to bicarbonate which does not affect phenolphthalein. The author suggests that the pharmacopœial requirements be changed so that the phenolphthalein test is not applied sooner than 2 days after the completion of the preparation or that the thymol blue test used in Sapo Formaldehydus be applied.—K. SEILER. *Schweiz. Apoth.-Ztg.*, 76 (1938), 401–403. (M. F. W. D.)

Sulfur in Aqueous Suspension. The author comments upon the article by L. Rosenthaler in *Pharm. Acta Helv.*, 13 (1938), 1, in which a prescription containing sulfur was discussed. V. suggests the addition of 2 to 3 Gm. of an aqueous 1% solution of dried ox bile which changes the physical form of the sulfur in such a manner that it is easily suspended. The 2 or 3 cg. of ox bile could hardly cause any inconvenience.—C. VIROT. *Pharm. Acta Helv.*, 13 (1938), 77. (M. F. W. D.)

PHARMACEUTICAL HISTORY

Angelo Sala—1576–1637. Biography.—O. CARLOTTO. *Il farm. ital.*, 6 (938), 231. (A. C. DED.)

Crude Drugs in Carolina—Pre-Revolutionary Commerce in. Many new items of materia medica were added by discovery and colonization of the New World and development of trade in these drugs makes interesting history. The author relates some of this with Charleston as the background.—J. HAMPTON HOCH. *J. Am. Pharm. Assoc.*, 27 (1938), 712. (Z. M. C.)

Francesco Fontana—1794–1867. Biobibliography.—V. C. MAZZANTI. *Il farm. ital.*, 5 (1937), 700, 6 (1938), 41. (A. C. DeD.)

German Pharmaceutical Museum. A review of the progress and plans for completing a German pharmaceutical museum.—FRITZ FERCHL. *Wiener Pharm. Wochschr.*, 71 (1938), 4. (M. F. W. D.)

I. G. Farbenindustrie—Anniversary of the Leverkusen Branch of. Celebration of the 75th anniversary.—ANON. *Wiener Pharm. Wochschr.*, 71 (1938), No. 32, 11. (M. W. F. D.)

Materia Medica—Ancient Chinese, and Its Relation to Modern Pharmacy. A brief history of Chinese medicine. Seventy-five per cent of mineral, vegetable and animal drugs found in present day pharmacopœias are contained in the Chinese pharmacopœia of 1596. Recent occidental discoveries such as ephedrine and liver extracts have been used in various forms by the Chinese for centuries.—F. A. STEWART-DUNN. *Can. Pharm. J.*, 71 (1938), 502, 6, 7; through *Chem. Abstr.*, 32 (1938), 8077. (F. J. S.)

Pestilences of the 16th–18th Centuries and Their Historical Influence. A historical review of the epidemics of diseases during the 16th to 18th centuries.—KURT ANNECKE. *Wien. Pharm. Wschr.*, 71 (1938), 20–22, 34–36, 44–48, 56–60, 70–72. (M. F. W. D.)

Plants of Homer. Historical.—TH. TENNER. *Pharm. Post.*, 71 (1938), 278–280. (H. M. B.)

PHARMACEUTICAL EDUCATION

Drug Therapy—Hospital Intern and. The author describes the conduct of a course of lectures. Briefly it consisted of a lecture by a medical man on a certain group of symptoms followed by a discussion of the drugs to be used and the formulated prescription.—AARON LICHTIN. *J. Am. Pharm. Assoc.*, 27 (1938), 707. (Z. M. C.)

Hospital Pharmacy in the College Curriculum. The author points out the need for such courses and discussed some of the requirements.—MORRIS DANER. *J. Am. Pharm. Assoc.*, 27 (1938), 705. (Z. M. C.)

PHARMACEUTICAL ECONOMICS

Accounting, Economics and Business Studies—Is the Pharmacist a Poor Merchant Because He Lacks Training in? The author answers his own question by "Yes" and then discusses some reasons for this conclusion.—RALPH R. KREUER. *J. Am. Pharm. Assoc.*, 27 (1938), 613. (Z. M. C.)

Community Medicine—Regulated, Pharmacy's Position under. The author discusses regulated medicine in Germany. He discusses the restrictions that apply to private pharmacists. Some comparisons are made with conditions in other countries.—GEORG URDANG. *J. Am. Pharm. Assoc.*, 27 (1938), 702. (Z. M. C.)

Intangibles—Influential. The author discusses some of the factors involved in attractive advertising displays and some of the qualities that enter into good salesmanship.—C. M. BROWN. *J. Am. Pharm. Assoc.*, 27 (1938), 709. (Z. M. C.)

Perfume Industry—French Natural and Synthetic. Its Progress and Evolution. A review.—Y. R. NAVES and S. SABETAY. *Tech. Ind., Chim., No. 277bis*, (1938), 71–76, 84; through *J. Soc. Chem. Ind.*, 57 (1938), 980. (E. G. V.)

Perfume Plants in Réunion—Economics of. An account is given of the economic, climatic, geographical and technical factors in relation to the present production of essential oils and concretes [geranium, vetiver, ylang-ylang, and, produced to a smaller extent, patchouli, gardenia and champac (Michelia champaca)] and also cane sugar in Réunion. The island is still a foremost producer of geranium oil, in spite of the competition of the oil from Kenya and elsewhere. The exceptional quality of the ylang-ylang oil assures it a market although the low price of the oil from Madagascar and the Comores and the high price of sugar have restricted its production.—A. KOPP. *Compt. rend. XVII Cong. Chim. Ind.*, (1937), 759–762; through *J. Soc. Chem. Ind.*, 57 (1938), 980. (E. G. V.)

