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PHARMACEUTICAL ABSTRACTS

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ABSTRACTORS

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ORGANIC

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Magnolia Fuscata—Alkaloids of. Two new phenolic alkaloids, magnoline $C_{18}H_{21}O_3N$ and magnolamine $C_{20}H_{23}O_4N$, were isolated from the leaves of *Magnolia fuscata*. The former consists of small colorless crystals, is very difficulty soluble in the usual organic solvents, melts at 179° C. and has a very slight levo-rotatory power. The second alkaloid crystallizes from benzene as very fine colorless needles.—N. PROSKOURNINA and A. OREKHOFF. *Bull. soc. chim. France*, 5 (1938), 1357–1360; through *Chimie & Industrie*, 42 (1939), 113. (A. P.-C.)

Morphine Content of Opium. The highest morphine strengths recorded in samples of Indian opium collected from first lancings were (Ghazipur) 18.3; (Gorakhpur) 18.1; (Gonda) 17.2; (Bareilly) 16.8; (Shahjehanpur) 17.0%.—ANON. *Analyst*, 64 (1939), 511. (G. L. W.)

Opium Alkaloids—Chromatographic Study of the. The analyses were concerned with morphine, codeine, narcotine and papaverine, and were based on the general scheme of Karrer and Nielsen (*Festschr. Zangger*, 2 (1935), 954–958) for separating quinine and cinchonine and of Zechmeister and Kolnoki in their chromatographic studies of cellulose acetate. In Wood light the four alkaloids give, respectively, pale violet, dark violet, yellow-gray and silver-white colors. As a result of the experiments the following scheme of separation of the alkaloids was developed: zone 1, resin + morphine; zone 2, morphine; zone 3, morphine + codeine + narcotine; zone 4, codeine + narcotine; zone 5, codeine + narcotine + papaverine; zone 6, papaverine; zone 7, papaverine; zone 8, absence of alkaloids. With this method it is possible to separate morphine initially and papaverine as a final product. Codeine and narcotine are absorbed in the intermediate stratum, codeine tending to accumulate in the upper part; there is, however, no sharp separation between codeine and narcotine. The morphine stratum is visible in ordinary light and better in Wood light; the papaverine stratum is visible only in Wood light.—G. R. LEVI and F. CASTELLI. *Gazz. chim. ital.*, 68 (1938), 459–470; through *Chimie & Industrie*, 42 (1939), 103–104. (A. P.-C.)

Veratrine Alkaloids. VI. The Oxidation of Cevine. A new degradation of cevine by oxidation with chromic acid in dilute sulfuric acid gave a substance, $C_{14}H_{14}O_6$, which apparently was derived from the acidic portion of the parent molecule. Properties and reactions of this crystalline substance are presented and conjectures made on its structure.—L. C. CRAIG and W. A. JACOBS. *J. Am. Chem. Soc.*, 61 (1939), 2252. (E. B. S.)

Essential Oils and Related Products

Essential Oils and Synthetic Odoriferous Substances Used in Cosmetics—Preserving Properties of. Comparative tests showed that the additions of common natural and synthetic aromatic substances to cosmetic creams retard or inhibit the growth of molds. A complete inhibition of molding was effected on the addition of these aromatic substances to beer wort infected with cultures of *Aspergillus glaucus* and *Penicillium glaucum*. Several tables are given, showing the comparative effectiveness of various essential oils and synthetic aromatics in the suppression of mold growths in emulsified creams.—E. SHEVLYAGINA and R. RUTKOVSKAYA. *Masloboĭno Zhirovoe Delo*, 15 (1939), No. 4, 31; through *Chem. Abstr.*, 34 (1940), 2133. (F. J. S.)

Ethereal Oils from the Resin of Pistacia Terebinthus. Volatile oils distilled from the resin of *Pistacia terebinthus* from the island of Chios are composed principally of *d*-pinene which is in turn a mixture of $C_{10}H_{16}$, dipentene and free borneol, and is esterified by acetic acid—G. A TSATSAS. *Prakt. Akad. Athenon*, 12 (1937), 137 (in Greek); through *Chem. Abstr.*, 33 (1939), 5989. (F. J. S.)

Eugenol—Determination of, in Essential Oils. Exactly 10 cc. of oil are treated with 80 cc. of *N* potassium hydroxide in a 100 cc.-conical flask with a graduated neck (10 cc.) and well shaken every 5 minutes for 30 minutes. Sufficient *N* potassium hydroxide is added to bring the unabsorbed oil into the graduated neck and the volume is determined after keeping for 24 hours. The amount dissolved represents eugenol. Emulsification can be prevented by pretreating the oil with a paste of tartaric acid and then drying over sodium sulfate. Reliable results are obtained with clove, pimento, cinnamon leaf and lawang oils. Bay oil contains chavicol and the results are unsatisfactory. 5% sodium hydroxide in place of *N* potassium hydroxide affords high results.—P. A. ROWAAN and J. A. INSINGER. *Chem. Weekblad*, 36 (1939), 642–643; through *J. Soc. Chem. Ind.*, 58 (1939), 1176. (E. G. V.)

Oil of Chenopodium—Assay of. Proposed methods of assay are discussed and the following proce-

dure proposed: Place 10 cc. of the oil in a cassia flask (250 cc.) and add 150 cc. water and 30 cc. of 2*N* bisulfite solution free from an excess sulfur dioxide. Shake at frequent intervals for 1–2 hours preferably in the shaking machine; then add 30 cc. more of the bisulfite solution and continue shaking. The flask may be kept at 30–40° C. and finally heated to 70° C. When the undissolved oil ceases to diminish in volume, the flask is filled with water and after settling the volume of oil is read. A sample of oil was fractionated and the constants for five fractions are reported.—F. D. DODGE. *Drug and Cosmetic Ind.*, 46 (1940), 414–415. (H. M. B.)

Peppermint Oils—Balkan. The Bulgarian peppermint oil industry dates back to 1926. The rapid progress made by the industry is shown by a table which is given in this article. The Bulgarian oil is of very good odor and flavor, superior to American oil and about equal to the Italo-Mitcham oil. The cultivation of Mitcham peppermint was also started in Roumania in 1926. The oil is of similar quality to the Bulgar-Mitcham oil. Both of these oils satisfy the color test of the British Pharmacopœia, 1932, and also give a blue-violet color with the sugar-hydrochloric acid test.—W. H. SIMMONS. *Perfumer. Essent. Oil Record*, 31 (1940), 92. (A. C. DeD.).

Raman Effect—Application of the, to the Analysis of Essential Oils. The identification of oils and the study of their constitution (*e. g.*, the distinction between isomerides) with the use of Raman frequencies are suggested.—L. M. LABAUNE. *Rev. marques parfum. savon.*, 14 (1936), 145; through *Chem. Abstr.*, 33 (1939), 5988. (F. J. S.)

Volatile Oil of Bitter Almond—Purified. This product will be among the new monographs in an Addendum to the British Pharmacopœia, 1932, which will shortly be published.—ANON. *Perfumer. Essent. Oil Record*, 31 (1940), 163. (A. C. DeD.).

Glycosides, Ferments and Carbohydrates

Animal Peroxidases—Specificity and Biological Roles of. A review with bibliography.—M. POLONOVSKI and MAX JAYLE. *Bull. soc. chim. biol.*, 21 (1939), 66–91; through *Chem. Abstr.*, 33 (1939), 3403. (E. G. V.)

Cardiotoxic Plants. XVII. Secondary Glucosides of Oleander. Oleander leaves contain, in addition to oleandrin, desacetyl-oleandrin and adynerin, a new glucoside named neriantin, $C_{29}H_{42}O_9$ + 1.5 H_2O. Like adynerin, this compound possesses no cardiotonic properties. By hydrolysis it yields glucose and a genin.—R. TSCHESCHE, K. BOHLE and W. NEUMANN. *Ber.*, 71 (1938), 1927–1932; through *Chimie & Industrie*, 42 (1939), 104. (A. P.-C.)

Enzymes—Quantitative Method for Determining the Action of. The Zeiss interferometer is recommended for determining the activity of enzymes.—L. ASHER. *Verh. schweiz. Physiol.*, 13 (1938), 11–12; through *Chem. Abstr.*, 33 (1939), 6371. (E. G. V.)

Mannose Solution for Bacteriological Use—Note on the Preparation of an Unpurified Product. In view of the high cost of pure mannose the authors make this report. A satisfactory carbohydrate for classifying vibrios may be prepared by treating vegetable ivory-nut shavings, known to be rich in mannose, with NaOH then with H_2SO_4 and finally removing all acid with $Ba(OH)_2$ and $BaCO_3$.—SARASHIPADA BOSE. *Indian J. Med. Research*, 27 (1939), 73–74. (W. T. S.)

Papain—Rate of Digestion of, on Mutton. Biological and chemical analyses showed that digestion in a mince of 500 Gm. of mutton and 5 Gm. of papain was complete within two hours. A slow transformation of proteose to peptone occurred after this period. With half the quantity of papain three hours were required for the digestion. Of the three chemical methods used to determine the rate of digestion in the mince the formol titration was the simplest.—SARASHIPADA BOSE. *Indian J. Med. Research*, 27 (1939), 65–74. (W. T. S.)

Peptic Activity—Method for the Determination of. Report is made of a study undertaken to find in the literature a short, convenient, accurate method of assay for preparations containing pepsin. The method is a modification of that proposed by Jenkins and Hoshall. Detailed procedure is given. The method of preparation of the substrate has been changed. It was found necessary to heat the mixture at least 30 minutes before a homogeneous substrate is produced. A 0.0800 *N* hydrochloric acid provides a substrate of optimum p_H for peptic digestion under the conditions of the method. Digestion for 30 minutes at 55° C. was found most suitable. Investigation showed that peptic activity figures of liquid pepsin preparations purchased from retail stores are above N. F. VI standard but are equivalent to pepsin used when prepared.—C. J. KLEMME and LEE WORRELL. *Jour. A. Ph. A.*, 29 (1940), 263. (Z. M. C.)

Saccharosonic Acids and Their Salts. A method for the production of saccharosonic acids and their alkali metal, alkaline earth metal and tertiary amine salts comprises subjecting esters, lactones or acylated lactones of osonic acids to the action of agents of alkaline reaction corresponding to the mentioned salts, while maintaining the reaction of the reaction mixture near the neutral point. Glucosaccharosonic acid compounds of the general formula $C_6H_7O_5OX$ are produced in which *X* represents hydrogen or an alkali or alkaline-earth metal. The acid melts (with decomposition) at 160° to 164° C., and it and other compounds may be used in the treatment of scurvy and similar diseases, as a substitute for carbohydrates in diabetes, and in general for bactericidal effects.—HEINZ OHLE. U. S. pat. 2,160,621, May 30, 1939. (A. P.-C.)

Saponin Solutions—Surface Tension of. The authors have studied, by a pulling-force method, the variation of surface tension in saponin solutions as a function of time in determining the exact influence of the concentration of the saponin, the influence of electrolytes and the influence of the p_H coefficient of the solvent. They have established that the presence of electrolytes generally augments the lowering of the surface tension produced by the saponin especially when the cation of the electrolyte has a low valence. The influence of the p_H coefficient is complex: the lowering of the surface tension produced by the saponin reaches a maximum p_H coefficient between 3 and 4, but depends on the composition of the buffers used to obtain the p_H coefficient.—A. BOUTARIC and P. BERTHIER. *Bull. soc. chim. France*, (1939), 804; through *J. pharm. Belg.*, 21 (1939), 714 (S. W. G.)

Saponins and Sapogenins. X. The Isolation of Gitogenin from Chlorogalum Pomeridianum. An improved procedure is given for the isolation of steroid sapogenins from *Chlorogalum pomeridianum*. Besides the previously reported tigogenin and chlorogenin a third sapogenin has been isolated which has been shown beyond reasonable doubt to be identical with gitogenin from digitalis in spite of an unexplainable behavior of mixed melting-point determinations. Melting-point diagrams are given for mixtures of gitogenin, tigogenin and chlorogenin.—C. R. NOLLER, L. H. GOODSON and M. SYNERHOLM. *J. Am. Chem. Soc.*, 61 (1939), 1707. (E. B. S.)

Sarcostemma Australe R. Br.—Saponin of. *Sarcostemma australe* R. Br. is a latex-bearing plant growing in the arid parts of Australia. Extraction of eight Kg. of plant material with 50–60 liters ethyl alcohol at room temperature and kneading the syrupy extract with ether give about 2.5% of crude saponin as a light brown, amorphous powder, easily soluble in cold water and depositing the saponin as a syrup on heating. It was freed from impurities by partition between chloroform and water and then between ethyl alcohol-benzene and water; the product was further fractionated by shaking the aqueous solution with ethyl acetate. Saponification of the saponin with 0.5*N* alcoholic potassium hydroxide and acetylation of the resin give a sarcostin glucoside hexaacetate, brownish resin. Hydrolysis of the saponin with methyl alcohol containing 0.75% dry hydrochloric acid gives α-methyl glucoside; from the dilute ethyl alcohol-hydrochloric acid hydrolysis, phenyl-*d*-glucosazone was isolated; a quantitative determination of the sugar content gave 23.7% glucose (a diacylsarcostin monoglucoside requires 23.1%). Various methods were tried for the purification of the aglucone, of which adsorption on alumina from benzene-chloroform gave the purest product, analyzing for a monobenzoylmonocinnamylsarcostin; hydrolysis with ethyl alcohol-potassium hydroxide gives sarcostin, $C_{21}H_{34}O_6$, with 1 mol. water, melting point 170°; anhydrous, melting point 266–267°; concentrated hydrochloric acid gives a deep blue-violet solution, from which resinous materials separate; triacetate, colorless resin. The alkaline solution from the saponification contains benzoic acid and cinnamic acid.—J. W. CORNFORTH and J. C. EARL. *J. Chem. Soc.*, (1939), 737–742; through *Chem. Abstr.*, 33 (1939), 6320. (E. G. V.)

Sugars—Reducing Powers of Various, with Alkaline Copper Citrate Reagent. Scales' method for the determination of reducing sugars was modified by increasing the boiling time, and reducing values of 32 sugars were determined at various concentrations. The method as modified provides a very simple, convenient means for the quantitative determination of the various sugars. A comparison of the reducing values of different sugars reveals that the configurations of carbons 3, 4 and 5 have marked effect on the reducing values, but that the configuration of carbon 2 has little influence. Sugars in which the hydroxyl on carbon 3 is *trans* to the hydroxyls on carbons 4 and 5 have the highest reducing powers, while those which have *cis* hydroxyls on carbons 3 and 4 have lower reducing values. When the glycosidic union of a disaccharide is on carbon 3, the molecular reducing power is less than that of the monosaccharide corresponding to the reducing part of the molecule; if the glycosidic union is on carbon 4, the molecular reducing power is about 1.4 that of the corresponding monosaccharide, and if on carbon 6, the molecular reducing power is about 1.2 that of the corresponding monosaccharide. The effect of barium bromide on the reducing powers of the sugars varies with the experimental conditions. Under the conditions used in this investigation the presence of 6.5% of barium bromide lowers the reducing value by approximately 4%.—HORACE S. ISBELL, WILLIAM W. PIGMAN and HARRIET L. FRUSH. *J. Research Natl. Bur. Standards*, 24 (1940), 241. (W. T. S.)

Other Plant Principles

Chlorophyll—Natural and Commercial, in Edible Oils. A method based on fluorescence is used to differentiate natural chlorophyll from copper or zinc compounds. Copper produces a faint blue fluorescence, and zinc a strong red, in ethereal solutions. Nitrobenzene accents fluorescence in certain mixtures and differentiates between red fluorescence of zinc chlorophyll and natural chlorophyll, on the addition of copper acetate and acetic acid to the test solutions.—E. TURK. *Anales. Asoc. quím. argentina*, 132 (1937); through *Rev. soc. brasil. quím.*, 7 (1938), 237. (G. S. G.)

Derris Malaccensis—Isolation of an Optically Active Phenol From. In Part IV of a series of papers on the active principles of leguminous fish-poison plants H. makes this report. An optically active phenol, malaccol, isolated from an ethereal extract of the root of *Derris malaccensis* (Kinta type), is shown to have the formula $C_{20}H_{16}O_7$. From a study of its reactions and by comparison of these with the reactions of sumatrol and of elliptone, malaccol is found to be 15-hydroxyelliptone.—STANLEY H. HARPER. *J. Chem. Soc.*, (1940), 309–314. (W. T. S.)

Ionone and Irone. Properties of the two ionones, their separation and use, with methylionone, in perfumery, the preparation of irone from the oil of the iris, and its conversion into irene, dehydroirene, dehydroirenehydroxylactone, iregenone-di- and -tricarboxylic acids are described.—N. SABBATINI. *Riv. it. ess. prof. e piante offic.*, 18 (1936), 135, 187; through *Chem. Abstr.*, 33 (1939), 5988. (F. J. S.)

Lactuca Virosa—Determination of the Bitter Principles of the Latex of, by Taste. VII. A discussion.—G. SCHENCK and H. GRAF. *Arch. pharm.*, 277 (1939), 257–61. (L. K.)

Lactucins—Preparation of. VI. Bitter Principles of the Latex of Lactuca Virosa L. A description.—E. SPATH, G. SCHENCK and W. SCHREBER. *Arch. pharm.*, 277 (1939), 203–206. (L. K.)

Musk. I. The Natural Product. A discussion of the early history, the place of musk in medicine, the occurrence of musk in animals and plants and its production from natural sources.—ERNST OHLSSON. *Progressive Perfumery & Cosmetics*, (1939) 182; through *Chem. Abstr.*, 34 (1940), 2138. (F. J. S.)

***d*-Sesamin—Chlorination of.** Chlorination by means of hydrochloric acid and hydrogen peroxide of *d*-sesamin in a solvent such as acetic acid gives successively: 5,5′-dichlorosesamin, methylene ester of 4,5-pyrocatechol, methylene esters of 3,4,5-trichloropyrocatechol, methylene ester of 3,4,5,6-tetrachloropyrocatechol.—T. KAKU, K. ITTYODA and H. RI. *J. Pharm. Soc. Japan*, 58 (1938), 191–193; through *Chimie & Industrie*, 42 (1939), 108–109. (A. P.-C.)

Terpenes—Method of Study of, and Composition of Kuskovo Turpentine. The turpentine contains *d*-α-pinene 64, *l*-β-pinene 6, *d*-Δ^3-carene 14, and higher boiling point terpenes 12%.—J. S. SALKIND and A. G. BULAVSKI. *J. Gen. Chem. Russ.*, 9 (1939), 369–378; through *J. Soc. Chem. Ind.*, 58 (1939), 884. (E. G. V.)

Fixed Oils, Fats and Waxes

A. O. C. S. Olive Oil Committee—Report of the. Results and comments from collaborate studies on the Siebenberg-Hubbard and Fitelson tests for the detection of tea seed oil in olive oil are fully reported. The Fitelson test is found to be the easier to perform and to interpret, and is recommended for adoption as a tentative standard method, full details of the technique being given. The test is applicable to any type of mixture of the oils and gives reliable quantitative results for edible olive oils containing not less than 10% of tea seed oil; in the case of inedible olive oils, variations in their color may mask the end-point, so that the results are only

roughly approximate. Occasionally, authentic tea seed oil gives a faint pink color, usually fainter than would be equivalent to the presence of 5% of the oil, hence positive results indicating less than 10% of the oil can be accepted with reserve.—ANON. *Oil and Soap*, 16 (1939), 181–184; through *J. Soc. Chem. Ind.*, 58 (1939), 1258. (E. G. V.)

Ben (Moringa) Seed Oil. The tree *Moringa oleifera* and its flowers and fruit are briefly described. Seeds received from Haiti (average weight 0.3 Gm. each) comprised 26.2% of shells and 73.8% of kernels, the latter containing water 5.1% and oil 37.7%. The expressed oil had n^{25} 1.4651, acid valence 0.74, saponification value 186.4, iodine value (Hanus) 68.02, unsaponifiable matter 1.5%. Detailed analysis of the fatty acids indicated the following composition (expressed as glycerides % on oil): myristic 1.6, palmitic 3.8, stearic 11.3, behenic 6.5 (melting point of recrystallized acid 79.5°), lignoceric 0.15, oleic 71.1 and linoleic acid 3.9. An earlier sample of seed from Nicaragua yielded 70.3% of kernels containing 5.4% of water and 49.2% of oil having saponification value 186.7, iodine value 66.2, saturated acids 22.6%.—G. S. JAMIESON. *Oil and Soap*, 16 (1939), 173–174; through *J. Soc. Chem. Ind.*, 58 (1939), 1259. (E. G. V.)

Cacao Butter—Replacement of, in Pharmaceutical and Cosmetic Practice. The relation between the tensile strength, P, and the melting point, θ of preparations of fats and waxes is given by $P = m\theta + n\theta^2$, where m, n are −32.75, 1.82 for fats and −50.37, 2.07 for waxes. The sum of the products θ and parts by weight for each constituent of a cacao-butter (I) substitute should be 3400–3650. From these facts satisfactory substitutes of mixtures of paraffin (melting point 56°) and vegetable oils (melting point 32°) having 35–80% of the firmness of I are prepared.—A. G. BOSIN. *Sovet. Farm.*, 5 (1934), 3–10; through *J. Soc. Chem. Ind.*, 58 (1939), 1290. (E. G. V.)

Camphorated Oil for Injection—Preparation and Physical Constants of. Perfectly neutral olive oil suitable for the preparation of camphorated oil for injections can be prepared by the method suggested by Miss Ballot, consisting in neutralizing the free fatty acids with a 30% excess of normal sodium hydroxide and salting out the soaps thus formed by means of sodium chloride and sulfate. The camphor content of camphorated oil can be determined accurately polarimetrically.—A. JERMSTAD. *Pharm. Acta Helv.*, 13 (1938), 87–91; through *Chimie & Industrie*, 42 (1939), 102. (A. P.-C.)

Castor Oil. A review of uses, properties and production.—H. C. MILLER. *J. Jamaica Agr. Soc.*, 43 (1939), 25–29; through *Chem. Abstr.*, 33 (1939), 6627. (E. G. V.)

Fats and Oils—Chemistry of the Alicyclic Constituents of Natural. The topics included in this review are: vegetable and animal fats, phospholipides, the components of waxes, lipides of bacterial origin, lipides from fungi and analytical methods.—R. J. ANDERSON and L. F. SALISBURY. *Ann. Rev. Biochem.*, 8 (1939), 133–154; through *Chem. Abstr.*, 33 (1939), 6625. (E. G. V.)

Fats and Oils—Sterols and Vitamins as Components of. A review with 39 references.—M. SINGER. *Seifensieder-Ztg.*, 66 (1939), 425–426, 446–447, 465–467, 485–486, 505–506; through *Chem. Abstr.*, 33 (1939), 6625. (E. G. V.)

Lard—Adulteration of. Three samples which appeared to be hydrogenated fish oils gave tests which corresponded fairly well with those given by lard except their microscopic appearance under polarized light (brilliant needles observed only in the true lard) and their response to the Tortelli and Jaffe color reaction (true lard gave no color; others gave yellow to blue colors).—E. RENAUX. *J. pharm. Belg.*, 21 (1939), 549–50. (S. W. G.)

Mustard Oil. There are three varieties of mustard seed oil with characteristics as follows:

	White	Red	Black
Oil extd. by petr. ether	46.2	40.4	38.8%
Free fat acids	2.6	3.8	3.9%
Glycerides	93.1	92.2	92.1%
Unsaponifiable matter	0.8	1.1	0.9%
Isothiocyanates	0.28	0.58	0.8%
Cyanides	0.02	0.03	0.04%
Sapon. number	172	174	175
Iodine number	95	103	108

The percentage composition of the fat acids of these oils is: myristic 0.5, stearic 0.5, behenic 3.9, lignoceric 1.4, oleic 31.9, eruoic 41.9, linolic 17.8, linolenic 2.9; allyl isothiocyanate is not present in the seeds of these oils but is generated from glucosides present by the action of water which is always added during the process of grinding and pressing. The oil from seeds containing fungus contains nearly five times as much cyanide as normal oil. The unsaponifiable matter of mustard oils is a sterol which melts at 137° and also a terpene hydrocarbon, dipentene and a sulfur compound belonging to the heterocyclic series.—S. DUTT. *Indian Soap J.*, 5 (1939), 279–285; through *Chem. Abstr.*, 33 (1939), 6627. (E. G. V.)

Oil Milling—Modern. A lecture. Plant and processes for the expression, solvent extraction and refining vegetable oils are described.—L. H. DOWNS. *Oil and Colour Trades J.*, 95 (1939), 715–722; through *J. Soc. Chem. Ind.*, 58 (1939), 742. (E. G. V.)

Oils of Flacourtiaceæ and Their Derivatives. Unsaturated esters of chaulmoogric acid exert a more powerful therapeutic action than saturated esters; this is the case more particularly with the esters of citronellol, geraniol and linaloöl. The therapeutic activity can also be increased by esterifying chaulmoogryl and hydnocarpyl alcohols with aliphatic, aromatic or hydroaromatic carboxylic acids.—K. BURSCHKIES. *Angew. Chem.*, 51 (1938), 772; through *Chimie & Industrie*, 42 (1939), 105. (A P.-C.)

Olive and Olive Seed Oils—Specific Behavior of. By means of a combination of absorption and fluorescence methods a color reaction is obtained which permits detections with sesame or cottonseed oils up to 10%.—G. KARAGUNIS and D. SOLMOS. *Chim. Chronika*, 10–12 (1938), 218–223 (in Greek); through *Chem. Abstr.*, 34 (1940), 2196. (F. J. S.)

Olive Oil—Solid Acids in. Olive oils from different sources were mixtures, as shown by the melting point of the acids freed from oleic acid and the crystalline form of their lead salts. The mixed acids were repeatedly fractionated as their lithium salts. Non-congealable oils contained palmitic and much archidic acid (I); congealable oils had little I. The Bellier index of the former was greater than that of the latter.—R. MARCILLE. *Compt. rend.*, 209 (1939), 730–732; through *J. Soc. Chem. Ind.*, 59 (1940), 59. (E. G. V.)

Paraffin—Identification of. An application of Raman spectra to the identification and approximately quantitative analysis of individual paraffins, up to and including octanes, in paraffinic mixtures is described.—A. V. GROSSE, E. J. ROSENBAUM and H. F. JACOBSON. *Ind. Eng. Chem., Anal. Ed.*, 12 (1940), 191–194. (E. G. V.)

Poppy Oil. The seeds of various types of *Papaver somniferum* and *P. rhoeas*, grown in Sardinia, yield 40–55% of oil (density 0.924–0.938, acid value 14.92–17.94, saponification value 189.17–196.32, iodine value 130.3–136.83) similar to that yielded by oriental poppy.—G. B. ZANDA. *Arch. farmacol. sper.*, 67 (1939), 163–166; through *J. Soc. Chem. Ind.*, 58 (1939), 856. (E. G. V.)

Rye Germ Oil—Sterols of. A new doubly unsaturated sterol which is an isomer of stigmasterol has been isolated in a pure state from the most soluble sterol fraction of rye germ oil. The presence of α_1-, β- and γ-sitosterol has been demonstrated. The absence of α_2-sitosterol and stigmasterol has been shown. An analysis for dihydrositosterol failed to yield the pure compound by either the Schöenheimer or Anderson-Nabenhauer method.—S. W. GLOYER and H. A. SCHUETTE. *J. Am. Chem. Soc.*, 61 (1939), 1901. (E. B. S.)

Sulfonated Oils—Preparation of, and Their Detection in Medicinal, Pharmaceutical, Cosmetic and Technical Preparations. A review with twenty-four references.—WALTER MEYER. *Deut. Apoth. Ztg.*, 55 (1940), 128–130, 142–144. (H. M. B.)

Tangan-Tangan Oil—Medicinal Use of. Tangan-tangan oil is a good substitute for imported castor oil, since its laxative efficiency is somewhat better. Tangan-tangan oil, from Philippine *Ricinus communis*, is devoid of the side effect of vomiting sometimes produced by imported castor oil. Both oils produce after-constipation, but the effect is more frequent with tangan-tangan. Cats are suitable laboratory animals for testing cathartic efficiency of a purgative oil. Olive oil is not purgative when given in the same amount as the usual purgative doses of castor oil. Tangan-tangan oil prepared by cold expression does not contain the highly poisonous ricin with which the oil is associated in the beans.—ROMULO GUEVARA. *Rev. Filipina Med. Farm.*, 30 (1939), 87. (G. S. G.)

Vitamin A in Steamed Cod Liver Oil and in Oil Obtained by Centrifuging the Residue after Steaming. Steaming of cod liver removes 73% of the oil present, and a further 10% is obtained by centrifuging the residue; 61.5% of the total vitamin A content is contained in the steamed oil and 14% in the centrifuge oil. Centrifuge oil, which is thus more than 1.5 times as rich in vitamin A as steamed oil, is of slightly darker color and has a stronger odor.—L. AURE. *Arsberetn. vedkomm. Norges Fisk.*, 111 (1936), 50–51; through *J. Soc. Chem. Ind.*, 58 (1939), 744. (E. G. V.)

Waxes—Identification of Commonly Used, in Admixture. The precipitation temperatures of the waxes in *n*-butyl alcohol and *n*-haptane are proposed as criteria for the detection of carnauba and ozokerite in a mixture of waxes. The quantitative separation involves the isolation of an ethanol-soluble fraction, fatty acids of high and low molecular weight, hydrocarbons and fatty alcohols of high and low molecular weight. A schematic outline for the identification of waxes in admixture has been developed on a semiquantitative basis.—S. ZWEIG and A. TAUB. *Ind. Eng. Chem., Anal. Ed.*, 12 (1940), 9–14. (E. G. V.)

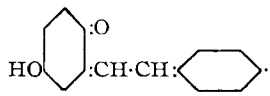
Unclassified

Alcohols—Purification of. Alcohols are purified by treatment with an easily reduced nitrate (for example, of a multivalent metal). Purification by vaporizing the alcohol (ethyl alcohol) through an alcoholic solution of cupric nitrate, ferric nitrate or silver nitrate, treating the distillate with alkali, and redistilling is claimed.—A. E. JURIST and L. W. GREEN. U. S. pat. 2,075,205; through *J. Soc. Chem. Ind.*, 58 (1939), 805. (E. G. V.)

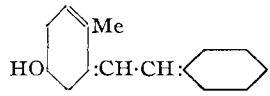
Amines—Production of, by Emulsion Method. Lower aliphatic amines are prepared by emulsifying an appropriate alkyl halide in water-ethyl alcohol-soap, adding the emulsion in portions to aqueous ammonia at about 100°/7 atmospheres, evaporating water and recovering amine by adding solid sodium hydroxide. The preparation of ethylamine, ethylene diamine, isopropylamine from ethyl bromide, ethylene dichloride and isopropylene bromide, respectively, is claimed.—C. BARBIERI, U. S. pat. 2,078,555; through *J. Soc. Chem. Ind.*, 58 (1939), 915. (E. G. V.)

Antipyrine—Some Mercury Compounds of. By the action of mercuric chloroamide on a boiling aqueous solution of antipyrine, there is formed a monomercury compound of antipyrine, corresponding to the formula $C_{11}H_{11}N_2O.HgCl.H_2O$, in which the mercury is combined to the carbon atom of the =CH— group. With potassium iodide this compound gives iodoantipyrine and mercuric iodide which is soluble in excess of the alkali iodide. Similar compounds, $C_{11}H_{11}N_2O.HgCl$, $C_{11}H_{11}N_2O.HgBr$ and $C_{11}H_{11}N_2O.HgOH$, are obtained by the action of mercuric acetate in the cold on antipyrine followed by substitution of chlorine, bromine or hydroxyl for the acetyl group. When an equimolecular mixture of antipyrine and mercuric acetate is fused on an oil-bath and the melt dissolved in water, there separates dimercurioantipyrine, $C_{11}H_{10}ON_2(HgOOCCH_3)_2$.—M. RAGNO. *Gazz. chim. ital.*, 68 (1938), 741–747; through *Chimie & Industrie*, 42 (1939), 110. (A. P.-C.)

Antirachitic Vitamins—Synthesis of Compounds Related to. The preparation of cyclohexylideneacetaldehyde and 4-hydroxycyclohexanone is described together with their condensation to form the dienone



Attempts to introduce an exocyclic methylene group in place of the carbonyl oxygen in the above formula have apparently led to the formation of mixtures of isomeric hydroxytrienes, $C_{15}H_{22}O$. The predominant isomeride is considered to have the third ethylene bond in the cyclohexane ring



and not in the exocyclic position. The preparation of cyclohexylideneacetaldehyde by ozonolysis of 1-allylcyclohexanol is an example of a useful method for obtaining α,β-unsaturated aldehydes.—JOHN B. ALDERSLEY, G. NORMAN BURKHARDT, ALBERT E. GILLAM and NATHAN C. HINDLEY. *J. Chem. Soc.*, (1940), 10. (W. T. S.)

Arseno Compounds—Asymmetric. Compounds of the general formula $4\text{-}NaO_2CCH_2O\text{-}2,3\text{-}(X)2C_6H_2As:AsC_6H_4N.NCH_3.CCH_3:C(NHCH_2OSO_2Na).CO$,

where one X represents CH_3 or —$NHCOCH_3$ and the other X represents hydrogen, readily dissolving in water to neutral solutions of good efficacy and tolerability when administered intravenously, subcutaneously or intramuscularly, are made by reducing to asymmetric arsenobenzenes phenoxyacetic acid-arsonic acids or aryl arsonic acids which have an imidazole ring containing glycolic acid as substituent, together with other therapeutically active aryl arsonic acids, or by producing the asymmetric arsenobenzenes from the derivatives of the

corresponding arsonic acids containing trivalent arsenic. In cases in which the product to be obtained contains a primary amino group or groups, acylate such group or groups or cause the arsenobenzene to react with compounds capable of condensing with primary amino groups such as formaldehyde bisulfite or glycide. Various details of procedure are given.—KARL STREITWOLF, ALFRED FEHRLE and WALTER HERRMANN, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,161,538, June 6, 1939. (A. P.-C.)

6-Benzoyl Morphine. 3-Benzyl-6-benzoyl morphine was prepared as follows: Dissolve 1.13 Gm. benzyl-morphine in 5 cc. pyridine, and mix with 3 cc. of a solution of 2.1 Gm. benzoyl-chloride in 10 cc. pyridine. At the end of 3 days, distil off the pyridine in vacuum. Dissolve the residue in 6 cc. of 0.5*N* HCl and 150 cc. of water. To the filtrate add 10 cc. of 25% HCl. The precipitate is the hydrochloride of 3-benzyl-6-benzoyl morphine. Cool the latter mixture to 0°; decant the liquid, and dissolve the precipitate in 70 cc. of hot 45% alcohol. Add 4 cc. of 25% HCl to the hot solution. On cooling, fine, silky, hydrated needles separate out. Yield—1.1 Gm. Dried crystals melt at 130–135°. Mechanically stir 1.5 Gm. of the hydrochloride with 10 cc. of 38% HCl. The salt is transformed into a brownish, oily mass which gradually dissolves. After 1 to 2 days pour the product into 200 cc. of water and shake the mixture with petroleum ether. Make the aqueous solution alkaline with ammonia. The new base separates out. Yield—70–80% of theoretical. The base crystallizes from ether in beautiful, leaflike crystals. From 10- to 12-fold quantities of absolute alcohol, it crystallizes as shiny needles melting at 269–270°, with decomposition.—C. MANNICH and G. SIEWERT. *Arch. pharm.*, 277 (1939), 128–130. (L. K.)

Calcium Ascorbate and Calcium Acetylsalicylate—Double Salt of. A therapeutic double salt is produced by slaking lime with water, suspending the slaked lime in ethanol, mixing the suspension with a mixture formed of acetylsalicylic acid and ascorbic acid and evaporating the ethanol.—SAMUEL KLEIN. U. S. pat. 2,159,214, May 23, 1939. (A. P.-C.)

4-Carboline and 5:6-Benz-4-Carboline—Synthesis of Some Derivatives of, in Attempts to Find New Antimalarials. To prepare compounds carrying a basic side chain similar to that of atebrin and plasmoquine, various carboline derivatives have been prepared in order that they might be tested for possible antimalarial activity. The condensation of 3-chloro-1-methyl-4-carboline, or preferably of its methosulfate, with diethylaminoalkylamines has been effected with the formation of the corresponding diethylaminoalkylaminoderivatives. Analogous compounds have been prepared in the 5:6-benz-4-carboline series. Replacement of nuclear hydrogen by chlorine has been observed when certain carboline and benz-carboline derivatives are treated with an excess of phosphorus pentachloride.—WILLIAM O. KERMACK and WALTER TEBRICH. *J. Chem. Soc.*, (1940), 314–318. (W. T. S.)

$\Delta^{4:6}$-Cholestadien-3(β)-ol—Preparation of. A study of $\Delta^{4:6}$-cholestadien-3(β)-ol has been undertaken in order to determine whether, in view of the mobility of the related 7:8-dehydrocholesterol ring system, it is converted into vitamin D_3 on irradiation with ultraviolet light.—VLADIMIR A. PETROW. *J. Chem. Soc.*, (1940), 66. (W. T. S.)

Chrysene Series—Experiments in. A convenient method of preparing 2-(α-naphthyl)-propionaldehyde has been found in the condensation of α-naphthylmagnesium bromide with methoxyacetonitrile followed by a methyl Grignard reaction on the resulttin methoxy-methyl α-naphthyl ketone and acid dehydration of the carbinol. The aldehyde can be smoothly reduced to the alcohol and the latter converted into the chloride. From these intermediates an attempt was first made to synthesize 5-methyl-chrysene by the Bogert-Cook method, but there was obtained instead a hydrocarbon identical with Newman's 6-methylchrysene. Apparently in analogy with the *para* migration of a methyl group attached to a saturated ring observed by Haworth, an *ortho* methyl migration occurs in the dehydrogenation. Various other possible methods of utilizing the same intermediates for the synthesis of 5-methylchrysene were explored without success, the difficulty being associated in part with the ready loss of methyl from the 5-position, as observed by W. E. Jones and Ramage.—L. F. FIESER, L. M. JOSHEL and A. M. SELIGMAN. *J. Am. Chem. Soc.*, 61 (1939), 2134. (E. B. S.)

Glycerin and Its Substitutes. A lecture. The possibilities of glycols, sugars, "perglycerin" (as hygroscopic medium), ethanolamines, etc., as partial substitutes for glycerol are reviewed.—F. OHL. *Allgem. Oel- u. Fett-Ztg.*, 36 (1939), 245–250; through *J. Soc. Chem. Ind.*, 58 (1939), 856. (E. G. V.)

Hormone Intermediate—Production of. 3-Chloro-Δ^5-acetocholen-17-one, melting point 153°, is obtained in good yield by interaction of dehydroandrosterone with phosphorus pentachloride at room temperature.—J. WEIJLARD. U. S. pat. 2,072,913; through *J. Soc. Chem. Ind.*, 58 (1939), 995. (E. G. V.)

Iodine Compounds for Poultry—Therapeutic. An iodine-generating composition, suitable for administration to fowl through the esophagus for preventing blackhead and coccidiosis, contains an iodide and an iodate of an alkali metal, such as potassium iodide and iodate, which react together and liberate free iodine upon contact with the acidic reagent present in the fowl's gastric juice.—ELLIS L. WEFT. U. S. pat. 2,158,446, May 16, 1939. (A. P.-C.)

Iodohippuric Acids—Preparation of Some. The usefulness of sodium *o*-iodohippurate (Hippuran) as a contrast agent in radiography has led the author to investigate other iodinated hippuric acids. The method of Wheeler and Johns (*Am. Chem. J.*, 43 (1910), 398) for the preparation of 2-amino-5-iodobenzoic acid was found to give a low yield of an impure product. This intermediate was readily obtained in the hands of the authors by nascent iodination of anthranilic acid. 2-Amino-5-iodobenzoic acid was also prepared in low yields by the iodination method of Datta and Prosad. Treatment of *p*-aminobenzoic acid with nascent iodine yielded 2,4-diiodoaniline instead of the expected 3-iodo-4-aminobenzoic acid. 2,5-Diiodo-, 3,4-diiodo- and 3, 5-diiodobenzoic acids were converted by thionyl chloride to the corresponding dibenzoyl chlorides. The three latter compounds upon treatment with an alkaline solution of glycocoll and subsequent acidification gave in each case the desired diiodohippuric acid in over-all yields of 78%, 40% and 33%, respectively. Published methods for the preparation of 2,5-diiodo-, 3,4-diiodo- and 3,5-diiodobenzoic acids were critically studied as was the procedure for preparing 2-amino-3,5-diiodobenzoic acid.—CARL J. KLEMME and JAMES H. HUNTER. *J. Org. Chem.*, 5 (1940), 227–234. (W. T. S.)

Mercury Compounds—Antiseptic Organic. Antiseptic water-soluble compounds of the general formula $(HO_3S)_nY(N{:}NH)OH(HgX)_n$, in which X is an acid radical, Y is aryl, and n is 1 or 2, are produced by coupling diazotized sulfanilic, metanilic,

naphthionic, benzidinesulfonic or 1-aminonaphthalene-3,6-disulfonic acid with 2-chloromercuri-6-methylphenol, 2-chloromercuri-4-methylphenol, 2-chloro-6-chloromercuriphenol, *o*-chloromercurithymol, α-chloromercuri-β-naphthol, 3-chloromercuri-4-hydroxyazobenzene-4-sulfonic acid, or *o*-chloromercuriphenol (suitably at a p_H of 3 to 6).—RUSSELL HOPKINSON and ALEXANDER V. TOLSTOOUHOV, assignors to OSTRO RESEARCH LABS., INC. U. S. pat. 2,162,014, June 13, 1939. (A. P.-C.)

Mercury Compounds—Organic. Germicidal compounds of relatively low toxicity and suitable for therapeutic uses have the general formula $(R\text{Hg})_xR'$, in which R represents an aromatic structure to a carbon atom of which the mercury is directly attached and in which none of the carbon atoms has direct linkage with any element other than hydrogen, carbon and mercury; in which R' represents a sulfonamido-substituted aromatic carboxylic acid radical that is linked to the RHg group through replacement of acidic hydrogen; and in which x represents the number of RHg groups in the compound and is an integer of at least 1 and not more than the number of carboxyl groups in the radical R'. Details are given of the production of a number of such compounds.—CARL N. ANDERSEN, assignor to LEVER BROS. CO. U. S. pat. 2,162,211, June 13, 1939. (A. P.-C.)

Monocyclic Rings—Stereochemistry of. I. Interconversion of Methylcyclohexane into Methylcycloheptane Ring and Synthesis of 4-Methylcycloheptanone. 4-Methylcycloheptanone has been synthesized by three different methods. First, 4-methylcyclohexanonecyanohydrin was converted into 4-methylcyclohexenyl cyanide which was reduced to 4-methylcyclohexylmethylamine and di-4-methylcyclohexylmethylamine. Distillation of the product obtained by the action of nitrous acid on the primary amine, yielded 4-methylcycloheptene, 4-methylcycloheptanol and 4-methylcyclohexyl carbinol. 4-Methylcycloheptanol on being oxidized gave a ketone mixture from which it has been inferred that 4-methylcycloheptanone exists in isomeric forms. Methyl succinic ester gave a diol on reduction which was subsequently converted into the dibromide, the di-nitrile and methyladipic acid. By the action of sodio-malonic ester on the dibromide and the subsequent hydrolysis, the corresponding suberic acid could not be obtained. The only product of this reaction was methylcyclopentane carboxylic acid. The methyladipic acid was, however, more conveniently prepared by the oxidation of 4-methylcyclohexanone. This was converted into the diol, dibromide, di-nitrile and γ-methylsuberic acid without much difficulty. By a third method pure 4-methylcyclohexanone was converted into a mixture of ketones by the action of diazomethane by the method of Mosettig and Burger. From the ketone mixture, the semicarbazone of 4-methylcycloheptanone was isolated in fairly good yield.—MUHAMMAD QUDRAT-I-KHUDA and SUBASH KUMAR GHOSH. *J. Indian Chem. Soc.*, 17 (1940), 19. (F. J. S.)

Polycyclic Aromatic Hydrocarbons—Synthesis of. The 6:9:10-trimethyl and the 5:6:9:10-tetramethyl derivative of 1:2-benzanthracene have been synthesized for biological comparison with other hydrocarbons of similar structure. These compounds were prepared by the action of methylmagnesium iodide on the appropriate derivatives of 9:10-anthraquinone, conversion of the resulting diols into their dimethyl ethers. Treatment of these with metallic sodium gave the 9:10-dimethyl hydrocarbons. Reports of test for carcinogenic and growth-inhibitory activity will be published elsewhere.—G. M. BADGER, J. W. COOK and F. GOULDEN. *J. Chem. Soc.*, (1940), 16. (W. T. S.)

Quinones Related to Vitamins K_1 and K_2—Synthesis of. The chemical properties and absorption spectra of synthetic model compounds and the marked antihemorrhagic activity of at least one of these substances (2,3-dimethyl-1,4-naphthoquinone, assayed by the Almquist procedure) lends support to the formulation of vitamin K_1 as 2-methyl- (or ethyl)-3-phytyl-1,4-naphthoquinone and of vitamin K_2 as 2,3-difarnesyl-1,4-naphthoquinone. A theoretical interpretation is given of the purple-blue color reaction of β-unsaturated alkyl naphthoquinones with sodium ethylate and it is shown that the reaction involves the replacement of the unsaturated side chain by hydroxyl. This accounts for the formation of a phthiocol-like pigment as the end product of the color reaction with vitamin K concentrates, and the pigment probably is phthiocol or the ethyl homolog. The phthiocol isolated from human tubercle bacilli may have arisen from the alkaline cleavage of a K-type vitamin.—L. F. FIESER, W. P. CAMPBELL and E. M. FRY. *J. Am. Chem. Soc.*, 61 (1939), 2206. (E. B. S.)

Sulfanilamide—Pyridine and Piperazine Derivatives of. 2-(3′-Nitro-4′-hydroxybenzenesulfonamido)pyridine has been prepared by the condensation of 3-nitro-4-acetamidobenzenesulfonyl chloride with 2-aminopyridine, followed by hydrolysis and replacement of the amino by the hydroxy group. By reduction 2-(3′-amino-4′-hydroxybenzenesulfonamido)pyridine has been obtained. A number of di- and mono-substituted piperazine derivatives have also been prepared. These compounds have been synthesized in order that their possible chemotherapeutic value may be ascertained.—WILLIAM O. KERMACK and WALTER TEBRICH. *J. Chem. Soc.*, (1940), 202–205. (W. T. S.)

Thiazoles—Researches on. XXIII. Synthesis of Certain Benzothiazoles Structurally Related to Quinoline Antimalarials. 6-Methoxy-4 (and 7)-(β-diethylaminoethyl) - aminobenzothiazoles have been synthesized from *p*-anisidine in the one case, and from 3-nitro-4-aminoanisole in the other. It was planned to study these compounds as possible antimalarials, but recent similar work makes their value as such unlikely. From *m*-nitro-*p*-anisidine, 4-amino-6-methoxybenzothiazole is easily prepared. Nitration of 6-methoxy, or of 2-phenyl-6-methoxybenzothiazole, substitutes the H in position 7.—H. H. FOX and M. T. BOGERT. *J. Am. Chem. Soc.*, 61 (1939), 2013. (E. B. S.)

Thiobarbiturates—Some N-Substituted Derivatives of. The medicinally useful properties of Prominal and Evipan led the authors to prepare and study some analogous 1,5,5-trialkyl-2-thiobarbituric acids. One mole of dialkyl malonic ester and 1.6 moles of alkyl thiourea condensed smoothly in anhydrous ethanol containing 3 moles of sodium to yield 1-allyl-5,5-dialkylthiobarbituric acid. However, methyl-, ethyl- or phenylthiourea under the same conditions would not give the desired trisubstituted thiobarbituric acid but instead another compound probably an amide, $R_2C(CONHCS.NHR')_2$, or in some cases a cyclic derivative of it. By changing conditions and proportions these reactants could be condensed to give workable and in some cases significant amounts of the desired trisubstituted compound along with the corresponding α,α - dialkyl - *N* - alkylthiocarbamylmalonamic acid. Of the 13 trisubstituted thiobarbituric acids prepared the Na salts of 9 were injected intraperitoneally into mice. While the effective and lethal doses varied widely within the group, most of the compounds were quick and short-acting hypnotics with the exception of the benzyl derivatives which were convulsants.—FRANK S. CROSSLEY, ELLIS MILLER, WALTER H. HARTUNG and MAURICE L. MOORE. *J. Org. Chem.*, 5 (1940), 238–243. (W. T. S.)

Thymol Derivatives. III. Ortho-Thymotinic Acid and Certain of Its Derivatives. Procedures are outlined for the preparation of the acid (A), its ammonium and silver salts, methyl and ethyl esters, acetyl derivative, 3-nitro and 3,4-dinitro-compounds, the silver salt of 3-nitro-*o*-thymotinic acid and its ethyl ester, 3-amino-*o*-thymotinic acid hydrochloride, the 3-azophenyl derivative of A and 3-bromo-*o*-thymotinic acid.—CLARENCE W. SONDERN. *Pharm. Arch.*, 11 (1940), 28–32. (H. M. B.)

α-Tocopherol—Further Investigations on the Homologs of. Syntheses of tocopherols containing two methyl substituents in the aromatic nucleus have been dealt with in previous papers (*J. Chem. Soc.*, (1938), 1382, and (1939), 542). The work has now been extended to the condensation of quinol and toluquinol with phytol to produce lower homologs of α-tocopherol. Condensation of quinol monobenzoate with phytol, followed by removal of the benzoyl group, gave a tocopherylquinol which could be cyclized by acid treatment. This, nor the other tocopherols in question, showed vitamin E activity in doses as high as 50 mg. 1:4-Dihydroxy-2-methylnaphthalene was condensed with phytol (using $ZnCl_2$ and heat) to give an oil consisting largely of quinones related to vitamin K instead of the expected tocopherol. The oil possessed no vitamin E activity.—A. JACOB, E. K. SUTCLIFFE and A. R. TODD. *J. Chem. Soc.*, (1940), 327–332. (W. T. S.)

BIOCHEMISTRY

Adrenal Gland Extracts—Purification of. Extracts of the cortical portion of the adrenal gland freed from ballast substances are dissolved in 95% ethyl alcohol and the solution is filtered through a base-exchange material, for example, permutit. The cortical hormone is thus obtained free from adrenaline.—W. W. SWINGLE and J. J. PFIFFNER, U. S. pat. 2,074,943; through *J. Soc. Chem. Ind.*, 58 (1939), 887. (E. G. V.)

Air for Breathing—Oxygen-Liberating Compositions Suitable for Regenerating. Oxygen-liberating compositions are formed from alkali peroxide, hydrate alkali peroxide and a hydrated copper oxychloride catalyst which becomes effective to supply water to the composition under the heat of reaction between the composition and exhaled air, the composition being characterized by liberating oxygen immediately on contact with exhaled air and at a rate at least equal to the minimum oxygen replenishment value necessary in a closed breathing system, and by long continued oxygen evolution at such rate during such exposure to exhaled air.—KURT A. GERSON. U. S. pat. 2,160,542, May 30, 1939. (A. P.-C.)

Alcoholic Beverages—Stabilization of. Non-distilled alcoholic beverages, particularly wines, are stabilized against hazes due to iron, aluminum, copper, and calcium by addition of 0.1–1 Gm./gal. of soluble sodium phosphite (preparation described). The liquor is agitated, and the precipitate which has appeared about 12–18 hours later is removed by filtration.—A. G. LIBBEY. U. S. pat. 2,075,653; through *J. Soc. Chem. Ind.*, 58 (1939), 877. (E. G. V.)

Alcoholic Intoxication—Medicolegal Aspects of. After thoroughly discussing the various methods of determining intoxication the author cites his reasons for preferring the spinal fluid-brain ratio test. It was granted that this method is too dangerous and complicated for general use.—FERDINAND C. HELWIG. *Southern Med. J.*, 33 (1940), 648–656. (W. T. S.)

Androstene Compounds—Δ^4 Unsaturated. Therapeutic compounds are produced by combining $\Delta^{5,6}$-androstene compounds with hydrogen halide and then eliminating the hydrogen halide under mild conditions with alkali salts of organic acids such as sodium or potassium acetate.—LEOPOLD RUZICKA, assignor to SOCIETY FOR CHEMICAL INDUSTRY IN BASLÉ. U. S. pat. 2,159,569, May 23, 1939. (A. P.-C.)

Aneurin (Vitamin B$_1$)—Determination of, in Drug Preparations. Best results were obtained if the sample contained about 5γ of aneurin hydrochloride in water. To 150 cc. solution in a separatory funnel add 5 cc. of 1% $K_3Fe(CN)_6$ solution, mix, add 10 cc. 10% NaOH solution, shake and let stand for 2 minutes. Add 20 cc. isobutyl alcohol, shake for 1 minute, filter through fat-free cotton into a 25-cc. measuring flask. Repeat the extraction with 5–6 cc. isobutyl alcohol and fill the flask to the mark with the filtrate. If the solution opalesces (an indication of water in the isobutyl alcohol) add 1 Gm. anhydrous Na_2SO_4, let stand over night and filter. Measure the fluorescence of the thiochrome solution by means of a Hanau analyzing lamp and a Pulfrich step photometer, and compare with that of standard solution prepared from crystalline aneurin hydrochloride. If the sample contains other fluorescing substances, aneurin is adsorbed by Fuller's earth preparations. The method gave results with errors of not more than +8 or −16%.—GÁBOR VASTAGH. *Magyar Gyógyszerésztud. Társaság Értesítője*, 16 (1940), 56; through *Chem. Abstr.*, 34 (1940), 2135. (F. J. S.)

Anterior Pituitary Hormone—Effect of Picric and Flavianic Acids on the Potency of the Follicle-Stimulating. The claim of Fevold that follicle-stimulating hormone is reversibly inactivated by picric or flavianic acid could not be substantiated.—H. JENSEN and S. TOLKSDORF. *J. Biol. Chem.*, 132 (1940), 519. (F. J. S.)

Antirachitic Provitamin from Wheat Germ Oil. By the chromatographic method there was separated from the sterol fraction of wheat germ oil 1.2% of provitamin D, identified as ergosterol. Several reactions (formation of pinacone, catalytic hydrogenation, etc.) confirmed the identity of the provitamin.—A. WINDAUS and F. BOCK. *Hoppe-Seyler's Z. physiol. Chem.*, 256 (1938), 47–48; through *Chimie & Industrie*, 42 (1939), 118. (A. P.-C.)

Arginine—Determination of, by Means of Flavianic Acid. A method to determine arginine in hydrolysates of proteins is described, which depends upon the insolubility of arginine diflavianate in the acid solution of amino acids. This substance separates slowly in the cold as pale yellow needles. Purification is effected by solution in ammonia and reprecipitation at slightly acid reaction from hot solution as the monoflavianate which separates as orange-yellow plates with a highly developed golden yellow luster. Analysis of a representative group of proteins has given results usually a little higher than those previously obtained by the silver precipitation method. From 3 to 5 Gm. of protein are required for each determination and the results are highly reproducible and apparently reliable.—H. B. VICKERY. *J. Biol. Chem.*, 132 (1940), 325. (F. J. S.)

l-Ascorbic Acid. Esters such as diacetone-2-keto-*l*-gulonic acid allyl ester, bis(methyl ethyl ketone)-2-keto-*l*-gulonic acid methyl ester, and diacetone-2-keto-*l*-gulonic acid diethylaminoethyl ester, on heating with acids such as 18% hydrochloric acid, 20% sulfuric acid, 10% potassium bisulfate, or 50% formic acid solution, yield *l*-ascorbic acid, which may be precipitated by cooling and recrystallized.—WILHELM WENNER, assignor to HOFFMANN-LAROCHE INC. U. S. pat. 2,159,191, May 23, 1939. (A. P.-C.)

Ascorbic Acid—Stability of, Action of Preservatives on the. Addition of formic (0.25%), salicylic (0.1%) or benzoic acid (0.1%) to an aqueous solution of synthetic ascorbic acid (5 mg. %) retards the destruction of the vitamin; addition of the same substances to a lemon juice containing ascorbic acid in the same concentration has only a very slight preserving effect on the vitamin content.—W. KLODT and B. STIEB. *Arch. exptl. Path. Pharmakol.*, 189 (1938), 509; through *Chem. Abstr.*, 33 (1939), 5987. (F. J. S.)

Base in Biological Material—Determination of Total, by Electrodialysis. A modified unit for the determination of total base by electrodialysis is described. Its application is described for the determination of base in serum, blood cells, urine, tissues and other biological media. Approximately 0.2 cc. or 0.2 Gm. of material is adequate and the recovery of the total base is complete. Comparison was made between the recovery of the base by electrodialysis and by the determination of ions individually, by the gravimetric procedure, by the barium iodate method described by Van Slyke and associates and by the benzidine sulfate method of Hald. Agreement was satisfactory with all of the methods except that described by Hald.—W. V. CONSOLAZIO and J. H. TALBOTT. *J. Biol. Chem.*, 132 (1940), 753. (F. J. S.)

Blood-Stanching Compositions. Stanching and bleeding-preventing remedies for external application to wounds, injection or oral administration contain a polymeric vinyl compound capable of swelling in water, such as a polymeric vinyl alcohol. —WILLY O. HERRMANN, assignor to CHEMISCHER FORSCHUNGSGES. M. B. H. U. S. pat. 2,160,503, May 30, 1939. (A. P.-C.)

Blood Sugar Test. A small quantity of the blood to be tested is diluted many times; proteins are precipitated by acidifying to a p_H of 4.5 or less; after removing the precipitated proteins the solution is alkalinized to a p_H of about 10.7. The alkaline liquid is treated with formaldehyde in the presence of sodium sulfite to produce formose in an amount proportional to the original sugar present in the blood, a definite quantity of 2,4-dinitro-1-naphthol-7-sulfonic acid is added to produce a coloration which, by comparison with a color chart, indicates the sugar content of the blood.—WM. B. FORTUNE, assignor to ELI LILLY AND CO. U. S. pat. 2,171,961, Sept. 5, 1939. (A. P.-C.)

B Vitamins and Fat Metabolism. III. The Effects of Vitamin B_6 upon Liver and Body Fat. The administration of vitamin B_6 in conjunction with thiamin, riboflavin and choline to rats fed a fat-free diet causes a slight increase in body fat and an increase in body weight. Nicotinic acid slightly augments the effect of vitamin B_6 upon body fat but not upon body weight. Neither vitamin B_6, nicotinic acid nor riboflavin will prevent the deposition of fat in the liver which results when thiamin is administered. The amount of liver fat is normal if choline is administered, either alone or with any combination of the above factors.—G. GAVIN and E. W. MCHENRY. *J. Biol. Chem.*, 132 (1940), 41. (F. J. S.)

Calcium Ion Activity—Determination of, in Biological Fluids. The solubility of calcium picrolonate in the solution under examination is determined by measurement of the concentration of picrolonate ion with a Leifo photometer. Application of the solubility product principle gives the concentration of calcium ion. The amount of solid phase and p_H (between 4.0 and 8.6) have no effect. Since neutral salts have a large influence on the solubility of calcium picrolonate the sodium chloride concentration is kept constant. The solubility in 0.1*N* sodium chloride is 1.4 mg. at 30°. Calcium ion activity was not diminished by addition of glycine, urea, glucose, fructose, galactose, lactose, sucrose or small amounts of bicarbonate. Calcium ion activity became zero when 4.5 equivalents of sodium citrate were added. The method was applied to ultrafiltrates of biological fluids. Of the calcium in cow milk, 25% is filterable and 17% of the filterable calcium is ionized; for human milk the corresponding figures are 53 and 25%; for spinal fluid 93 and 94%; for adult human blood 60 and 72% (range of 54–85%). In pathological bloods essential lowering of the calcium ion activity was observed only in the cases that showed signs of tetany.—G. O. HARNAPP. *Klin. Wochschr.*, 17 (1938), 1731–1736; through *Chem. Abstr.*, 33 (1939), 2163. (E. G. V.)

Carbon Dioxide in Blood and Other Fluids—Micromethod for the Determination of. The authors summarize their work as follows: 1. A simple inexpensive apparatus has been described for the determination of the total CO_2 content of plasma and other solutions. 2. It has been compared with the manometric method in carbonate solutions and plasma and found to agree within 1% 3. The time required for a complete determination is 15 minutes.—E. S. WEST, B. E. CHRISTENSEN and R. E. RINEHART. *J. Biol. Chem.*, 132 (1940), 681. (F. J. S.)

Carbon Monoxide in the Blood—Micromethod for Determining. The amount of CO in the blood may be determined by the reaction of the gas with $PdCl_2$, or with I_2O_5. Colorimetric methods are only roughly quantitative and the spectroscope can not be generally used for this analysis while spectrophotometric methods require expensive apparatus. B. has devised a scheme applying the I_2O_5 method to 1-cc. samples containing down to 0.1 volume p. c. A 0.2-cc. sample being required to determine physiologically-important amounts. Apparatus: The washing bottles, reaction flask and absorption flask are connected by standard ground-glass joints and the entire apparatus except the aspirator is mounted on a 45 by 53 cm. vertical board. An insulated muffle is provided which is capable of heating the I_2O_5 from the cold to 150° C. within 10 minutes. Procedure: After a blank is run, the CO in a suitable quantity of blood is determined by adding phosphotungstic acid and then determining the liberated iodine after it was absorbed in *N*/10 NaOH solution as iodinehypoiodite. A method is outlined for preparing and standardizing all required solutions. Certain important notes and precautions relative to the method are given. The method was tested for accuracy in two ways. First, measured amounts of certain known mixtures of CO and air were passed into the apparatus and then assayed for CO content. Second, a series of determinations were made using blood samples which were prepared by combining in various proportions CO-saturated blood and fresh blood both of which had been assayed for CO in the same apparatus immediately before they were mixed. After citing references to articles in which others claim to have found CO in the normal blood B. uses his micromethod to further study this problem. The blood of rabbits and guinea-pigs was found to contain normally from 0.12 to 0.20 volume p. c. of CO. The blood of a chronic cigarette smoker contains three times as much CO as that of an occasional smoker, even though the occasional smoker was bled immediately after smoking two cigarettes. The results obtained by examining the blood of traffic policemen for CO were not conclusive. It has been claimed that the central nervous system is the principle source of CO for the blood. The brain of a guinea-pig was found to contain no significant amount of the gas nor would this tissue produce CO on being kept in Ringer's

solution for five hours. Hence this finding is contrary to the previous report. Five determinations on different samples of air collected in urban Melbourne revealed that they ranged in CO content from 12 to 17 p.p.m. This compares favorably with the 12 to 15 p.p.m. for country air. This does, however, account for the amounts of CO found in normal blood.—DAVIS F. BLAND. *Australian J. Exp. Biol. Med. Sci.*, 18 (1940), 35–47. (W. T. S.)

Carbon Monoxide in the Blood—Pyrotannic Acid Method for the Determination of. The 10% error usually attributed to the Sayers method (*Chem. Abstr.*, 20 (1926), 60) can be reduced to 1%, if the standard is made up of blood of the same species. Carbon monoxide is first washed through potassium hydroxide solution exactly the same concentration of pyrogallol as tannic acid is used in both, the sample blood is diluted 1:20, and the standards are made up in 5% steps.—H. KOMATU. *J. Oriental Med.*, 30 (1939), 775–783. (F. S. M.)

Chemist at Work. XXII. Biological Research. Work carried out at Franklin Institute is described. —M. P. BENOY. *J. Chem. Educ.*, 15 (1938), 373–377. (E. G. V.)

Chloral Hydrate Suggested as an Agent for Testing Liver Function. Of the several tests devised to determine the functional activity of the liver none are entirely satisfactory. $CCl_3CHO(H_2O)$ is reduced in the body to CCl_3CH_2OH which in turn is quantitatively conjugated with glucuronic acid by the liver and then eliminated as urochloralic acid. Hepatic efficiency, it was thought, could be measured by administering $CCl_3CHO(H_2O)$ and then analyzing the urine for unconjugated chloral or the corresponding alcohol. To prove this hypothesis, healthy dogs and dogs whose livers had been damaged by toxic doses of CCl_4 were given orally $CCl_3CHO(H_2O)$ and then their urine tested quantitatively with pyridine for the R-C-halogen$_3$ group. The level of free chloral excretion in the liver-damaged dogs receiving 200 mg. per Kg. of the drug was considerably higher than in the controls. It was thought that it might be possible to use this in measuring liver function in human cases. The procedures of the study are described and the results thereof given in tables and charts.—B. MUKERJI and R. GHOSE. *Indian J. Med. Research*, 27 (1940), 757–764. (W. T. S.)

Chloral Hydrate Tested as a Possible Agent for Determining Hepatic Efficiency. The liver of animals and especially man detoxify aspirin, camphor and other drugs by secreting glucuronic acid with which these chemicals are conjugated. This "glucuronic function" has been used more or less satisfactorily as a test of hepatic efficiency by administering certain drugs to animals and then analyzing their excretions for conjugated glucuronides. The use of glucuronogenic chloral hydrate for this purpose is now suggested since it requires glucuronic acid for its detoxification and moreover unconjugated chloral may be easily demonstrated in the urine. Chloral hydrate in doses of 150 to 200 mg. per Kg. was necessary to increase the elimination of conjugated glucuronic acid in dogs. In rabbits 250 to 450 mg. per Kg. was necessary. These were termed in each instance the "effective dose." The "effective dose" of chloral hydrate was administered to healthy dogs and rabbits and to dogs and rabbits whose livers had been damaged by controlled amounts of CCl_4. The urine of the controls and treated animals were compared as to conjugated glucuronic acid content. Differences should theoretically have indicated degree of liver function. Dogs tolerated the experiments well enough to permit long observation periods while rabbits did not. The hope of the test was not realized for these reasons: (1) During the early stages of liver injury in dogs and rabbits, there is a tendency toward an increased though irregular excretion of glucuronic acid. (2) The rate of regeneration of a damaged liver is often most rapid. (3) Rabbits are extremely susceptible to chloral hydrate and under CCl_4 dosing dogs often vomited or were purged. Several explanations are offered for the unexpected increase of glucuronic acid in liver-damaged animals. In spite of the unsatisfactory results obtained up to now the authors believe additional study on this problem is worth-while.—B. MUKERJI and R. GHOSE. *Indian J. Med. Research*, 27 (1940), 765–775. (W. T. S.)

Choline—Effect of, on the Fatty Liver of Carbon Tetrachloride Poisoning. The removal of excess liver fat caused by phosphorus poisoning can be hastened by adding choline to the diet. To control the liver fat deposit due to the lack of choline alone, low choline diets were administered to which known quantities could be added. Carbon tetrachloride was used because it produces very fatty livers and the degree of poisoning can be more easily controlled than with phosphorus. The experiments showed that "rats maintained on a diet low in lipotropic factors with an amount of added choline sufficient partially to prevent the increase in liver fat due to a low choline diet develop very fatty livers during the 20-day period following the administration of carbon tetrachloride. Animals poisoned with carbon tetrachloride and fed the same diet, with the addition of excess choline, have almost normal livers at the end of the same period."—H. M. BARRETT, C. H. BEST, D. L. MACLEAN and J. H. RIDOUT. *J. Physiol.*, 97 (1939), 103–106. (F. S. M.)

Citrus Juices—Gases in the Commercial Handling of. A study has been made of the gases present in Florida citrus juices (grape fruit and orange) extracted and deaerated by different methods in the laboratory and in commercial practice. The oxygen content of commercially extracted citrus juices before deaeration ranged from 2.46 to 4.67 cc. per liter, reduced to standard conditions. After deaeration they contained 0.09 to 2.39 cc. per liter. The commercial plate-type deaerators investigated were found to be greatly overloaded with a resulting reduction in efficiency. Under the conditions of the investigators, centrifugal deaeration was found to be the most efficient of those methods examined and now being used in commercial practice in Florida. Using this type of deaerator, most efficient deaeration is obtained when the temperature of the juice is not less than 61° F. (16° C.) with a vacuum of at least 25 inches (635 mm.). Dissolved oxygen in the juice apparently reacts with some constituent or constituents of the juice and results in a disappearance of the oxygen. This disappearance of oxygen is accelerated by elevated temperatures and may adversely affect the juice, especially so far as the vitamin C content is concerned.—G. W. PULLEY and H. W. VON LOESECKE. *Ind. Eng. Chem.*, 31 (1939), 1275–1278. (E. G. V.)

Cobra Venom—Effect of Repeated Injections of, on Blood Chemistry and Morphology. Large quantities of cobra venom were injected in a series of rabbits for periods varying from 2 to 21 weeks. Morphological and biochemical studies on the blood revealed no striking pathological changes and no specific effect on the blood picture of the animals as compared with the normals.—DAVID I. MACHT, SOLOMON SHERMAN and DOROTHY J. BROOKS. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 458. (A. E. M.)

Congo Red—Hematologic Actions of. In concentrations of 1:1000, Congo red protects against hemolysis of human erythrocytes by hypotonic saline solutions, hypertonic urea and sodium tauro-

cholate in saline solutions and saponin in dextrose and saline solutions. Increased hemolysis occurs with hypotonic dextrose solution and in ether and urea in aqueous solutions. Antihemolytic action appears to be mediated through a film effect on the cells, as a result of a change in the physical state of the dye. Doses of 100 mg. per Kg. produce uniform anticoagulating effects in rabbits; smaller doses have no effect.—A. P. RICHARDSON. *Am. J. Med. Sci.*, 198 (1939), 87–94. (B. H.)

4,4'-Diamidino Stilbene—Blood Changes Produced by. To determine the toxicity of this trypanocidal amidine compound it was injected into rabbits in dose levels of 15 to 27.5 mg. per Kg. In the animals receiving 15-mg. doses the blood sugar was not affected but blood urea rose some 50–100%. Animals receiving 25 mg. collapsed, showed metabolic disturbances and a rise in sugar and urea in the blood of over 100%. With 27.5-mg. doses one rabbit died immediately, the other collapsed but recovered to show very high blood urea and blood sugar.—J. DEVINE. *Ann. Trop. Med. Paras.*, 34 (1940), 67–71. (W. T. S.)

Diaminodiphenyl-Sulfone Glucoside—Spectrophotometric Examination of the Blood Following the Administration of. The cyanosis produced by the sulfanilamide group of drugs has already been studied and reported on. The blood of a series of patients, being treated for meningitis with diaminodiphenylsulfone glucoside, was examined spectrophotometrically for methemoglobin in order to control the dosage of the drug for each patient. Data is given on 12 cases with these conclusions. No sulfamoglobinemia is produced under the influence of this drug. Methemoglobin begins to appear only after the spinal fluid is clear. No toxic effects are produced if the drug is stopped after the methemoglobin band appears in the blood.—R. N. CHOPRA, P. K. SESHAN and A. J. H. DE MONTE. *Indian Med. Gaz.*, 75 (1940), 7. (W. T. S.)

***p*-Dimethylaminobenzaldehyde Method for Determining Tryptophane as Contrasted with the Glyoxylic Acid Method—Critical Study of.** The *p*-dimethylaminobenzaldehyde method for the estimation of tryptophane in proteins is shown to give erroneous results owing to the fact that tryptophane as combined in the protein molecule gives more color with the aldehyde reagent than does an equivalent amount of free tryptophane. The mode of linkage and degree of oxidation of tryptophane influence the color reaction, so that the source of error in the procedure is the use of free tryptophane as the standard. The reliability of the glyoxylic acid method is confirmed. Observations are recorded which indicate that the current theories on the mechanism of the reaction between aldehydes and tryptophane require revision.—J. L. D. SHAW and W. D. MCFARLANE. *J. Biol. Chem.*, 132 (1940), 387. (F. J. S.)

Egg Albumin—Molecular Weight of. Analyses of the tyrosine, tryptophane and phenylalanine content indicate a minimal molecular weight of 18,400 for electro-dialyzed, moisture-free egg albumin. Calculations indicate the presence of 310 amino acids per mole of egg albumin. This result rests on the assumption that no unknown basic amino acids or nitrogen-containing prosthetic groups are present in the egg albumin molecule.—F. W. BERNHART. *J. Biol. Chem.*, 132 (1940), 189. (F. J. S.)

Entomology—Advances in. A review for 1939.—C. H. RICHARDSON. *Am. Chem. Soc., News Ed.*, 18 (1940), 64. (E. G. V.)

Estrogen—Influence of, on the Electrolyte Pattern of the Immature Rat Uterus. An investigation of the electrolyte composition of the immature rat uterus before and after it is stimulated to grow by a single dose of estrogen reveals the following facts: During the first six hours after estrogen administration the uterus gains water and chiefly extracellular electrolytes; during this phase there is an increase in the potassium to phosphorus ratio; and during the following 24 hours, there is a rapid growth of new protoplasm with a gradual return of the electrolyte pattern to a normal configuration.—N. B. TALBOT, OLIVER H. LOWRY and E. B. ASTWOOD. *J. Biol. Chem.*, 132 (1940), 1. (F. J. S.)

Estrus-Promoting Substance from the Anterior Pituitary Lobe. The process comprises extracting fresh anterior pituitary lobe at a temperature not exceeding 60° C. several times with the aid of an organic solvent miscible with water in which the estrus-promoting substance is insoluble, extracting the remaining gland residue with an aqueous solvent in which the estrus-promoting substance is soluble, precipitating the aqueous extract with a lower aliphatic alcohol at a p_H value of about 6 to 8, extracting the resulting precipitate at a weakly alkaline reaction with an aqueous solvent in which the estrus-promoting substance is soluble, and again precipitating from the solution obtained the active substances with the aid of a lower aliphatic alcohol, dissolving the precipitate produced in water or physiological salt solution, freezing the solution and drying it.—WILLY LUDWIG, assignor to WINTHROP CHEMICAL CO. U. S. pat. 2,158,788, May 10, 1939. (A. P.-C.)

Filtrate Factor of the Vitamin B_2 Complex—Properties of the, with Evidence for Its Multiple Nature. Procedures are described for the concentration of the rat filtrate factor complex. The complex is extractable with isoamyl alcohol and is soluble in methanol, ethanol and acetone. The complex is adsorbable on norit from acid solution. It is not destroyed by heating with *N*NaOH for one hour. It is not inactivated by acetylation. The complex was not precipitated by semicarbazide hydrochloride or benzoyl chloride nor was a benzylthiuronium salt or a copper salt formed. Two factors at least appear to be a part of the filtrate complex; one is essential for normal growth, the other preserves normal color in the pelage. While both factors are extractable with diethyl ether from acid solutions, the residue, while promoting growth, does not contain the antigraying factor. Cane molasses, an aqueous rice bran extract and an alcohol-soluble liver preparation appear to be good sources of both factors but brewers' yeast, while a rich source of the growth factor, is low in the antigraying factor; whole milk powder is low in its content of both factors.—ALI MOHAMMAD, OLIVER H. EMERSON, GLADYS A. EMERSON and HERBERT M. EVANS. *J. Biol. Chem.*, 133 (1940), 17. (F. J. S.)