Physicians, Patients and Prescriptions. A physician, who formerly worked in a pharmacy points out faults of some members of each profession and points the way to better relations.—CHESTER I. ULMER. *J. Am. Pharm. Assoc.*, 27 (1938), 610. (Z. M. C.)

Professional Pharmacy—Advertising. The author points the way to proper advertising of a professional pharmacy.—JOSEPH A. ORTOLAN. *J. Am. Pharm. Assoc.*, 27 (1938), 615. (Z. M. C.)

Socialized Medicine in Tampa, Florida. The author tells how "Mutual Aid Societies" have operated in Tampa. The discussion covers the following heads: benefits, the doctor, hospitals and clinics, and apothecary shops.—FRANK L. CONIGLIO. *J. Am. Pharm. Assoc.*, 27 (1938), 699. (Z. M. C.)

MISCELLANEOUS

Adhesive Plasters—Surgical and Medical.—W. MATHER, LTD., and E. BERRY. Brit. pat. 487,743; through *J. Soc. Chem. Ind.*, 57 (1938), 983. (E. G. V.)

Adsorption and Desorption with Infusions of Medicinal Plants. Norite 5x is an effective adsorbent of active principles in such infusions; after adsorption the surface tension of these

liquids is near that of water. However, if intended for therapeutic use internally, *e. g.*, to disguise the odors of obnoxious medicines containing onion, garlic, etc., norite may fail to give up these adsorbates in the organism. Treatment *in vitro* with water, dilute hydrochloric acid, ammonia or gelatin failed to separate the odoriferous extracts.—L. I. WEBER and L. LEGOIX. *J. Pharm. Chim.*, 24 (1936), 502–507; through *Chimie & Industrie*, 39 (1938), 723. (A. P.-C.)

Ammonium Compounds—Quaternary. Antiseptic compounds suitable for use in mouth washes, disinfecting various materials, etc., and which are polyammonium compounds containing at least one higher aliphatic hydrocarbon radical are obtained by causing aliphatic compounds containing at least two reactive substituents to react with tertiary amines, as by heating tetramethylethylenediamine with dodecyl bromide at 100° C. for several hours to form tetramethyldidodecylethylenediammonium bromide (which also may be formed by causing methyl bromide to react upon *sym*-dimethyldidodecylethylenediamine in molecular proportions in a closed vessel at about 100° C.). Numerous examples are given of the production of compounds by reactions of this type.—LUDWIG TAUB and FRIEDRICH LEUCHS, assignors to ALBA PHARMACEUTICAL CO. U. S. pat. 2,113, 606, April 12 (1938). (A. P.-C.)

Apothecaries—Pests in, and Their Extermination. Seven classes of beetles (*Coleoptera*) and their habits are described.—W. MADEL. *Deut. Apoth. Ztg.*, 53 (1938), 188–190, 284–285, 757–759. (H. M. B.)

Beauty Washes—Modern Technic for. The technic of emulsifying oil-in-water and water-in-oil systems is reported. As emulsifiers which assure a p_H of about 6 in the preparations, which is best suited for the care of the skin, the following are recommended: the monostearates of diethylene glycol and ethyldiethylene glycol, and the monolaurate of diethylene glycol, the latter with the addition of some substance to reduce the p_H. As bases sterol or stearic acid, oleic acid, lauric acid and ricinoleic acid and their corresponding glycol esters can be used, as well as the esters of cetyl alcohol, *e. g.*, the lauric acid ester. The addition of resin increases the stability of the emulsion. In place of glycerol, diethylene glycol and ethylethylene glycol can be used; in place of lanolin sterols, *e. g.*, cholesterol can be used. "Antiseptol" and "Aseptol" are recommended as preservatives.—E. BOURDET. *Rev. marques parfum. savon.*, 14 (1936), 280–282; through *Chem. Abstr.*, 32 (1938), 7211. (F. J. S.)

Chemical Preservation. The advantages of chemical preservatives, and especially of the author's "Nipa esters," such as the nontoxic alkyl (ethyl, propyl, etc.) esters of para hydroxybenzoic acid, for the preservation of foodstuffs and cosmetic preparations are stressed.—T. SABALITSCHKA. *Öle, Fette, Wachse*, (1938), No. 3–4, 4–10; through *J. Soc. Chem. Ind.*, 57 (1938), 974. (E. G. V.)

Creams—Stable, Preparation of. Emulsion breakdown in oil-in-water types is generally caused by the use of insufficient emulsifying agent, by the way in which the constituents are incorporated, by the use of an oil that is too light, by the reaction between the emulsifying agent and and other constituents in the preparation. In the case of liquid beeswax-borax emulsions, more stable products may be secured by adding castile soaps or a gum mucilage like quince seed and the addition of such emulsifying agents as glycol stearate, glycol oleate, etc. Breakdown in water-in-oil types is caused by heat, chemical incompatibilities, failure to homogenize finely, insufficient emulsifying agent and improper selection of waxes as hardening agents. Other conditions for maintaining stability are mentioned.—THORPE W. DEAKERS. *Drug Cosmetic Ind.*, 43 (1938), 39–40, 42. (H. M. B.)

Drugs, Proprietary Medicines and Cosmetic Agents—Contribution to. A discussion of forty products.—C. GRIEBEL. *Deut. Apoth. Ztg.*, 53 (1938), 754–756. (H. M. B.)

Fixatives Used in Perfumery. The function of high viscosity fixatives (usually resinous substances) in increasing the persistence of odor is discussed.—R. FRIDMAN. *Maslob. Shir. Delo*, No. 1, 10 (1934), 31–33; through *J. Soc. Chem. Ind.*, 57 (1938), 981. (E. G. V.)

Germicide. A germicide for topical application consists of an aqueous solution of a triphenyl methane dyestuff possessing germicidal properties, together with a sufficient amount of a lower alkyl ether of diethylene glycol compatible with water to give the composition substantial penetrative properties.—SPENCER J. CURRIE. U. S. pat. 2,118,460, May 24, 1938. (A. P.-C.)