Fish and Fish Products—Vitamins in. A lecture.—G. Lunde. *Angew Chem.*, 52 (1939), 521–524; through *J. Soc. Chem. Ind.*, 58 (1939), 987. (E. G. V.)

Flavin (Vitamin B_2) Content of Foodstuffs. The flavin content of mushrooms, fermentation products (soya-miso, soya sauce and liquors), and milk has been determined photochemically.—M. SUMI and Z. TSUZUKI. *Bull. Inst. Phys. Chem. Res. Japan*, 17 (1938), 1296–1299; through *J. Soc. Chem. Ind.*, 58 (1939), 773. (E. G. V.)

Food Flavors. Spices and the use of essential and citrus oils as flavors are described. Many flavors can be prepared synthetically, especially fruit flavors. Tea is flavored with floral scents for differentiation.—G. R. A. SHORT. *Food Manuf.*, 14 (1939), 187–189; through *J. Soc. Chem. Ind.*, 58 (1939), 773. (E. G. V.)

Gelatin—Effect of, on Power of Women to Per-

form Maximal Anærobic Work. Physical exercise, maximal anaerobic in type and constant as to rate of working and speed, was performed to the point of exhaustion by 6 adult women. After a period of training, gelatin was added to the diet and its influence on fatigue was noted. There was no influence on the working capacity nor did gelatin prevent the development of "staleness" when brief work of extreme severity is repeated daily over a long period of time.—F. A. HELLEBRANDT, ROZELL RORK and ELIZABETH BROGDON. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 629. (A. E. M.)

Gonadotropic Extracts—Picric Acid and Picrolonic Acid Precipitates of. The author summarizes his work as follows: (1) The active fraction of the picric acid and picrolonic acid precipitates of pituitary gonadotropic extract is insoluble in p_H 3.0 and is soluble in isotonic saline at p_H 4.5. (2) The insoluble picric acid and picrolonic acid precipitates or the soluble extracts (p_H 4.5) retain their activity when assayed with copper to delay resorption or when administered simply in divided dosage (five doses per day instead of one). (3) No evidence for a reversible chemical inactivation is thus obtained.—F. BISCHOFF. *J. Biol. Chem.*, 132 (1940), 35. (F. J. S.)

Gonad-Stimulating Product. A product capable of stimulating and developing the gonads of males and females and sufficiently free from allergic-reaction-producing substances to be suitable for human use is derived from the placenta of a mare obtained between the 37th and 130th day of gestation, by extraction with acetone containing ammonia, etc.—HUBERT R. CATCHPOLE and WM. R. LYONS, assignor to CATCHPOLE. U. S. pat. 2,173,353, Sept. 19, 1939. (A. P.-C.)

Gray Hair—Review of the Causative Factors of. The literature on nutrition associates, with increasing frequency, gray hair with an unknown factor of the vitamin B group. In foxes, rats and dogs, graying and restoration of normal hair color appears to be dependent on withdrawals and additions of a yeast factor in their diets. This factor which is demonstrably different from vitamins B_1, B_2 or B_6 is also found in liver. In fact large doses of the purified known compounds of the vitamin B complex increased graying when the hair-pigment vitamin was lacking. Mention was made of the possible connection of hormones to a loss of pigment in the hair.—Editorial. *Southern Med. J.*, 33 (1940), 554–556. (W. T. S.)

Hippuric Acid—Colorimetric Determination of. The following procedure is recommended: Mix 5 cc. of the sample with 2 cc. of sodium hypobromite solution, recently prepared by mixing 10 cc. of caustic soda solution with 20 cc. of water and 1 cc. of bromine, and heat on a boiling water bath for 5–10 minutes. A slight, but definite, turbidity is noted with a concentration of 0.5 Gm. of hippuric acid per liter. Shake the suspension vigorously for one-half minute with 1 cc. of chloroform or 1.5 cc. of ether and let stand for several seconds. The chloroform layer assumes a color similar to that of alkaline dichromate solution; while the ether mixture shows a ring of the same color. The intensity of the color obtained may be compared with a series of standard colors produced with known amounts of hippuric acid.—G. DENIGES. *Bull. trav. soc. pharm. Bordeaux*, 78 (1940), 57–60. (S. W. G.)

Hydantoins Containing the Sterol Nucleus. From initial materials such as androsterone, *trans*-dehydroandrosterone, androstene-3,17-dione, 3-hydroxy-17-ethiocholanone, testosterone, androstan-17-ol-3-one, cholestanone, progesterone, estrone, equilenin, compounds of the suprarenal cortical hormone series, stereoisomerides and homologs of esters or ether of such compounds partial enol derivatives or other derivatives having unchanged carbonyl groups or the like, there are produced, by treatment in a solvent and with a cyanide such as potassium cyanide and ammonium carbonate (or ammonia and carbon dioxide) under pressure and at a temperature above 100° C. (suitably 120° to 135° C. for 15 to 18 hours under 20 to 25 atmospheres pressure), polyhydrocyclopentanophenanthrenes which are substituted with spirohydantoin in the 3-, 17- or both the 3,17-positions and which may serve as intermediates in the manufacture of therapeutic compounds. Several examples with details are given.—KARL MIESCHER and ALBERT WETTSTEIN, assignor to SOCIETY FOR CHEMICAL INDUSTRY IN BASLE. U. S. pat. 2,161,928, June 13, 1939. (A. P.-C.)

6(α)-Hydroxyprogesterone—Investigation of. In view of the physiological activity of progesterone and desoxycorticosterone (21-hydroxyprogesterone) it was deemed desirable to prepare and study new sterol derivatives containing oxygenated carbon atoms. Pregnane-20-one-3(β)-5,6(*trans*)-triol was converted to the 3,6-diacetate (I) in 74% yields by acetic anhydride. Partial saponification of I removed the acetyl group at position 3 to yield the 6-monoacetate derivative (II). Oxidation of II with chromic acid yielded pregnane-3,20,dione,5,6(*trans*)-diol 6-monoacetate (III). Dehydration of III gave 4-pregnane-3,20-dione-6(α)-ol acetate (IV). Saponification of IV yielded instead of the expected 6(α)-hydroxyprogesterone a probable pregnane trione isomer. The *cis* form of I was also converted to its 3,6-diacetate. Preliminary tests indicated that the acetate of 6(α)-hydroxyprogesterone has distinct progestational activity and possible slight cortical effect in adrenalectomized rats. The work is being continued.—MAXIMILIAN EHRENSTEIN and THELMA O. STEVENS. *J. Org. Chem.*, 5 (1940), 318–328. (W. T. S.)

Intestinal Mucous Membrane—Stable Therapeutic Products from. Products which may be given *per os* or parenterally are obtained by treating intestinal mucous membrane, such as that of hogs, with a neutral to weakly alkaline buffer solution, filtering the mixture, adding a water-soluble organic solvent such as acetone capable of precipitating the desired substances to the filtrate, and isolating the precipitate, the entire process being carried out at a temperature not exceeding 45° C.—CARL L. LAUTENSCHLAGER, FRITZ LINDNER and RUDOLF RIGLER, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,161,422, June 6, 1939. (A. P.-C.)

Iodoacetic Acid and Denatured Egg Albumin—Reaction between. The reaction between iodoacetic acid and denatured egg albumin was studied by measurement of the iodide produced by the reaction. In the course of this reaction there is an initial rapid production of iodide, which is believed to be caused by the sulfhydryl groups, followed by a slower steady yield of iodide due to some other group or groups as yet unidentified. Extrapolation of this non-sulfhydryl iodide to zero time yields a value for available cysteine of 0.55% in heat-denatured and 0.87% in urea-denatured egg albumin. The sulfhydryl groups of the denatured egg albumin are labile, measurably diminishing in a few hours.—L. ROSNER. *J. Biol. Chem.*, 132 (1940), 657. (F. J. S.)

Male and Female Sex Hormones. A review of the structure, properties, preparation and use of the various male and female sex hormones is given.—W. E. BOUMAN. *Pharm. Tijdschr. v. Nederl. Indie*, 16 (1939), 313, 361, 378. (E. H. W.)

Marmite—Increased Value of, in Medicine in War Time. The vitamin and mineral content of this

well-known yeast extract make it especially valuable in war time when diets are likely to be lacking in "protective" substances.—ANON. *J. Trop. Med. Hyg.*, 43 (1940), 48. (W. T. S.)

Micro-Kjeldahl Method—Rapid. A micro-Kjeldahl method is described and a figure is given showing the complete apparatus used during the distillation of ammonia in a partial vacuum. The method is more rapid than the ordinary macro-Kjeldahl procedure and is not appreciably less accurate. Nitrogen quantities corresponding to that contained in 0.1 to 0.2 cc. of blood serum are very satisfactory. The method involves measurement of samples and standard acid with syringe pipettes, distillation in a partial vacuum and titration with a 0.2-cc. capacity microburette.—A. KEYES. *J. Biol. Chem.*, 132 (1940), 181. (F. J. S.)

Morphine in Urine—New Simple Method of Determination of. The following procedure is recommended: Make 50 cc. of urine slightly alkaline with sodium bicarbonate and shake vigorously for 3 minutes in a separatory funnel with acid-free ethyl acetate. Dry the ethyl acetate extract with anhydrous sodium sulfate mixed with a small amount of sodium bicarbonate and filter through a plaited filter and rinse the sodium sulfate with ethyl acetate. Evaporate the filtrate on a water bath or better, at ordinary temperature in a dish under a hood. Dissolve the residue in 4.5 cc. of water containing 2 drops of 20% nitric acid, treat the solution in a test-tube (18 x 160 mm.) with 2 drops of ammonium molybdate solution (10%). After 1 hour, filter through a small hard filter and treat the clear filtrate with 8 drops of a saturated ammonium vanadate solution. After 1 hour the turbidity arising is compared with a standard morphine solution in a nephelometer.—MAX SCHIRM. *Deut. Apoth. Ztg.*, 55 (1940), 106–107. (H. M. B.)

Organic Materials—Analysis of, for Traces of Metallic Impurities. The spectrochemical analysis of such materials as pharmaceuticals, dyes, and biological tissues and fluids, has been developed for traces of aluminum, calcium, copper, iron, lead, magnesium, manganese, nickel, strontium, tin and zinc.—T. M. HESS, J. S. OWENS and L. G. REINHARDT. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 646–649. (E. G. V.)

Paraldehyde—Determination of, in Biological Fluids. A simple, rapid and accurate method is described for the determination of paraldehyde in biological fluids. The paraldehyde is removed from the biological fluid by vacuum distillation and bubbled through a potassium dichromate-sulfuric acid oxidizing mixture. The excess of dichromate is titrated iodometrically with sodium thiosulfate. A figure is also given showing the apparatus used in the determination of paraldehyde in biological fluids.—HARRY LEVINE and MEYER BODANSKY. *J. Biol. Chem.*, 133 (1940), 193. (F. J. S.)

Potassium—Can Sodium Be Partially or Completely Substituted for, in Plant and Animal Organisms? A study of data contained in 108 papers showed that potassium and sodium are not interchangeable.—G. ROHDE. *Ernahr. Pflanze*, 35 (1939), 230–235; through *Chem. Abstr.*, 33 (1939), 8218. (E. G. V.)

Potassium—Photometric Determination of, in Biological Fluids. The application of the Pulfrich photometer to the authors' colorimetric method (*Rev. soc. argentina biol.*, 8 (1932), 38) is described. The extinction coefficient for concentrations of cobalt equivalent to 1 mg. of potassium is 2.017 with Pulfrich filter S61.—A. D. MARENZI and GERSCHMAN. *Anales farm. bioquim. (Buenos Aires)*, 9 (1938), 85–90; through *Chimie & Industrie*, 42 (1939), 33–34. (A. P.-C.)

Protein Chemistry—Development of. A review.—E. FARBER. *J. Chem. Educ.*, 15 (1938), 434–444. (E. G. V.)

Proteins of Blood Serum—Robertson Refractometric Method for the Determination of the. In the Robertson method the specific increment for albumin is 0.00177. The value 0.00188, obtained on horse serum albumin, gives results sufficiently accurate for clinical purposes.—M. GRINSTEIN. *Anales soc. quim. argentina*, 26 (1938), 106–116; through *Chimie & Industrie*, 42 (1939), 33. (A. P.-C.)

Purine Nucleotides and Nucleosides—Determination of, in Blood and Tissues. The micromethod for determining purine nucleotides published by Kerr and Blish (1932) has been simplified and shortened. An adaptation of this procedure which permits the separate estimation of adenine and hypoxanthine by the procedure of Hitchings (1933) is also presented.—S. E. KERR. *J. Biol. Chem.*, 132 (1940), 147. (F. J. S.)

Sexual Hormone Products. Preparations for parenteral use having enhanced sexual hormone action are obtained by combining testosterone, androstanediol, androstenediol, 17-methyltestosterone, estrone, estradiol or androstenedione with an aliphatic carboxylic acid, aliphatic hydroxy carboxylic acid or aliphatic alcohol.—KARL MIESCHER and ALBERT WETTSTEIN, assignors to SOC. POUR L'INDUSTRIE CHIMIE À BÂLE. U. S. pat. 2,173,337, Sept. 19, 1939. (A. P.-C.)

Snake Venoms of the Bothrops Species—Biochemical Studies on. V. Bothropotoxin enriched by purification exerts a considerably greater neurotoxic activity than the original crude material, but smaller than that of the fresh venom. Pure bothropotoxin is entirely free from sulfur; the presence of the latter bears no relation to the activity of the product.—D. V. KLOBUSITZKY and P. KÖNIG. *Hoppe-Seyler's Z. physiol. Chem.*, 255 (1938), No. 4, 1–3; through *Chimie & Industrie*, 42 (1939), 105. (A. P.-C.)

Soy Bean Flour—Active Whipping Substance from. The substance responsible for the whipping of undenatured, solvent-extracted soybean flour is not glycinin. The whipping substance is extracted from the flour at p_H 5.0, the isoelectric point of glycinin. This extract whips more readily and to a much greater volume than suspensions of the original flour; it has a better flavor and can successfully be used in place of egg white in many food preparations. About 37% of the weight of flour is obtained as soluble extract. The residue may be used for the preparation of glycinin.—B. M. WATTS and D. ULRICH. *Ind. Eng. Chem.*, 31 (1939), 1282–1283. (E. G. V.)

Sulfates—Determination of, in Blood. The previously described method (*Anales farm. bioquim. (Buenos Aires)*, 8 (1937), 62–74) is improved by removing phosphates from the blood filtrate before determining the sulfates. This is done by adding a little zirconium oxychloride or aluminum chloride (free from sulfates) to the filtrate, making slightly alkaline with ammonia and filtering.—A. D. MARENZI and R. F. BANFI. *Anales farm. bioquim.*, 9 (1938), 76–84; through *Chimie & Industrie*, 42 (1939), 33. (A. P.-C.)

Sulfur-Polysulfide Mixture—Colloidal, Studies on. Absorption and Oxidation after Oral Administration. Orally administered colloidal sulfur in doses of 500 to 750 mg. is completely absorbed, oxidized and excreted in the urine as sulfate, where the oral dose may be recovered quantitatively in most cases. The absorption and elimination are very rapid, as reflected in a marked increase in urinary sulfate within two hours.—H. GREENGARD

and J. R. WOOLLEY. *J. Biol. Chem.*, 132 (1940), 83. (F. J. S.)

Sweet Wines—Alcohol Content of Ebulliometric Grade. The error due to the sugar content in the determination of ethyl alcohol in sweet wines by Malligand's method is corrected by the use of a modified form of Emiliani's formula.—M. PROCOPIO. *Ann. chim. applicata*, 29 (1939), 74–77; through *J. Soc. Chem. Ind.*, 58 (1939), 768. (E. G. V.)

Testosterone—Preparing Purified. A solution containing testosterone in an organic solvent (preferably acetone of 60% concentration) which is inert to sulfuric acid is extracted with 55 to 75% sulfuric acid, and the acid layer formed is diluted with water to a concentration not higher than 40% sulfuric acid; the solution is extracted with a solvent immiscible with water (such as ether), the organic solvent is removed by evaporation, and the residue is subjected to distillation in a high vacuum and the distillate is collected. Various details and modifications of procedure are given, and a crystalline product is obtained that melts at 154 to 154.5° C. after several recrystallizations from dilute acetone.—ERNST LAQUEUR, KAROLY G. DAVID, ELIZABETH DINGEMANSE and JANOS FREUD, assignors to CIBA PHARMACEUTICAL PRODUCTS, INC. U. S. pat. 2,175,963, Oct. 10, 1939. (A. P.-C.)

α-Tocopherol—Lower Homologs of. The 5,8-, 5,7- and 7,8-dimethyltocopherols obtained from dimethylhydroquinone are physiologically active and exhibit a high vitamin E potency. They are oily substances which strongly reduce silver nitrate and gold trichloride.—P. KARRER and H. FRITZSCHE. *Helv. Chim. Acta*, 21 (1938), 1234–1240; through *Chimie & Industrie*, 42 (1939), 117. (A. P.-C.)

Urine Albumin Test. To the diluted urine add sodium hexametaphosphate and acidulate with glutamic acid hydrochloride or oxalic acid to produce a turbidity which, by comparison with a turbidity chart, indicates the albumin content of the urine.—WM. B. FORTUNE, assignor to ELI LILLY AND CO. U. S. pat. 2,171,962, Sept. 5, 1939. (A. P.-C.)

Vitamin A Deficiency. III. Blood Analysis Correlated with a Visual Test. A definite correlation has been found between the vitamin A level in the blood, as determined by a somewhat new method, and the Pett visual test for vitamin A deficiency.—L. B. PETT and G. A. LEPAGE. *J. Biol. Chem.*, 132 (1940), 585. (F. J. S.)

Vitamin A_2—Cyclization of. Vitamin A_2 can be cyclized by the same methods which are employed to cyclize vitamin A_1. Cyclized vitamin A_2, like cyclized vitamin A_1, has an ultraviolet absorption spectrum with maxima at 350, 368 and 390 mμ. The antimony trichloride reaction product of cyclized vitamin A_2, like that of vitamin A_1, has an absorption spectrum with a maximum near 690 mμ. Cyclized vitamin A_2 is more strongly adsorbed by alumina than is cyclized vitamin A_1. A method has been outlined for the estimation of the relative amounts of vitamins A_2 and A_1 by the separation of their cyclized derivatives.—N. D. EMBREE and E. M. SHANTZ. *J. Biol. Chem.*, 132 (1940), 619. (F. J. S.)

Vitamin B_1—Distribution of, in Food as Determined by Chemical Analysis. A survey of the distribution of vitamin B_1 in 190 samples of food was carried out by a rapid chemical method. Twenty Gm. of foodstuff are minced or powdered. A solution of 0.1% pepsin in 0.33% hydrochloric acid is added and the volume made up to 97.4 cc. The mixture is incubated over night at 37°; 2.6 cc. of *N*-sodium hydroxide and 100 mg. of taka-diastase are then added and incubation is continued for a further 5 hours. A part of the solution is then centrifuged. Two 3-cc. aliquots are pipetted into graduated cylinders in which the following reagents are kept stirred by means of a stream of nitrogen: The first cylinder contains 2 cc. of methyl alcohol, 1 cc. of 30% sodium hydroxide and 1 cc. of 1% potassium ferricyanide. The second cylinder contains 2 cc. of methyl alcohol and 1 cc. of sodium hydroxide only. The nitrogen is kept bubbling for 1 minute; the solutions are then made up to 10 cc. with water, 13 cc. of isobutyl alcohol are added to each and they are well mixed. When the supernantant layers become clear, 10 cc. of each are pipetted into uniform test-tubes and 1 cc. of alcohol is added to each of them. The tubes are matched by holding them side by side at an angle of 45° against a nickle oxide filter arranged in a vertical position to transmit the ultraviolet light of a mercury vapor lamp. A standard solution of thiochrome is added 0.1 cc. at a time to the aliquot prepared without the use of ferricyanide until the color and intensity of the fluorescence of the two tubes has reached the best possible match. Two standard solutions are desirable. 1-cc. volumes of solutions containing 3 Gm. and 30 Gm. of vitamin B_1 are added to 2 cc. of methyl alcohol, 1 cc. of 30% sodium hydroxide, and 2 drops of 1% potassium ferricyanide and throughly mixed; 10 cc. of isobutyl alcohol are then added and the mixture is shaken vigorously. The aqueous layer is allowed to settle to the bottom and is drawn off by means of a glass jet and discarded; 1 cc. of alcohol is then added and the total volume made up to 15 cc. with isobutyl alcohol. Results from titrations with these solutions are readily calculated as follows: 1 cc. of the more dilute standard isobutyl alcohol solution contains 0.2μ Gm. of vitamin B_1. In the method stated, 10 cc. of supernatant solution are drawn off for comparison out of a total volume which is found to be 17 cc. The original aliquot of 3 cc. represents $20 \times {}^{3}/_{100} = 0.6$ Gm., hence the 10 cc. taken for matching represents $0.6 \times {}^{10}/_{17} = 0.35$ Gm. If 1 cc. of the standard solution is required to make a match, the concentration of vitamin in the original sample equals ${}^{0.2}/_{0.35} = 0.57\mu$ Gm. per Gm. or 0.19 International Unit per Gm.—M. PYKE. *J. Soc. Chem. Ind.*, 58 (1939), 338–340. (E. G. V.)

Vitamin C Content of Chillies, Onions and Garlic, Both in the Raw State and when Boiled with Water. Whereas pure vitamin C is heat-labile, certain vegetables on being heated show a startling increase in this vitamin. Several theories of this anomaly were reviewed. Using the indophenol titration method the authors have now shown that onions and garlic lose from 40 to 55% of their vitamin C contents on cooking. In contrast, boiling materially increased the amounts of this vitamin in ripe and unripe chillies. Also, it was found that ripe chillies contain considerably more of the vitamin than do unripe chillies. It was believed that this increase may best be explained on assuming a hydrolysis of an "ester" form of the vitamin and also softening of the pulp in which it is held.—H. J. BISWAS and K. L. DAS. *Indian J. Med. Research*, 27 (1939), 135–138. (W. T. S.)

Vitamin Concentrates from Materials Such as Tuna Liver Oil. The saponifiable constituents are saponified. The unsaponifiable fraction is separated by extraction with a selective solvent. The phosphatide content of the unsaponifiable portion is separated by selective solvent action. The remainder of the unsaponifiable portion (comprising vitamins A and D together with sterols and other inert materials) is subjected to a systematic fractionation which comprises progressively cooling and fractionally crystallizing and filtering at successively lower temperatures a solution thereof, thereby separating a solution of vitamin A in sub-

stantially pure form from a series of residues containing vitamin D, vitamin A, sterols and other inert materials. The residues are redissolved, recrystallized and filtered in sequence, the residue from the highest temperature crystallization being discarded, thereby separating a second series of residues from a solution of substantially pure vitamin A. The treatment is repeated until there is obtained substantially pure vitamin D as final residue.—NICHOLAS A. MILAS, assignor to RESEARCH CORP. U. S. pat. 2,173,629, Sept. 19, 1939. (A. P.-C.)

Vitamin D in Calcium Metabolism. The author cites and describes seven cases by which he shows that vitamin D is indispensable to normal calcium metabolism. Osteomalacia may develop if vitamin D is lacking, especially in pregnant and lactating women. Eleven references.—S. H. LIU. *Chinese Med. J.*, 57 (1940), 101–118. (W. T. S.)

Vitamin D—Incorporating, with Malted or Fermented Liquors. A concentrated oil-free alcohol solution containing vitamin D in stable form is added to a product such as beer containing at least 0.25% alcohol and also containing dissolved carbon dioxide, just prior to its transfer to the commercial containers in which it is to be sold.—JACQUES W. D. CHESNEY, assignor to NEW DISCOVERIES, INC. U. S. pat. 2,175,340, Oct. 10, 1939. (A. P.-C.)

Vitamin D—Stability of, in Foods Containing Lime. Vitamin D is unstable in concentrates containing calcium carbonate.—W. LIEBSCHER. *Z. Tierernahr. Futtermittelk.*, 1 (1938), 265–270; through *J. Soc. Chem. Ind.*, 58 (1939), 988. (E. G. V.)

Vitamin G—Concentrates of. An aqueous solution of vitamin G is treated with a sufficient amount of siliceous adsorbent material to adsorb the greater part of the vitamin from the solution. The adsorbent is separated from the body of the solution and treated with water, alcohol or dilute acetic acid. The solvent is separated from the adsorbent at a temperature above that at which adsorption had taken place. An aqueous solution is prepared from the eluate by removing any nonaqueous solvent which may be present. Adsorbent carbon is added to remove the greater part of the vitamin from the solution; the carbon is separated from the solution; vitamin G is eluted from the carbon with benzene-alcohol, which is separated from the carbon at an elevated temperature, and the benzene-alcohol is evaporated from the solution thus obtained.—LELA E. BOOHER and LINCOLN T. WORK. U. S. pat. 2,175,014, Oct. 3, 1939. (A. P.-C.)

Vitaminic Liquids—Molded Spheres or Ovoids, Etc., Containing. Apparatus is described, and a mode of operation for preparing spherical, spheroidal, ovoid and similarly shaped articles for pharmaceutical and other purposes, and comprising a colloidal matrix having dispersed therein a vitamin-bearing liquid completely enveloped and imprisoned by the colloidal matrix so that there is no free vitamin-bearing liquid on the surface of the product. Gelatin compositions mixed with vitamin C may be used.—JAMES A. RAYNOLDS, JR., assignor to ATLANTIC COAST FISHERIES CO. U. S. pat. 2,170,520, Aug. 22, 1939. (A. P.-C.)

Vitamins. Review of sources, formulas and activity of vitamins A, B_1, C and D. Special reference is made to fruits and vegetables of Brazil which have appreciable amounts of cevitamic acid. Among those known to North America are mentioned: several varieties of oranges, lemons, limes, guava, mangoes, tangerines, tomatoes, avocados, melons; ranging in vitamin C content from 0.79 mg. per cc. to 0.10 mg. per cc. Guava contains 0.18 mg. per Gm.—RENATO SOUZA LOPES. *Lab. Clin.*, 18 (1939), 45. (G. S. G.)

Vitamins A and D—Australian Fish Liver Oils as a Source of. This work showed that although certain of these fish liver oils contained both vitamins A and D they do not compare with the liver oils of the cod and the halibut in this respect. The liver oil from the snapper shark (*Galeorhinus australis*) was richest in vitamin A, reaching a peak in winter when the percentage of oil in the liver is lowest. The yolk of the embryo of this fish was examined for vitamin A with almost negative results. The maximum vitamin D content of these fish oils was only two International Units per gram. Of all Australian fish the oil of the groper remains the richest from the standpoint of these two vitamins.—M. M. CUNNINGHAM and E. C. SLATER. *Australian J. Exp. Biol. Med. Sci.*, 17 (1939), 457–464. (W. T. S.)

Vitamins and Constants of Free and Extracted Oils from Canned Sockeye Salmon—Comparative Study of. Since a portion of each year's pack of canned salmon is stored, it is of interest to know whether it undergoes changes during this period. Hence a study of the effects of storage upon the oil in canned salmon is under way. The present report covers an investigation of the proper procedure of removing the oil and a comparative study of properties of the oil which drains from the can and that obtained by ether extraction. Literature concerning vitamin content and physical constants is voluminous and only a few of the later ones are mentioned. Report of experimental work covers source of canned salmon, extraction and separation of the oils preparatory to the assays for vitamins A and D, procedure and results of biological assays for vitamin D and for vitamin A, and constants of free and extracted oils. Results of vitamin D assays show that the free oil contains 80 units and the extracted oil 88 units per Gm., comparing favorably with cod liver oil which has a minimum of 85 units per Gm. The difference between the free and extracted oils does not appear significant. Results of vitamin A assays indicate that the content of both is very low as compared with cod liver oil. Results of the constants agree with reports of other investigators.—ARTHUR W. STEERS and LOUIS FISCHER. *Jour. A. Ph. A.*, 29 (1940), 166. (Z. M. C.)

Vitamins as Coenzymes. Certain chemically known vitamins play important and indespensable roles in well-defined enzymic reactions. Enzymes can be synthesized by the body while vitamins cannot. In combination with enzymes certain vitamins catalyze the combustion of foods and the building up of new cells. This explains, in part, why lack of vitamins may result in metabolic disturbances and, in protracted and serious deficiency, in death.—H. TAUBER. *J. Chem. Educ.*, 16 (1939), 10–15. (E. G. V.)

Wine—Chromatographic Analysis Applied to the Natural Coloring Matter of. Chromatographic analysis, together with absorption spectrophotometry, gives a possible method of separating and identifying the individual coloring matters of wines.—L. GENTILINI. *Ann. chim. applicata*, 29 (1939), 169–183; through *J. Soc. Chem. Ind.*, 58 (1939), 983. (E. G. V.)

Wine—Natural Aging of. When aged in vats, wines increased in volatile ester content. As a result of the precipitation of lees, there were decreases in combined tartartic acid and in color and tannin. Wines hermetically sealed in glass increased in volatile ester content during a year's storage at room temperature. There was no detectable amount of a reversible Redox system at the p_H of wine.—E. K. NELSON and D. H. WHEELER. *Ind. Eng. Chem.*, 31 (1939), 1279–1281. (E. G. V.)

Wines—Biochemical Study of Eudemized. Bacteria introduced into the grapes as a result of the insect damage produce gluconic and glycuronic acids, which are formed in the grapes or musts prior to the alcoholic fermentation. These acids increase the extractives of the infected wines, account in part for their dextro rotation and explain the fact that reducing material (glycuronic acid) is present even though intensive fermentation may have taken place. The presence of these acids, which impart the characteristic properties to eudemized wines, introduces errors into the determination of other organic acids, for example, lactic and malic acids.—J. VENTRE. *Ann. fermentations*, 5 (1939), 74–92; through *J. Soc. Chem. Ind.*, 58 (1939), 876. (E. G. V.)

Zoölogy—Advances in, during 1939. A review.—D. P. COSTELLO. *Am. Chem. Soc., News. Ed.*, 18 (1940), 25–29. (E. G. V.)

ANALYTICAL

Absorption Spectrophotometry—Quantitative. The internal control method permits the quantitative determination of extinction coefficients, or of percentage absorption, to be made rapidly with the same apparatus and general technique used for quantitative emission spectrochemical analysis.—J. S. OWENS. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 643–646. (E. G. V.)

Acetylsalicylic Acid—Hydrolysis of Higher Homologs of. A comparison of the rates of hydrolysis, under given conditions, of acetylsalicylic, acetyl-*o*-cresotic, acetoxy-2-allyl-3-benzoic, acetyl-*o*-thymotic and acetoxy-2-*tert*-butyl-3-methyl-6-benzoic acid showed that a substituent group in *o*-position relative to acetoxy and in *m*-position relative to the carboxyl group decreases the facility of hydrolysis by giving rise to steric hindrance. This inhibiting action increases with the degree of complexity of the substituent group.—A. LESPAGNOL and MELLE. BAR. *Bull. soc. chim. France*, 5 (1938) 1360–1365; through *Chimie & Industrie*, 42 (1939), 113. (A. P.-C.)

Acetylsalicylic Acid Preparations—Characterization of. Iodometric Determination of Salicylic Acid. The differing physical and pharmacological properties of commercial samples of acetylsalicylic acid are discussed. The following method for the determination of the salicylic acid content is recommended: To about 0.3 Gm. of sample add 15 cc. of 0.5*N* sodium hydroxide and allow to stand over night or heat for some time on a water bath. Add 0.5 Gm. of sodium carbonate, 50 cc. of water and 20 cc. of 0.1*N* iodine solution. After 20–30 minutes add 2 cc. of 5.5*N* sulfuric acid and titrate with sodium thiosulfate. One mole of salicylate absorbs 6 atoms of iodine. In the analysis of tablets it is best to recrystallize from carbon tetrachloride. The method is stated to give results within about 0.1% of the theoretical.—D. KRUGER. *Z. anal. Chem.*, 117 (1939), 318–326. (S. W. G.)

Adsorption Analysis. A review of Tswett's chromatographic method.—H. G. CASSIDY. *J. Chem. Educ.*, 10 (1939), 88–93. (E. G. V.)

Alcoholic Hydroxyl Groups—Rapid Qualitative Test for. Dilute 1 cc. of the cerate solution (made by dissolving 400 Gm. of hexanitrato ammonium cerate in 1 liter of 2*M* nitric acid) in a test-tube by the addition of 2 cc. of water and add a drop or two of the compound to be tested. If the compound is solid, dissolve a small amount in the least quantity of water required before addition to the test reagent. A red color indicates an alcohol. For water-insoluble compounds dilute 1 cc. of the cerate solution with 2 cc. of dioxane and add a drop or two of the compound to be tested. If a solid is to be tested, dissolve a small amount in the least possible amount of dioxane before making the test. The production of a red color indicates an alcohol. (Dioxane solutions cannot be applied to solutions of the perchlorato ceric acid because of the reduction of the reagent.) Alcohols, hydroxy acids, hydroxy esters, halogenated alcohols, glycols and hydroxy aldehydes containing less than ten carbon atoms have been tested with positive results. Aromatic amines, amine hydrochlorides and compounds containing chromophoric groups interfere by giving colors or precipitates with the reagent. Compounds which are readily oxidized may decolorize the test reagent before the red color of the test can be noted. Phenols interfere by formation of conflicting colors.—F. R. DUKE and G. F. SMITH. *Ind. Eng. Chem., Anal. Ed.*, 12 (1940), 201–203. (E. G. V.)

Alcohols—Identification and Determination of. The method previously proposed for the determination of alcohols by esterification with phthalic anhydride in the presence of pyridine in the cold is tedious. The operation can be considerably hastened by carrying it out at a higher temperature. The reagent is prepared by dissolving 50 Gm. of the anhydride in 250 cc. of pyridine, drying it by distillation from barium oxide and filtering the distillate to remove separated anhydride. About 0.5 to 1 Gm. of the alcohol is refluxed with 10 cc. of the reagent on a boiling water bath for one hour; 50 cc. of water is then added and the heating continued for ten minutes. The condenser is rinsed with water and the contents of the flask titrated with *N*/2 sodium hydroxide. A blank titration of 10 cc. of the reagent is carried out, and from the difference in volume of *N*/2 alkali required for each titration the amount of phthalic ester can be calculated. The results of the examination of a large number of primary alcohols and some secondary alcohols can be esterified almost quantitatively. However, some secondary alcohols, borneol, cyclohexanol and others, become dehydrated when submitted to the reaction, while with others it is suggested steric hindrance prevents esterification; to this class belong glycerol, propylene glycol and tartaric acid. As the acid phthalates of the alcohols exist in two forms, *cis-* and *trans-*, which have definite and sharp melting points, they can be used for the identification of the alcohols. After the esterification the phthalates are liberated by warming with water in the presence of pyridine, making the solution alkaline with potassium hydroxide and then adding an excess of hydrochloric acid, when the acid phthalates crystallize out. The acid phthalates of some tertiary alcohols can be prepared from the magnesium alcoholates.—S. SABETAY and Y. R. NAVES. *Ann. chim. anal.*, 19 (1937), 285; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 261. (S. W. G).

Amino Acids and Their Compounds—Microscopy of. Data on 27 amino acids giving crystalline salts with picrolonic acid is presented. Photomicrographs of 12 picrolonates are shown.—R. DUNN, K. INOUYE and P. KIRK. *Mikrochemie*, 27 (1939), 154–160. (R. H. B.)

Analysis—Summarized Methods of. The Sulfate Ion. Qualitative tests are described involving the use of barium chloride, reduction on charcoal, lead acetate, sodium rhodizonate, mercuric nitrate and microcrystal tests. Determination of sulfate ions as barium sulfate, semimicro procedures, as benzidine sulfate and as lithium sulfate are described.—J. GRANT. *Chem. Products*, 2 (1939), 43–46, 67–70; through *Chem. Abstr.*, 33 (1939), 8137. (E. G. V.)

Aristochine—Herapathit Reaction for. The author discusses the well-known herapathit reaction and its application to the microchemical identifica-

tion of aristochine, quinine carbonate $CO(OC_{20}H_{23}N_2O)_2$.—M. WAGENAAR. *Pharm. Weekblad*, 76 (1939), 1544. (E. H. W.)

Arsenic—Note on the Use of the Nephelometer for the Routine Determination of Traces of, by Bougault's Method. Bougault's method consists essentially in reducing oxygenated arsenic compounds in hydrochloric acid solution by means of hypophosphorous acid, resulting in a turbidity the intensity of which depends on the amount of arsenic present, and comparing with that of similarly treated standards. The latter, however, are not stable, and even if stabilized by the addition of gum arabic, fresh standards must be prepared daily. The following procedure gave turbidities which showed no change after 1 month: dissolve 2.5 Gm. of borax in 150 cc. of distilled water, add 1 Gm. of powdered rosin, heat 15 to 20 minutes with constant stirring, continue stirring while allowing to cool and dilute to obtain the desired series of turbidity standards.—JACQUES THURET. *Ann. fals.*, 32 (1939), 328–330. (A. P.-C.)

Beer—Micromethods for the Examination of. Directions and apparatus for the microanalysis of beer are given.—G. GHIMICESCU. *Mikrochemie*, 27 (1939), 197–211. (R. H. B.)

Bismuth—Determination of, by the Quinaldine Salt of Iodobismuthous Acid. The sample (containing about 0.03 Gm. of bismuth) is dissolved in sulfuric acid and diluted to about 200 cc., and the acidity is adjusted to about 1*N*. After the addition of 15 cc. of a 10% sodium sulfite solution, bismuth is precipitated by the dropwise addition, with stirring, of 20 cc. of a solution containing 150 cc. of quinaldine, 50 cc. of concentrated sulfuric acid and 75 Gm. of potassium iodide per liter. After being allowed to settle, which requires 15 to 20 minutes if well stirred, the red precipitate is filtered with suction on a Gooch filter or a fritted-glass filter cell. The precipitate may stand several hours before filtering without apparent decomposition, but preferably not overnight. It is first washed with 40 to 50 cc. of a solution of 35 cc. of quinaldine, 15 cc. of concentrated sulfuric acid, and about 0.8 Gm. of potassium iodide per liter. As washing with water must be avoided to prevent decomposition of the precipitate, the small amount of excess iodide left by the first wash solution is removed by washing with 30 cc. of a solution of 10% acetone in *N* dibutyl ether. The crucible containing the well-washed precipitate is then transferred to a beaker and about 100 cc. of a 5% sodium hydroxide solution are added. To ensure complete decomposition of the precipitate the solution is heated to boiling for about 20 minutes, after which it is cooled and neutralized with concentrated hydrochloric acid, and an excess of 10 cc. is added. After adding 8 cc. of a 0.5*M* potassium cyanide solution, the iodide is titrated to iodine cyanide according to Lang's method. Each cc. of the 0.1*N* (0.025*M*) potassium iodate solution is equivalent to 0.002612 Gm. of bismuth.—J. R. HAYES and G. C. CHANDLER. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 531–532. (E. G. V.)

Bismuth Salicylate—Basic, Modification of the Composition of, on Washing with Water. Basic bismuth salicylate prepared by the addition of 100 Gm. of powdered bismuth nitrate of 52.5 Gm. of salicylic acid in 500 cc. of water at 50° C. contains 52.5% of Bi_2O_3. Successive washings with 1 liter of water and sampling after three washings gave samples containing 53.8, 63.8, 65.3, 65.0, 65.5, 64.6, 64.2, 65.0, 65.2 and 63.3% Bi_2O_3. Constant composition is obtained after 9 washings with 1 liter of water. It is recommended that preparation of basic bismuth salicylate containing less than 60% of Bi_2O_3 should not be used in the preparation of oil suspensions for therapeutic use since such samples give a hard yellowish white deposit adhering to the bottom of the vial after sterilization at 100° C. for 1 hour.—L. BRACALONI. *Boll. chim.-farm.*, 77 (1938), 605–609; through *Chimie & Industrie*, 42 (1939), 113. (A. P.-C.)

Caffeine—Application of a New Reaction of, to Its Determination in Official Solutions. Dilute 1 cc. of the weak solution (contains 0.25 Gm. of caffeine and 0.3 Gm. of sodium benzoate per cc.) with 50 cc. of distilled water. To 5 cc. of the diluted solution add 5 cc. of hydrochloric acid, 2 Gm. of zinc amalgam, heat to boiling and let stand for fifteen minutes. (Prepare the zinc amalgam as follows: Mix 10 Gm. of zinc in the form of needles with 20 cc. of water, 5 cc. of saturated solution of mercuric chloride and 5 cc. of hydrochloric acid; shake for five minutes, decant and wash immediately with distilled water.) Decant the liquid into a comparator tube, add 1 drop of 1% potassium chlorate solution and compare with a control sample, run at the same time, in a colorimeter. With the strong solution (contains 0.4 Gm. caffeine and 0.35 Gm. of sodium benzoate per cc.) dilute 1 cc. to 80 cc. with distilled water. Proceed as in the case of the weak solution using 5 cc. of the diluted solution.—E. KERGONOU. *Bull. trav. soc. pharm. Bordeaux*, 78 (1940), 78–89. (S. W. G.)

Calcium and Phosphate—Micromethods for the Determination of. A compilation, giving reagents used, principles, use and accuracy for certain calcium and phosphate methods is given. An extensive bibliography is appended.—R. S. MANLY. *Mikrochemie*, 27 (1939), 145–153. (R. H. B.)

Calomel. The author states that the rapidity with which a given weight of calomel will dissolve depends upon the size of the particles in the sample, and suggests a test, based on this principle, to be used in determining the particle size. The test is as follows: Place 400 mg. of calomel in an iodine flask, add 10 cc. of alcohol and shake to distribute the calomel. Add 10 cc. of a solution of iodine (2.5 Gm. of iodine in 100 cc. of 90–95% alcohol) and again shake the mixture. The calomel should be dissolved in four minutes. If large crystalline particles are present they will remain as a precipitate. Seventeen different samples of crystalline calomel were examined and tested. Samples having particle sizes up to 30 microns dissolved completely in three and one-half minutes or less of shaking. Samples containing particles measuring 100 microns or more exhibited crystalline residues after shaking for ten minutes.—L. VAN ITALLIE. *J. pharm. chim.*, 30 (1939), 305–307. (S. W. G.)

Carbon and Hydrogen—Accuracy and Precision of Microanalytical Determination of. A direct empirical test of the accuracy and precision of the microanalytical determination of carbon and hydrogen, embracing 349 individual analyses of about 200 pure compounds by 23 experienced analysts, yields the information that this process is conducted at present with an over-all precision of about 2.9 parts per 100 of carbon and about 22 parts per 100 of hydrogen; both elements are determined slightly too high, the error on the carbon being probably significant and that on the hydrogen probably not. The statistical methods are described and illustrated briefly. While tolerance limits expressed in per cent on the sample are not in accord with the usual custom among American chemists, such expression is sound in principle for carbon and hydrogen determinations. The outside tolerances for hydrogen as found from the present study agree very well with those commonly accepted; those on carbon, however are a little wider than commonly accepted values. The precision attained by microanalysts varies considerably and should be given

due consideration by organic chemists. Microanalysis is an art as well as a science.—F. W. POWER. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 660–673. (E. G. V.)

Carbon Disulfide—Estimation of. It has been shown that carbon disulfide will form a precipitate with piperazine, with the composition $C_4H_{10}N_2CS_2$. The reaction is quantitative only in the presence of a larger excess of piperazine. The reaction takes place best with 95% ethyl alcohol as solvent. The precipitate is dried at 105°. Determinations can be made within 0.1–0.2%. For the determination of vaporous carbon disulfide, the air can be bubbled through a concentrated alcoholic solution of piperazine.—A. CASTIGLIONI. *Ann. chim. applicata*, 29 (1939), 196–198. (F. S. M.)

Carbon Disulfide Vapor. The test recommended depends upon the reaction between carbon disulfide, diethylamine and cupric acetate whereby copper diethyldithiocarbamate is formed. The quantity of carbon disulfide present is estimated by standards prepared with known amounts of carbon disulfide. Full details are given for making the test. Poisonous effects are shown even when as little as 0.1 mg. of carbon disulfide is present per liter of air.—ANON. *Dept. Sci. Ind. Research (Brit.), Methods for Detection of Toxic Gases in Industry*, 6 (1939); through *Chem. Abstr.*, 33 (1939), 8141. (E. G. V.)

Carbon Monoxide—Detection of, with Palladium Chloride Paper. The palladium chloride paper previously recommended was found to assume a grayish tint on keeping even under the most favorable conditions. The following method of preparation of the reagent paper is recommended. Prepare small glass bulbs which have two capillary ends and hold about 0.1 cc. of 10% palladium chloride solution. Cut bands of filter paper 55 x 15 mm. When the test is to be conducted break the sealed ends of a bulb, rest one of the ends on a strip of the filter paper and drain by shaking if necessary. Suspend the paper in the atmosphere for ten minutes. If the concentration of the carbon monoxide is 1:3000 to 1:4000 the paper will assume a gray to grayish brown color in 6–10 minutes. If hydrogen sulfide or sulfur dioxide is present in the atmosphere it should be passed through a tube containing lead acetate before coming in contact with the reagent paper.—J.-A. LABAT. *Bull. trav. soc. pharm. Bordeaux*, 78 (1940), 65–67. (S. W. G.)

Carbon—Semimicro Method for Determination of, in Dilute Aqueous Solutions, Especially Those of the Fermentation Industries. The material under examination is treated in a reaction flask at 170–180° in a stream of purified oxygen with a mixture of concentrated sulfuric acid (or sulfuric acid and sulfur trioxide) and chromic acid. The gases evolved pass in turn through glass wool, 20% aqueous potassium iodide and glass-wool portions treated, respectively, with aqueous silver nitrate and sulfuric acid, and then to the combustion tube. This contains silver wool, cupric oxide, silver wool and lead chromate, in that order, the portion between and including the silver wools being heated to redness. The dried carbon dioxide is absorbed in potassium hydroxide bulbs and a soda-lime tube, being determined by weighing. In the examination of liquids containing alcohols, aldehydes or volatile acids the glass-wool tube following the reaction flask is connected directly to the combustion tube.—H. FINK and H. MUNDER. *Vorratspflege u. Lebensmittleforschung*, 2 (1939), 371; through *J. Soc. Chem. Ind.*, 58 (1939), 876. (E. G. V.)

Carotene—Factors Affecting Adsorptive Powers of Magnesium for. The adsorptive powers of magnesium preparations were studied in order to secure preparations which adsorb xanthophyll and do not adsorb carotene and could be used in the purification of solutions of carotene in petroleum ether. Nineteen samples of magnesia from various sources were tested as received and after activation by heating with an equal volume of water for 30 minutes on a steam bath. All adsorbed carotene and therefore could not be used for purifying carotene solutions. Activated magnesia, heated in a muffle furnace at 400° C. and activated, adsorbed 76% of the carotene, 25% when the temperature was 750° and 0.5% when the temperature was 900°. Reagents suitable for the purification of carotene in the method of selective adsorption can be prepared as follows: (1) with a few samples of magnesium oxide or hydroxide by mixing in suitable amounts of water; (2) activating and mixing in suitable amounts of water; (3) exposure of magnesium oxide to the air, activating and mixing water in, if necessary; (4) magnesium carbonate either as received or after activation, or with addition of a small amount of water. The adsorptive power of the reagent for carotene and for xanthophyll should be measured before it is used.—G. S. FRAPS, A. R. KEMMERER and S. M. GREENBERG. *Ind. Eng. Chem., Anal. Ed.*, 12 (1940), 16–18. (E. G. V.)

Ceric Sulfate—Application of, to the Determination of Arsenic in Paris Green and Lead Arsenate. Ceric ammonium sulfate has been shown to be a satisfactory standard oxidizing agent when used instead of iodine in the determination of arsenic in Paris green and lead arsenate by the official distillation method of the A.O.A.C.—J. P. MEHLIG and K. R. JOHNSON. *J. Chem. Educ.*, 15 (1938), 367–369. (E. G. V.)

Chloride—Determination of, by the Volhard and Gravimetric Methods. The presence of large quantities of silver chloride can cause appreciable error in the titration of silver ions with thiocyanate by the Volhard method, and in order to avoid this the silver chloride is removed by filtration. It is possible, however, to prevent the error by the addition of a protective colloid. The addition of 10 cc. of a 4% solution of thymol in ether or amyl alcohol proved satisfactory in the titration of about 1 milliequivalent of chloride in approximately 30 cc. of solution. Good stirring is essential during the titration. The adsorption of silver ions can also be prevented by titrating in the presence of nitric acid and ammonium nitrate. This also helps in the gravimetric determination of chloride.—J. BITSKEI. *Z. anal. Chem.*, 118 (1939), 164–169. (S. W. G.)

Chlorine—Determination of Small Quantities of Free, in Phosgene. Phosgene has been found to be unaffected by mercuric iodide at room temperature while free chlorine reacts with mercuric iodide to liberate iodine. The loss in weight caused by the conversion of mercuric iodide into mercuric chloride is used to determine the presence of as little as 1 mg. of chlorine in 10 Gm. of phosgene. The liberated iodine might be titrated with thiosulfate, but under the conditions studied, free iodine was present at the start. The methods of preparation and handling definite quantities of chlorine are described.—H. MARTIN, W. OETTINGER and W. KUHN. *Z. anal. Chem.*, 117 (1939), 305–317. (S. W. G.)

Chlorine, Ozone and Hypochlorites—Color Tests for, with Methane Base. If ozone gas is led into a solution of 4,4′-tetramethyldiaminodiphenylmethane (methane base) in either carbon tetrachloride, alcohol or acetone, a sequence of colors (violet, amethyst, rose and ruby red) is produced. The addition of chlorine gas to such solutions of the base gives another sequence of colors: blue, grass green, olive green, orange and yellow with final complete bleaching. Hypochlorites in aqueous solution give the chlorine sequence of colors. If the methane base is

in alcoholic solution of greater than 50% alcohol the chlorine sequence is followed by the ozone sequence of colors. Electrolytically prepared hypochlorites give both sequences of colors in aqueous solutions; the ozone sequence is recognizable a few hours after the chlorine colors. After prolonged standing, chemically prepared hypochlorites may give partial ozone colors. The color of solutions of fluorescein is destroyed more rapidly by electrolytically prepared hypochlorites than by those chemically prepared. These differences in color reactions may be due to the presence of ozone in the electrolytically prepared hypochlorites.—A. T. MASTERSON. *Analyst*, 64 (1939), 492. (G. L. W.)

Chromic Oxidation—Titrimetric Determination of Organic Substances by. Use of Stable Standard Solutions: Nitro-chromic Solutions. *Alcohol in Simple Aqueous Solution.* Place in an iodine flask 10 cc. of 0.1*N* nitro-chromic solution (4.90 Gm. of potassium dichromate in enough nitric acid to make a liter) and 1 cc. of the diluted hydroalcoholic solution containing at most 1% of alcohol; or 10 cc. of 0.1*N* nitro-chromic solution and 5 cc. of hydroalcoholic solution containing at most 0.2% of alcohol. Shake well for two minutes in the first case and for five minutes in the second case, then add 40 cc. of water. Transfer the mixture to a flask containing 1 Gm. of potassium iodide in 100 cc. of water, let stand for one minute then add, by means of a burette or pipet graduated in twentieths of a cc., 0.1*N* sodium thiosulfate until the liberated iodine is removed and a pure blue color remains. Let *N* represent the number of cc. of thiosulfate used; then $10 - N \times 1.15$ gives the mg. of alcohol in the sample; or $10 - N \times 1.448$ gives the volume in cubic mm. of alcohol in the sample. *Anesthetic Chloroform.* Use 10 cc. of the 0.1*N* nitro-chromic reagent and 1 cc. of the chloroform, then proceed as above. *Spirit of Camphor.* Accurately measure 10 cc. of the spirit into a liter volumetric flask and add water, at first drop by drop, to make a liter. Mix well, filter, then use 1 cc. of the filtrate and 10 cc. of the reagent as above. *Complex Mixtures.* The other substances present which may be oxidized by the reagent must be removed.—H. CORDEBARD. *J. pharm. chim.*, 30 (1939), 263–272. (S. W. G.)

Confirmatory Tests—Limits of Identification of Simple. An attempt was made to determine the ultimate limits of identification of two well-known confirmatory tests, one of which (the test for barium by the addition of sulfate ion) is based on the appearance of a precipitate, while the other (the Prussian blue test for iron) produces a coloration when the limiting concentration is reached. Using micromanipulators and microinjection apparatus, drops 10^{-9} to 10^{-11} cc. in volume of the test solution and the reagents were deposited in a film of paraffin oil and inspected with the microscope before and after merging. Employing a microscope magnification of × 397 and dark-field illumination as furnished by a Zeiss Epi-Condenser W, 10^{-14} Gm. of barium, supplied by a drop of 10^{-9} cc. of 0.001% barium solution, always give positive tests. The outcome of experiments with smaller quantities of barium was either doubtful or negative. Using the × 397 magnification and transmitted light, the blue coloration of the Prussian blue test was always observed with 4×10^{-13} Gm. of ferric ion contained in 4×10^{-11} cc. of test solution. These findings are in satisfactory agreement with conclusions drawn from theoretical considerations.—A. A. BENEDETTI-PICHLER and J. R. RACHELE. *Ind. Eng. Chem., Anal. Ed.*, 12 (1940), 233–241. (E. G. V.)

Copper—Simple Micro-Test for. In solutions of p_H 5 to p_H 8, quantities of copper between 1 part in 10^6 and 5 parts in 10^7 parts of water may be detected by mixing or boiling 100 cc. of such solutions with 0.05 cc. of oleic acid. The presence of copper is indicated by the appearance of a blue-green color in the drop of oleic acid. The color develops very slowly on standing but with stirring (20 minutes) or boiling (5 minutes) the time may be reduced. This reaction may account for the green color seen in some olive oils.—E. HEYMAN and L. F. KERLEY. *Analyst*, 64 (1939), 502. (G. L. W.)

Cyanide Ion—Argentometric Titration of, with Diphenylcarbazone as Indicator. The following procedure is recommended: Adjust the p_H of the solution to 9–10, add 4 drops of 0.3% diphenylcarbazone in alcoholic solution. The indicator imparts a reddish brown color. Add the silver nitrate solution and shake to help redissolve the precipitate in the excess cyanide. As soon as all the cyanide has been converted into the silver cyanide complex the next drop of silver causes precipitation of silver cyanide and the indicator changes to violet. Then, when just as much more silver ion has been added and all the silver is precipitated as silver cyanide, the precipitate suddenly turns blue and coagulates. The alkali cyanide solution should be about 0.1–0.5 *M* and the silver nitrate solution should be about 0.1–0.5*M* also. The diphenylcarbazone shows the violet color when the ratio 2 cyanide:1 silver is obtained and the blue color of the precipitate is formed when the ratio is 1 cyanide:1 silver.—R. RIPAN-TILICI. *Z. anal. Chem.*, 118 (1939), 305–307. (S. W. G.)

Cyanogenetic Substances in Edible Members of the Cruciferæ—Occurrence of. The author records previous references to the isolation of nitriles from the oils obtained by steam distillation of cabbages and other members of the sub-family *Brassica*. Phenylpropionic nitrile was found in water cress and phenylacetic nitrile in nasturtium. The presence of goitrogenic nitriles in cabbage has been demonstrated in feeding experiments. Prolonged steaming of cabbage may actually increase the goitrogenic properties. The author found that urine passed in 3.5 hours by persons who had previously partaken of cabbage and brussels sprouts at the immediately previous meal contained from 0.0016 to 0.0086 Gm. of sodium cyanide. Prior to the meal the urines were free from cyanide.—G. V. JAMES. *Analyst*, 64 (1939), 500. (G. L. W.)

Drug Ash—Composition of. Methods are given for detecting phosphates, silica, manganese, aluminum, nickel and copper in drug ash. The tests are carried out on the ash from the incineration of 1 Gm. of drug. For the detection of silica and phosphates, the incineration is carried out in a nickel crucible; for the other constituents, a quartz crucible is used.—L. ROSENTHALER. *Pharm. Acta Helv.*, 13 (1938), 101–103; through *Chimie & Industrie*, 42 (1939), 102. (A. P.-C.)

Ethanol—Determination of, after Preliminary Purification of the Vapors by Adsorption. The usual methods of determining the alcoholic strength of samples may not be applicable to many pharmaceutical preparations containing other volatile constituents. The method described depends upon the volatilization of 5–15 mg. of ethanol by the passage of considerable air at room temperature, the vapor is passed over a suitable quantity of dry, "amphoteric" activated carbon which serves to remove interfering vapors. The quantity of carbon required is determined by testing its adsorption power with antipyrine. A quantity which will adsorb 12–15 mg. of antipyrine will allow the passage of 5–20 mg. of ethanol. The purified ethanol vapors are passed into 25 cc. of 0.1*N* potassium dichromate solution to which enough sulfuric acid has been added to make the density equal 1.62. The excess dichromate is determined iodometrically. A special apparatus is shown and the various pre-

cautions to be noted are discussed—E. SCHULEK and P. ROZSA. *Z. anal. Chem.*, 117 (1939), 400–414. (S. W. G.)

Ethyl Vanillin in Vanilla Extract—Qualitative Test for. Dealcoholize 50 cc. of the sample, treat with lead acetate solution and extract with ether in exactly the manner prescribed in the official A.O.A.C. gravimetric method for vanillin. Place the ether extract in a small beaker and allow the residue to remain over night in a desiccator. Then add 1 cc. of an acid solution made by diluting 2 parts of concentrated hydrochloric acid with 1 part of water. Place the beaker in a water bath at 55° C. until the residue is dissolved, then pour the solution into a medium-sized test-tube. Use no wash water, as a quantitative transfer is not required. Add 1 cc. of 3% hydrogen peroxide solution to the test-tube and shake frequently while the color changes to yellow, brown, then red. Finally a deep purple color appears and a blue precipitate forms. After standing 15 minutes add 15 cc. of benzene and place the test-tube in the water bath at 55° C. Shake frequently and allow the test-tube to remain in the water bath until the lower aqueous layer becomes a dirty yellowish brown (about 15 to 20 minutes). Remove it from the water bath and carefully pour or pipette a major portion of the benzene layer into a small dry test-tube. If the benzene is colored violet, ethyl vanillin is present. In the absence of ethyl vanillin the benzene is colored a light or dirty yellow.—H. W. CHENOWETH. *Ind. Eng. Chem., Anal. Ed.*, 12 (1940), 98–99. (E. G. V.)

Fats, Etc.—Standardized Methods of Analysis of, and Fatty Products. Second Report of the International Committee for the Study of Fats. Standard methods for determining the usual physical and chemical characteristics of fats (including, inter alia, Wijs, Hanus and Hubl iodine values; hydroxy value by pyridine-ether acetylation and expressed as mg. of potassium hydroxide equivalent to the acetic acid combined with one Gm. of original fat; determination of insoluble polybromides) and for the analysis of hard soaps (determination of water, insoluble matter, total fatty acids, total and free alkali) are detailed.—*Union Internat. Chim.*, (1938); through *J. Soc. Chem. Ind.*, 58 (1939), 512. (E. G. V.)

Ferrous Iron—Characteristic Reaction of Dithio-Oxamide with. When 1 or 2 drops of a 0.05*M* neutral or slightly acid solution of ferrous salt (*A*) were treated with 0.5 to 1 cc. of fresh, cold, alkaline (1.2 to 2.5*N*) solution of dithio-oxamide ($H_2N.CS.CS.NH_2$) (0.1 to 0.2%) (*B*), a deep blue color which changed on standing, was produced. One or two cc. of *B* when mixed with a little sodium hydrosulfite and then with 1–2 drops of 0.01*M* solution of a ferric salt gave the same color. No color was produced with metallic iron until the iron was caused to dissolve by touching it with a piece of zinc or aluminum wire or by making it a cathode against another iron anode.—G. NILSSON. *Analyst*, 64 (1939), 501. (G. L. W.)

Filtration—New Aids to. The production of a porous rubber sheet having controlled pore dimensions and uniform pore distribution, by expanding bubbles of air through successive thin films of latex, provides a filter medium having special value where the filtrate is acid. By stretching the multi-layered latex sheet in one direction during vulcanization the pores become effectively narrow slots, providing finer filtration.—ANON. *Chem. Met. Eng.*, 46 (1939), 212–213; through *J. Soc. Chem. Ind.*, 58 (1939), 676. (E. G. V.)

Formaldehyde—Determination of, with Ammonia. II. The following procedure is recommended: Place 8 cc. of the solution (accurately measured) in a 150-cc. conical flask, add 35 cc. of 2*N* ammonia solution, shake and after standing a short time, distil off the excess ammonia under reduced pressure into 15 cc. of *N* sulfuric acid. Titrate the excess acid, and from the result calculate how much ammonia was used up by the aldehyde to form hexamethylene tetramine. The results are in agreement with those obtained by the hydrogen peroxide method but are higher than the values obtained by direct titration of the excess ammonia (without distillation) to a rosolic acid end-point.—A. FOSCHINI and M. TALENTI. *Z. anal. Chem.*, 118 (1939), 94–97. (S. W. G.)

Formol Titration—Micromethod for. A micromethod is described which allows a potentiometric titration of formaldehyde to be carried out with 0.1 cc. of sample, using a glass electrode.—A. JANKE and E. MIKSCHIK. *Mikrochemie*, 27 (1939), 176–179. (R. H. B.)

Glycerol—Determination of, and Some Other Hydroxyl Compounds. The following procedure is recommended: Accurately weigh a quantity (not more than 10 cc.) of the solution, containing not more than 0.8 Gm. of glycerol, in a 100-cc. graduated flask. Dilute to 10 cc. with water, add 10 cc. of 30% sodium hydroxide solution and 60 cc. of alcohol. Mix, then add enough of a solution containing 10 Gm. of cupric chloride dihydrated in 100 cc. of alcohol to leave an undissolved precipitate of cupric oxide, and make up to the mark with alcohol. Centrifuge about 60 cc. of the liquid and transfer 50 cc. of the clear solution to a 300-cc. conical flask. Add 100 cc. of water, sulfuric acid (1:6) to a faintly acid reaction and 10 Gm. of potassium iodide. Titrate the mixture with 0.1*N* thiosulfate to the appearance of a white color. Carry out a blank determination. Glycerin can be determined in a solution containing trimethyleneglycol and glucides. The method can be used for the determination of mannitol, sorbitol and tartaric acid by operating with an aqueous medium. The complex compounds formed by these substances with copper are insoluble in alcohol.—S. H. BERTRAM and R. RUTGERS. *Rec. trav. chim. Pays-Bas.* 57 (1938), 681; through *J. pharm. Belg.*, 22 (1940), 295. (S. W. G.)

Gold—Detection of, in Qualitative Analysis. To 2–3 cc. of the solution to be tested add 0.3 cc. of pure morpholine, or enough to impart a distinctly basic reaction to the solution, and filter to remove any copper or iron precipitates. Heat the filtrate to boiling. If gold ions are present the solution will be yellow and will gradually assume a bluish violet tint and similarly colored flocks will precipitate. By comparison with reactions of known concentrations an approximate estimation of the gold content can be made.—L. S. MALOWAN. *Z. anal. Chem.*, 118 (1939), 100–102. (S. W. G.)

Halogens—Modified Beilstein Test for, in Organic Compounds. A section of Monel metal tubing 0.9 cm. in outer diameter is heated to cherry red with a Bunsen burner equipped with a fishtail. The compound to be tested is brought up to within 1 cm. of the under side of the Monel tube. The material decomposes in the flame and the decomposition products are automatically swept up against the hot metal. If the compound contains halogen, a colored flare will appear which may range anywhere between green and blue. The approximation of percentage is made possible by taking given amounts of material. The liquids are picked up on a platinum loop; the solids, on a small platinum spoon about 2 mm. in diameter.—D. F. HAYMAN. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 470. (E. G. V.)

Hydrocyanic Acid—Micromedico-Legal Test for. A modification of Dènigés' method for the detection of HCN for forensic purposes is described. The

HCN is liberated from the organs and detected by the formation of crystals with an ammoniacal solution of alloxan.—A. MARTINI and B. BERISSO. *Mikrochemie*, 26 (1939), 241–244. (R. H. B.)

Hydrocyanic Acid—Partition Coefficients of Aqueous Solutions of, and Some Organic Solvents. Place equal volumes (20 to 40 cc.) of the aqueous solution of hydrocyanic acid (determined concentration between 1% and 5%) and the organic solvent in a 125-cc. flask, seal tightly and shake vigorously for five minutes. Let stand for ten minutes in water at 18°, then determine the hydrocyanic acid in the two layers, after separation, by titration with 0.1*N* silver nitrate in ammoniacal medium and in the presence of potassium iodide as indicator according to the method of Dènigés (*Bull. trav. soc. pharm. Bordeaux*, (1893), 376). The following values for $C = \frac{\text{HCy in water}}{\text{HCy in solvent}}$ were obtained: ether 0.42; benzene 2.25; tetrachloroethane 2.70; ethyl bromide 2.80; chloroform 4.20; carbon tetrachloride 24.0.—G. DÈNIGÉS. *Bull. trav. soc. pharm Bordeaux*, 78 (1940), 61–65. (S. W. G.)

Ichthammol—Assay of. The following method was used: Transfer from 0.7–1.0 Gm. of the sample, accurately weighed, into a Kjeldahl flask with the aid of 30 cc. of distilled water. Add 5 Gm. of reagent potassium chlorate, then add slowly 30 cc. of reagent nitric acid, and evaporate the mixture to about 5 cc. Transfer the residue into a 300-cc. beaker with the aid of about 25 cc. of hydrochloric acid and again evaporate to about 5 cc. Add 100 cc. of water, heat to boiling, filter and wash. If no insoluble residue remains, precipitate the hot solution with barium chloride, filter it, wash, ignite the resulting barium sulfate and weigh.—REPT. AMER. PHARM. ASSOC. LAB. *Bull. Natl. Formulary Committee*, 8 (1940), 193. (H. M. B.)

Indole—Quantitative Determination of. The method is based on the observation that when a chloroform solution of indole is treated with dilute acid (up to approximately 12%) and Ehrlich's reagent the color remains in the chloroform, but if the test is made with stronger hydrochloric acid the color is transferred to the aqueous phase. If the acid is too concentrated, the color may be inhibited or destroyed. In the method described herein syrupy phosphoric acid is used instead of hydrochloric acid because, being of heavier density, it may be easily separated with the indole and reagent from a mixture with chloroform, forming the lower layer, which can be easily tapped off. Furthermore, being a weaker acid than hydrochloric acid, some reaction with other possible interfering substances (when chloroform extracts of biological material are made) may be avoided. The addition of acetic acid increases the sharpness of separation and clarifies both layers. Almost all the acetic acid remains dissolved in the chloroform. After separating the phosphoric layer, the characteristic color of the reaction is developed by adding acetic acid to it.—L. H. CHERNOFF. *Ind. Eng. Chem., Anal. Ed.*, 12 (1940), 273–274. (E. G. V.)

Iodine—Determination of, in Thyroid and Its Preparations by Cerate Oxidimetry. The method developed is believed superior to the U. S. P. XI method. Thoroughly mix 1 Gm. of thyroid, finely powdered and accurately weighed, with 15 Gm. of anhydrous sodium carbonate in a nickel crucible of about 125-cc. capacity, and spread an additional 10 Gm. of anhydrous sodium carbonate evenly over the surface. Heat the crucible in the flame of a Bunsen burner at a rate to attain a dull red color in 10 minutes. Then place the crucible and contents in a muffle furnace and heat at a temperature not to exceed 500° C. for 30 minutes. Cool the mixture and transfer it to a 250-cc. beaker containing 100 cc. of warm distilled water. Rinse the crucible with 25 cc. of distilled water and add it to the beaker. Apply gentle heat to the beaker and contents to ensure solution of the sodium carbonate and iodide. Filter the solution while still warm and wash the carbonaceous material with several small portions of warm distilled water. Cool the filtrate and cautiously neutralize with concentrated hydrochloric acid, using litmus paper as an indicator. For each 100 cc. of neutralized solution, add 20 cc. of concentrated hydrochloric acid and titrate with 0.005*N* ceric sulfate, using a microburette and 1 drop of *o*-phenanthroline ferrous sulfate, 0.025*M* solution, as indicator, the end-point being the first bluish green tinge that remains in the solution for 1 minute. Conduct a blank test with the same quantities of the same reagents omitting only the thyroid, and fusing as directed, and subtract the volume of 0.005*N* ceric sulfate consumed from that consumed by the thyroid. Each cc. of 0.005*N* ceric sulfate is equivalent to 0.0003178 Gm. of iodine in thyroid combination. For thyroid tablets, weigh not less than 20 of the tablets and reduce them to a fine powder without an appreciable loss. Substitute approximately 1 Gm. of tablet mixture, accurately weighed, for the thyroid sample and proceed with the proposed and U. S. P. XI methods for the assay of the thyroid gland. The sample weight should be increased so that the amount of thyroid will equal or exceed 259.2 mg. (4 gr.).—W. H. HILTZ and D. T. WILSON. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 637–639. (E. G. V.)

Iodine—Device for Subliming. The device consists of a desiccator of Pyrex glass, having a diameter of approximately 250 mm., and bearing a 40- to 60-watt light bulb in the lid. Lead wires from an ordinary municipal lighting circuit are soldered to the metallic base of the bulb, which is sealed in the hole in the desiccator lid with plaster of Paris in such a way that no metallic surface is exposed to the interior of the desiccator and also so that the plaster does not touch the wire soldered to the central terminal of the bulb, which is covered with Khotinsky or a similar cement. The tile supports the beaker or evaporating dish containing the iodine to be sublimed and the beaker contains a drying agent such as phosphorus pentoxide. If a resistance is placed in series in the external circuit, closer regulation of heating temperatures is assured. When a current is passed through the bulb, the top of the desiccator becomes warmer than the bottom and iodine vaporizes and condenses on the lower sides and bottom.—J. CORNOG and L. OLSON. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 551. (E. G. V.)

Iodoform—Effect of Inhibitors on the Photochemical Oxidation of. Quinones and polyphenols prevent the autoxidation of iodoform to a considerable extent. Phenol, thymol, naphthalene, cyclohexanol, stilbene and the dimethyl ester of hydroquinone, on the other hand, possess no inhibiting properties. In the case of the inhibitors, the rate of autoxidation decreases with increase in the concentration of the inhibitor according to an exponential law.—K. WEBER and V. MAUTNER. *Arhiv. Za Hemiju*, 12 (1939), 172–182; through *Chimie & Industrie*, 42 (1939), 110. (A. P.-C.)

Iron—Colorimetric Determination of, in Aluminum, Alumina, Hydrated Alumina and Aluminate Liquors by Means of Sodium Sulfide. In slightly basic solutions the presence of iron causes the formation of a bluish green color upon the addition of a little sodium sulfide solution. The procedure recommended for carrying out the analysis using the Pulfrich photometer is given. The results obtained are shown to correspond almost exactly with values obtained by titrating very dilute iron solutions with titanium chloride.—L. ROELEN. *Z. anal. Chem.*, 117 (1939), 385–91. (S. W. G.)

Jones Reductor—Modified. The tip of the delivery tube is first expanded to form the female joint. A 15-cm. length of capillary tubing, possessing an inside diameter of 1.5 mm. and an outside diameter approximately equal to that of the delivery tube of the reductor, is heated at one end until the orifice is barely closed. The capillary tube is then heated at a point 5 cm. from the closed end and drawn out until it possesses a taper simulating that of the female cone. The male cone is obtained by cutting the tubing at the constriction. Three or four male cones should be made and ground into the delivery tube of the reductor, care being taken not to grind too long on any one cone before grinding in the next. In this way all the cones are gradually ground to the same size and may be used interchangeably in the reductor. The closed tips of the cones are then ground down on a piece of plate glass until each cone possesses the desired orifice size. In this way cones delivering approximately 20, 50, 100 or any desired number of cc. per minute may be obtained. The volume delivered must be determined by trial. If too large a volume is delivered, the orifice may be closed slightly by reheating the tip.—W. A. TAEBEL. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 550.
(E. G. V.)

Laboratory Lifting Device. The device is useful for raising of heating baths and for the control of heat that is required in fractional distillation. It consists of an automobile jack (rotary motion type) mounted on a plate equipped with leveling screws which are long enough to enable the plate to clear the base of a ring stand. The jack is equipped on top with a plate, about 20 x 20 cm., which is made to support the oil bath, with or without a hot plate, or any other piece of equipment.—G. CALINGAERT. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 552.
(E. G. V.)

Lead, Copper and Zinc—Photometric Determination of. The determination of these three metals is based on the use of a photometer in which the extinction coefficient of colored solutions is measured, using light passed through a colored filter. The amount of metal present is then read off from standardization curves. The reagent is a solution of dithizone, freed from yellow oxidation products in the following way. A solution of 20 mg. of dithizone in 100 cc. of carbon tetrachloride is shaken with very dilute ammonia (1 cc. of strong ammonia to 200 cc. of redistilled water). The ammoniacal solution is acidified with hydrochloric acid, and the dithizone shaken back into 100 cc. of tetrachloride. This solution is then washed several times with water. It should be freshly prepared. The method for the determination of lead, copper and zinc in admixture is as follows: 100 cc. of the sample is acidified with 2 cc. of sulfuric acid (10%), and shaken out with 5 cc. of dithizone solution (6 mg. %). The extraction is repeated with more dithizone solution until the latter remains of a pure green color. The combined dithizone solutions are washed with two portions of 10 cc. each of dilute ammonia (0.5%), and made up to 30 cc. with carbon tetrachloride. After shaking with 5 cc. of dilute sulfuric acid, the copper is determined photometrically. The aqueous solution from which the copper has been removed is filtered, treated with 0.5 Gm. of citric acid, and neutralized to litmus paper with dilute ammonia. The liquid is transferred to a separating funnel with the addition of 0.5 cc. of potassium cyanide solution (5%) and shaken out with 5 cc. of dithizone solution. If the latter does not show a pure red color,or if the color is golden brown owing to iron, then more cyanide is added in small portions until the correct color of lead dithizone appears. The extraction is repeated until the extract is of a pure green color. The combined extracts are washed with ammonia and acidified as before the photometric determination of the lead. The remaining solution now contains the zinc. It is filtered, acidified with hydrochloric acid, and concentrated to one-tenth its volume to remove hydrocyanic acid. After making up with water to 100 cc., ammonia is added until the liquid is neutral to litmus paper, followed by 2 cc. of hydrochloric acid (2%) and sufficient sodium acetate solution to cause the liquid to change the color of blue Congo red paper to a distinct red. This solution is then shaken out with dithizone solution as before, the extracts being finally made up to 60 cc., shaken with ammonia and the zinc determined photometrically.—R. STROHECKER, H. RIFFART and J. HABERSTOCK. *Z. Untersuch Lebensm.*, 74 (1937), 155; through *Quart. J. Pharm. Pharmacol.*, 11 (1938) 275. (S. W. G.)