Insecticidal Sprays. A contact insecticide, such as pyrethrin-containing extract, is dissolved in a vegetable or animal oil which is dispersed in water by an emulsifying agent.—WALTER C. O'KANE. U. S. pat. 2,104,757, Jan. 11, 1938. (A. P.-C.)

Insecticides—Contact. A review of pyrethrum, derris and nicotine insecticides, and others acting by contact.—M. COVELLO. *Ann. Chim. Farm.*, 1 (1938), 65–76; through *J. Soc. Chem. Ind.*, 57 (1938), 960. (E. G. V.)

Liquors—Preparation of, in the Household. A collection of eleven old recipes.—A. ULBRICH. *Deut. Apoth. Ztg.*, 53 (1938), 857–858. (H. M. B.)

Magnesium Salts in the Cosmetic Industry. A review of uses and effects of magnesium salts in lotions, bath perfumes, deodorants and powders. The sulfate, carbonate and stearate are the common magnesium salts in use to-day.—J. GLENN. *Soap, Perfumery Cosmetics*, 11 (1938), 424–427; through *Chem. Abstr.*, 32 (1938), 8695. (F. J. S.)

Milk Powders in Cosmetics. Spray-process milk powders only should be used in making reconstituted milk for use as a skin lotion. Full cream powder is best for dry skins and separated powder for greasy skin. Emollient milk-bath preparations can be made using full cream powder, but separated powders are less satisfactory. Milk powders of both types are suitable for foam-bath powder. Rolling massage cream and face pack are also possible products for utilization of milk powder.—F. H. SEDGWICK. *Soap, Perfumery Cosmetics*, 11 (1938), 696–699; through *Chem. Abstr.*, 32 (1938), 8695. (F. J. S.)

Perfume Materials—Extraction of, Unstable to Heat. Material such as lavender flowers is subjected under pressure to the action of a hydrocarbon solvent containing two to four carbon atoms, such as propane, and the solution thus obtained is separated and subjected to refrigeration until a separation of phases occurs; the phase rich in hydrocarbon solvent is separated, and the hydrocarbon solvent is removed from it by distillation.—PHILIP L. YOUNG and PETER J. WIEZEVICH (name changed to PETER J. GAYLOR), assignors to STANDARD OIL DEVELOPMENT CO. U. S. pat. 2,106,200, Jan. 25, 1938. (A. P.-C.)

p_H Values. Their Use and Application in Cosmetics and Soaps. A survey of methods applicable in industrial practice.—H. JANISTYN. *Soap, Perfumery Cosmetics*, 11 (1938), 531–535; through *Chem. Abstr.*, 32 (1938), 8695. (F. J. S.)

Preserving and Disinfecting Compositions. Compositions suitable for disinfecting the hands, etc., contain, as an active preserving and disinfecting ingredient, dodecyldiethylbenzylammonium chloride or other nonacylated quaternary ammonium compound at least once substituted by a higher molecular aliphatic radical which may be a higher alkyl, hydroxyalkyl, haloalkyl, alkoxyalkyl, alkylmercaptoalkyl or an alkylaminoalkyl radical.—GERHARD DOMAGK, assignor to ALBA PHARMACEUTICAL CO. U. S. pat. 2,108,765, Feb. 15, 1938. (A. P.-C.)

Rotenone Insecticides. A brief discussion of some of the principal causes of irregularities in the results obtained in the use of these products, and in the sampling and analytical results.—F. LEVALLOIS. *Compt. Rend. 17me Congr. Chim. Ind., Paris* (Sept.-Oct. 1937), 559–561. (A. P.-C.)

Soap—Manufacture of, in the Cold. The manufacture of soap from coconut oil, castor oil and tallow with concentrated alkali is described.—J. L. RANGEL. *Rev. Chim. Ind.*, 7 (1938), 20–24; through *J. Soc. Chem. Ind.*, 57 (1938), 935. (E. G. V.)

Toilet Depilatory Preparations. A thiolcarboxylic acid or salt is treated with excess of alkali to p_H 10–13, for example, not greater than 2% of thiolglycollic acid and 5–10% of calcium hydroxide, or 3–6% of thiolacetic acid and 6–12% of calcium hydroxide; other more complicated prescriptions are given.—M. E. J. GHEURY DE BRAY. Brit. pat. 484,467; through *J. Soc. Chem. Ind.*, 57 (1938), 990. (E. G. V.)

Toilet Soaps—Cracking and Scaling of. Precautions to be taken in the manufacture of a soap base and in its subsequent processing, in order to prevent cracking and scaling of the final tablet, are examined.—H. ZILSKE. *Allgem. Oel- u. Fett-Ztg.*, 35 (1938), 198–203; through *J. Soc. Chem. Ind.*, 57 (1938), 935. (E. G. V.)

PHARMACOLOGY, TOXICOLOGY AND THERAPEUTICS

PHARMACOLOGY

Adrenaline Effects—Action of Sodium Permanganate on. Sodium permanganate, injected intravenously in doses of 10 to 30 mg. in the cat or dog, remains in the blood a short time and oxidizes adrenaline injected during that time but does not alter the response of the smooth muscles of the animal to excitation of the adrenergic sympathetic nerves.—Z. M. BACQ. *Compt. Rend. Soc. Biol.*, 124 (1937), 1247–1249; through *Chimie & Industrie*, 39 (1938), 726. (A. P.-C.)

Alkaloidal Salts—Influence of Acid Radical of, on Pharmacologic Activity. Salts of Morphine. The influence of the phenylpropionate, hydrochloride and citrate of morphine, when injected intravenously into rabbits, on the local anesthetic action of cocaine on the cornea and also on the ocular reflex is reported. Earlier studies involving local application of the salts had shown that salts of the phenylpropionate type were most active, those of the citrate type least active and the mineral acid salts intermediary. In this study the order of the first and second of the above seems to be reversed. The different results are explained by the statement that the salts of the phenylpropionate type pass less readily into the corneal cells than do those of the citrate type, and that the former are eliminated from the body (in the urine) more rapidly than the latter.—J. REGNIER and S. LAMBIN. *Bull. sci. pharmacol.*, 45 (1938), 241-252. (S. W. G.)

Aminomethylbenzodioxane—Synthesis and Pharmacologic Study of Several Heterocyclic Derivatives Related to. Diethylaminoethylphenylsulfide (I), diethylaminoethylaniline (II), methylaminoethylphenylsulfide (III), diethylaminomethylbenzothioxane (IV), diethylaminomethylbenzodihydrothiazine (V), diethylaminomethyltetrahydroquinoxaline (VI), piperidinomethylbenzothioxane (VII), piperidinomethylbenzodihydrothiazine (VIII) and piperidinomethyltetrahydroquinoxaline (IX) were prepared and tested pharmacologically. Diethylaminoethyloxybenzene (X), diethylaminomethylbenzodioxane (XI) and diethylaminomethylbenzomorpholine (XII) were also tested. Practically all the compounds showed hypotensive action when administered to dogs under chloralose anesthesia. II and IV showed slight hypertensive action in small doses, but with larger doses the action was reversed. II was the only drug tested which showed no adrenaline-blocking action, but variation of dosage gave different results. II and XI showed sedative action when tested on rabbits. The toxic doses in mg. per Kg. for some of the compounds are given as follows: (X) 40–50, (I) 30–40, (II) 40–60, (XI) 20–30, (IV) 20–30, (XII) 100, (V) 80–100 and (VI) 40–50.—G. BENOIT and D. BOVET. *Bull. sci. pharmacol.*, 45 (1938), 97–107. (S. W. G.)

Androgens—Spermatogenesis in Immature Hypophysectomized Rats Injected with. Testosterone propionate and dehydroandrosterone acetate administered daily at a 2 mg. level to immature hypophysectomized rats induced sperm head or spermatozoon formation in the seminiferous tubules. Smaller doses stimulated only the accessory organs. Testosterone seemed to prevent the adrenal cortex shrinkage as occurs after hypophysectomy.—EUGENE CUTULY, ELIZABETH C. CUTULY and D. ROY MCCULLAGH. *Proc. soc. exptl. biol. med.*, 38 (1938), 818. (A. E. M.)

Antithyrotropic Substance—Presence of, in Serum of Rats Injected Chronically with Rat Pituitary Extract. The injection of rat pituitary extract into rats gives rise to an antithyrotropic substance in the serum of these animals. This was detected by the depressing effect of the serum on the O_2 consumption of guinea pigs receiving a standard dose of thyrotropic hormone.—EVELYN ANDERSON and HERBERT M. EVANS. *Proc. soc. exptl. biol. med.*, 38 (1938), 797. (A. E. M.)

Cardiac Drugs—Action of, upon the Chromatophores of Toads. Report is made of some experimental work which showed that the minimal systolic dose of ouabain, scillaren B, coumingine hydrochloride or cymarin injected into the lymph sac of the nebulous toad, *Bufo valliceps*, causes noticeable blanching of the dorsal skin.—CHESTER C. HARGREAVES, WILLIAM T. WINCHESTER and K. K. CHEN. *J. Am. Pharm. Assoc.*, 27 (1938), 564. (Z. M. C.)

Cathartics—Evaluation of. Chemical nature of many laxative drugs is still uncertain and chemical evaluation is not yet possible. A reliable bio-assay is needed. The author briefly reviews the history of the testing of laxatives on animals. He then gives detailed procedure for determination by means of daphnia. He has applied it to aloe, aloin, rhubarb, rhaponticum, cascara, jalapin, podophyllum, elaterin, yohimbine and others. As a dependable yardstick, representing a uniform constant standard measure for the degree and speed of evacuation, specially purified crystalline elaterin (preferably β) has been found most satisfactory. Efficiency of an organic cathartic is then expressed in terms of laxative units, using standardized daphnia and pure elaterin.—ARNO VIEHOEVER. *J. Am. Pharm. Assoc.*, 27 (1938), 670. (Z. M. C.)

Desacetylpseudobufotalin Halide. Dissolve the dried venom secretion obtained from Chinese toads in alcohol, add petroleum ether and shake the solution, remove the petroleum ether, add ether to the alcohol solution, remove the separated resinous matter, vaporize the alcohol-ether solution, dissolve the residue in alcohol, and pour it into water to precipitate it; dissolve the precipitate cold in ethyl acetate, vaporize the solution again dissolve the residue in alcohol, and

crystallize out the pseudobufotalin. Dissolve this in glacial acetic acid and treat with dry hydrohalic acid while cooling it, and finally remove the remaining hydrohalic acid and acetic acid. A powerful heart stimulant is obtained.—HEIZABURO KONDO, SHUNICHI IKAWA and YOSHITO KOBAYASHI. U. S. pat. 2,108,340, Feb. 15, 1938. (A. P.-C.)

6-Desoxyl-*l*-Ascorbic Acid—Antiscorbutic Action of. The antiscorbutic action of 6-desoxy-*l*-ascorbic acid was tested on 250 Gm. guinea pigs using *l*-ascorbic acid as a standard of comparison. It proved to be active but quantitatively only about one-third as active as *l*-ascorbic acid.—V. DEMOLE. *Helv. Chim. Acta*, 21 (1938), 277. (G. W. H.)