Lead—Elimination of Iron by Means of Cupferron in the Colorimetric Determination of, by the Dithizone Method. In the determination of lead by the dithizone method, under certain conditions the interference of iron cannot be overcome by the use of potassium cyanide. It has already been proposed to remove iron with cupferron (Clifford, *J. Assoc. Official Agr. Chem.*, 21 (1938), 212–218), but the excess of the latter remaining in the solution interferes with the subsequent colorimetric determination of the lead (also noted by Clifford in a private communication to the authors). This is overcome by destroying the cupferron residue by heating. The method (technique described in detail) consists essentially in destroying organic matter by means of sulfuric, nitric and perchloric acids, precipitating iron with cuferron in acid medium, extracting the ferric complex with chloroform, evaporating the aqueous solution (containing all the lead) to white fumes, taking up in water, and extracting with dithizone in the usual manner.—M. L. PANOUSE-PIGEAUD and H. CHEFTEL. *Ann. fals.*, 32 (1939), 296–301. (A. P.-C.)

Magnesium—Determination of, in Biological Materials. Weigh out a sample large enough to contain not less than 0.05 mg. and not more than 3.00 mg. of magnesium calculated as the oxide. Place in a platinum dish, add 1 cc. of concentrated sulfuric acid and mix well. Evaporate on a steam bath to dryness and ash in a muffle held between 500° and 600° C. When the ash is white, remove from the muffle. Dissolve with a few cc. of 6*N* nitric acid, transfer to a beaker and evaporate to dryness. This step may be left out if the product does not contain tin. Warm the sample with 1 cc. of concentrated hydrochloric acid, dilute with several volumes of water, and filter out the tin and silica. Traces of tin may dissolve again in the hydrochloric acid but will be removed along with the iron and aluminum. Add a few drops of bromine water to the filtrate to oxidize the iron, boil to remove the excess bromine, and bring to a p_H of approximately 4.0 with dilute sodium hydroxide, using bromocresol green as an indicator. Make the final adjustment of the p_H with 20% sodium acetate. A slight excess of phosphate is necessary to precipitate the iron at this p_H. Filter out the iron while hot and wash with distilled water. Add 1 cc. of saturated sodium oxalate solution, bring to p_H 4.4 to 4.6 with a solution of dilute oxalic acid, heat to boiling, cool and let stand for 2 to 3 hours to allow precipitation of the calcium. Filter and wash with ammonia water (1 to 50). Bring the solution to a yellow shade with dilute hydrochloric acid. Evaporate the filtrate to approximately 10 cc., cool and add 5 cc. of the 8-hydroxyquinoline reagent. Place the watch glass over the beaker and hold at a temperature just below boiling for 15 minutes. Cool and filter, using a sintered glass filter stick having a thin layer of asbestos over the filtering disk. Wash the

beaker once with 95% alcohol and then 6 to 8 times with 1*N* ammonia. Make sure that all the alcohol has been washed out of the beaker, since it interferes in the final determination. Dissolve the precipitate in the beaker and on the filter stick with 5 cc. of 2*M* perchloric acid and make up to such a volume that a 5-cc. aliquot contains between 0.05 and 0.10 mg. of magnesium oxide. Add 5 cc. of cerate reagent to the above aliquot and heat in a water bath held between 96° and 100° C. for 10 minutes. Cool and titrate the excess cerate with standard ferrous ammonium sulfate solution, using *o*-phenanthroline ferrous sulfate as an indicator. Calculate the per cent of magnesium, assuming that 59.7 equivalents of cerate reagent are used per mol of magnesium.—J. P. NIELSEN. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 649–651. (E. G. V.)

Metallic Ions—Spot Tests for. A description of spot tests and fluorescence phenomena for silver, lead and mercury compounds, uranium and aluminum is given, using benzopurpurin 4B, bromphenol blue and morin as reagents.—E. A. KOCSIS. *Mikrochemie*, 27 (1939), 180–184. (R. H. B.)

Moisture—Rapid Determination of. A 15–20-cc. sample of cotton or sunflower seed oil, or of melted paraffin wax, is heated at 190–200° for 2 hours, cooled and about 5 Gm. of the material under examination are added. The temperature is maintained at 165° for 3 minutes, and the oil plus material are reweighed; the loss in weight gives the water content of the material.—A. G. KULMAN. *Zavodskaya Lab.*, 7 (1938), 1436–1437; through *J. Soc. Chem. Ind.*, 58 (1939), 450. (E. G. V.)

Nicotine—Simple and Rapid Method for Determining. The following procedure is given: Distil 5 Gm. of tobacco with steam into a receiver containing 3 Gm. of gum arabic. Stop the distillation after 300 cc. of distillate have been collected. Mix and place two 5-cc. portions in separate tubes. To each portion add 5 cc. of 1% gum arabic solution. From the second tube pipette off 5 cc. of the mixed solution and to this add 5 cc. of gum arabic solution and continue this procedure until a series of tubes each containing half as much of the sample as the previous one is obtained. To each tube add 0.5 cc. of silicotungstic acid reagent and note when the formation of opalescence ceases. As little as 0.31 mg. of nicotine gives a positive test. Comparison with standards gives good results.—A. VERDA and E. HERZFELD. *Z. anal. Chem.*, 118 (1939), 9–13. (S. W. G.)

Nicotinic Acid and Nicotinamide—Colorimetric Determination of. In the Konig method (*J. Prakt. Chem.*, 69 (1904), 105) used by Strafford and Parry-Jones and by Swaminathan for nicotinic acid, the color intensity depends on the p_H. Phosphate buffer, p_H 6.1, is used for stabilization and the color maximum after 7 minutes is used for colorimetry. Thus used, the method is accurate to 0.0001 mg. per cc. The extinctions differ for nicotinic acid and for nicotinamide.—H. KRINGSTAD and T. NAESS. *Naturwissenschaften*, 26 (1938), 709; through *Chimie & Industrie*, 42 (1939), 113. (A. P.-C.)

Nicotinic Acid—Colorimetric Determination of, by Means of 1-Chloro-3,4-Dinitrobenzene. Evaporate a sample of the urine to dryness in a large porcelain dish on the water bath; take up the residue in boiling benzene to a volume approximately one-twentieth that of the original urine sample; place the solution in a distilling flask and distill the benzene; to the residue add about 1 Gm. of 1-chloro-3,4-dinitrobenzene, fuse by placing for 30 minutes in a sulfuric acid bath at 160° C., let cool and treat alternately with ether and with water, transferring to a separatory funnel, until a total volume of 50 cc. of ether and 20 cc. of aqueous solution are obtained; after shaking separate the aqueous layer, remove the ether therefrom by careful heating, cool to 15° C. and make to 25 cc.; fill the cell of the colorimeter with the solution, add 3 to 4 drops to 20% sodium hydroxide solution and read the intensity of the red color, from which the nicotinic acid concentration is obtained. The method gives satisfactory results.—M. COVELLO. *Bol. soc. ital biol. sper.*, 13 (1938), 1021–1023; through *Chimie & Industrie*, 42 (1939), 104. (A. P.-C.)

Organic Analysis—Qualitative, Hydroxamic Acids in. Tests are described for alcohols, aldehydes, esters, carboxylic acids, sulfonic acids, oximes, nitro compounds, amides and cyanates.—D. DAVIDSON. *J. Chem. Educ.*, 17 (1940), 81–84. (E. G. V.)

Organic Qualitative Reagents. Mercurous mercury, silver, lead, antimony(ous), tin(ous), calcium, barium and strontium were precipitated in various forms in the presence of fourteen water-soluble dyes. Silver, precipitated as sulfate, gives a characteristic test, with the Brilliant Yellow used. If Bordeaux Red is employed antimony(ous) gives a characteristic pink solution for dilutions as low as 0.001 Gm. of antimony per cc. of solution. Stannous tin decolorizes Bordeaux Red completely. Antimony(ous) and stannic tin do not. Calcium, precipitated as hydroxide, in the presence of Brillant Yellow, gives a pink precipitate. Barium and strontium, under the same conditions give orange-colored precipitates and solutions.—J. W. SMITH and H. E. ROGERS. *J. Chem. Educ.*, 16 (1939), 143–144. (E. G. V.)

Organic Sulfur Chemistry—Progress of. A review of developments in biological, medicinal and industrial organic sulfur chemistry.—E. E. GILBERT. *J. Chem. Educ.*, 16 (1939), 323–329. (E. G. V.)

Oxygen in Organic Compounds—Qualitative Test for. The method consists of vaporizing the sample of organic compound and passing the vapors through a bed of glowing charcoal, then through barium hydroxide solution. If the compound is oxygenated, the oxygen will be converted into carbon dioxide which is precipitated as barium carbonate upon coming in contact with barium hydroxide solution. —C. V. BOWEN, J. F. BOURLAND and E. F. DEGERING. *J. Chem. Educ.*, 16 (1939), 295–296. (E. G. V.)

Potassium—Determination of Minute Amount of. A 0.5-cc. aliquot of the potassium solution is placed in a 15-cc. centrifuge tube previously cleaned with cleaning mixture, 0.5 cc. of precipitating reagent (sodium cobaltinitrate) is added dropwise and with shaking, and the contents of the tube are thoroughly mixed and allowed to stand for 1 hour at a temperature of from 20° to 25° C. The precipitate is firmly packed in the bottom in the tube by centrifuging for about 10 minutes at about 2000 r. p. m. The supernatant liquid is removed by aspiration and the sides of the tubes are washed with 5 cc. of distilled water, care being exercised not to disturb the precipitate. The tube is recentrifuged at the same speed for about 2 minutes and the supernatant liquid again aspirated. This procedure is repeated twice more (making 4 centrifugations in all). One cc. of the ceric sulfate reagent (0.01*N*) is added (more than this for amounts of potassium greater than 0.06 mg.) and the tube is heated in a water bath for 2 or 3 minutes, until the precipitate dissolves. The solution is cooled to room temperature, 1 drop of the potassium iodide reagent is added, and it is titrated with standardized sodium thiosulfate, a few drops of starch solution being added near the end-point. The end-point is very sharp and easily visible in daylight. At the same time 1 cc. of the ceric sulfate solution is titrated with the standardized sodium thiosulfate.—I. A. KAYE. *Ind. Eng. Chem., Anal. Ed.*, 12 (1940), 260–261. (E. G. V.)

Pyrethrin I—Determination of. In the mercury reduction method for determining pyrethrin I excess

filter paper in the titration is to be avoided, as its presence tends to produce difficult and less readable end-points. The application of the Wilcoxon method to samples of practically pure chrysanthemum monocarboxylic acid and of a commercial pyrethrum indicates that linearity of results exists in the first case, and a marked nonlinearity exists in the second case, confirming previous work. The color changes observed in the Seil color reaction are concluded to be the result of the formation of a colloidal dispersion of metallic mercury or of some mercury compound which, on standing, undergoes spontaneous successive increase in particle size until a coarse suspension (blue-colored) is formed. In the Wilcoxon procedure the use of precipitants other than sodium chloride has no advantage. However, the time elapsed between the addition of Dènigés reagent and the addition of sodium chloride solution can be reduced to 15 minutes (from the time of 1 hour specified by Wilcoxon), provided the mixture is centrifuged briefly following the sodium chloride addition.—C. S. SHERMAN and R. HERZOG. *Ind. Eng. Chem., Anal. Ed.*, 12 (1940), 136–137. (E. G. V.)

Pyrethrin I—Determination of. Pyrethrum extract, obtained by extracting the powdered flowers with petroleum ether and evaporating off the solvent, was used for the work. Twenty Gm. of this extract were dissolved in petroleum ether, the solution was filtered, the petroleum ether was evaporated and the residue was saponified with alcoholic sodium hydroxide. The alcohol was removed by boiling and the aqueous solution was treated with barium chloride and filtered. Excess barium was precipitated in the filtrate with sulfuric acid, the barium sulfate was filtered off, and the clear filtrate was made slightly alkaline and diluted to 1 liter. From this stock solution aliquots were taken for analysis. Each aliquot was acidified and analyzed by the Holaday modification of Wilcoxen's method, except that alcohol was used instead of acetone. The three largest aliquots were extracted three times with petroleum ether, and 15 cc. of Dènigés reagent were used in reduction. The determined pyrethrin content of each aliquot plotted against the volume of the aliquot shows that within the range investigated the reduction is linear.—D. A. HOLADAY and J. J. T. GRAHAM. *Ind. Eng. Chem., Anal. Ed.*, 12 (1940), 80–81. (E. G. V.)

Salicylic Acid—Microdetermination of. Salicylic acid as the ammonium salt is detected as silver salicylate by crystallographic methods. As little as 0.4γ can be detected.—H. JURANY. *Mikrochemie*, 26 (1939), 314–318. (R. H. B.)

Salting Out in Microchemical Reactions. In microchemical operations it is often desired to effect crystallization by the addition of salt and sometimes, instead of the desired well-formed crystals, a liquid phase appears. The studies here described seem to show that this liquid phase represents an unstable phase and in the case of antipyrine is more likely to occur when the temperature is above atmospheric and when the concentration of the desired product is low. Often scratching the sides of the vessel suffices to start crystallization, but seeding with a few crystals is indicated in most cases.—B. V. J. CUVELIER. *Z. anal. Chem.*, 115 (1938), 9–14; through *Chimie & Industrie*, 42 (1939), 107. (A. P.-C.)

Selenious Acid—Argentometric Titration of. Dilute from 25 to 50 cc. of about 0.1*M* sodium selenite solution with ten volumes of water and titrate at p_H 9.6 with silver nitrate solution using fluorescein as an adsorption indicator. At the start the precipitate of silver selenite assumes a yellowish pink color but turns bright red as soon as the equivalence point is reached. Under similar conditions the titration can be carried out using diphenylcarbazone as indicator although the end-point is more difficult to determine. Another procedure allows the addition of an excess of silver nitrate solution and the determination of the excess silver gravimetrically, volumetrically or electrometrically.—R. RIPAN-TILICI. *Z. anal. Chem.*, 117 (1939), 326–330. (S. W. G.)

Sodium—Colorimetric Micromethod for the Determination of, with Manganous Uranyl Acetate. A micromethod for the determination of sodium is described. Sodium is precipitated by manganous uranyl acetate as the triple acetate and the precipitate is washed with a solution of zinc uranyl acetate saturated with the manganous triple salt and having the same alcoholic concentration as the precipitating reagent. The precipitate is treated with potassium periodate and the solution of permanganate thus obtained is measured by comparison with a standard of potassium permanganate in a colorimeter or directly in the Evelyn photoelectric colorimeter. Phosphate in biological material does not interfere. Potassium causes high results if the molar ratio of K:Na in the sample exceeds 1.5.—E. LEVA. *J. Biol. Chem.*, 132 (1940), 487. (F. J. S.)

Spirits and Liquors—Reagents for Detection of Ketonic Substances and Methyl Alcohol (as Impurity or Denaturant) in. *m*-Dinitrobenzene gives color reaction with aldehydes and ketones, for example, furfuraldehyde, acetaldehyde and acetone; of the sugars, fructose is most reactive, while sucrose is inactive. Nessler's reagent reacts with methyl alcohol, propyl alcohol, furfuraldehyde, fructose, acetaldehyde, and, to a smaller extent, lactose, and maltose, but not with sucrose. 1:2:4-Diamino-methyl-benzene reacts with aldehydes, especially furfuraldehyde, but not with ketones or, excepting glucose and galactose, sugars.—A. CASOLARI. *Ann. chim. applicata*, 29 (1939), 77–81; through *J. Soc. Chem. Ind.*, 58 (1939), 769. (E. G. V.)

Spot Analysis—Application of, to the Investigation of Medicaments. IX. A New Test for Chlorine and Chlorine-Containing Substances. A stable test paper is prepared by impregnation with a fluorescein-potassium bromide solution. Chlorine liberates bromine, which is then recognized by its action in converting fluorescein to eosin. The test is not valid in the presence of other free halogens, but oxidizing agents generally give no reaction, and the test is preferable to the one using KI-starch paper. A red coloration of the bright yellow test paper indicates free chlorine. The presence of bromine must of course be previously tested for with fluorescein paper free from KBr.—O. FREHDEN and CHEN-HUA HUANG. *Mikrochemie*, 26 (1939), 41–43. (R. H. B.)

Sulfur—Determination of Protein, in Plants. Experiments with cystine-starch mixtures, with additions of volatile sulfur compounds likely to occur in plants, potassium thiocyanate, etc., as well as plant samples and curd cheese, indicate that protein sulfur can be quantitatively extracted by hot 20% hydrochloric acid and determined in the filtrate from a barium chloride precipitation of sulfate already present. A sample equivalent to 2 Gm. dry substance, finely ground, is boiled with 100 cc. of water and 5 cc. of 20% hydrochloric acid to $^1/_4$ volume, 100 cc. of 20% hydrochloric acid is added and boiling is continued almost to dryness. The residue is diluted in a 200-cc. volumetric flask, barium chloride solution added and the mixture allowed to stand for complete precipitation of sulfate. An 8–10 cc. excess of 10% sodium hydroxide is added, then sufficient sodium carbonate to precipitate the excess of barium, and shaken occasionally for a time, and finally made to volume and filtered. To

100 cc. of the filtrate add 5 cc. 30% hydrogen peroxide and 2–3 cc. sodium hypobromite solution and boil to dryness. To the residue add 25 cc. fuming nitric acid and 15 cc. perchloric acid and proceed as in the method for total sulfur previously described. Although the amount of sulfur to be determined may be small, it is not generally advisable to increase the sample weight.—R. BALKS and O. WEHRMANN. *Bodenkunde u. Pflanzenernahr*, 9–10 (1938), 646–652; through *Chem. Abstr.*, 33 (1939), 2067. (E. G. V.)

Sulfur—Determination of Total, in Plant Substances, Particularly in Sunflowers. Further study of the nitric acid or hydrochloric acid-nitric acid plus potassium chlorate wet oxidation method for determining total sulfur has shown that reliable results cannot be obtained with certain samples, for example, sunflower plants, and organic compounds such as allyl mustard oil, cystine, taurine and sulfonal. Excepting with the last, good results were obtained by the methods of Cherbuliez and Meyer and Bertrand and Silberstein but not by that of Balks and Wehrmann. A combined wet digestion and alkali fusion method giving practically complete recovery of sulfur in all the above is described. To 1 Gm. of plant substance in an Erlenmeyer flask add 300 cc. concentrated nitric acid and digest for 3–4 hours over a low flame, not above gentle boiling. If foaming is excessive, let stand over night before heating. When the volume is sufficiently reduced and the organic matter practically destroyed, transfer to a platinum dish and evaporate to dryness. Add excess sodium carbonate and a little sodium hydroxide solution and evaporate to dryness, finally igniting in an electric oven at 450°. Dissolve in dilute hydrochloric acid, separate silicon dioxide and determine sulfur as barium sulfate in the usual manner. Analytical data for the sulfur content, both organic and inorganic, of all parts of the sunflower plant are presented. Total sulfur is highest in the leaves, 2.13% dry substance, of which 95% is inorganic; the fruit is lowest in sulfur, 0.3%, but 40% of this is organic. By the usual method of ashing the recovery is practically only inorganic sulfur.—E. BLANCK and J. SACHSE. *Bodenkunde u. Pflanzenernahr*, 9–10 (1938), 636–645; through *Chem. Abstr.*, 33 (1939), 2066. (E. G. V.)

Sulfur—Pregl, Combustion of Metallic Compounds. The Pregl catalytic combustion method for sulfur has been modified in order to apply to compounds containing a metal.—J. F. ALCINO. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 298. (E. G. V.)

Thallium and Lead Ions—New Reactions for Differentiating between. (1) To the solution (0.5–5.0%) which gives the usual reactions for thallium and lead add 0.25 the volume taken of sodium hydroxide solution and 0.5 the volume taken of Javel water. If lead is the only cation present the solution remains clear, even on heating; but if thallium is present a rust or chocolate colored precipitate is formed. (2) Mix 1 cc. of the solution (at least 0.1%) with 0.5 cc. of solution of ammonium hydroxide, add 1 cc. of sodium sulfide solution (5%), mix, then add 1 cc. of acetic acid solution and mix again. With thallium a brown-black colloidal turbidity appears, after addition of the sodium sulfide solution, changes to a red turbidity by reflected light, and after about ten minutes appears violet or bluish by transmitted light. Upon boiling for a few seconds the liquid becomes clear and colorless. If lead is present the brown color which first forms remains after the addition of the acetic acid solution, and upon boiling black flocks are formed when the concentration of the lead ion reaches 1 Gm. per liter. —G. DÈNIGÈS. *Bull. trav. soc. pharm. Bordeaux*, 78 (1940, 5–10. (S. W. G.)

Universal Buffer—Improved. A mixture of 6.008 Gm. of citric acid, 3.893 Gm. of potassium dihydrogen phosphate, 1.769 Gm. of boric acid and 5.266 Gm. of diethylbarbituric acid when dissolved in water to make 1000 cc. gave a solution from which other solutions varying from p_H 2.6 to p_H 12.0 could be prepared by adding varying amounts (x) of $N/5$ sodium hydroxide solution to 100 cc. portions of the buffer solutions. The linear equation: $p_H = 0.0853x \times 2.686$ holds accurately over the range from p_H 4.0 to p_H 7.5 and more approximately (within 0.1 p_H) over the wider range to p_H 9.0. For values outside this range a table is given showing the values of x to be added to 100 cc. of the buffer solution to attain values from p_H 2.6 to p_H 12.0. By the use of the buffer solution plus quinhydrone as one-half of an electrochemical cell of which the unknown plus quinhydrone forms the other half, the p_H of an unknown can be determined by titration of the buffer solution with $N/5$ sodium hydroxide to a null point with a galvanometer.—W. C. JOHNSON and A. J. LINDSEY. *Analyst*, 64 (1939), 490. (G. L. W.)

Veronal—Microestimation of, in Blood and Spinal Fluid. The material under examination is treated with an acid buffer solution and the veronal extracted with purified ether. The extract is purified and sublimed in a sublimation apparatus, and weighed on a microbalance. The procedure enables conclusions to be drawn as to the magnitude of the original dose of the drug. A procedure for the separation of veronal from succinic acid by adsorption is also given.—R. FISCHER. *Mikrochemie*, 26 (1939), 255–263. (R. H. B.)

War Gases—Case for Detection and Quick Analysis of. The apparatus and reagents in the container are illustrated and described.—E. DEFRANCE. *J. pharm. Belg.*, 22 (1940), 197–199. (S. W. G.)

Wine—Direct Determination of Chlorine in, and the Chlorine Content of Palatinate and Foreign Wines. Deeply-colored wines are decolorized with barium hydroxide and potassium permanganate, and chloride is then determined directly by Volhard titration. Palatinate wines of various years and colors had 10–90 mg. of chloride per liter, a fact which has to be taken into account when attempting to defeat adulteration of these wines with foreign wines of high chloride. Sodium and chloride ions do not occur in equivalent amounts —H. GROHMANN. *Z. Untersuch. Lebensm*, 77 (1939), 482–488; through *J. Soc. Chem. Ind.*, 58 (1939), 768. (E. G. V.)

Wines—Iodometric Determination of Acidity of. The wine is treated with potassium iodide, potassium iodate and sodium thiosulfate at room temperature (24 hours), and the excess of sodium thiosulfate is titrated. Acidity is usually more than that determined by the official method.—P. VIELES. *Bull. soc. chim.*, 6 (1939), 1127–1129; through *J. Soc. Chem. Ind.*, 58 (1939), 983. (E. G. V.)

PHARMACOGNOSY

VEGETABLE DRUGS

Adulterants in Drugs—Pharmacognosy of Some Weeds Recognized as. The study deals with *Matricaria discoidea* DC. (*M. suaveolens*), *Capsella Bursa pastoris* Mœnch and *Polygonum aviculare* L. Twenty-six references. HEINZ HARMS. *Deut. Apoth. Ztg.*, 55 (1940), 359–360. (H. M. B.)

Anona Squamosa—Phytochemical Study of Seed of. *Anona muricata* (guayabanos), *A. reticulata* (anonas), *A. squamosa* (ates or atis), are three plant species of *Anona* cultivated in the Philippines. The latter is recognized in the Mexican Pharmacopœia. A yellowish fixed oil is extracted from the ground seeds of atis by refluxing with petroleum ether, which

represents about 12.5% of the original seeds. The oil is decolorized by Fuller's earth, regaining its yellow color later. It is unaffected by animal charcoal. The oil has the following constants: sp. gr., 0.815 at 30° C.; refractive index 1.458 at 20° C.; congeals at 3°; iodine number 71.43; acid number 8.153; saponification value 145; ester value 139.29. The nature of the mixed fatty acids is undetermined, but is essentially a glyceryl ester of oleic acid. The bark of *A. squamosa* contains 0.01% anonaine alkaloid. A small amount is found in seeds but only in the amorphous form. The oil is reported efficacious as an antiparisitic hair oil and lice exterminator.—GUILLERMO Q. QUIBILAN. *Rev. Filipina Med. Farm.*, 30 (1939), 84. (G. S. G.)

Arnica Montana L.—Components of the Blossoms of. I. Petroleum ether extract was saponified to procure the fatty components. Forty per cent of the extract was unsaponifiable and yielded 3 crystalline substances: one containing oxygen atoms in the molecule as hydroxyl groups; a sterol, and one which is probably a sterol also. The saponifiable fraction gave 6.52% glycerol and 7.48% free fatty acids. Palmitic and lauric acids had previously been found. The petroleum ether extract of the blossoms of *Arnica montana* contains about 56% fatty acids. Of these, about half are volatile oils which represent almost the entire portion of unsaturated acids. The saturated acids consist of C_6 and C_8 acids, lauric acid, small amounts of stearic acid, and, chiefly, palmitic acid. To prepare the extract, make an ether extract of 1000 Gm. of dried blossoms. Distill off the petroleum ether. To remove basic plant constituents from the extract taken up by the ether, shake the latter first with water acidified with HCl and finally with distilled water. The ether solution is dried for 24 hours over sodium sulfate and the ether is distilled off. The extract consists of a greenish brown mass of soft consistency and tastes very bitter. The acid value of the extract is 9.93; the saponification value, 129.16; and the iodine value, 31.93. The iodine value of the total fatty acids is 57.32; the neutralization number, 442.0.—H. DIETERLE and K. FAY. *Arch. pharm.*, 277 (1939), 65–74. (L. K.)

Ash Contents of the Official Drugs of the Pharm. Hung. IV. The ash was determined in 10-cc. quartz crucibles by ignition of 0.5 Gm. powdered drug over a Barthal lamp heated by alcohol. The following values are recommended as maximum percentage total and acid-soluble ash contents: bitter orange peel 6, 0.5; cinchona 4, 1; cassia bark 5, 1; condurango 12, 1; frangula 7, 0.5; pomegranate bark 16.5, 2.5; althaea leaves 17, 3; belladonna leaf 16.5, 3; digitalis 12, 3; hyoscyamus 24, 8; mallow leaves 17, 3.5; peppermint 12, 1.5; salvia 12, 1; senna 12, 2–3; stramonium 21, 5; trifolium 10.5, 2; uva ursi 4, 0.5; althaea root 7, 0.5; angelica root 12, 4; gentian 5, 1; hydrastis 3, —; ipecac 5.5, 2.5; jalap 6.5, 1.5; glycyrrhiza 6.5, 1.5; ononis 7, 2.5; krameria 4.5, 1; *Saponaria hungarica* root 9, 1; senega 5, 2; taraxacum 9, 3; valerian 13, 6.5; calamus 6, 1; aspidium 4, 1; triticum 5, 2.5; orris 4, 0.5; rhubarb 14, 1; zedoaria 7, 2; ginger 7, 2; salep 3.5,1. The values prescribed by the pharmacopœias of the various countries are compared.—KÁROLY KODRIK. *Magyar Gyógyszerésztud. Társaság Értesítője*, 16 (1940), 16; through *Chem. Abstr.*, 34 (1940), 2134. (F. J. S.)

Balsam Peru. The history, botany, production, purification, properties, composition and adulterations are reviewed.—ERNEST GUENTHER. *Drug and Cosmetic Ind.*, 47 (1940), 26–30, 47. (H. M. B.)

Carotenoids, Glycosides, Alkaloids and Vitamins —New Method of Detection of, by Chromatographic Analysis. A review.—ELSIOR COUTINHO. *Pub. farm.* (São Paulo), 5 (1939), 5; through *Chem. Abstr.*, 34 (1940), 2133. (F. J. S.)

Carthamus Tinctorius L.—Cultivation of. Analyses of seeds from Ethiopia are reported.—E. MORGAGNI. *Agric. colon.*, 33 (1939), 301–307; through *J. Soc. Chem. Ind.*, 58 (1939), 1162. (E. G. V.)

Chicory. A review of the uses and cultivation of chicory root is described.—A. LISANTI. *Il farm. ital.*, 8 (1940), 60. (A. C. DED.)

Cinchona Barks—Capillary and Luminescence Analysis of. A method of differentiating between commercial samples of cinchona bark is described, Strips of filter-paper are lowered into cylindrical vessels containing 10% macerations of the bark so that their ends are immersed. After 24 hours they are removed and dried, and the amount of absorption is measured. Luminescence tests are then carried out on the dried papers. Ethyl alcohol and acid macerations give fluorescent bands the widths of which increase with increasing amount of alkaloid; 68% ethyl alcohol macerations give better results than 90% or 96% ethyl alcohol. Hydrochloric acid or trichloroacetic acid is better than sulfuric acid, acetic acid or oxalic acid and hydrochloric acid macerations show exceptionally strong fluorescence.—E. SVAGR and E. KINSKA. *Collection Czechoslov. Chem. Commun.*, 11 (1939), 256–265; through *J. Soc. Chem. Ind.*, 58 (1939), 994. (E. G. V.)

Cinchona Succirubra Pav.—Optimal Light Conditions for Cultivating, at Sukhumi. The irregular light intensity under the forest roof which changes unevenly during the day, is one of the factors that have determined the evolution of the genus *Cinchona*. This explains why artificial shading is necessary when the tree is cultivated in field plantations and why days 9–11 hours long are better than those 12 hours long. In selecting the most valuable varieties for clonal reproduction, *i. e.*, those with a large vegetative mass and a high content of alkaloids, it is necessary to give special attention, on the one hand, to cold-resistant forms for undergrowth cultures and, on the other, to light- and heat-resistant specimens, in order to meet the requirements of the summers in the subtropics of the U. S. S. R.—B. S. MOSHKOV and I. E. KOCHERZHENKO. *Compt. rend. (Doklady) acad. sci. U. R. S. S.*, 20 (1938), 63–66; through *Biol. Abstr.*, 14 (1940), 9275. (F. J. S.)

Datura Arborea (Floripondio). In the *Solanaceæ*, there are three species of the genus *Datura* which are at present being studied in Peru, namely, *D. tatula*, *D. sanguinea* and *D. arborea*. *D. arborea* is an atropine plant, three varieties of which exist in Peru. It has the same active principles as belladonna, hyoscyamus and stramonium, namely, the daturine alkaloids, atropine, duboisine and scopolamine. The action of daturine is shown to be superior to that produced by an equal quantity of atropine. Roots and leaves contain the most alkaloids. Galenical preparations can be prepared which can be used to replace preparations of other atropine plants whenever an action of a parasympathetic nature is required. Since the alkaloidal content of *D. arborea* is less than belladonna and almost equal or less than stramonium and hyoscyamus, proportionately larger doses can be employed.—FERNANDO MONTESINOS A. *Bol. soc. quím. Peru*, 5 (1939), 99; through *Chem. Abstr.*, 34 (1940), 2138. (F. J. S.)

Drugs—Crude, Study of. Of the official vegetable drugs in the B. P. some 80% are non-alkaloidal and have no chemical assay process for standardization. If in the form of entire drug the purity is fairly evident; but if in a crushed or powdered form then it is by no means easy to ensure the authenticity of the sample. A microscopic examination may reveal the presence of foreign elements and a system

of quantitative measurements has been worked out by T. E. Wallis and his students. Although of recent introduction and restricted use, these processes are a real contribution to the science of pharmacognosy inasmuch as they help to establish working methods for the standardization of powdered crude drugs for which there is no chemical process.—J. M. ROWSON. *Pharm. J.*, 144 (1940), 73. (W. B. B.)

Drugs Occurring in the European Trade, Their Identification, Adulteration and Uses—Most Important. Zeodary and ginger roots are discussed. Twenty-one references dealing with the series are given.—FRANZ BERGER. *Scientia Pharm.*, 11 (1940), 3. (H. M. B.)

Ephedra from Sardinia—Some Varieties of. *E. vulgaris* from Sardinia contained from 0.75 to 1.83% of *d*-pseudoephedrine while *E. nebrodensis* contained 3.4%.—MARIA MULAS and EDINA SALIS. *Arch. ist. biochim. ital.*, 11 (1939), 315; through *Chem. Abstr.*, 34 (1940), 2133. (F. J. S.)

German Salep—Production of, in the Rhön. A discussion with eight illustrations and sixteen references.—EGON SCHRADER. *Die Deut. Heilpflanze*, (March, 1939), 12–15; through *Deut. Apoth. Ztg.*, 54 (1939), 345. (H. M. B.)

Ginko Seed—Contribution to the Knowledge of. The leaves, fruit and seed are described and illustrated; in connection with sections of the fruit and data on the principle constituents thereof. A brief survey is presented of investigations thus far carried on. While there is considerable disagreement concerning the fruit constituents, the following substances have either been isolated or otherwise identified: Steam distillation of the pulpy material yields volatile acids (H_2CO_2?), acetic, proponic, butyric, valeric, capronic and caprylic (?); the pressed juice gave reducing sugars, aspargine, calcium, phosphoric acid, acidic oil, ginkgic acid ($C_{24}H_{42}O_2$), ginkgolic (hydroxy) acid, ginnol ($C_{26}H_5OH$), m. 82.5° C., bilobol ($C_{21}H_{32}(OH)_2$), m. 36–7° C. Conflicting data reported by the several workers appear to be due mainly to the different procedures as well as to the condition of the collected fruit. Twenty-one references.—C. GRIEBEL. *Deut. Apoth. Ztg.*, 54 (1940), 603–608. (H. M. B.)

Indian Herb Mixtures. The author presents twenty formulas of herb mixtures commonly used in the East Indies. A brief pharmacognostical and pharmacological description of each item in the formulas is also given.—P. SORGDRAGER. *Pharm. Tijdschrift v. Nederl. Indie*, 16 (1939), 169, 201. (E. H. W.)

Linden Flowers—Adulteration of Official. Among the adulterants noted are *Tilia argentia* and *T. americana*.—W. PEYER. *Deut. Apoth. Ztg.*, 54 (1940), 608–609. (H. M. B.)

Melilotus Albus—Protein Determination by Use of Pulfrich Photometer in. The determination of protein in plants may be satisfactorily carried out by absolute photometry by the procedure described. The method is especially adaptable to melilotus.—E. FUNCK. *Mikrochemie*, 26 (1939), 175–176. (R. H. B.)

Oil of Cinnamon, Official Cinnamon Bark and Their Preparations in Filtered Ultraviolet Light. The two cinnamon barks, cortex cinnamomi cassiæ (I) and cortex cinnamomi ceylanici (II) show no differences under a fluorescent microscope. If, however, their powders are treated with 2 to 3 drops of 10% $Ba(OH)_2$, differences in fluorescence appear which make the identification easy. As low as 10% of I in II can be detected. The oil of II (III) in Me_2CO shows no fluorescence, while the oil of I (IV) in Me_2CO fluoresces blue-green. By setting up proper standards it is possible to detect 1% of IV in III.—K. LEUPIN and J. STEINER. *Mitt. Lebensm. Hyg.*, 30 (1939), 217; through *Chem. Abstr.*, 34 (1940), 2137. (F. J. S.)

Ostryoderis Chevalieri Dunn. (Sedon)—Bark of. The root bark of the plant is described macro- and microscopically. The bark, which has a violent action on the intestines and may cause loss of sight, contains an alkaloid or an alkaloid-like complex ($C_{15}H_{22}N_2O_2$) to which the physiological action is attributed. A further study will be made.—J. BALANSARD and M. MARTINI. *Bull. sci. pharmacol.*, 46 (1939), 268–271. (S. W. G.)

Polygonum Maritimum L.—Localization of Tannic Compounds in the Vegetative Organs of. The authors conclude that the subterranean and aërial vegetative organs are provided with numerous tanniferous cells the contents of which give the microchemical reactions of gallotannic acid. Sometimes the tannic compound is free while at other times it is associated with a cellulose mucilage in a complex which is insoluble in alcohol.—R. LEMESLE and R. GIRARD. *Bull. trav. soc. pharm. Bordeaux*, 77 (1939), 74–82, 84. (S. W. G.)