Digitalis—Bioassay of, with Observations on the p_H Factor. Report is made of an extensive study of some bioassay procedures. Experimental work is reported in detail, results are tabulated and the tables discussed. Under general discussion it is pointed out that the over night frog method is preferable to the one-hour frog method because there is time for complete absorption and the personal equation is eliminated. Abandonment of ouabain as a reference standard removes objection to the U. S. P. X method. Ouabain and digitalis are not identical as to absorption rate or frog susceptibility. Maceration technic described for Reference Digitalis Powder of U. S. P. XI is the best method for preparing digitalis extract. The following conclusions were reached: (1) The expression of "cat units" for potency should be abandoned. (2) The one-hour frog method with ouabain as standard showed consistent decrease in potency of the tinctures followed by an increase in potency. (3) The Canadian technic was the only one of several methods tried that showed significant loss of potency in tinctures aged for six months. (4) Unsuitability of ouabain as a reference standard was confirmed. (5) No relationship between potency and p_H was found. (6) The Canadian extraction method leaves about 20% of the activity of the powder. (7) Maceration, percolation and a modified Canadian technic of Soxhlet extraction was satisfactory. (8) The maceration technic of U. S. P. XI for extraction of Digitalis Referency Powder was the most satisfactory for routine bio-assays. (9) The potency requirements for U. S. P. XI tincture are 1.53 times those of U. S. P. X based on susceptibility of frogs to ouabain and digitalis in the spring of 1936. (10) The over night technic of the Canadian method is the best for routine standardization. (11) Though both are intended to equal 100 mg. of International Standard Digitalis Powder per cc., the U. S. P. XI tincture is considerably stronger than the Canadian tincture because technic for the latter does not permit complete extraction.—CASIMIR ICHNIOWSKI and MARVIN R. THOMPSON. *J. Am. Pharm. Assoc.*, 27 (1938), 540. (Z. M. C.)

Ephedrine—Synthetic and Natural, Comparative Action of. The toxicity on mice, pressor action on spinal cats, or cats anesthetized with nembutal, pressor action on unanesthetized rabbits, and the effect of blood sugar in the rabbit have been determined for natural and synthetic *l*-ephedrine. From the results of the tests conducted, synthetic and natural *l*-ephedrine would appear to have identical actions. Three tables are given which evaluate the results obtained.—E. C. DODDS and R. L. NOBLE. *Pharm. J.*, 140 (1938), 641. (W. B. B.)

Erythro Plasmatic Distribution of Several Organic Medicinals. Rabbits weighing 2–3 Kg. were used as test animals. After subcutaneous or intravenous administration of the drugs, 5–15 Gm. of blood was obtained by cardiac puncture. The blood, treated with fluoride, was centrifuged for 15 minutes at 3000 revolutions to separate the plasma and corpuscles. The separated plasma and corpuscles were dried and the amount of the medicinal compound in each was determined by taking up the residue in ammonium sulfate solution then extracting with a volatile immiscible solvent. In the case of aspirin, the mixture was hydrolyzed and the salicylic acid liberated was determined. Sodium benzoate, antipyrine and caffeine gave higher concentrations in the blood plasma than in the corpuscles; while sodium salicylate, aspirin and Evipan gave higher concentrations in the blood corpuscles. The distribution of aspirin, salicylic acid and caffein in the heart, lungs, liver, kidneys, spleen, brain and bile duct is tabulated.—P. CHERAMY and E. CLICHE. *J. pharm. chim.*, 27 (1938), 321–324. (S. W. G.)

Folliculin—Determination of, in Ovarian Powder. Extract 10 Gm. of the powder successively with 150, 100, 75 and 75 cc. of boiling 80% alcohol, filter the combined alcoholic solution, distil to a small volume, and add 10 volumes of acetone to the residue. Evaporate the clear acetone solution, dissolve the residue in oil and assay by the usual method using castrated female rats.—A. CHOAY. *Compt. Rend. Soc. Biol.*, 125 (1937), 857–858; through *Chimie & Industrie*, 39 (1938), 322. (A. P.-C.)

Glycols—Study of Arylated Bitertiary. The compounds were prepared by action of organomagnesium mixtures on the diacetone alcohol, methyl-2-pentanol-2 one 4. The following compounds were prepared: methyl-2-phenyl-4-pentane diol-2, 4; methyl-2-tolyl-4-pentane diol 2, 4; methyl-2-naphthyl-4-pentane diol-2, 4. Physiological experiments showed the compounds possessed hypnotic properties. Experiments with fish indicated the order of activity to be as follows: phenyl derivative 1, tolyl derivative 1.5 and naphthyl derivative 5. The phenyl derivative when injected into guinea pigs (25 cg. per Kg.) caused an onset in 10–15 minutes and produced a sleep lasting about two hours, from which the animal apparently quickly returned to normal.—A. LESPAGNOL and M. BOUCHE. *J. pharm. chim.*, 27 (1938), 417–425. (S. W. G.)

Male Sex Hormone—Neutralization of Ovarian Follicular Hormone in Women by Simone in Women by Simultaneous Administration of. Studies of vaginal smears and biopsies indicate that the male hormone (testosterone propionate) is able to neutralize, in women, the effects of estradiol on the cornification of the vaginal epithelium.—EPHRAIM SHORR, GEORGE N. PAPANICOLAOU and BENJAMIN F. STIMMEL. *Prac. soc. exptl. biol. med.*, 38 (1938), 759. (A. E. M.)

Pectin Preparation and Adrenalone—Hemostatic Actions of. In rabbits weighing about 2 kilos the intravenous injection of 0.06 cc. of a 0.05% solution of adrenalone (methylacetopyrocatechol) caused a marked decrease in the clotting time of the blood. The effects lasted about 6 hours. The injection of 2 to 5 cc. of a proprietary pectin preparation, "Sangostop," produced a similar effect.—G. DEROUAUX. *Compt. Rend. Soc. Biol.*, 124 (1937), 567–568; through *Chimie & Industrie*, 39 (1938), 725. (A. P.-C.)

Pharmacologic Action and Chemical Structure—Relation between. A comprehensive review with comments by the author is given. An extensive bibliography is appended.—E. ZUNZ. *J. pharm. Belg.*, 20 (1938), 445–451, 463–468, 481–485, 499–502, 517–520, 535–539. (S. W. G.)

Theophylline-Ethylenediamine Mixture—Analeptic Respiratory Action of a. Euphylline, a mixture of 78 parts theophylline and 22 parts ethylenediamine, stimulates respiration in the chloralosed dog and suppresses the Cheyne Stokes rhythm produced by morphine or evipan. It stimulates the respiratory centers directly and not through the carotid sinus. The analeptic respiratory action is not a simple addition of the effects of the two components but a mutual reinforcement of their effects.—J. VAN HEERSWYNGHELS. *Compt. Rend. Soc. Biol.*, 124 (1937), 285–287; through *Chimie & Industrie*, 39 (1938), 317. (A. P.-C.)

Thyroid Hormone—Influence of, on Estrin Action. Thyroid globulin at subminimal doses does not sensitize castrate rats to estrin action. Doses of various thyroid materials increased the quantity of estrin necessary to induce estrus as soon as levels were reached high enough to increase the metabolism.—ARTHUR E. MEYER and ANNE WERTZ. *Proc. soc. exptl. biol. med.*, 38 (1938), 843. (A. E. M.)

Tinospora Bakis Miers and Cocculus Leæba DC—Studies of Medicinal Menispermaceæ Including. Botanical and chemical studies are reported for roots of *T. Bakis* (*Bakis*), *C. Leæba* (*Sangol*), *T. crispa* and *T. tuberculata;* the latter two are stated to be one and the same specie. The presence of colombine and palmatine in the roots of Bakis and Sangol indicate that they may be considered as substitutes for colombo. Sangol contains another alkaloid, sangoline (Heckel) which is the same as oxyacanthine. The total alkaloids of Bakis are appreciably toxic to guinea pigs, 0.1 Gm. per Kg. constituting a lethal dose. Palmatine, however, is slightly toxic, the above dose causing no ill effects. When 0.01 Gm. of total alkaloids is injected into a dog a very definite hypotension is observed, and this is observed to the same extent when a similar dose of palmatine is administered under the same conditions. The total alkaloids or palmatine alone cause a definite lowering of the body temperature in a guinea pig which has had its body temperature raised by administration of a nitrophenol derivative. Unlike quinine it has no action on vorticellæ or flagellated protozoa.—L. BEAUQUESNE. *Bull. sci. pharmacol.*, 45 (1938), 7–14. (S. W. G.)

Urginæ Maritima (Squill)—Pharmacodynamics of the Cardioactive Principles of. Report is made of a study of the pharmacodynamic action of a preparation known as Urginin. Details of preparing it for use are given. The report covers uniformity and stability, pharmacodynamic action, reversibility of action. Urginin is a mixture of two water-soluble cardioactive glucosides of squill of uniform biological potency and good stability. A method has been devised for the quantitative expression of the relative cumulative effects of cardioactive glucosides. The cumulative effect of Urginin is half that of ouabain and one-fifth that of digitoxin. Urginin is more readily reversible than ouabain, which is more readily reversible than digoxin, which is more

readily reversible than digitoxin. The emetic action of Urginin on the intact cat is less than that of ouabain or tincture of digitalis.—DAVID ROBERT CLIMENKO. *J. Am. Pharm. Assoc.*, 27 (1938), 596. (Z. M. C.)

Verbenaloside—Action of, on Isolated Organs. The action was studied on isolated rabbit intestine and isolated guinea pig uterus. The drug augments the amplitude and steadies the movements of the rabbit intestine. This action was not observed when an amount of glucose corresponding to that represented by the glucoside was used. Addition of the drug to the bath in which the uterine horn is immersed does not prevent the onset of spontaneous contractions, and addition before or after a contraction does not modify the periodicity of the movements; however, there is an irregular augmentation of the amplitude of the movement. This is noticed mainly on the gravid uterus, and not at all on an old organ.—J. CHEYMOL. *J. pharm. chim.*, 27 (1938), 386–397. (S. W. G.)

Verbenaloside—Parasympathomimetic Action of. The action of verbenaloside on the cardiovascular system, the respiration, the intestine and the excised eye is slightly parasympathomimetic; the effects of the drug on the arterial pressure and the intestine *in situ* disappear on addition of atrophine. Injection of the drug into the dog augments the activity of acetylcholine.—J. CHEYMOL. *J. pharm. chim.*, 27 (1938), 374–386. (S. W. G.)

Vitamin C and Anaphylactic Shock in Dogs. The administration of vitamin C has no marked effect either upon the phenomena of sensitization nor the subsequent anaphylactic reaction.—SIMON W. EYER, CARL A. DRAGSTEDT and MAX RAMIREZ DE ARELLANO. *Proc. soc. exptl. biol. med.*, 38 (1938), 642. (A. E. M.)

Vitamin C and Peptone Shock in Dogs. The prior administration of vitamin C to dogs does not protect against peptone shock and correspondingly it does not prevent the liberation of histamine from the fixed cells of the body into the blood.—CARL A. DRAGSTEDT, SIMON W. EYER and MAX RAMIREZ DE ARELLANO. *Proc. soc. exptl. biol. med.*, 38 (1938), 641. (A. E. M.)