Solanum Carolinense L. A chemical study of the berries of the plant by the usual procedures shows the presence of a fixed oil and an aklaloid or alkaloids which is/are soluble in alcohol, isoamyl alcohol, acetone, ether, chloroform, diluted acetic acid and diluted hydrochloric acid. The fixed oil has the following constants: specific gravity (25° C.) 0.9596, $(n)_{25°\,C.}$ 1.4861, iodine number 109.86, acid number 33.08, ester number 171.14, saponification number 204.22.—ROBERT D. LITTLE and ROBERT L. MCMURRAY. *Pharm. Arch.*, 11 (1940), 23–28. (H. M. B.)

Specific Volume of Official Powders—Determination of the Apparent, and Its Analytical and Technical Utility. On many occasions the apparent specific volume of a powder or pulverized drug is a magnitude of some importance. This is simply determined by introducing 25 Gm. of powder into a 50-cc. or 100-cc. graduated cylinder, allowing the cylinder to drop about 5 cm. onto the palm of the hand 10 times (slight compression) and rapping 50 times on a hard surface (medium compression), reding the level and dividing by 25. A tabulation of the apparent specific volume of some 30 slightly and medium compressed powders is given.—ROMOLO MAZZUCCO. *Bull. chim. farm.*, 78 (1939), 517; through *Chem. Abstr.*, 34 (1940), 2131. (F. J. S.)

PHARMACY

GALENICAL

Bleach Ointment. The recent official decision to issue a standard specification for bleach ointment is very welcome, as it is necessary that the public should be protected against the sale of ointments containing extremely small percentages of available chlorine. It is concluded that the use of supertropical bleach should be encouraged, as the ointment prepared from it deteriorates more slowly, and there is much less risk of vigorous chemical reaction during manufacture. A soft white paraffin of low iodine value should be used, but consideration should be given to the possible use of saturated hydrogenated fat. A tube is the most suitable container for bleach ointment. The figure of 15% available chlorine suggested by Moir is too high a standard, a more reasonable figure being either 10% or 12%. A table is given which shows the rate of deterioration, over a period of twelve weeks, of B. P. Bleach Ointment as compared to Tropical Bleach Ointment. Also a graph is given to demonstrate this deterioration.—G. H. MACMORRAN. *Pharm. J.*, 144 (1940), 213. (W. B. B.)

Calciferol—Preparation and Stability of Formulas Containing. A summary is given of several years researches conducted at the Danish Apothecaries Society Control Laboratory. One per cent solutions of calciferol (vitamin D_2) in peanut, almond or olive oil (1 Gm. of oil sol. = 1 mg. calciferol = 40,000 International Units of vitamin D) were stable over $1^1/_2$ years' storage. In first attempts to prepare tablets, to be of 40 International Units potency (1 mg. calciferol per 1000 tablets), these were prepared according to Formula A: I. Calciferol, 0.001 Gm., precipitated calcium phosphate, 655 Gm., powdered arrowroot starch, 140 Gm. II. Ether, *q. s.* III. White gelatin, about 10 Gm., distilled water, *q. s.* IV. Talcum, 45 Gm. A concentrated dispersion of calciferol in the arrowroot starch was first made. Thirty mg. of calciferol were weighed, dissolved in 50 cc. of peroxide-free ether, mixed thoroughly with a convenient quantity of arrowroot starch, dried a short time at room temperature, spread in a thin layer on an enamel tray. It was then sifted, mixed again and stored in well-stoppered glass bottles. Batches of granules were made by taking the proper aliquot of this stock dilution, mixing with the remainder of the starch needed, then the calcium phosphate mixed in. This mixture was moistened with the gelatin solution, pressed through a sieve and dried in a thin layer at room temperature, finally dried several hours at about 35° C. Talcum was sifted in, and tablets containing 0.655 Gm. calcium phosphate were punched. In variant formulas tested, the gelatin solution for moistening was replaced by alcohol. Granulates were also made of calciferol, sugar, cacao powder and calcium phosphate, moistened with alcohol, and dried a few hours at 30–35° C. Another variant was substitution of petrol ether for ether. Unfortunately, biological tests indicated practically complete destruction of the vitamin in these preparations. Contact with the air, destroyed the calciferol. Since the oil solution was more stable, its use in preparing granules was tried. With the oil solution (1%) substituted in formula A, bioassays were more satisfactory, but there was still some loss (per cent of intended potency of fresh tablets was 71%). Another formula was now tried. Formula B: Granules containing 50 cg. of calcium phosphate and 50 International Units of vitamin D were made as follows: Calciferol in oil (1%), 1.25 Gm., powdered cane sugar, 248.75 Gm., Pasta Cacao Deoleata, 250.00 Gm., precipitated calcium phosphate, 500.00 Gm., ether, *q. s.*, spirit, *q. s.* The calciferol in oil was dissolved in about 50 cc. of peroxide-free ether, mixed thoroughly with the sugar and dried in a thin layer at room temperature. Then this mixture was incorporated with the calcium phosphate and the cacao. This composition was now moistened with concentrated alcohol, granulated through sieve No. 5, dried first for 5 hours at room temperature, then 5 hours at about 35° C. and sifted through sieve No. 3. Pastilles were made from the granules with 5% talcum sifted in for lubricant. On bioassay, the per cent of standard potency of the freshly-prepared pastilles was 112% (deviation within bioassay error). Comparing the effect of different drying conditions and strengths of alcohol, granules were made by Formula B with: (*a*) Alcohol, 500 Gm. per Kg., dried 21.3 hours at room temperature. Found potency: 119%. (*b*) Concentrated alcohol, 400 Gm. per Kg., dried 5 hours at 36° C. Found potency: 87%. (*c*) Dilute alcohol, 350 Gm. per Kg., dried 21 hours at 36° C. Found potency: 104%. Studying the keeping qualities of granules (*a*), (*b*) and (*c*), no significant loss was found in 4–5 months' storage, and other granules and pastilles of Formula B showed no loss in 1 year's storage. When tablets were made by the modified Formula A (using calciferol in oil), and starting at 71% of intended potency, these decreased in two months' storage to a potency of 41% of intended potency, and after 5 months contained only 20% of intended potency. Hence the granules and pastilles made by Formula B, even with dilute alcohol as moistener, were stable if kept in filled, brown glass bottles. Use of the 1% oil solution of calciferol was essential for stability. Tablet formulas containing the pure crystalline chemical lost 70–100% potency.—H. LINDHOLM. *Arch. Pharm. Chemi.*, 47 (1940), 287. (C. S. L.)

Chloramine in Solutions, Salves and Tablets—Stability of. Chloramine, Dan. Phar., as a solid, lost in 2 years' time 3.55% strength. Solutions of various strengths were kept at room temperature in brown, cork-stoppered bottles for 9 months. A 10% solution showed no loss; a 2% solution lost 2%; a 0.5% solution lost 2%; a 0.1% solution lost 4%. Other specimens were kept 3 weeks in white glass bottles in full daylight and lost strength markedly, 37–49% loss. Whether in half-filled or filled bottles, a 0.5% solution kept in the thermostat at 38–39° C. for 2 months lost 2%. Adding Sorensen phosphate buffer solution to p_H 6, the loss in 6 months was 1%; buffered to p_H 7 the loss in 6 months was $^1/_2$%. Chloramine tablets were stored in screw-cap bottles for 23 months and lost 2.3% while in a paper box for the same period, the tablets lost 3.7%. Chloramine Vaseline, Disp. Dan. 1938, stored in brown, 100-Gm. glass salve jars with screw cap did not lose strength in 8 months.—O. M. OLSEN. *Dansk. Tids. Farm.*, 14 (1940), 57. (C. S. L.)

Di-Iodo-*p*-Phenolsulfonic Acid Solutions—Sterilization of. On heating di-iodo-*p*-phenolsulfonic acid, it splits off iodine. A 1% solution (for injection) was tested as to its stability during sterilization by an electrometric analysis and it was found that on autoclaving for 20 minutes, this solution decomposed 2.2%; heating for one hour at 100° C. it decomposed 1%; and the solution decomposed only 0.7% when it was heated for 2 hours at 80° C.—ANON. *Arch. Pharm. Chemi*, 47 (1940), 229. (C. S. L.)

Dry Extracts—New Solvents for the Preparation of. Solvents other than ethanol can be used for the preparation of extracts. A mixture of isopropyl alcohol, acetone and water removes the active principles of cinchona, belladonna, rhubarb and gentian more rapidly than does ethanol. Mixtures of acetone and water or of isopropyl alcohol and water also give good results, but do not act as rapidly.—F. DUCOMMUN. *Pharm. Acta Helv.*, 13 (1938), 185–209; through *Chimie & Industrie*, 42 (1939), 109. (A. P.-C.)

Ergometrine—Preparation of a Stable Solution of. The authors state that the addition of ascorbic acid to an aqueous solution of ergometrine increases its stability considerably but not indefinitely.—A. SALOMON and R. W. SPANHOFF. *Pharm. Tijdschrift v. Nederl. Indie*, 15 (1938), 280. (E. H. W.)

Fluidextract of Ergot—Stability of. Fluidextract of ergot was prepared from an ergot of known alkaloidal content by the method of the Dan. Phar. 1933. The samples were stored under various conditions and sodium hydrosulfite (1%) and ascorbic acid (1%) were added as stabilizers. After 1, 2, 4, 6, 10 and 12 months, the contents of ergometrine and of ergotoxine were determined and it was found that only ascorbic acid had a stabilizing effect. The other preparations lost, after 6 months' storage, 38% of ergometrine and 54% of ergotoxine; after 12 months' storage, 51% of ergometrine and 69% of ergotoxine. The sample which contained the ascorbic acid lost 16% of ergometrine and 40% of ergotoxine in 12 months; thus ergometrine was more stable than ergotoxine.—S. A. SCHOU and M. TONNESEN. *Dansk. Tids. Farm.*, 14 (1940), 49. (C. S. L.)

Hexamethylenetetramine Solutions—Sterilization and Stability of. The aging of hexamethylenetetramine solutions gives rise to the liberation of a certain quantity of formaldehyde. Sterilization by heat favors this phenomenon. The degree of decomposition of hexamethylenetetramine depends on sterilization temperature and concentration of the solution; it increases as the concentration decreases. —J. BÜCHI. *Pharm. Acta Helv.*, 13 (1939), 157–162, 163–175; through *Chimie & Industrie*, 42 (1939), 109. (A. P.-C.)

Iodine and Oil—Stabilizing Solutions of. Solutions of iodine in animal or vegetable oil are stabilized and deodorized by addition of isopropyl alcohol.—V. KLOPFER. Brit. pat. 503,313; through *J. Soc. Chem., Ind.*, 58 (1939), 777. (E. G. V.)

Iodine—Solubility of, in Glycerin. Preparation of Official Collutory of Iodine. The author reports that 1 Gm. of iodine will dissolve in 100 Gm. of glycerol at 100° in 45 minutes; 0.75 Gm. of iodine will dissolve in 100 Gm. of glycerol at 100° in 35 minutes; 0.5 Gm. of iodine will dissolve in 100 Gm. of glycerol at 100° in 25 minutes. The iodine may be dissolved in aqueous potassium iodide solution and mixed with the glycerol in preparing the collutory of iodine official in the French Codex, or the finely powdered iodine may be dissolved in glycerol on a water bath. The solution in glycerol is quite stable.—P. MESNARD. *Bull. trav. soc. pharm. Bordeaux*, 78, (1940), 71–78. (S. W. G.)

Isopropyl Alcohol as Extracting Agent in the Preparation of Certain Dry Extracts of the Swiss Pharmacopœia. Use of isopropyl alcohol instead of ethanol for the extraction of alkaloidal drugs gives in most cases similar or better results; but most of the extracts thus obtained are less stable.—W MÄRKI. *Pharm. Acta Helv.*, 13 (1938), 210–226, 227–270; through *Chimie & Industrie*, 42 (1939), 109. (A. P.-C.)

Milk of Magnesia. A creamy product of only slight settling character comprises water, magnesium hydroxide particles formed by interaction between magnesia and water and a dissolved electrolytic hydration agent such as magnesium bicarbonate which is effective in the amount present, which may be about 0.5 to 1.5%, to inhibit settling.—ROGER A. MACARTHUR, assignor to PHILIP CAREY MANUFACTURING CO. U. S. pat. 2,168,228, Aug. 1, 1939. (A. P.-C.)

Percolation, Diacolation and Evacolation. The efficiency of the three methods in the preparation of fluidextract of quinine are compared with results favoring percolation.—HANNS RUDOLF FROMM. *Deut. Apoth. Ztg.*, 55 (1940), 275–276. (H. M. B.)

PHARMACOPŒIAS AND FORMULARIES

B. P.—New Addendum to the. The General Medical Council of Great Britain will publish shortly a second addendum to the British Pharmacopœia, 1932, in which certain new monographs, and certain modifications of existing monographs, will be included. The following new monographs will be included: Emulsio Olei Morrhuae, Emulsio Olei Vitaminati, Extractum Malti cum Oleo Vitaminato, Liquor Vitamini A Concentratus, Liquor Vitamini D Concentratus, Liquor Vitaminorum A et D Concentratus, Oleum Amygdalae Volatile Purificatum, Oleum Hippoglossi, Oleum Vitaminatum, Toxinum Tetanicum Detoxicatum, together with relevant appendices. Notes are given on these new preparations. The addendum will contain, in addition, emendations to monographs of the B. P. 1932, authorizing the use of arachis oil, cottonseed oil, or sesame oil in place of olive oil in making liniment of camphor, hydrous ointment and compound ointment of mercury; and the use of simple ointment in place of the beeswax and benzoinated lard in ointment of tannic acid and instead of the lard and hard and soft paraffins in ointment of capsicum.—ANON. *Pharm. J.*, 144 (1940), 329. (W. B. B.)

National Formulary Changes. The changes in general notices, minor changes in monographs, completely rewritten and new ones, especially in the section devoted to materials and preparations for diagnostic use, are presented as adopted for N. F. VII.—*Bull. Natl. Formulary Committee*, 8 (1940), 287–337. (H. M. B.)

Pharmacopœia Revision. When the British Pharmacopœia, 1932, was issued, a ten-yearly revision was contemplated, the successive pharmacopœias being timed to alternate with the decennial revisions of the United States Pharmacopœia; it was thus intended that the next British Pharmacopœia should be published in 1941, five years after the appearance of the eleventh revision of the United States Pharmacopœia. This principle of alternation, however, has become no longer possible in consequence of changes in the general policy of the U. S. P. authorities. Since the U. S. P. XI was published in 1936, two supplements have been produced, and there are indications that, in order to meet their responsibilities under the Federal Food, Drug and Cosmetic Act of 1938, the U. S. P. authorities may find it necessary to issue supplements at frequent intervals. The general policy of decennial revision and alternation of the two pharmacopœias is thus disturbed, and it may well happen that eventually it will be arranged that the two pharmacopœias will be published at the same time. Some alteration of plans for the publication of the British Pharmacopœia has been made advisable by the war, and the Commission has recommended to the General Medical Council that the publication of the new Pharmacopœia should be delayed. The work of revision, however, still goes on, as far as the difficulties of war time allow, in order that the book may be ready as soon as national conditions make publication advisable. The Commission has further recommended that Addenda, amending the Pharmacopœia, should be published from time to time in order to deal with special difficulties as they arise. Other topics briefly discussed are (1) the B. P. and the Codex, (2) vitamins, (3) preparation of sterile solutions and (4) analytical procedures.—C. H. HAMPSHIRE. *Pharm. J.*, 144 (1940), 241. (W. B. B.)

Scandinavian Pharmacopœial Methods of Sterilization and of Aseptic Preparation. Among the Scandinavian pharmacopœias only the Finnish pharmacopœia defines "Sterilization" and it is the only one naming aseptically prepared solutions as "nearly sterile." The Norwegian and the Danish pharmacopœias state that: "no drug preparation may be designated as sterile unless it has received a treatment (autoclaving, or dry sterilization at 160° C. for 2 hours) which leads to certainty of sterility, or unless it has been proved sterile by bacteriological control." Notes are given on the sterilization of cotton, dry sterilization of cork stoppers, formalin treatment of cork stoppers, sterilization of oils, dry sterilization of filters, fractional sterilization (Tynadallization), sterilization of rubber caps and stoppers of collapsible tubes, of glycerin and specific consideration is given to sterilization of distilled water, physiological saline, camphorated oil for injection, sodium bicarbonate solutions, lanolin, solutions of methenamine, caffeine, glucose, sodium barbital. The pharmacopœial tests of resistant glass for ampuling are also considered.—A. T. DALSGAARD. *Arch. Pharm. Chemi*, 47 (1940), 401. (C S. L.)

NON-OFFICIAL FORMULAS

Cosmetic Manual. Thirty-Eight Astringent Lotions. The effect of astringent solutions on the skin is partly psychological and partially physiological. Components are discussed and formulas for the following types are offered: those not containing aromatic waters and with an alkaline reaction (4 formulas); those acid in reaction (3) and neutral (1); with metallic astringents (13); and aromatic waters without metallic compounds (11); and with metallic compounds (6).—JOSEPH KALISH. *Drug and Cosmetic Ind.*, 47 (1940), 31–32. (H. M. B.)

Detergents. A composition for removing plasters and adhesive tape from the skin comprises a mixture of preferably pure carbon tetrachloride with not more than 40%, preferably not more than 20%, of white oil. The mixture may contain up to 10% of alcohol. The provisional specification describes a mixture of iodine crystals, alcohol, carbon tetrachloride and liquid paraffin, boiled for five minutes. —ANON. *Indian and Eastern Chemist*, 21 (1940), 52. (A. C. DED.)

Foot Preparations—Topical. Formulas for foot powders, corn plasters, salves and collodions, chilblain remedies, foot lotions and bath salts are given.—S. P. JANNAWAY. *Perfumer. Essent. Oil Record*, 31 (1940), 151. (A. C. DED.)

Hair Creams. A number of formulas for hair creams which are not of an oily character are given. —H. STANLEY REDGROVE. *Perfumer. Essent. Oil Record*, 31 (1940), 225. (A. C. DED.)

Hand Lotion Manufacture. A hand lotion must possess a distinctive psychological feel and a softening effect on the surface cells. The mucilaginous bases, emollients, water-retaining ingredients and fatty materials used in their preparation are discussed. Reasons for instability are mentioned. The following general working formula is offered: Quince seed 0.5–0.75%, water 25–35%, stearic acid 1.5–2.5%, mineral oil 3–5%, glycerin 1–2%, triethanolamine 0.5–1.5%, preservative 0.1–0.2%, perfume 0.25%, cetyl alcohol 0.1–0.3%, water 60–70% and beeswax 1–2%.—N. T. GORCHOFF. *Drug and Cosmetic Ind.*, 46 (1940), 682–683, 685, 715. (H. M. B.)

DISPENSING

Bordeaux and Burgundy Mixtures. The proportions of copper sulfate and hydrated lime in Bordeaux mixture are 4 oz. of the former with 5 oz. of the latter in $2^1/_2$ gallons of water. The point is emphasized that the hydrated lime must always be used quite fresh, and a check can be made to determine from the finished mixture whether sufficient lime has been added by testing with blue litmus paper, which should not turn pink. In preparing Burgundy mixture 5 oz. of washing soda replace the hydrated lime.—ANON. *Pharm. J.*, 144 (1940), 321. (W. B. B.)

Collyria—Mydriatic. Study of Some Salts of Levorenine. The following formulas are given for isotonic mydriatic collyria of salts of levorenine; the preparations are stable, have an optimum p_H and are sterilized by tyndallization at 70°. (1) Redistilled water 10 cc., chlorobutanol 3 cg., sodium bisulfite 3 cg., crystalline levorenine 20 cg., boric acid 0.168 Gm., sodium chloride 0.0613 Gm. (2) Redistilled water 10 cc., chlorobutanol 3 cg., sodium bisulfite 3 cg., levorenine bitartrate 40 cg., sodium chloride 0.0786 Gm. (3) Redistilled water 7.4 cc., chlorobutanol 3 cg., sodium bisulfite 3 cg., crystalline levorenine 20 cg., 1*N* solution of gluconic acid 2.6 cc. (4) Redistilled water 10 cc., chlorobutanol 3 cg., sodium bisulfite 3 cg., crystalline levorenine 20 cg., phenylpropionic acid 0.1639 Gm., sodium chloride 0.0888 Gm. The pharmacological action of levorenine is discussed.—F. STERNON and F. HENRIOUL. *J. pharm. Belg.*, 22 (1940), 145–153. (S. W. G.)

Digitalis Leaves—"Disintegrated." This form of preparation is recommended for the manufacture of digitalis suppositories and is made by extracting the leaves with water and then with 90% alcohol and then warming both extracts with the extracted leaves in a vacuum at 30° to remove the solvents so that the "disintegrated" digitalis powder remains with the active ingredients adhering to the surface of the drug particles to be absorbed more readily in the rectum. The author suggested that this type of preparation might have advantages as a new type of dry extract with ballast material.—WALTHER AWE. *Deut. Apoth. Ztg.*, 55 (1940), 44–46. (H. M. B.)

Filtration Apparatus. Some practical notes on some of the best known filtration systems, or on those most suitable for users in the drug, chemical and allied trades are given. Details of methods of laboratory filtration have been included, as well as notes on accessories.—ANON. *Chemist and Druggist*, 132 (1940), 65. (A. C. DED.)

α-Naphthol—Dissolving, in Water. For use with water to form antiseptic solutions, a concentrated solution is prepared containing potash soap, some water, α-naphthol and an alcohol such as isopropyl alcohol, the proportion of soap to α-naphthol being at least about 2 to 1 and the solution containing at least about 20% of the alcohol. Acetone or chloroform also may be used.—FERDINAND HERB, assignor to ARNOLD JOERNS. U. S. pat. 2,171,555, Sept. 5, 1939. (A. P.-C.)

Procaine and Epinephrine—Tablets of, for Preparation of Hypodermic Solutions. A formula is given for tablets of procaine HCl and epinephrine: Epinephrine 0.15 Gm., procaine HCl, 100 Gm., powdered sodium chloride, 28 Gm., powdered potassium sulfate, 16 Gm., powdered sodium bisulfite 4 Gm., Thymol, 1 Gm., concentrated spirit, *q. s.* (about 15 cc.), fine powdered boric acid, 10.85 Gm., to make 1000 tablets. Each contains: 10 cg. of procaine HCl and 0.15 mg. of epinephrine. To be dispensed in sterile wide-neck, glass-stoppered bottles with label: One tablet is dissolved in 4 cc. of sterile water. The preparation of the tablets is conducted under aseptic conditions using dry, sterilized sieves, mortar and enamel trays, and cleansing the tablet machine parts with alcohol and then with Hoffman solution. Dilute epinephrine is used: 1.5 Gm. of a freshly prepared dilution of epinephrine, called "Hektoadrenalin," is mixed with a solution of the thymol in 15 cc. alcohol. Procaine HCl is used as fine crystals (Sieve 8). This is mixed with the sodium chloride, potassium sulfate and sodium bisulfite in a sterile mortar, then moistened with the Hektoadrenalin-thymol solution; more alcohol is added as may be needed, then the mixture is granulated through sieve 8. The granules are spread with a celluloid strip on an enamel tray and dried in a lime chamber. Then the boric acid is sifted on and tablets of 7–8 mm. in diameter are punched at high pressure. Despite the pressure, the tablets disintegrate quickly in water.—E. MOE. *Arch. Pharm. Chemi*, 47 (1940), 425. (C. S. L.)

Riboflavin Solubility and Preparation of Riboflavin Solutions for Injection. Riboflavin (lactoflavin) is so slightly soluble in water that solutions to be used for injection must be prepared with the aid of substances increasing its water solubility. Use of urea and urethane for this purpose was studied. The stability of these substances to autoclaving was tested over a wide range of p_H. Urea was not satisfactory, for there was considerable decomposition during heat sterilization and the p_H was

markedly altered. Within the p_H range 3–10, urethane showed practically no decomposition on autoclaving the solutions. The solubility of riboflavin in water was 15 mg. per 100 cc.; in 10% urea solution was 41 mg. per 100 cc.; in 10% urethane solution was also 41 mg. per 100 cc. (all at 20° C.). Literature claims for solubility of riboflavin in water have been a little higher (25 mg. per 100 cc.); but this was probably due to the readinesss of formation of supersaturated solutions. Thus although 50 mg. per 100 cc. exceeds the true solubility of riboflavin, it was possible to prepare stable solutions for injection at this concentration provided that the ampuls were autoclaved lying horizontal so that the neck of the ampul was filled. Riboflavin solutions withstood 120° C. for 20 minutes without observable loss if the p_H was below 6.4. At p_H 6.6 this treatment caused loss of 15% of the riboflavin; at p_H 7.6 the loss was 50%. A formula is given for Solutio Lactoflavini pro Injectione: Lactoflavinum, 50 mg., urethanum, 10 Gm., aqua destillata sterilizata, *ad* 100 cc. Dissolving the riboflavin and the urethane with cautious warming, the solution is filtered and filled promptly into ampuls. The necks of the ampuls are cleaned with a stream of steam, then sealed and sterilized by autoclaving with the ampuls lying on their side and the necks completely filled with fluid. The preparation is stable if kept in the dark. Since the solution is supersaturated, after opening the ampul it should not be kept, as any evaporation will lead to crystallization. At the Copenhagen State Hospital still more supersaturated solutions (150 mg. per 100 cc.) have been used, but such solutions begin to crystallize in the ampuls within 14 days. When clouded they can be warmed until clear and re-autoclaved.—S. A. SCHOU and B. FRETHEIM. *Dansk Tids. Farm.*, 14 (1940), 97.
(C. S. L.)

Storage and Processing Vessels. In making a choice of the materials of which vessels for the processing or the storage of pharmaceutical preparations, whether galenical or chemical, are made, regard must be had to the possibility of interaction between the preparation and the material of the vessel, to the durability of the vat and to ease of cleaning. The important materials are summarized.—ANON. *Chemist and Druggist*, 132 (1940), 71.
(A. C. DED.)

Syrup of Tar—Incompatibility between, and Potassium Sulfoguaiacolate. Addition of potassium sulfoguaiacolate to syrup of tar produces a violet-brown color which attains its maximum intensity in several seconds. The color may be removed by addition of a saturated solution of citric acid drop by drop, shaking after the addition of each drop, until the normal color returns. Only a few drops of the citric acid solution are required to remove the undesirable color and prevent its reappearance.—J. A. LABAT. *Bull. trav. soc. pharm. Bordeaux*, 78 (1940), 67–69. (S. W. G.)

PHARMACEUTICAL HISTORY

Cosmetics—Ancient. The following arts of beauty culture in India are briefly described: Twigs as dentifrices, bathing an art, ancient enfleurage, skin beauty and Hindu manicure.—K. SADGOPAL. *Indian and Eastern Chemist*, 21 (1940), 44.
(A. C. DED.)

Derris—Early History (1848–1918) of the Use of, as an Insecticide. A detailed review containing 28 references.—R. C. ROARK. *Pests*, 6 (1938), 8–10; through *Chem. Abstr.*, 33 (1939), 2275.
(E. G. V.)

Emulsions—Early Experiments in. The earliest use of "emulsion" quoted in the Oxford English Dictionary occurs in the anonymous "Enchiridion Medicum" of 1612. In a discourse read before the Royal Society on December 10, 1674, the author mentioned certain experiments in incorporating essential oils, resins and gums in vinous or aqueous media. Other experiments are also mentioned.—ANON. *Chemist and Druggist*, 132 (1940), 475.
(A. C. DED.)

Mortars—Inscriptions upon. The author has collected the inscriptions from many old mortars and presents them in a classified arrangement.—D. A. WITTKOP KONING, JR. *Pharm. Weekblad*, 76 (1939), 1471. (E. H. W.)

Oak in German Folklore. A review.—E. ZÖLLNER. *Die Deut. Heilpflanze*, (March 1939), 9–11; through *Deut. Apoth. Ztg.*, 54 (1939), 345.
(H. M. B.)

Pharmacy before Printing. A review of manuscripts and instruments evacuated from the British Museum on account of the war.—G. RHODES. *Chemist and Druggist*, 132 (1940), 463.
(A. C. DED.)

Science in India—Progress of. The progress of science in India since 1784 until the present time is reviewed.—ANON. *Indian and Eastern Chemist*, 20 (1939), 316. (A. C. DED.)

PHARMACEUTICAL EDUCATION

Industrial Research in 1939. A review.—W. A. HAMOR. *Am. Chem. Soc., News Ed.*, 18 (1940), 1–13; 49–58. (E. G. V.)

Nobel Prize in Chemistry for 1939. An Honor of Swiss Science and Industry. A biographical sketch of Leopold Ruzicka.—ANON. *Riechstoff-Ind. Kosmetik*, 15 (1940), 8–9. (H. M. B.)

Pharmacist—What Every, Should Know. The importance of botany, pharmacognosy and physics in relation to pharmaceutical education is discussed.—C. BEAVEN. *Indian and Eastern Chemist*, 20 (1939), 308, 348. (A. C. DED.)

PHARMACEUTICAL LEGISLATION

Bleach Ointment—B. S. Specification for. A specification for bleach ointment (antigas Ointment No. 1) has been prepared by the British Standards Institution at the request of the Air Raids Precautions Department of the Ministry of Home Security. The specification provides that the ointment shall consist of equal parts by weight of bleaching powder and white mineral jelly. It must be in the form of a uniform smooth paste, free from foreign matter and visible impurities. Undue heating must be avoided during mixing. The bleaching powder used must be a suitably stabilized product, free from visible particles, and 99% must pass through a 60 mesh B. S. test sieve. It must contain not less than 30% available chlorine, and when a sample is tested after being kept at 100° C. for two hours in the specified manner, it should lose not more than one-fortieth of its original content of available chlorine. Notes are given on these new preparations. The available chlorine in a freshly prepared sample of bleach ointment must not be less than 14%. The labels and containers must be marked with the name "Bleach Ointment (Antigas Ointment No. 1)," the name of the maker, and the date of manufacture.—ANON. *Pharm. J.*, 144 (1940), 330. (W. B. B.)

Dangerous Drugs—Care of. Representations have been made to the Minister of Health by the Home Office regarding the importance of ensuring the safe custody of dangerous drugs issued as part of the medical equipment of first aid posts, and for securing that proper supervision is exercised in their administration. In issuing dangerous drugs to the scheme-making authorities the Minister has arranged that they shall be consigned personally to the country medical officer or the medical officer of

health, as the case may be, who is the officer primarily responsible for their safe custody. In conjunction with the Home Office, the Minister has given careful consideration to the safeguards which may be necessary to secure the object in view, and has decided to issue instruction for the guidance of scheme-making authorities.—ANON. *Chemist and Druggist*, 132 (1940), 95. (A. C. DED.)

Drug Standards—Development and Application of. The author discusses the following topics: Early statutes of the British drug laws, development of pharmacopœial standards, standardization in the present century, the Codex, application of standards, degrees of standardization, maintenance of standards, the effect of the war on standards.—A. D. POWELL. *Pharm. J.*, 144 (1940), 17. (W. B. B.)

Medicinals for Sale to the Public—Official Tariff of. A list of substances and the official tariff of the medicinals is given.—ANON. *Il farm. ital.*, 7 (1939), 1005. (A. C. DED.)

Mercury—Control of. The Control of Mercury (No. 3) Order, 1940 (S. R. and O., 1940, 112), dated January 25, 1940, has been made by the Minister of Supply under Regulations 55 and 98 of the Defence (General) Regulations, 1939. Its effect is to substitute a new schedule of prices per pound for the previous list.—ANON. *Chemist and Druggist*, 132 (1940), 90. (A. C. DED.)

Pharmaceutical Legislation. A bill submitted to the House of Representatives of Puerto Rico provides that: Pharmacists must be members of the College of Pharmacists in order to be licensed for their profession. It establishes a Board of Pharmacy and the bill defines terms such as "laboratory," "dealer in chemicals," etc. It provides for an Inspector of Pharmacy and sets standard requirements and examinations for admission to the practice of pharmacy. The Pharmacopœia and the National Formulary of the U. S. A. are used as reference standards. Poisons are classified.—ANON. *Rev. farm. (Puerto Rico)*, 3 (1939), 1143. (G. S. G.)

PHARMACEUTICAL ECONOMICS

Aconites—Indian Commercial. The author shows the importance of the aconite trade to northern India and the necessity for grading, cultivation and organized collection to place this drug on the same footing as the European quality.—N. B. DUTT. *Indian and Eastern Chemist*, 20 (1939), 318. (A. C. DED.)

British Pharmaceutical Products. In a paper on hospital organization with special reference to India, the author called attention to British medicinals in this way. A list is given of 238 well-known pharmaceuticals manufactured in foreign, and in some instances, enemy countries. After each item in this list the writer gives the name of a corresponding or similar drug which is manufactured in the United Kingdom. The name of the English maker and/or supplier is also given. For example, Carbromal B. P. is listed opposite adalin; papaveretum opposite pantopon; barbitone opposite veronal; cardatone opposite coramine; iodoprotein opposite sajodin, etc.—R. N. CHOPRA. *Indian Med. Gaz.*, 75 (1940), 170–182. (W. T. S.)

B. P. Names and Proprietaries. From the beginning of the war the question of maintaining adequate supplies of essential medicines has engaged the attention of the authorities, and licenses to make medicinal substances which were the subject of patents held by German firms have been granted to a number of British manufacturers, many of whom are now able to offer supplies. Unfortunately, no control can be exercised over the titles given by makers to their equivalents of German proprietaries. In consequence, there are being added to the pharmaceutical dictionary many new names, some of which give little indication of the chemical nature of the product. In a praiseworthy attempt to clarify the position at an early stage, the Pharmacopœia Commission has issued a list of twelve names of substances which will shortly form the subject of monographs in an Addendum—substances which formerly were imported and now are being made in this country. A table is given in which, classified under the new B. P. names, are shown the chemical composition, action and uses, as well as the proprietary names which have already been adopted by certain manufacturers for some of the new products.—ANON. *Pharm. J.*, 144 (1940), 270. (W. B. B.)

Cod Liver Oil Merger. Grimsby Cod Liver Oils, Ltd., and Isaac Spencer and Co., Ltd., have joined with British Cod Liver Oil Producers (Hull), Ltd., to form Portaccord Limited.—ANON. *Indian and Eastern Chemist*, 21 (1940), 47. (A. C. DED.)

Curacao Aloes Crop. The output of aloes in the Netherlands Indies was somewhat short during the current year, owing to drought and the difficulty of obtaining labor. Early estimates placed the output at around 3200 cases of 125 lb. each, which compares with an average of around 3400 cases per annum. The actual output of the 1939 crop is now estimated at around 2800 cases, all of which was harvested during the second quarter of the year.—ANON. *Chemist and Druggist*, 132 (1940), 53. (A. C. DED.)

Danish Synthetic Pharmaceutical Industry. The author discusses the possibility of an independent Danish synthetic pharmaceutical industry. By means of flow sheets the relationship of basic supplies to the finished synthetic product is shown. A flow sheet for the preparation of pure opium alkaloids from opium is also shown.—H. BAGGESGAARD-RASMUSSEN. *Arch. Pharm. Chemi*, 47 (1940), 187. (C. S. L.)

Drug Manufacture in India During Peace and War. An Address by the Chairman of the Drug Inquiry Board. A demand, through necessity or choice, of the people for cheap drugs is the cause of the use of inferior drugs in India. Due to a lack of restrictive laws unscrupulous manufacturers here and abroad flood the country with adulterated and misbranded medicines. Since 1930 certain deterrents to local manufacturers, *e. g.*, the excise regulation of spirits, transportation difficulties, etc., have been removed and as a result more honest preparations are now available. Legislation in the form of a Drug Control Bill will stimulate further progress. **Present State of Drug Industry.** About one-third as many drugs are manufactured in India as are imported. These include official, proprietary and semi-cosmetic preparations produced mainly by some 12 concerns, in many cases from imported raw material. Acids and a few common chemicals are manufactured but most heavy chemicals are imported. Some of the products lack standards and the production of many common substances, *e. g.*, glucose, is not even attempted. Numerous small firms who function as importers and manufacturers show large profits due to a lack of drug control laws. **Drug Industry in War Time.** Being a heavy importer, the present war has affected greatly the drug supply of both crude and finished products. Replacements will be sought from home sources, neutrals, and the United Kingdom. Indigenous drugs, both official and substitutes, will be forthcoming but many solvents and synthetics will not. **Review of India's Position with Regard to Drug Supply.** India can supply her needs for vegetable drugs and will export some. Many of the essential oils and most

fixed oils are locally available. Peanut oil will substitute for olive oil. As to alkaloids, atropine, caffeine, emetine, ephedrine, morphine, quinine and strychnine are being, or can be, produced. Emetine and especially quinine are not available in sufficient quantity. Almost all inorganic drugs are imported. Iodine may be available from Japan or possibly from the Scottish Kelp Industry. Bromine remains an especial problem. As to special organic drugs, the situation is even worse. They and their intermediates, previously obtained from Germany, will not be available. The U. S. A. or United Kingdom must supply those that can not be manufactured in an emergency. Of the complex salts and organometallics, India will be able to manufacture a few, and with the supply already in hand, may get by. Regarding sera, vaccines, gland products and vitamins, India will look to the U. S. A. for her main supply. Local slaughter houses will provide some, while others, the use of which is still in the experimental stages, will hardly be missed. Surgical dressings are being manufactured in abundance and the distillation of coal for disinfecting fluids can be extended. India's greatest need is the production of basic materials as alkalies, acids, solvents, phenol, aniline, iodine, bromine, urea, etc. With these at hand, human ingenuity can provide many present lacks.—R. N. CHOPRA. *Indian Med. Gaz.*, 75 (1940), 233-236. (W. T. S.)