TOXICOLOGY

Arsenic in Grape Musts and in Wines. Natural Algerian wines obtained from vines that were not treated with so-called "insol." arsenates contain 0.01 to 0.02 mg. of arsenic per liter. When treatment with "insol," arsenicals has been carried out not later than the beginning of coloring of the grapes (end of June in Algeria) the wine can contain up to 0.4 mg. of arsenic per liter; when this treatment was combined with the use of an adhesive agent and of severe leaf stripping, the arsenic content can exceed 1 mg. per liter. When arsenical treatment is continued beyond the period when the grapes begin to take on color, and especially if calcium arsenate is used, the arsenic content can exceed 5 mg. per liter. The quantities given above indicate merely the order of magnitude, the actual figures depending on a large number of factors (weather, number of treatments, dose of arsenates applied, amount of sulfur dioxide used in vinification, etc.). The arsenic content of must (fresh or sterilized) is always higher than that of the wine obtained from it, as part of the arsenic is insolubilized during fermentation and eliminated (generally to the extent of 40 to 45%) in the lees. Sulfur dioxide increases appreciably the solubility of lead and calcium arsenates in musts and wines.—J. H. FABRE and E. BRÉMOND. *Ann. Fals.*, 31 (1938), 149–157. (A. P.-C.)

Benzene—Study of Localization of, in the Body in Acute and Chronic Intoxication by Inhalation. A special apparatus in which controlled concentrations of benzene and air are passed into the respiration chamber is described and diagrammatically illustrated. The benzene was recovered from the blood, fat and organs by the following general procedure: Digest the organ in an alcoholic solution of picric acid after cutting into small pieces in twice its weight of the solution (10 cc. of the picric acid solution was used for small organs). Transfer to a distillation flask with the aid of more alcoholic solution and then add 10 cc. of 95% alcohol. Introduce a glass bead into the flask and quickly connect with the inverted U shaped condenser. Heat gently just to boiling so that the upright part of the condenser acts as a reflux. After thirty minutes, increase the temperature and collect the distillate in a small flask graduated at 10 cc. and containing 0.5 cc. of alcohol, the flask being submerged almost completely in ice. Transfer the 10 cc. of distillate to a tared glass stoppered flask and determine the amount of benzene by the spectrographic method of Laurian (*J. pharm. chim.*, 27 (1938), 561). Blood is first treated with potassium oxalate, then about 30 Gm. of the sample is placed in a distillation flask containing about 200 cc. of alcoholic

picric acid solution. The mixture is shaken, 10 cc. of alcohol is added, the flask is connected and the above procedure is followed. Fat is minced, placed in the distillation flask with an equal weight of alcoholic picric acid solution, digested for one hour, then the alcohol and benzene mixture is distilled as above. Benzene was found to be fixed in the endocrine glands, especially the suprarenal glands. It was localized selectively in the nervous system in acute intoxications and in the bone marrow in chronic intoxications.—P. LAURIN. *J. pharm. chim.*, 28 (1938), 5–22.

(S. W. G.)

Calcium Nitrate—Skin Lesions Due to. The pathological phenomena observed after application of calcium nitrate to the skin (hyperemia, leucocytic infiltration, necrosis) are due to the irritating action of the compound itself and not to that of caustic impurities such as free lime. Ammonium nitrate, which contains no lime, gives rise to the same accidents as the calcium salt. Abundant perspiration or atmospheric humidity increase the time of contact of the calcium nitrate with the skin and consequently favors the production of irritative lesions. The presence of cuts or scratches is not required for the nitrates to exert their deleterious action.—G. LORETO. *Medicina Lavoro*, 28 (1937), 161–177; through *Chimie & Industrie*, 39 (1938), 273. (A. P.-C.)

Calcium Salts—Comparative Study of Some, Used in Therapeutics. A comparative study of the physiological effects of calcium chloride, lactate, gluconate and pyruvate. Contrary to generally accepted notions, the gluconate is only one and a half times (instead of four times) less toxic than the chloride. The lactate was the most toxic of the salts examined. With all the salts studied the cause of death resides in the depressive action exerted by the calcium cation on the nervous centers, which action is undoubtedly compensated by the associated anion, but to an extent that present experiments have not yet permitted of determining.—U. BALDACCI. *Arch. Farmacol. Sper.*, 62 (1936), 91–107; through *Chimie & Industrie*, 39 (1938), 717. (A. P.-C.)

Carbon Monoxide—Elimination of, in Acute and in Chronic Poisoning. Determination of carbon monoxide in the blood and of the coefficient of carbon monoxide intoxication comprises: (1) extraction of gases in the blood by the previously described method (*Ann. Fals.*, 31 (1938), 8–13) and determination in the extracted gases of carbon monoxide by the usual chemical method (absorption with copper chloride after removal of carbon monoxide with aqueous potassium hydroxide and of oxygen with alkaline pyrogallate); (2) saturation of a second portion of blood with carbon monoxide, extraction of the gases, and determination of carbon monoxide therein. In cases of acute carbon monoxide poisoning, if the victim survives, elimination of carbon monoxide from the blood is complete in from 6 to 18 hours according to the treatment received, even though death ultimately ensues as a result of the poison. In cases of slow or chronic carbon monoxide poisoning, appreciable and abnormal traces of carbon monoxide (0.50 to 1.20 cc. per 100 cc. of blood) can persist for several months after removal of the person from the injurious medium. The presence of such traces apparently constitutes chemical evidence of chronic carbon monoxide poisoning and also furnishes scientific proof of the existence of such a form of carbon monoxide poisoning, which has at times been controverted.—E. KOHN-ABREST. *Ann. Fals.*, 31 (1938), 198–210. (A. P.-C.)