Pharmacy—Modern Publicity and. The author believes that publicity plays an important role in modern pharmacy. He describes in detail pharmacy week as celebrated in America.—S. N. BISWAS. *Indian and Eastern Chemist*, 20 (1939), 337. (A. C. DED.)

South African Imports. The Union of South Africa continues to be a substantial market for medicinal and pharmaceutical preparations, importing on an average about 400,000 pounds worth every year. Normally, most of these imports originate in the United Kingdom, rather less than 20% come from the United States, and a little more than that amount from Germany. France is the next important supplier, followed by Switzerland. Considerable quantities of bulk materials are imported into the Union for repackaging, but the extent of this business is not known. A number of foreign companies maintain subsidiary plants in the Union. Details available regarding the medicinal and pharmaceutical import trade of the Union are given in a table.—ANON. *Chemist and Druggist*, 132 (1940), 405. (A. C. DED.)

U. S. A. Exports. During 1939, exports of medicinal preparations from the United States were valued at $22,317,465.—ANON. *Chemist and Druggist*, 132 (1940), 405. (A. C. DED.)

U. S. A. Medicinal Products—Increased Demand for. A striking increase is recorded in exports of medicinal, pharmaceutical and biological products from the U. S. A. since the outbreak of hostilities. From September to December 1939, exports of these products were valued at $9,573,939 compared with $6,235,235 during the corresponding period of 1938.—ANON. *Chemist and Druggist*, 132 (1940), 405. (A. C. DED.)

MISCELLANEOUS

Antimoth Compound. A molecule of a sulfonic acid of benzylated isatin having the sulfonic group in the benzene nucleus of the indol radical, is condensed with 2 molecules of an alkylated or halogenated phenol of ethers of such phenols.—J. R. GEIGY, *Soc. Anon.* Belg. pat. 432,155, Feb. 28, 1939. (A. P.-C.)

Biguanide Compounds and Rancidity Retard. An invention is described to inhibit or retard the deterioration or development of rancidity in soap, soap stock or any one or more of the ingredients. Biguanide, a salt of biguanide or a salt of a substitution product of biguanide is incorporated in the soap to render it more stable.—R. L. SIBLEY, Nitro, West Virginia and Monsanto Chemical Company, St. Louis, Missouri. British Patent Specification No. 521,863; through *Perfumer. Essent. Oil Record*, 31 (1940), 238. (A. C. DED.)

Bottles for Injection Medicines—Standardization of. A standard form for Swedish bottles with transparent gum rubber caps to contain sterile medicines for injection is proposed in sizes holding 5, 10, 15, 25, 30, 50 and 100 ml.—S. KJELLMARK. *Farm. Revy*, 39 (1940), 33. (C. S. L.)

Chemicals—Containers for Transport and Storage of.—A. G. Wright. *Chemical Age* (London), 41 (1939), 160-162; through *Chem. Abstr.*, 33 (1939), 8057. (E. G. V.)

Cosmetic Creams. A cosmetic of the vanishing cream type comprises a plastic emulsion of oleaginous and aqueous material and includes a compound, such as monostearate of diethylene glycol, having oleophilic and hydrophilic groups, the oleophilic group containing at least 6 carbon atoms and the compound having good wetting and lubricating properties, being miscible with water and capable of penetrating through the natural greasy layer on the skin and facilitating the softening of the hair when applied to the skin.—BENJAMIN R. HARRIS. U. S. pat. 2,173,203, Sept. 19, 1939. (A. P.-C.)

Detergents in Cake Form for Toilet Purposes. A mildly acid detergent of good lathering and cleansing properties is formed of boric acid (which serves as a binder) and the sodium salt of the acid sulfuric acid ester of technical lauryl alcohol or other suitable water-soluble salt containing an alkyl radical of at least 8 carbon atoms and radicals of sulfuric or phosphoric acid.—WM. G. BECKERS. U. S. pat. 2,169,829, Aug. 15, 1939. (A. P.-C.)

Detergents Suitable for Toilet Use. A detergent in bar form substantially free from soap contains predominantly a mixture consisting of 5 to 60% of a saturated super glycerinated fat having at least 12 carbon atoms in the fat acid radical and not less than about 40% of a substantially solid water-soluble salt such as the sodium salt of a compound from the group consisting of the following, in all of which the alkyl radical contains more than 8 carbon atoms: sulfonated or sulfated aliphatic alcohols or hydrocarbons, fatty acid esters of hydroxyethane sulfonic acid or of dihydroxypropane sulfonic acid, fatty acid amides of methylaminoethane sulfonic acid and alkyl ethers of dihydroxypropane sulfonic acid.—ROBERT A. DUNCAN, assignor to PROCTER & GAMBLE CO. U. S. pat. 2,175,285, Oct. 10, 1939. (A. P.-C.)

Eye Lotions. The article emphasizes the principal points to be taken into account when preparing and selling an eye lotion.—ANON. *Chemist and Druggist*, 132 (1940), 48. (A. C. DED.)

Funnels. Repairing Sintered Glass Funnels. A method is given for preparing broken glass funnels.—T. K. TELFORS. *Pharm. J.*, 144 (1940), 121. (W. B. B.)

Hair on the Human Head—Removing Dye from Living. A dye-removing composition is formed of 3% of 40° Baumé nitric acid, 1% hydrochloric acid, 1% oxalic acid, 1% of acetic ether, 0.02% of cholesterol, 3% of diethylene glycol, 1% of sodium formaldehydesulfoxylate and 89.98% of water.—EDMOND SOUSSA. U. S. pat. 2,149,319, March 7, 1939. (A. P.-C.)

Index of the Year 1939. An index of the articles appearing in *Il Farmacista Italiano* during the year 1939 is given.—ANON. *Il farm. ital.*, 8 (1940), 87. (A. C. DED.)

Insecticidal Compositions. In the preparation of insecticidal compositions use is made of 4-(10-undecylenoyl)morpholine or other neutral carboxylic acid amide having a heterocylcic radical and an aliphatic hydrocarbon residue containing at least 6 carbon atoms.—EUCLID W. BOUSQUET and PAUL L. SALZBERG, assignors to E. I. DU PONT DE NEMOURS & Co. U. S. pat. 2,166,118, July 18, 1939. (A. P.-C.)

Insecticide. Various details are described for producing an insecticide capable of forming a transparent emulsion with water and which may contain mineral spray oil, a butyl alcohol, glycol cyclohexanol or a methyl, ethyl or butyl ether of a mono- or di-ethylene glycol, and an alkali metal salt of sulfonated oleic acid about 4% to 6% by volume.—PAUL W. JEWEL and WM. E. BRADLEY, assignors to UNION OIL CO. OF CALIFORNIA. U. S. pat. 2,165,486, July 11, 1939. (A. P.-C.)

Insecticide—Combustible. Pulverulent vegetable materials having an insecticidal or disinfecting action are incorporated into cardboard, and the latter is cut in such a manner that combustion takes place progressively.—ETABLISSEMENTS DECHOSAL. Belg. pat. 432,652, March 31, 1939. (A. P.-C.)

Insecticides. Insecticides suitable for use in various mixtures contain a reaction product of a pyridinic compound (such as pyridine and sulfur) with an olefinic material (such as a petroleum, shale oil or tar distillate) containing 18% of phosphorus pentoxide.—CARL P. HOPKINS, assignor to LATIMER-GOODWIN CHEMICAL CO. U. S. pat. 2,166,661, July 18, 1939. (A. P.-C.)

Insecticides. *N*-Salicylidene picramic acid, *N*-(3,-5-dinitrosalicyclidene) picramic acid, *N*-cinnamylidene picramic acid and various compounds of the general formula 2-HO-3-*X*-5-*X*C_6H_2N:CH*R* (where one *X* represents the nitro group, the other *X* represents hydrogen or a nitro group, and *R* represents hydrogen or an aromatic, aliphatic or aralkyl residue) are obtained by reactions such as condensing 2-amino-4-nitro-, -6-nitro- or -4,6-dinitro-phenol with an aldehyde (such as formaldehyde, aldol, acetaldehyde, butyraldehyde, benzaldehyde, cinnamaldehyde, salicylaldehyde, phenylacetaldehyde, hippuraldehyde, etc.). The reaction is carried out by dropping the aldehyde into a vessel containing the nitroaminophenol compound, either in molten form or dissolved in an inert solvent. Reaction temperatures of from 30° to 90° C. are usually satisfactory, and an alkaline reaction medium is desirable. An atmosphere of carbon dioxide facilitates the reaction. Such products and secondary amino compounds which they yield on reducing may be used as insecticides.—EDGAR C. BRITTON and CLARENCE L. MOYLE, assignors to DOW CHEMICAL CO. U. S. pat. 2,155,356, April 18, 1939. (A. P.-C.)

Massage Creams. A high molecular weight fatty acid such as stearic or palmitic acid is used with a soap such as the sodium soap of a high molecular weight fatty acid, together with a wax such as beeswax and ceresin, and sufficient readily volatile alcohol, etc., to produce a cream which is substantially fluid at body temperatures, and with a small proportion of a low-molecular fruit acid such as citric or acetic acid to produce a surface film during use which rolls off the surface in the form of filaments.—IDA G. BLISH. U. S. pat. 2,172,118, Sept. 5, 1939. (A. P.-C.)

Menthyl Anthranilate. Menthyl anthranilate may be prepared by treating a menthol solution of an alkali metal mentholate with methyl anthranilate. It is suitable for use in cosmetics such as "suntan creams" or "sunburn lotions" as an absorbent of actinic rays.—MARION S. CARPENTER, assignor to GIVAUDAN-DELAWANNA, INC. U. S. pat. 2,170,185, Aug. 22, 1939. (A. P.-C.)

Nail Enamel. Ten parts of an organic ester of cellulose, such as cellulose acetate butyrate, is dissolved in a mixture containing 25 parts of ethylene dichloride and 40 parts of diethylene dioxide, etc.—HENRY C. FULLER. U. S. pat. 2,173,755, Sept. 19, 1939. (A. P.-C.)

Parasiticide Suitable for Pharyngeal Administration to Birds Affected with Gapeworms. A sparingly soluble metallic antimonyl tartrate such as barium, silver or stannous antimonyl tartrate is used (suitably in dust form).—JACOB M. SCHAFFER, PAUL D. HARWOOD and EVERETT E. WEHR, dedicated to the people of the United States for free use. U. S. pat. 2,161,261, June 6, 1939. (A. P.-C.)

Perfume Fixative. A sheet of nonfibrous perfume fixative comprises a dried pellicle of cellulose acetate containing an essential oil, diethyl phthalate and diacetone.—ELLSWORTH B. OVERSHINER, assignor to SHELLMAR PRODUCTS CO. U. S. pat. 2,169,055, Aug. 8, 1939. (A. P.-C.)

Perfume—Successful. The psychology and physiology of smell perception and of the influence of odors must be studied if the successful perfumery product is to be evolved.—S. G. FIELD. *Indian and Eastern Chemist,* 20 (1939), 342. (A. C. DED.)

Plastics in Packaging. Several types of plastics are available and generous use is already being made of them in specific applications. For nonrigid packages and "overwraps" there are transparent cellulose and rubber film materials, while for rigid containers to replace glass and metal there are molded and built-up boxes and tubes of cellulose acetate; injection and compression moldings of polystyrene and methyl methacrylate resins; and jars, closures, applicators and novelties of the urea and phenol-formaldehyde resins. The scope of modern plastic materials is extensive, though not all are suitable for applications involving prolonged contact with, or immersion in, liquids and creams containing water and certain solvents. The reason for this is that many plastics absorb small proportions of moisture, and therefore swell, while they are attacked by alcohol, esters and other organic liquids. All, however, are safe for packing the great majority of dry products.—ANON. *Chemist and Druggist,* 132 (1940), 459. (A. C. DED.)

Shaving Cream—Brushless. A plastic emulsion of oleaginous and aqueous materials, such as may be formed from stearic acid, is used with a minor proportion (suitably about 0.5% to 5%) of an aromatic sulfonate, such as α-naphthalene sodium sulfonate.—WOLF KRITCHEVSKY, assignor to RIT PRODUCTS CORP. U. S. pat. 2,167,180, July 25, 1939. (A. P.-C.)

Soap from Waste Fat. Although waste fat is always of commercial value, in some instances it might be found an economic advantage to convert the fat into a soap suitable for household cleansing purposes. This can readily be effected by the saponification of the fat by means of caustic soda. The following process will give a satisfactory soap for general cleansing purposes: fat 36 lb., caustic soda 4¾ lb. (may be increased slightly to complete saponification of fat), water 4 gallons. The soap should be prepared in an iron vessel capable of being heated. The caustic soda should be dissolved in the water and heated to boiling. The fat should then be added slowly to avoid frothing and when all has been added, the mixture should be boiled for three hours. The solution can be tested for complete saponification of the fat by treatment of a small quantity with water as no oily globules should sepa-

rate. When saponification is complete, the soap solution can be poured into a suitable mold. Either individual molds for the bars can be employed or the soap can be poured into a trough about 3 inches deep. When cold the soap mass produced can be cut into suitable pieces. It will usually be found desirable to stack the soap manufactured in this way for a few weeks before use to enable the bars to dry out and harden. The character of the soap naturally will depend to some extent on the nature of the fat used. Soap produced in this way differs chemically from soap as produced commercially, in that it still contains the glycerin produced by the saponification of the fat.—ANON. *Pharm. J.*, 144 (1940), 321. (W. B. B.)

Soap Manufacture—Saturated Fatty Acids in. An invention which describes improvements in soap and soap products and in the manufacture thereof is given.—R. THOMAS and H. B. OAKLEY. British Patent Specification No. 521,566; through *Perfumer. Essent. Oil Record*, 31 (1940), 239. (A. C. DED.)

Substitutes—Unsuitable. Three substitutes for glycerin and one for oil of turpentine are described.—W. PEYER. *Deut. Apoth. Ztg.*, 55 (1940), 292. (H. M. B.)

Sunburn—Cosmetic for Preventing or Reducing. A substantially flesh-colored, flaked, light-weight metal powder such as dyed or pigmented aluminum is dispersed in a vehicle such as petrolatum, etc.—CHARLES L. PARSONS, assignor of 50% to HENRY C. PARKER. U. S. pat. 2,175,213, Oct. 10, 1939. (A. P.-C.)

Tin—Limitation of, as a Packing Material. Allotropic transformation will take place in both annealed and chill-cast commercial tin. Although slow in starting, it progresses rapidly at ordinary winter temperatures. A small amount of such transformation on the breaking surface of a tin packing would cause leakage. Since a perfect seal must be maintained at all times in hydropneumatic mechanisms, the relative ease of transformation precludes the use of pure tin as a packing substance in ordinance material. Tests of 0.1% and 0.5% bismuth in tin indicate that even these small amounts of bismuth will increase the hardness and decrease the elasticity to a marked degree. Since softness and plasticity are the desirable properties for packings, the addition of bismuth would defeat the purpose for which the packing is intended.—A. C. HANSON and G. O. INMAN. *Ind. Eng. Chem.*, 31 (1939), 662-663. (E. G. V.)

Tooth Paste. Sodium perborate is used with a boric acid ester of glycerol or of a glycol (suitably also with talc, tricalcium phosphate, etc.).—THOMAS I. TAYLOR. U. S. pat. 2,172,743, Sept. 12, 1939. (A. P.-C.)

Trichloromethyl Aromatic Carbinol Ethers. Intermediates for the preparation of perfumes, flavoring substances or therapeutic compounds, such as (3-benzyloxy-4-hydroxyphenyl) (trichloromethyl)carbinol, are produced by the reaction of chloral hydrate with the monobenzyl ether of pyrocatechol, monobutyl ether of pyrocatechol, etc. (suitably for several days or weeks in benzene with addition of sodium sulfite and sodium carbonate at 25° C.). Several examples with details are given.—LUCAS P. KYRIDES, assignor to MONSANTO CHEMICAL CO. U. S. pat. 2,168,349, Aug. 8, 1939. (A. P.-C.)

PHARMACOLOGY, TOXICOLOGY AND THERAPEUTICS

PHARMACOLOGY

Adrenaline—Physiological Precursors of. The decarboxylation of 3,4-dihydroxy-phenylalanine was accomplished by two methods: 1. Action of *B. coli* in a culture medium of p_H 5.5 for 20 days at 37°; and 2. Treatment for 3 hours on a water bath at 37° with some fragments of kidneys of recently killed guinea pigs. The medullary and cortical parts of the ground tissue of fresh suprarenals were caused to act on the hydrochloride of the dihydroxyphenylethylamine. Adrenaline was formed with the medullary and never with the cortical. Action under the same conditions on tyramine failed to produce adrenaline. The formation of adrenaline can thus be considered to take place in two phases, first decarboxylation then oxidation and methylation in the side chain. The detection and determination of these substances were effected electrophotometrically using the color reaction with mercuric chloride.—ANDRE VINET. *Compt. rend.*, 210 (1940), 552. (G. W. H.)

Aminophyllin, Histaminase and Nicotinic Acid—Effect of, on Histamine-Poisoned Puppy Bronchioles. Aminophyllin is an effective dilator of histamine-poisoned puppy bronchiolar sections. Histaminase and nicotinic acid had little or no effect in the concentrations used.—A. J. GILBERT and F. GOLDMAN. *Proc. Soc. Exptl. Biol. Med.*, 44 (1940), 458. (A. E. M.)

Antihemorrhagic Compounds—Synthesis of. A number of naphthoquinone derivatives have been prepared and investigated for vitamin K activity, the results seeming to confirm the authors' conception of the nature of vitamin K_1 and K_2.—L. F. FIESER, D. M. BOWEN, W. P. CAMPBELL, E. M. FRY and M. D. GATES, JR. *J. Am. Chem. Soc.*, 61 (1939), 1926. (E. B. S.)

Artostenone Derivatives—Sex Hormone Activities of. A determination has been made of the sex hormone activities of "artosterone," a hydroxy ketone, prepared from the sterol (artostenone) obtained from the Indian summer fruit *Artocarpus integrifolia*. In sexually immature rats, 50γ of this substance per day produced an average increase of 20% in the weight of the prostate plus seminal vesicles. Artosterone had a depressing effect on the testes but stimulated the kidneys and the involution rate of the thymus. The histological changes produced by the substance in the vas deferens and testes were essentially those observed after injections of androgens. Thus it was concluded that the compound possesses definite androgenic activity.—M. C. NATH and T. N. SEN GUPTA. *Indian J. Med. Research*, 27 (1939), 171-179. (W. T. S.)

Autonomic Nervous System—Relation of, to Pharmacy. The pharmacological effects of amphetamine (benzedrine) sulfate, mecholyl, atropine and prostigmine on the eye, skin, gall bladder, heart, blood pressure, gastrointestinal tract and urinary bladder, based on an investigation performed on dementia præcox patients, supposed to be organically healthy, are described.—A. MYERSON. *J. Connecticut State Med. Soc.*, 3 (1939), 19-21; through *Chem. Abstr.*, 33 (1939), 2214. (F. J. S.)

Betaine Hydrochlorides of *dl*-Serine, *dl*-Threonine and *dl*-Allothreonine—Synthesis and Determination of the Lipotropic Activity of the. A method is given for the synthesis of the betaine hydrochlorides of *dl*-serine, *dl*-threonine and *dl*-allothreonine. The betaines of *dl*-threonine and *dl*-allothreonine undergo a retrograde aldol condensation in an alkaline medium, yielding betaine and acetaldehyde. The betaine hydrochlorides of *dl*-serine, *dl*-threonine and *dl*-allothreonine do not prevent the development of a fatty liver in rats fed a high fat, low protein diet.—HERBERT E. CARTER and DONALD B. MELVILLE. *J. Biol. Chem.*, 133 (1940), 109. (F. J. S.)

Cannabis and Butyl-Bromallyl-Barbituric Acid—Synergism of. Study was undertaken to deter-

mine whether cannabis will show clearer results when administered with other drugs than when given alone. No appreciable synergism or antagonism was noted with stimulants but there was definite depressant action when given with a hypnotic. Data on 323 experiments on adult male mice are summarized in the report. Cannabis preparations were administered by stomach tube followed by hypodermic injection of the hypnotic. The relation between dose of cannabis and duration of "sleep" is shown by graph and by tabulation. Other features of the combined action of cannabis and Pernoston were a more rapid onset of hypnosis and corneal anesthesia. Other details of results are discussed.—S. LOEWE. *Jour. A. Ph. A.*, 29 (1940), 163 (Z. M. C.)

Castor Oil and Its Physiological Action. A review.—L. PRANDSTRALLER. *Il farm. ital.*, 7 (1939), 216. (A. C. DED.)

Citric Acid—Antiketogenic and Glycogenic Activity of. In the albino rat, citric acid is as effective as glucose in the relief of insulin hypoglycemia, active in the formation of liver glycogen, and has a marked antiketogenic action.—EATON M. MACKAY, HERBERT O. CARNE and ARNE N. WICK. *J. Biol. Chem.*, 133 (1940), 59. (F. J. S.)

Coramine—Action of, on the Nervous System. Large doses of coramine stimulate then depress the cardiac vagus; the depressant effects on the vagus are more marked in the cat than in the rabbit. Coramine has little or no effect on the sympathetic nervous system following doses that produce typical vagal depression. Coramine produces terminal asphyxia, twitchings and tremor, apparently from paralysis of the peripheral nerves, which effect is more pronounced in the rabbit than in the cat.—A. F. BURTON. *Arch. intern. pharmacodynamie*, 63 (1939), 292. (W. H. H.)

Cryptopine—Pharmacodynamic Action of.—F. P. LUDUENA. *Compt. rend. soc. biol.*, 129 (1938), 1214–1216; through *Chem. Abstr.*, 33 (1939), 2212. (F. J. S.)

Diabetes Insipidus—Changes in Physico-Chemical Forces in. Effect of Transplantation of the Hypophysis. In operative cases of diabetes insipidus, transplantation of the hypophysis results in a beneficial action which ceases after several months only because of resorption of the implanted pituitary.—EUGEN BARATH. *Deut. Med. Wochschr.*, 65 (1939), 212–214. (L. K.)

Digitalis and Its Cardiac Action. A review of digitalis is given.—P. LEOME. *Il farm. ital.*, 7 (1939), 117. (A. C. DED.)

Dormovit, a New Synthetic Hypnotic. Dormovit, in oral doses of 0.2–0.4 Gm., is a useful hypnotic in man; its effect lasts for about 7 hours. Unpleasant side actions were not observed. Habituation does not occur, even if used over many weeks. Marked analgesic effects were obtained in combination with dimethylaminophenyldimethylpyrazolone.—O. L. WEISS. *Munch. med. Wochschr.*, 85 (1938), 366–367; through *Chem. Abstr.*, 33 (1939), 2208. (F. J. S.)

Dormovit—Pharmacological Effect of. Dormovit (furfurylisopropylbarbituric acid) is easily soluble in alcohol, ether, chloroform and lipin; molecular weight 250; melts at 168–170°. The aqueous solution of the sodium salt has p_H 9.47 and is not changed by boiling for 30 minutes. The substance has a hypnotic effect in rabbits, cats and dogs after oral administration of 80 mg. or intravenous injection of 40 mg. per Kg. body-weight; 75 mg. per Kg. given per rectum in rats, has a hypnotic effect lasting 90–125 minutes. Lethal oral doses are 320 mg. in cats, 350 mg. in rabbits, 360 mg. per Kg. in dogs. Intravenous lethal dose in rabbits is 125 mg. per Kg. Small doses of dormovit protect mice against the lethal effect of a subcutaneous injection of 0.12 Gm. of cardiazol per kg. Hypnotic and narcotic doses have no effects on circulation, respiration and metabolism. Only small amounts of dormovit are excreted unchanged in urine; most of the substance is broken down in the organism.—K. ZIPF. *Munch. med. Wochschr.*, 85 (1938), 365–366; through *Chem. Abstr.*, 33 (1939), 2207. (F. J. S.)

Drugs—How Do, Act? A general discussion, covering such topics as chemical reactions in the body, the role of acetylcholine, prostigmin and physostigmine, the role of thyroxine, the body's need for iron, the tale of ascorbic acid, how sulfonamides act, organic mercurials and the pituitary, chemical structure and physiological action, and "one grain in a thousand tons."—W. LANGDON-BROWN. *Pharm. J.*, 144 (1940), 103, 119. (W. B. B.)

Drugs—Pain Threshold after Administration of Various. Quantitative studies on the best method for measuring graded pain stimuli in human beings is the electric procedure, in which the current is applied with fine electrodes and the minimum amount of energy necessary to produce pain is measured. For investigative work on analgesia of new drugs and chemicals the method is unsuitable for experimentation on human beings. The method described consists of applying the faradic current from a standardized induction coil to sensitive areas of the scrotum of tame adult male rats and measuring the minimal energy required to elicit a painful squeal. A large number of analgesic drugs were examined and there was complete agreement with clinical experience. This recommended the method for use with unknown substances. A large number of drugs yielded data paralleling clinical experience with some medicaments in men. Findings obtained in the study of analgesia produced by morphine and cobra venom agree with those derived from studies on guinea pigs and on normal human beings and with clinical reports. The new method offers a useful method for new compounds on which work has not progressed far enough to warrant trial on human subjects.—DAVID I. MACHT and MOSES B. MACHT. *Jour. A. Ph. A.*, 29 (1940), 193. (Z. M. C.)

Eserine—Influence of, on the Internal Secretion of the Pancreas. Small doses of eserine act as a stimulus on the internal secretion of the pancreas producing hypoglycemia; large doses on the contrary have a depressing action revealed by hypoglycemia.—L. LIACI. *Biochim. terap. sper.*, 26 (1939), 129. (A. C. DED.)

α-Estradiol and α-Estradiol Benzoate—Absorption Rates and Biologic Effects of Pellets of, in Women. The average absorption rate of implanted pellets per 30 days was 4.85% for estradiol as compared to 1.72% for the benzoate. The duration of therapeutic and biologic effects was definitely longer in the estradiol series. A fibrous capsule formed around the pellets progressively decreases absorption until finally the absorbed quantity drops below the threshold of action. The implantation of pellets does not seem to be a feasible method of administering these hormones.—ROBERT I. WALTER, SAMUEL H. GEIST and UDALL J. SALMON. *Proc. Soc. Exptl. Biol. Med.*, 44 (1940), 314. (A. E. M.)

Estrogens with Oxygen in Ring B. III. 6-Keto-α-Estradiol. The preparation of 6-keto-α-estradiol by treatment of α-estradiol diacetate with chromic acid is described. The introduction of the keto group diminishes the estrogenic potency to one-fourth of that of α-estradiol.—BERNARD LONGWELL and O. WINTERSTEINER. *J. Biol. Chem.*, 133 (1940), 219. (F. J. S.)

Estrone—Direct Action of, on the Mammary Gland. The proper dose of estrone in oil rubbed

into the skin of the rudimentary mammary glands of young rabbits caused growth of those glands but not of the control glands treated only with oil. Estrogenic substances are directly mammary stimulating.—WM. R. LYONS and Y. SAKO. *Proc. Soc. Exptl. Biol. Med.*, 44 (1940), 398. (A. E. M.)

Ethyl Thioncarbamate—Pharmacology of. Introduction of sulfur into the molecule of certain barbiturates causes a more rapid onset of hypnosis so experiments in introducing sulfur into the molecule of other hypnotics were tried. Ethyl thioncarbamate was prepared by the method of Salomon which is described. Experimental work is given in detail. Investigation of the pharmacology of the compound showed that the depression produced is more rapid in onset and of shorter duration than with ethyl carbamate. Secondary effects are such that it is definitely contraindicated for clinical use. These effects are mainly damage to liver and kidney tissue and may be due to a breakdown product. What these breakdown products might be and the reasons are discussed. Since higher homologs of the series might not break down in the same way, they will be studied.—JAMES M. DILLE and PAUL A. SQUIER. *Jour. A. Ph. A.*, 29 (1940), 145. (Z. M. C.)

Glyceraldehyde—Toxicity and Action of, on the Circulation of the Blood. The author examined the degree of toxicity of glyceraldehyde and found that the lethal dose corresponded to 1.8 Gm. per Kg. of frog weight. He further studied the pharmacological action this substance exercises on blood and on the respiration and concluded that it has a slight hypotensive action when it is administered in small or average doses.—L. LIACI. *Biochim. terap. sper.*, 27 (1940), 1. (A. C. DED.)

Glycerophosphoric Acid—Activity of, on Fibroma of the Uterus. The activity of the enzymatic system which causes the transformation of glycerophosphoric acid into pyruvic and phosphoric acids was very small in three cases of fibroma of the uterus while in cases of malignant tumors it is remarkable.—G. GROSSI. *Biochim. terap. sper.*, 26 (1939), 114. (A. C. DED.)

Heparin. Heparin and its anticoagulant properties are discussed. Twenty-eight references are given.—M. A. LESSER. *Drug and Cosmetic Ind.*, 46 (1940), 407–409. (H. M. B.)

Histamine in the Blood—Pharmacological Determination of, under Various Conditions. Histamine (I) determinations in the blood were made according to the method of Barsoum and Gaddum upon patients suffering from the following conditions: brachialgia (0.10γ I per cc. blood), neurosis (0.05), muscle dystrophy (0.05), parkinsonism (0.06), lues cerebri (0.05), paralysis of m. serratus (0.12). The I values in a normal dog with Eck's fistula showed a similar distribution (0.07γ per cc.) and therefore support the opinion that the liver is of little significance for the detoxication of I in the organism. By comparing the blood from the portal vein with that from the vena cava in the cat, it has not clearly been demonstrated that the blood of the vena portæ has a high histamine content.—W. A. DEN HARTOG JAGER. *Arch. neerland. physiol.*, 23 (1938), 537–540; through *Chem. Abstr.*, 33 (1939), 2933. (F. J. S.)

Hypovitaminosis C—Vomiting of Pregnancy as an Indication of. A discussion.—THOMAS DOXIADES. *Deut. med. Wochschr.*, 65 (1939), 217–218. (L. K.)

Insulin Hypoglycemia—Effect of Repeated, on the Lipid Composition of Rabbit Tissues. Repeated insulin hypoglycemia convulsions were induced in seventeen rabbits. Seventeen untreated rabbits served as controls. The brain, liver, kidney, spleen, muscle and adrenals were analyzed for lipids. The insulin treatments produced a small but statistically significant decrease in the phospholipid and neutral fat content of nervous tissues but no change in cholesterol. Phospholipid and cholesterol were not significantly affected in the liver, kidney, spleen and muscle. Neutral fat was increased in the liver and kidney only. The adrenal glands were hypertrophied; and the absolute amounts of phospholipid and neutral fat were increased while free and ester cholesterol remained constant. On a percentage basis the amounts of phospholipid and free cholesterol remained constant; the ester cholesterol was decreased and neutral fat increased.—LOWELL O. RANDALL. *J. Biol. Chem.*, 133 (1940), 129. (F. J. S.)

Laxatives and Purgatives. A survey of oil, vegetable extract, synthetic, saline and mercurial cathartics is given The conditions for which each is suitable, its action and its advantages and disadvantages are summarized.—R. G. HARRY. *Indian and Eastern Chemist*, 21 (1940), 49. (A. C. DED.)

Malonate—Effect of, on Tissue Respiration. The respiration of pigeon breast muscle inhibited by malonate was effectively restored by the addition of fumarate, malate or α-ketoglutarate. Succinate also restored the respiration, but relatively more was needed. Citrate and glutamate completely failed to restore respiration when 0.005*M* malonate was used and were inferior to the other acids in the presence of lower amounts of malonate. Glutamic acid, like citric, α-ketoglutaric and the C_4 acids, stimulated respiration catalytically. An intact citric acid cycle does not appear to be essential for the respiration of muscle. The same conclusion is reached whether malonate is regarded as a general inhibitor, or as a specific inhibitor for succinic dehydrogenase.—C. A. BAUMANN and F. J. STARE. *J. Biol. Chem.*, 133 (1940), 183. (F. J. S.)

Menthols—Chemical and Pharmacological Comparison of the. The literature on menthol commonly available is chiefly that of the U. S. P. article. Manufacturers think mostly of natural menthol and synthetic menthol, but there are eight possible and six have been isolated and characterized. Major objective of the studies reported was the determination of measurable differences in pharmacodynamic activities and in the toxicities which might affect their use in various preparations. Until recently menthol was obtained from Japanese peppermint oil; and attempts to produce it from mint oil from other localities gave too low results to be of commercial value. Synthetic menthols are on the market but they are not identical with the natural product and differ from the natural in odor, taste and cooling effect. Chemical constitution, synthetic menthol process and comparison of the three stereoisomers are discussed. Experimental work lists and briefly describes the menthols studied, describes tests applied to determine effects on human skin, on human nasal and oral mucous membranes, describes methods used in determining toxicities on albino rats and on rabbits.—A. RICHARD BLISS, JR. and H. BRYSON GLASS. *Jour. A. Ph. A.*, 29 (1940), 171. (Z. M. C.)

2 - Methyl - 1,4 - Naphthoquinone—Antihemorrhagic Activity of, in the Rabbit and the Possibility of Hypervitaminose-K. The 2-methyl-1,4-naphthoquinone which is shown to be capable of correcting the effects of vitamin K deficiency in the fowl is equally active in the elaboration of prothrombin of a mammal, the rabbit. It is well indeed in the cases of lowering of the prothrombin either in icterus by retention or in chloroformic intoxication that the favorable action of the quinone is manifested. The

intoxication of the rabbit by *p*-toluylenediamine appears, it seems, to constitute the basis of a qualitative as well as quantitative test of the activity of vitamin K in mammals. Beyond certain doses, 2-methyl-1,4-naphthoquinone produces after a momentary acceleration, at times a very marked retarding of the coagulation. This observation presents a precaution to be observed in the therapeutic application of vitamin K and sets up the problem of hypervitaminose-K.—PAUL MEUNIER, HERMANN HINGLAIS, DANIEL BOVET and ANDRE DREYFUSS. *Compt. rend.*, 210 (1940), 454. (G. W. H.)

Metrazol Convulsion—Pharmacological Modification of. Report is made of attempts to modify the metrazol convulsion with the purpose of decreasing its usual severity and duration but still retaining its general character. Experimental work is given in detail. It was found that a standard dosage of beta-erythroidin hydrochloride about 4 mg. per Kg. reduced the intensity of metrazol seizure in dogs. Duration was variable but in general seemed to be decreased. Paralytic doses of curare were found unsatisfactory because of difficulties in standardization and undesirable side actions.—SAMUEL B. ROSEN, JOHN B. ZIEGLER and BRUCE COMINOLE. *Jour. A. Ph. A.*, 29 (1940), 164. (Z. M. C.)

Naphthoquinones—Antihemorrhagic Activity of Certain. The antihemorrhagic activities of phthiocol, 2-methyl-1,4-naphthoquinone, 2-hydroxy-1,4-naphthoquinone and alfalfa concentrate have been compared. Phthiocol is lower in activity than the alfalfa concentrate, but this is considered more than compensated for by the low cost of preparation and great convenience of administration of the phthiocol.—H. J. ALMQUIST and A. A. KLOSE. *J. Am. Chem. Soc.*, 61 (1939), 1923. (E. B. S.)

Nicotinic Acid Amide—Vitamin Character of. A discussion.—T. MORELL. *Deut. med. Wochschr.*, 65 (1939), 1126–1127. (L. K.)

Nicotine Injuries to the Stomach. A discussion.—K. WESTPHAL and H. WESELMANN. *Deut. med. Wochschr.*, 65 (1939), 1229–1232. (L. K.)

Pectin—Fate of Ingested. In the dog when 20 Gm. of pectin was fed per day over a 7-day period, an average of 90% of the pectin was decomposed. When fed during fasting an average of only 50% was decomposed.—S. C. WERCH and A. C. IVY. *Proc. Soc. Exptl. Biol. Med.*, 44 (1940), 366. (A. E. M.)

Phenolphthalein—Conjugated, Constitution of, Formed in the Animal Body. Phenolphthalein injected into rabbits and guinea pigs is conjugated with glucuronic acid. The conjugate was isolated from the urine and crystallized as the cinchonidine salt with one molecule of alcohol or dioxane of crystallization. The properties of the conjugate are described and it is shown to be phenolphthalein-mono-β-glucuronide.—AUGUST A. DI SOMMA. *J. Biol. Chem.*, 133 (1940), 277. (F. J. S.)

Physiology and Principal Interrelations of the Thyroid Gland. One can discern a similarity of the effects for vitamin A, vitamins B_1 and B_2, vitamin C and vitamin D, that is, hyperthyroidization increases the needs for, and tends to deplete the stores of these vitamins. It is logical to expect that hypervitaminosis would offer some protection against thyroxin administration. In the early stages of B_1 and C avitaminosis there is increased metabolism, increased blood iodine and moderate thyroid hypertrophy followed by decrease as the avitaminosis progresses.—D. MARINE. *Bull. N. Y. Acad. Med.*, 15 (1939), 790. (A. C. DED.)

Pituitary Hormones—Diabetogenic Action of Various. Extracts of the anterior pituitary lobe exert a marked diabetogenic action provided the glands were frozen immediately after being removed and the extracts were prepared and stored at 0° C.; at ordinary temperature the glands lose their activity completely in a few hours. To obtain a diabetogenic action in a normal dog, from 1 to 1.4 Gm. of fresh bovine anterior pituitary lobe are required daily. If the injections are continued for several weeks, increasing the dose each week, diabetes becomes permanent and persists after cessation of the injections.—B. A. HOUSSAY and A. BIASOTTI. *Compt. rend. soc. biol.*, 129 (1938), 1259–1261; through *Chimie & Industrie*, 42 (1939), 119. (A. P.-C.)

Posterior Pituitary—National Standard for. The National Standard (Netherlands) for the assay of posterior pituitary is described under three headings: (1) oxytocic action, (2) antidiuretic action and (3) vasopressor action.—L. W. VAN ESVELD and M. VAN EKELEN. *Pharm. Weekblad*, 76 (1939), 1622. (E. H. W.)

Purgative Properties and Chemical Constitution. The relation between chemical constitution and purgative properties in the phenolphthalein group is concluded to be due to the lactone bridge with the phenolic hydroxyls playing the part of haptophores permitting the fixation of the molecules on living tissue. While phenolphthalein is very active its isomer 4,4′-dihydroxy-dibenzoyl-benzene is much less active and diphenylphthalide is entirely inactive. On the other hand, 3-*p*-hydroxyphenyl-isocoumarin (*Compt. rend.*, 209 (1939), 321) is excessively purgative. It possesses in addition some irritant properties due to the isocoumarin nucleus. If the phenolic hydroxyl is removed or if the lactone bridge is opened the purgative properties disappear; phenylisocoumarin and 4′-β-desoxy-benzoin-*o*-carboxylic acid are inactive. The physiological studies were effected *in vivo* on guinea pigs, the doses of the products varying from 0.05 to 0.50 Gm. per pig.—BUU-HOI. *Compt. rend.*, 210 (1940), 418. (G. W. H.)

Quinones Having Vitamin K Activity. A review of the contemporary literature on the subject plus a presentation of the results of the authors' investigations of a number of quinones, namely: 2,3-dimethyl-1,4-naphthoquinone, lomatiol, hydroxyhydrolapachol, lapachol, diallyl-1,4-hydroquinone, lomatiol methyl ether, hydrolapachol, diallyl-1,4-hydroquinone diacetate.—L. F. FIESER, D. M. BOWEN, W. P. CAMPBELL, M. FIESER, E. M. FRY, R. N. JONES, B. RIEGEL, C. E. SCHWEITZER and P. G. SMITH. *J. Am. Chem. Soc.*, 61 (1939), 1925. (E. B. S.)

Quinones—Vitamin K Activity of Some. The vitamin K activity of a number of 1,4-naphthoquinones is presented in the form of a table, the compounds having been investigated in determining the structure of vitamin K_1.—S. A. THAYER, L. C. CHENEY, S. B. BINKLEY, D. W. MACCORQUODALE, and E. A. DOISY. *J. Am. Chem. Soc.*, 61 (1939), 1932. (E. B. S.)

Secale Cornuti—Active Principles of. A review of the active principles of ergot, including the chemistry and pharmacological action is given.—U. Santi. *Il farm. ital.*, 8 (1940), 151. (A. C. DED.)

Senna Leaves and of the Fluidextract of Senna, U. S. P. XI—Bioassay of. Experimental work on white mice was conducted, using an infusion of the leaves and also the fluidextract. The method explained appears quite suitable for practical purposes. The method showed that the low p_H and the alcoholic content of the U. S. P. fluidextract of senna diminish the cathartic activity of the preparation.—E. GEIGER. *Jour. A. Ph. A.*, 29 (1940), 148. (Z. M. C.)

Soaps—Pharmacology of. II. The Irritant Action of Soaps on Human Skin. A previous report showed action of soap on human red cells and earth worm segments. The work has since been extended to study irritant action of sodium and potassium soaps on human skin. Irritant action has been attributed to free alkali, hydrolytic alkalinity, free fatty acid, acid soap, unsaturated acids, neutral soaps and add ingredients—perfumes and antiseptic substances. Oils thought to produce irritant soaps are cottonseed, cocoanut and palm. Experiments involved a new type of test which kept a definite amount of solution in contact with the skin. This is described and illustrated. Irritation curves are shown. The following chemically pure fatty acids were used in preparation of sodium and potassium soaps: *n*-caprylic, *n*-capric, lauric, myristic, palmitic stearic, linoleic, oleic and ricinoleic. Lauric and myristic acids produced the most irritant soaps. Potassium soaps of the saturated acids have been found to be more irritant than the corresponding sodium soaps. Females are more subject to irritation from soap solutions than males. Soap irritation is not due to hydrolytic alkalinity alone.—BYRON E. EMERY and LEROY D. EDWARDS. *Jour. A. Ph. A.*, 29 (1940), 251. (Z. M. C.)

Sodium Diphenylhydantoinate—Action of, on the Excised and Intact Uterus. Sodium diphenylhydantoinate in dilutions up to 1–150,000 causes inhibition of the excised non-pregnant rabbit uterus. Sodium diphenylhydantoinate given intravenously in doses of 40 mg. per Kg. causes inhibition of the intact rabbit uterus, and 15 to 25 mg. per Kg. given similarly to dogs cause inhibition of the uterus and a simultaneous fall in blood pressure.—M. E. DRAKE, V. G. HAURY and C. M. GRUBER. *Arch. intern. pharmacodynamie*, 63 (1939), 288. (W. H. H.)

Substances Acting on the Circulation—New Advances in the Field of. Analeptics acting centrally such as Cardiazol, Coramine and Cormid, Neospiran, Cycliton, Triazol and camphor preparations; and analeptics acting peripherally including Suprarenin, ephedrine, Sympatol, Veritol, Suprifen and Icoral, *m*-hydroxy-*nor*-ephedrine, benzedrine and Pervitin and purine bodies are reviewed. Sixty-five references.—K. KOCH and S. METZNER. *Deut. Apoth. Ztg.*, 55 (1940), 130–133. (H. M. B.)

Sulfanilamide and Sulfapyridine—Resistance of Human Spermatozoa in Vitro to. *In vitro*, concentrations of sulfanilamide and sulfapyridine well above the tissue concentration achieved by therapeutic doses do not affect the survival or activity of human spermatozoa.—LANDRUM B. SHETTLES. *Proc. Soc. Exptl. Biol. Med.*, 44 (1940), 392. (A. E. M.)

Testosterone Propionate—Effects of, on Female Roller Canaries under Complete Song Isolation. The administration of testosterone propionate to normal adult female roller canaries under conditions of complete song isolation brings forth male-like song in approximately 15 days after first administration.—FRANCIS MARSH BALDWIN, HOWARD SIDNEY GOLDIN and MILTON METFESSEL. *Proc. Soc. Exptl. Biol. Med.*, 44 (1940), 373. (A. E. M.)

Testosterone Propionate—Growth Stimulating Effect of. Testosterone propionate administered intraperitoneally to male albino rats in doses of 0.05 mg. daily at an age from 26 to 80 days led to significant increase in body weight and length. This effect of small doses stands in contrast to the growth depressing effect of large doses of the same hormone.—H. S. RUBINSTEIN and M. L. SOLOMON. *Proc. Soc. Exptl. Biol. Med.*, 44 (1940), 442. (A. E. M.)

Testosterone Propionate—Inhibitory Action of, on the Human Ovary. Testosterone propionate administered in adequate amounts to the cyclical human female can inhibit follicle maturation, ovulation and corpus luteum formation associated with regressive changes in the endometrium and the vaginal mucosa. The effect is probably brought about by suppression by the testosterone of the secretion of gonadotropic hormone by the pituitary.—S. H. GEIST, J. A. GAINES and U. J. SALMON. *Proc. Soc. Exptl. Biol. Med.*, 44 (1940), 318. (A. E. M.)

Thyroid Preparations—Variability of Action on Heart Rate Compared with Metabolic Activity of Various. The iodine content in thyroid preparations seems to be only an approximate guide for the estimation of metabolic effect; relatively large variations do occur in some products. Among the samples tested equal metabolic response was obtained with dosages from 236 to 446 gamma after dilution to 0.2% iodine. The effect on heart rate is not related to the metabolic action. The thyroxine content has still less demonstrable proportionality to either physiologic effect. While hydrolysis of thyroid globulin increases its heart rate action, hydrolysate from muscle tissue is inert in that respect.—ARTHUR E. MEYER and H. DANOW. *Proc. Soc. Exptl. Biol. Med.*, 44 (1940), 439. (A. E. M.)

Tikitiki—Extract of, Pharmacological Studies on. Rice polishings, a by-product of milling and polishing rice, was found effective as a preventive and cure of polyneuritis. It is used in the preparation of an extract, in some food products, and in pharmaceutical products incorporating vitamin B_1. Regulations require, as a standard of potency, 1 cc. tikitiki extract equivalent to 20 Sherman units of vitamin B_1. It is standardized biologically, chiefly by the pigeon method. Eleven samples were tested for: chemical composition, starch, size of powders, color reaction and specific gravity. A definite method for determining its identity is based on McCollum's and Prebluda's color reaction test. The best concentration is 0.5 Gm. tikitiki and 0.005 to 0.1 cc. extract of tikitiki.—JESUSA CONCHA and PATROCINIO VALENZUELA. *Rev. Filipina Med. Farm.*, 30 (1939), 137. (G. S. G.)

"Vasodepressive Substance" in the Blood. The extract from the blood of rabbits was prepared by means of the Barsoum-Gaddum method for a simple trichloretic acid method. The abilities of the extract from the blood of rabbits to augment the guinea pig intestine segment and to decrease the blood pressure in the cat, urethanized and atropinized, are not influenced by bleeding, cooling the animal or adrenaline injection. It is also true of the ability of the extracts of causing the gastric secretion.—K. FUZII. *Tôhoku J. Exp. Med.*, 35 (1939), 264. (A. C. DeD.)

Vasomotor Reflexes—Influences on Carotid Sinus. Phenylaminopropane phosphate (Benzedrine) in small doses produces no alteration of blood pressure or of proprioceptive vasomotor carotid sinus reflexes. Larger doses increase the blood pressure and decrease the vasomotor reflexes by decreasing depressor responses. High doses abolish the vasomotor reflexes of the carotid sinus origin. *N*-methyl-tetrahydro-isoquinoline may decrease or reverse the hypertensive action of adrenaline without appreciably altering propioceptive vasomotor reflexes of carotid sinus origin. Larger doses abolish these vasomotor reflexes. Histamine and peptone in small doses increase the depressor proprioceptive vasomotor carotid sinus reflexes without altering general blood pressure. Larger doses lower blood pressure and greatly decrease the proprioceptive vasopressor and vasodepressor reflexes of carotid sinus origin. Anaphylactic shock greatly lowers blood pressure and decreases or suppresses proprioceptive vasomotor reflexes of carotid sinus

origin.—K. S. GRIMSON and T. C. R. SHEN. *Arch. intern. pharmacodynamie*, 62 (1939), 474. (W. H. H.)

Vitamin C and Carbohydrate Metabolism. Vitamin C increases blood sugar in cases of hypoglycemia and in prolonged usage tends to prevent hypoglycemia. In schizophrenics given insulin shock treatment, the vitamin raises the blood sugar and enables the patient to be revived more quickly by sugar administration. Vitamin C is a factor in carbohydrate metabolism and in those illnesses in which there is a disturbance of muscle-glycogen metabolism.—ERIKA WILLE. *Deut. med. Wochschr.*, 65 (1939), 1117–20. (L. K.)

Vitamins A and E—Stimulation of the Glycogenic Hormone of the Anterior Pituitary by. The secretion of the glycogenotropic hormone of the anterior pituitary is no longer produced by frogs in captivity for several months and maintained without food, which shows that this gland is in a state of inactivity. The absence of the glycogenotropic hormone explains the fact that the liver of frogs starved for a long time is resistant to the glycogenolytic action of adrenaline. The treatment by vitamins A and E of frogs not fed for several months causes the reappearance of the glycogenotropic hormone in the liver of these animals. In the light of these facts vitamins A and E thus appear as agents stimulating the secretion of the anterior lobe of the pituitary.—LEON KEPINOV. *Compt. rend.*, 210 (1940), 188. (G. W. H.)

Zinc—Action of, upon the Pharmacodynamics of Cellular Resorption. Zinc exerts a pharmacodynamic action upon the cellular resorption of glucose. The absence of zinc in a medium of Raulin culture showed a diminution of 50–85% of the cellular resorption of glucose in *Aspergillus niger*. Zinc exerts this pharmacodynamic action in concentrations of 1:100,000,000–1:3,000,000; the optimal concentration of zinc was reported directly with that of glucose. The presence of 0.0003 Gm. of zinc in 100 cc. of Raulin culture containing 37.84 Gm. of glucose, produced in the *Aspergillus niger* a resorption of 18.5 Gm. of glucose and a synthesis of 4.85 Gm. of more dried plant than a plant cultivated upon an identical culture but deprived of zinc. In the case of cellular inundation by glucose, the cell defends itself from this intoxication by a diminished resorption of the compound. Zinc appears to play an antitoxic role with respect to glucose, permitting in the cell a more intense utilization of this substance.—O. KAUFFMANN-COSLA and R. BRÜLL. *Arch. intern. pharmacodynamie*, 63 (1939), 326. (W. H. H.)

TOXICOLOGY

Aconitine—Magnesium Sulfate and Calcium Chloride in Experimental Intoxications with. The minimal lethal dose of crystalline aconitine (Merck) from *Aconitum napellus* (aconitine nitrate), in intravenous injections is, in the dog, 0.03 mg. per Kg. The authors' experiments were made with this aconitine at a dose of 0.05 mg. per Kg. Of all the medicaments tried only magnesium sulfate in a 12% solution in a dose of 3 cc. per Kg., upon intravenous injection, is truly an antidote. Magnesium sulfate presents the inconvenience of producing stoppage of respiration if it is administered, by intravenous injection, in a very rapid manner. This inconvenience of magnesium sulfate may be avoided by the intravenous injection of calcium chloride in 3% solution in a dose of 10 cc. per Kg. The injection of calcium chloride preceding that of magnesium sulfate permits the rapid injection of magnesium sulfate without such accident. The injection of calcium chloride following the injection of magnesium sulfate causes the reappearance of the arrested respiration and sometimes produces a polypnea.—C. MLADOVEANU, O. VASILCO and P. OHEORGHIU. *Arch. intern. pharmacodynamie*, 63 (1939), 494. (W. H. H.)

Argemone Oil—Possible Cause of Outbreaks of Epidemic Dropsy. From biological, chemical and physical tests, additional evidence has been gathered supporting the previously reported hypothesis that outbreaks of epidemic dropsy in India are caused by the use of an edible mustard oil which has been accidentally or purposely adulterated with the oil from the seeds of *Argemone mexicana*. A toxic substance has been isolated from argemone oil but further study is necessary to prove that this substance is responsible for the epidemics.—R. B. LAL, S. P. MUKHERJI, S. C. ROY and G. SANKARAN. *Indian J. Med. Research*, 27 (1939), 207–221. (W. T. S.)

Bismuth Compounds—Comparative Study of Toxicity and Therapeutic Action of. Toxicity studies in rabbits and therapeutic studies in rabbit syphilis have indicated the similarities rather than the differences in a number of bismuth compounds and, therefore, suggest that these compounds act in a common manner probably due to a common end product. The maximal tolerated intramuscular dose of bismuth (metal) in terms of mg. per Kg. was found to be 59 for bismuth sodium tartrate, 40 for bismuth ethyl camphorate, 20 for iodobismitol, 10 for bismuth citrate and 2 for thiobismol. In contrast to this wide variation, the intravenous tolerated doses were found to be 3 for bismuth ethyl camphorate, 2 for bismuth sodium tartrate, bismuth citrate and iodobismitol and 1 for thiobismol. The triple curative dose of bismuth (calculated as the metal) was 2 mg. per Kg. for bismuth ethyl camphorate, 1.5 mg. per Kg. for thiobismol, and 1.0 mg. per Kg. for bismuth sodium tartrate, bismuth citrate and iodobismitol. The single curative doses of bismuth ethyl camphorate and bismuth sodium tartrate were 7 mg. per Kg. and 3 mg. per Kg., respectively. These data seem to indicate that bismuth compounds ultimately act in a form common to all and not in the form of the compound in which they were injected, and the observed differences of the many compounds may be accounted for largely by the differences in the rate of absorption from the intramuscular deposits.—B. J. LONGLEY, N. M. CLAUSEN and A. L. TATUM. *J. Pharmacol.*, 69 (1940), 294. (H. B. H.)

Cannabis—Report of League of Nations Subcommittee on. The alcohol, which is the principal constituent and the most toxic subtance in the resin of cannabis, is the only normal constituent of the resin which is carried along in the inhaled smoke, and is reported as the cause of hashishism. A procedure for determining the active principles in the smoke from cannabis is described. The alcohol is the only toxic substance found in the smoke from ignited cannabis, and a study of the evaluation of the drug by this means is suggested. Phenol III is reported as the oxidation product of phenol II.—F. DE MYTTENAERE. *J. pharm. Belg.*, 22 (1940), 163–168. (S. W. G.)

Chloral Alcoholate—Toxicity of. Warning against the prescribing of chloral hydrate in alcoholic vehicles often has been given because of the belief that chloral alcoholate is formed and constitutes the chief toxic agent of so-called "knock-out drops." A search of the literature revealed no data to show that chloral alcoholate is more toxic than chloral hydrate. This study determined the comparative hypnotic and toxic actions of chloral alcoholate and chloral hydrate. Doses of each, ranging from 0.37 to 1.4 Gm. per Kg., in aqueous solution, were administered by stomach tube to adult white rats. The results from more than 500 administra-

tions to 162 rats show that the alcoholate is slightly less hypnotic and less toxic than the hydrate. For example, hypnotic doses of 0.5 Gm. per Kg. of hydrate result in longer sleep than similar doses of alcoholate, and 4% solutions in doses of 1.0 Gm. per Kg. of hydrate killed 90%, whereas doses of 1.2 Gm. per Kg. of alcoholate killed only 80% of the test animals. Studies are in progress to determine the effect of repeated administration of these compounds in hypnotic doses.—W. LLOYD ADAMS. *J. Pharmacol.*, 69 (1940), 273. (H. B. H.)

Dichlorethyl Sulfide (Yperite)—Review on. The preparation, properties, toxicologic action and therapy of yperite are discussed. Its detection, determination and disinfection are also reviewed.—G. ROLAND. *J. pharm. Belg.*, 22 (1940), 199–204. (S. W. G.)

Manganese—Experimental Toxicological Studies on. The following summary is given: The experiments have demonstrated the toxicity of soluble manganese salts when injected or absorbed in large doses; while manganese dioxide, ingested or inhaled, does not appear to have an immediate toxic effect. The animals which died, or were killed, generally showed signs of hepatic and renal shock. The study of the distribution of the metal in the organism has shown that prolonged treatment leads to impregnation of the tissues and also of the brain. The small organs (suprarenals, bone marrow, testicles, spleen) usually retain high concentrations of the metal, which, with the localization in the nerve centers, is offered as the explanation of the accidents in the cases of workmen exposed to prolonged absorption of large quantities of managanese products.—A. C. LEMOS. *J. pharm. chim.*, 30 (1939), 206–213. (S. W. G.)

Mercury—Microdetermination of, in Organic Material. A critical review of different procedures applicable to the toxicological determination of mercury is given.—R. CAMBAR. *Bull. trav. soc. pharm. Bordeaux*, 78 (1940), 21–48. (S. W. G.)

Nicotine and Some of Its Salts—Comparative Toxicity of. Studies were made on the toxicity of the alkaloid nicotine and some of its salts by various routes of absorption. Female white mice were used as test animals. By skin (tail) absorption the alkaloid in concentrations of 35% to 98.3% produced fatalities in from 66 minutes to 27 minutes, whereas the salts (sulfate, tartrate and salicylate) in concentrations up to saturation were ineffective even after six hours. By absorption from a mucous membrane (vaginal) 3% nicotine alkaloid was approximately as toxic as 29.5% nicotine sulfate (calculated as nicotine), 17.5% nicotine tartrate and 6% nicotine salicylate. By absorption from the gastrointestinal tract nicotine was five times more toxic than the sulfate, two times more toxic than the tartrate, and one and one-half times more toxic than the salicylate. By absorption from subcutaneous injection the nicotine base was only slightly more toxic than the salts (sulfate and salicylate) studied.—H. B. HAAG and R. C. NEALE. *J. Pharmacol.*, 69 (1940), 289. (H. B. H.)

Nicotinic Acid—Dermatitis from Industrial Contact with. Nicotinic acid is generally considered inert, except for its therapeutic value in pellagra. There are occasional reports of dermatitis and itching after its administration. Four cases of dermatitis from skin contacts in occasional and nonsmokers are reported by workers in the preparation of nicotinic acid tablets. These cases were mild and disappeared within 48 hours. This was tested on volunteers, some smokers, some not. Some of them experienced skin irritation, some did not; there was no correlation between smoking and sensitivity. The pathogenesis is unexplained as yet.—R. M. WATROUS. *J. Am. Med. Assoc.*, 112 (1939), 2132. (G. S. G.)

Scilliroside. The toxic principle from red squill, designated as scilliroside, has been isolated from the absolute alcoholic extract residue by means of chloroform containing 20% normal butyl alcohol and subsequent purification by dissolving the residue from these extracts in a small amount of methanol from which it is crystallized by the careful addition of water. The amount is variable showing the necessity of standardization or use of the pure active principle in order to guarantee the raticide action. As much as 350 mg. has been obtained from 1 Kg. of fresh material. Its empirical formula is $C_{32}H_{46}O_{12}$. It is readily soluble in the lower alcohols, ethylene glycol, dioxane, glacial acetic acid, more difficultly in acetone, very slightly in water, the hydrocarbons, chloroform, ether and acetic ether. Liebermann's reagent produces a violet coloration changing to blue then blue-green. Dried *in vacuo* it melts with decomposition at 168–170°. $[\alpha]_D^{25} = -59°$, in methanol. The presence of an acetyl group, lactonic ring and a molecule of glucose has been established. It forms a crystalline tetraacetyl derivative m. p. 190° (corr.); $[\alpha]_D^{25} = -49°$ in methanol. The absorption curve is similar to proscillaridin-A. On the heart of the frog, scilliroside has an activity qualitatively and quantitatively equal to scillaren-A and in addition has the particular property of being a convulsant poison of high activity for rodents.—ARTHUR STOLL and JANY RENZ. *Compt. rend.*, 210 (1940), 508. (G. W. H.)

Selenium—Cystine and Some Other Organic Selenium Compounds—Toxicity of. It has been shown that the toxicity as well as the selenium is carried in the protein fraction of seleniferous grains and it was thought that selenium might be replacing sulfur in cystine and methionine. Selenium-cystine and several other organic selenium compounds have been studied. The results indicate that selenium-cystine is much more toxic than any of the others investigated, being approximately seven times that of β',β'-diselenodipropionic acid. Injected intraperitoneally the toxicity about equals sodium selenate or sodium selenite. The toxicities of the two inorganic compounds are in the same range as the seleniferous grains. The minimal fatal dose of selenium-cystine injected intraperitoneally into albino rats is 4 mg. per Kg. of body weight. This is equivalent to 8.44 mg. of selenium-cystine per Kg. of body weight.—ALVIN L. MOXON. *Jour. A. Ph. A.*, 29 (1940), 249. (Z. M. C.)

Thiocyanates—Absorption and Toxicity of Sodium and Potassium. The literature is briefly reviewed. A table summarizes the articles of American and Canadian origin. Another shows the acute lethal doses in experimental animals as compiled by Hunt. Experimental work is reported and is accompanied by tables and graphs. Injected intravenously in mice the potassium salt is much more toxic than the sodium; given by mouth to rats and mice the median lethal doses of both are comparable. In rats, daily administration of either salt causes no inhibition of growth. Dogs are more susceptible than mice or rats. Daily doses, 100 mg. per Kg. with few exceptions produce loss of weight, toxic symptoms and finally death. No uniform pathological lesions seem to account for death. Much smaller daily doses may be administered for considerable time without apparent impairment of health. A micromethod for determination of blood thiocyanate is reported. In rabbits, a single dose gives rise to maximal blood concentration of 10 to 16 mg. per 100 cc. is not detectable after 48 hours. A dose of 200 mg. per Kg. raises the peak of blood concentration to 20 to 24 mg. per 100 cc. It disappears in approximately 4 days. A dose of 300 mg.

per Kg. gives a blood concentration of 24 to 30 mg. per 100 cc. and it remains for more than a week. The same dose kills after the level rises to 43 to 46 mg. per 100 cc. In dogs, a single dose brings a blood concentration of 12 to 20 mg. per 100 cc. and it remains for more than 3 days. Results support Barker's belief that safety and toxicity of thiocyanate can be measured by the determination of blood concentration.—ROBERT C. ANDERSON and K. K. CHEN. *Jour. A. Ph. A.*, 29 (1940), 152. (Z. M. C.)

Vanillin and Ethyl Vanillin (Ethavan)—Toxicity of, for Rabbits and Rats. The minimal lethal dose for rabbits of both vanillin and ethyl vanillin is approximately 3 Gm. per Kg. when administered orally in milk. Five of 10 rats died after the subcutaneous injection of 2.6 Gm. per Kg. vanillin or 2 Gm. per Kg. ethyl vanillin in milk. In both species the signs were increased respiration, a sudden fall in blood pressure, muscular weakness, depression, lachrymation, dyspnea, collapse and death in coma from circulatory failure. The repeated oral administration of vanillin and ethyl vanillin dissolved in olive oil, 10% glycerol or milk (up to 54 doses of 240 mg. per Kg.) produced no signs of illness in rabbits so long as the dose did not contain toxic amounts of glycerol or olive oil, but all rabbits and rats receiving lethal doses of vanillin or ethyl vanillin or repeated doses above 20 mg. per Kg. showed histopathological changes of varying degrees of severity in the myocardium, kidney, liver, lungs, spleen and stomach. The feeding of vanillin and ethyl vanillin to rats in daily doses of 20 mg. per Kg. for a period of 126 days produced no signs of disturbance and no significant histopathological changes. A man of 70 Kg. who consumed a quart of food flavored with these compounds would ingest about 7 mg. per Kg. vanillin or 2 mg. per Kg. ethyl vanillin. It appears that the repeated ingestion of such amounts would be harmless.—WILHELM DEICHMANN and KARL V. KITZMILLER. *J. Pharmacol.*, 69 (1940), 282. (H. B. H.)

Wormwood and Essential Oil of Savin—Toxic Action on the System of. In guinea pigs and rabbits, oral administration of oil of savin (*Juniperus sabina*) produced dyspnea, hematuria, gastroenteritis, cachexia and death. Dilute infusion of wormwood leaves had little effect but a concentrated aqueous extract of the leaves produced effects like those of oil of savin. The kidneys showed hemorrhagic inflammation, the liver cytolytic degeneration without fat infiltration and the lungs edema and hemorrhagic infiltration. Abortion was produced by both drugs as a result of severe general poisoning and by a specific action. The livers and kidneys of the fetuses were affected like those of the mothers.—A. PATOIR, G. PATOIR and H. BEDRINE. *Compt. rend. soc. biol.*, 127 (1940), 1325–1326; through *Perfumer. Essent. Oil Record*, 31 (1940), 164. (A. C. DED.)

THERAPEUTICS

Acetylarsan. A Painless Intramuscular Arsenical in Yaws and Syphilis. This pentavalent organoarsenical is provided by May and Baker (India), Ltd., 11, Clive Street, Calcutta, India. It is said to be equal to neoarsphenamine in primary syphilis.—*Indian Med. Gaz.*, 75 (1940), 256. (W. T. S)

***p*-Aminophenylsulfamide (1162 F)—Elimination of, when Applied in Wounds.** The author reported that 1162 F and substances of this type are only slightly toxic to the animal cells as was shown by the results obtained upon rabbits. The application of 1162 F in the form of a powder to the open wound or in a closed wound has not produced the phenomena of local irritation in doses up to 1 to 2 Gm. per Kg.; the toxicity of sulfamide in closed wounds is slightly higher, approaching 5 to 6 Gm. per Kg. After oral administration of sulfamide in the rabbit, this compound passes into the blood very rapidly and after a very high maximum, the curve of its concentration descends very rapidly; on the contrary, after the introduction of powdered sulfamide into a wound, the passage into the blood is more easily progressive and prolonged. In animal wounds, presenting an extremely grave infection (bruised or crushed muscles, inclusion of foreign bodies, infection by a culture of non-diluted very pathogenic streptococci and closing of the wound), the author has stated that sulfamide action upon local application has been constant and is manifested by the survival of the animals treated for 8 to 10 days. Further evidence is reported by definite survivals. The studies of Jensen, Johnsrud and Nelson, have shown that the same conditions of protective action were applicable to man in open fractures. It is now possible to foresee with confidence the preventive and curative treatment of war wounds by the local application of powdered sulfamide; this simple method may be a precious adjuvant to the oral chemotherapy.—F. NITTI. *Acad. de Med.* (Nov. 21, 1939); through *Presse Méd.*, 88–89 (1939), 1577. (W. H. H.)

***p*-Aminophenylsulfamide—Meningitis in Pneumonia Cured by.** The authors report the observation of an adult who contracted acute meningitis and passed into the coma in a few hours which was due to a Type III pneumococci and was determined in a white mouse. This meningitis was treated, after the sixth hour of its evolution by sulfamide *per os* and intra-rachidically in massive doses. Clinical and bacteriological improvement was very rapid after the eighteenth hour of treatment, and recovery in seven days without recurrence.—A. GERMAIN and G. GAUTRON. *Soc. Med. des Hopitaux*, (Nov. 24, 1939); through *Presse Méd.*, 88–89 (1939), 1578. (W. H. H.)

Anertan—Clinical Report on Activity and Indications for. Anertan has significant activity and shows great therapeutic possibilities. Indications for its use are manifold.—GABRIEL GOGLIA. *Deut. Med. Wochschr* , 65(1939), 177–178. (L. K.)

Antihemorrhagic Compounds—Water Soluble. Methylnaphthoquinone or methylnaphthohydroquinone is the most active vitamin K compound known. It is as effective intravenously in an aqueous medium as orally in oil solution. *Per os*, its potency is greater in water than in oil. The phosphate derivative is less active. The sulfate is not as potent and less rapidly absorbed than the phosphate. A new water soluble compound of vitamin K activity is described, 2-methyl-1,4-naphthylene-dioxydiacetic acid. It has the potency of one unit in 2 mg., melts at 217–218° and is prepared by the action of monochloroacetic acid on methylnaphthohydroquinone in presence of sodium hydroxide.—S. ANSBACHER, ERHARD FERNHOLZ and M. A. DOLLIVER. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 652. (A. E. M.)

Antimalarial Synthetic Bases—Study of Some. The writer fully reports a study in which the antimalarial effect of 4:4′diamidino stilbene (I), 4:4′-diamidino-1:5-diphenoxy pentane (II), 2-amino-5-diethylamino pentane (III) and tetraamyldiamino decane (IV) was determined by the use of a series of canaries infected with *P. relictum*. Only II and III possessed antimalarial activity and the therapeutic index was small. Quinine was used for comparisons. Compounds I and II showed definite curative and slight prophylactic activity against *P. knowlesi* infections in monkeys.—J. D. FULTON. *Ann. Trop. Med. Paras.*, 34 (1940), 53–66. (W. T. S.)

Antistreptolysin S Titers in Rheumatic Fever. An investigation has been made of the antistreptolysin S and antistreptolysin O titers in the sera of (1) normal adults, (2) non-rheumatic children with, or recovering from, hemolytic streptococcal infections, (3) rheumatic children suffering from similar infections but with no rheumatic activity and (4) rheumatic children in whom the streptococcal infection was followed by an acute attack of rheumatic fever. Although there is much variability from one individual to another, the general trend of the figures leads to the following conclusions: In response to infection with the hemolytic streptococcus there is a rise in the antistreptolysin S titer considerably above the normal level in the sera of non-rheumatic children and in the sera of rheumatic children without signs of rheumatic activity. In the sera of children with clinical signs of rheumatic activity the antistreptolysin S titer, although often above normal, tends to remain relatively low. Sera taken during the period of acute rheumatic fever show lower antistreptolysin S titers than sera taken from the same patients during periods of rheumatic inactivity. During rheumatic attacks the titer varies with the intensity of the rheumatic process, tending to be lowest when the clinical symptoms are most pronounced. The antistreptolysin O titers tend to be higher in rheumatic subjects who contracted pharyngitis but escaped rheumatic attack than in non-rheumatic children with pharyngitis or scarlet fever. A more pronounced increase is shown by children with active rheumatic fever, and the titer tends to be highest at the peak of their attack, or just following. In short, there is a striking contrast between the low antistreptolysin S titers and the high antistreptolysin O titers of active rheumatic fever.—E. W. TODD, A. F. COBURN and A. B. HILL. *Lancet*, 237 (1939), 1213. (W. H. H.)

Athlete's Foot and Its Control—Study of. Prevalence and spread of this ailment are briefly discussed. Primary aim of this investigation was to examine sodium hypochlorite solution when used as a prophylactic measure. Changes in content of available chlorine in sodium hypochlorite foot baths are shown by graphs. It was found that a bath containing 13 gallons of one per cent (available chlorine) sodium hypochlorite solution is satisfactory as a prophylactic to athlete's foot for daily use for 400 persons. This conclusion is supported by clinical findings, there being a decrease in the number of new cases after installation of the hypochlorite foot baths.—J. B. VAUGHAN and H. G. DEKAY. *Jour. A. Ph. A.*, 29 (1940), 260. (Z. M. C.)

Bituminous Coal from Shangtung Province—Estrogenic Action of Extracts of. Eight samples of Chinese coal showed the following constants: moisture 0.25–0.74%, ash 7.52–19.97%, volatile matter 7.93–16.83%, fixed carbon 63.82–83.40%, calorific value 6410–8460 calories, carbon 68.72–83.24%, hydrogen 1.82–2.14%, oxygen 2.64–7.64%, nitrogen 0.46–1.38%, sulfur 0.75–3.69%. The active extract was prepared by digesting the powdered coal with normal sulfuric acid on a water bath for 6 hours. After filtration, the filtrate was extracted with ether and after washing with 10% sodium carbonate solution and drying with anhydrous sodium sulfate, the ether solution was evaporated in a vacuum and the residue was taken up in 20 cc. of olive oil. Rat units for the female sex hormone were found to be 40–200 per Kg. of coal.—T. H. TANG, W. C. WANG and C. C. PENG. *Pharm. Arch.*, 11 (1940), 58–59. (H. M. B.)

Cobra Venom—Use of, in Certain Painful Conditions. It is generally agreed that the neurotoxin principle of snake venom is responsible for its pain-controlling action. The activity of cobra venom is apparently related to its high S content. Of the numerous mechanisms by which venom is supposed to control pain, present authors favor this one. Stimulation of motor nerves liberates acetylcholine and it is this substance, and not the nerve itself, which carries the impulse across the synapse to the end organs. Cobra venom contains estrase which destroys acetylcholine preventing the impulse from passing to the responsive tissue and vice versa. After discussing the various preparations of cobra venom and their uses in different types of pain, the authors tabulated the results obtained from it in 65 cases and detailed data are given for 21. An average of 70% were relieved and none suffered untoward effects.—R. N. CHOPRA and J. S. CHOWHAN. *Indian Med. Gaz.*, 75 (1940), 69–75. (W. T. S.)

Coffee and Caffeine. The author described the power of tonicity of coffee and the therapeutic action of caffeine, its principal alkaloid.—L. PRANDSTRALLER. *Il farm. ital.*, 8 (1940), 57. (A. C. DED.)

Colitis—New Treatment of. The etiology and terminology of colitis have been discussed. Recent data concerning the physiology of the colonic membrane have been briefly analyzed. The importance of acidophilic flora for normal functioning of the colon has been stressed. It was indicated that the low absorptive power of the colonic membrane necessitates a predominantly aciduric flora. It was, furthermore, demonstrated that the implantation method could be replaced by a chemical method whereby the change of flora could be achieved without implanting *L. acidophilus*. This method offers considerable advantages over the method of implantation, on account of its simplicity, because of the stability of the preparation (polymolecular form of lactic acid combined with lactose) and its effectiveness. Although acidophilus milk therapy is effective in colitis, this chemical method of changing colonic flora shows superiority in this respect, particularly in cases of chronic ulcerative colitis and "simple" colitis.—B. SOKOLOFF. *Clin. Med. Surg.*, 46 (1939), 478. (W. H. H.)

Crinodora (Palusan)—Use of, in Indian Strains of Malaria. The German supply of atebrin to India having been cut off by the war, the authors have investigated the toxicity and antimalarial efficiency of crinodora, an acridine derivative manufactured in Italy. After a thorough examination, 44 patients received 0.1 Gm. crinodora in tablet form by mouth three times a day for five days. Their temperature fell and blood examinations revealed an absence of parasites except the gametocytes of *P. falciparum*. In other respects the drug behaved generally like acridine derivatives. It was considered an excellent substitute for atebrin.—R. N. CHOPRA, R. T. M. HAYTER, B. SEN and M. TALUKDAR. *Indian Med. Gaz.*, 75 (1940), 202–204. (W. T. S.)