Dermic Affections Produced in a Painting Plant. An investigation dealing with 240 workers showed that all the dermic affections are of an eczematous nature, but that they do not necessarily constitute an allergic syndrom, although the factor of predisposition seems to be indispensable. These dermic affections are due exclusively to the action of the solvents used: toluene, benzine, ethanol. They often are accompanied by general symptoms of intoxication of the digestive and respiratory tracts and of the central nervous system.—G. MUNKWITZ. *Arch. Gewerbepath.*, 8 (1937), 83–112; through *Chimie & Industrie*, 39 (1938), 675. (A. P.-C.)

Dust and Tuberculosis. The effect of a sericite dust on the tubercular immunity of the guinea pig was studied comparatively with a dust produced by polishing steel. After exposure to these dusts for several months, the animals were inoculated with tuberculous cultures of increasing virulence (intraperitoneal injections). In most of the animals the immunity was reduced to the same extent by both dusts, so that sericite dust must be considered as very dangerous.—H. SELTER and P. WEILAND. *Arch. Gewerbepath.*, 8 (1937), 71–82; through *Chimie & Industrie*, 39 (1938), 675. (A. P.-C.)

Eczematous Eruptions Produced by Leaves of Trees and Bushes. Many eczema-producing substances, such as ethereal oils, resins, balsams, organic acids and alkaloids, are of vegetable origin. The leaves of herbaceous plants and the wood of trees appear to be well known as

the possible causes of eczema, but, according to the authors' impression, the possibility of an eczematous eruption due to leaves of trees and bushes is seldom considered and rarely investigated by patch tests. The authors present two cases of eruption due to elm and two cases of occupational eczema caused by magnolia leaves (*Magnolia grandiflora*). During the investigation of one of the cases due to contact with elm (*Ulmus campestris* and *U. montana*), control patch tests were made on 67 subjects. Among these, a negative reaction appeared in 50; and in 17 (about 25% the reaction was positive). The two cases of sensitivity to magnolia leaves were by two employees of a dye concern which colored foliage with various aniline dyes. The magnolia leaves were imported from Italy and Switzerland and processed only in October and November, at which time the eczematous eruptions occurred in the two cases, induced by the vaporizing juice of the magnolia leaves.—V. GENNER and P. BONNEVIE. *Arch. Dermat. and Syph.*, 37 (1938), 583; through *Am. J. Pharm.*, 110 (1938), 203. (A. C. DeD.)

Lethal Gases in Hygiene—Utilization of. The use of various lethal gases for disenfection (including water and sewage effluents), for destruction of rodents and of insects concerned in the spread of disease or destruction of foodstuffs, is described and methods for their application are detailed.—P. G. STOCK. *Proc. Roy. Soc. Med.*, 31 (1938), 427–442; through *J. Soc. Chem. Ind.*, 57 (1938), 986. (E. G. V.)

Sodium Chlorate—Study of Acute Poisoning by. Large doses of sodium chlorate in concentrated solutions were administered to rabbits by intramuscular injection and by mouth. The salt was recovered from the different tissues by the following procedure: triturate the tissue with sand, extract with a mixture of equal parts of alcohol and acetone, separating the liquid from solid particles by centrifuging and washing with 90% alcohol. Evaporate to dryness on a water bath, cool, dissolve in enough distilled water to obtain a concentration of 0.5–1.5 mg. of sodium chlorate per 2 cc. To 2 cc. of the solution add 10 cc. of aniline reagent (20 cc. of redistilled aniline and 400 cc. of hydrochloric acid), mix at intervals during twenty-five minutes, then compare the green color with that produced by standards containing between 0.5–1.5 mg. of sodium chlorate and prepared at the same time. A dose of 9.6 Gm. by stomach caused rapid respiration, frequent nervous movements and coma after four hours. During two and a half hours the rabbit eliminated 38.5 cc. of urine containing 0.509 Gm. of sodium chlorate. The amounts of sodium chlorate found in the blood and the various organs after autopsy are tabulated. Intravenous administration of 4 Gm. of sodium chlorate caused similar reactions as above, with death in two hours. Chlorate was found in all the organs. Asphyxia was caused by formation of methemoglobin. The heart and bone marrow showed high concentrations of chlorate. The kidneys, bladder and ovaries also showed appreciable amounts of chlorate.—R. FABRE and A. OKAC. *J. pharm. chim.*, 27 (1938), 523–533. (S. W. G.)

Spleen Hyperplasia—Pronounced, Produced by Experimental Intoxication with Phenylhydrazine. Experiments were carried out on rats and mice. Intoxication was produced by subcutaneous injection of a solution of phenylhydrazine. Considerable havituation was observed; a 160- to 180-Gm. animal which received 1 mg. of phenylhydrazine per day at the start was soon able to tolerate 10 mg. The animal died in 4 to 6 weeks; considerable blood changes (30% loss of hemoglobin) appeared only a short time before death. During this time the spleen reached 50% of the weight of the liver and about 4 to 5% of the total body weight.—E. KETTERER. *Arch. Gewerbepath.*, 7 (1937), 701–706; through *Chimie & Industrie.*, 39 (1938), 726. (A. P.-C.)

Tecuna and Java Curare—Preliminary Studies of the Botanical Components of. Curare, the arrow poison of the South American Indians, is composed of the combined extractions of many plants and they differ in different localities Authentic specimens of crude material used by Tecunas and Javas were the subject of the present study the aim being to determine which plants contained alkaloids of paralyzing action. Procedures and results are reported. It was found that Tecuna and Java curare represent five species of *Strychnos* whose alkaloids have a curare-like action on frogs. *Chondodendron limacüfolium* and *Telitoxicum minutiflorum* also were found to be highly toxic but the paralyzing action needs more study. *Capparis sola* contains alkaloids having a curare-like action. Many plants used by the Tecunas and Javas were found to be of no interest from the standpoint of alkaloids with curare-like action.—KARL FOLKERS. *J. Am. Pharm. Assoc.*, 27 (1938), 689. (Z. M. C.)