

PHARMACEUTICAL ABSTRACTS

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CHEMISTRY

ORGANIC (*Alkaloids—Continued*)

Ergot Alkaloids—Preparation of Pure Crystallized. Ergot alkaloids are separated and prepared in the pure state by subjecting solutions of ergot alkaloids to a chromatographic adsorption according to the method of Tawett in different solvents. The crude extracts or solutions of alkaloids are dissolved in indifferent solvents such as benzene and its homologues, chloroform or dichloroethylene, and the solutions are passed into a column containing adsorbents insoluble in the solvents used, *e. g.*, sugar, alumina, lime, calcium carbonate, fibrous alumina, etc. By diffusion of the solution in the adsorbent column there appears a chromatogram visible to ultraviolet light. Examples are given of the separation of ergotamine and ergotaminine, ergotoxin and ergotinine and the constituents of sensibamine.—ARTHUR STOLL and ERNST BURCKHARDT, assignors to CHEMISCHE FABRIK VORM SANDOZ. U. S. pat. 2,080,954, May 18, 1937. (A. P.-C.)

Homeopathic Preparations—Examination of. A Contribution to Study of *Helleborus Orientalis*. The glucosides and alkaloids of the drug are studied according to (1) color reactions, (2) pharmacology of the glucosides and (3) preliminary tests. In the root were found carbohydrate, starch, fat, resin, glucoside and alkaloid and in the mother tincture carbohydrate, glucoside and alkaloid. The following test is proposed for the glucoside: Boil 8 Gm. of fine drug with 60 cc. alcohol (96%) and 0.5% tartaric acid for 2 hours on a water-bath. Filter the dark brown solution by suction and concentrate to a thick extract under a vacuum; mix well with absolute alcohol to separate the resin. Filter and after inversion with concentrated hydrochloric acid, test with Molisch's reagent. The glucoside and alkaloids may be separated as follows: Extract the drug as under the method for glucosides and extract the aqueous acid solution with ether, make the solution alkaline with sodium bicarbonate. If a turbidity occurs the ether extraction should be continued. The ether extract is extracted with water acidulated with hydrochloric acid from which the base may be obtained.—F. SONNTAG and G. KUHLMANN. *Apoth. Ztg.*, 52 (1937), 227-229. (H. M. B.)

Quinine Derivative—Preparation of, Having But Little Taste. A quinine salt is dissolved in water together with a soluble salt of 2,3-dioxynaphthalene-*o*-monoacetic acid, or quinine base is made to react with this acid in a suitable solvent.—PRODUITS ROCHE, Soc. ANON. Belg. pat. 410,695, Sept. 30, 1936. (A. P.-C.)

Vegetable Alkaloids—Mydriatic, Vitali's Test for. In fatal cases of *Datura* poisonings, especially if decomposition of the body has set in, Vitali's test should supplement the mydriatic test if fragments of *Datura* seeds are not found in the stomach or the intestine. The dried alkaloidal residue extracted by the Stas-Otto process is treated with a few drops of nitric acid, the liquid is evaporated, the porcelain dish placed on ice and the oxidized alkaloid is touched with a cold solution of alcoholic potassium hydroxide. 0.4% of atropine will still give a purple or purplish violet color. Strychnine and some dark putrefaction products have to be removed before the test is carried out by treating the residue with alcoholic potassium hydroxide, diluting with water, extracting with petroleum ether, washing the solution with alkaline water and, if necessary, repeating this process. The residue from the petroleum ether solution shows Vitali's reaction.—K. R. GANGULY. *Current Sci.*, 5 (1937), 367-368; through *Chem. Abstr.*, 31 (1937), 3820.

(F. J. S.)

Essential Oils and Related Products

Essential Oils—Dutch East Indian. *Citronella Oil*.—For the determination of citronellal content the hydroxylamine method is now adopted as official. In Holland, Ceylon oil is always sold by pharmacists, and the Pharmacopœia Commission did not adopt a special monograph for the Java oil. ***Cajuput Oil*.**—The export of cajuput oil from the Maluccas has decreased in recent years, owing to the competition of eucalyptus oil. A specimen of oil from the island of Boeroe showed the following analytical results: d_{15}^{15} , 0.9217; n_{20}^{20} , 1.4683; $[\alpha]_{D}^{20}$, -1.3° ; cineol, 63.8%; completely soluble in 1 to 10 volumes of 80% alcohol. Owing to the green color of this oil, and the high content of cineol, it did not pass the tests of the B. P., but it is suggested that the upper limit for cineol content may be increased. ***Palmarosa Oil*.**—The export of palmarosa oil from Java and Bombay in 1934 was 55 Kg. and 30,000 Kg., respectively. A sample of Java oil gave normal analytical results. ***Gingergrass Oil*.**—At present gingergrass oil is not exported from

the Dutch East Indies. A sample gave normal analytical results with the exception of the rotation, $[\alpha]_D +65.8^\circ$, which was high. The odor was very good. *Lemongrass Oil*.—The export of lemongrass oil from the Dutch East Indies is small, amounting to 125 Kg. in 1934. Two samples from Java appeared to contain citronellal and not citral, while they could not be used for the manufacture of geraniol. The oil is thus of no value as lemongrass oil, though it might compete with citronella oil.—AFD. HANDELSMUSEUM KON. VER KOL. INST. AMSTERDAM. *Annual Report*, No. 16 (1935); through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 711. (S. W. G.)

Eucalyptus Oils—Effect of Origin on the Composition of Certain. The yields of essential oils obtained from *E. amygdalina*, *E. cordata* and *E. melliodora* grown in the south of France are less than those from Australian sources. The French oils have higher viscosity values and phellandrene content, but contain less cineol. The composition of the oil from *E. rostrata* is essentially the same from either source.—H. DEBL. *Bull. soc. chim.* (v), 4 (1937), 79–81; through *J. Soc. Chem. Ind.*, 56 (1937), B., 287. (E. G. V.)

Java Citronella Oil. A commercial review is given.—A. F. HACCOU. *Perfumery Essent Oil Record*, 28 (1937), 162. (A. C. DeD.)

Padang Cinnamon Tree—Essential Oil from the Leaf of the. Dried leaves of *Cassia vera* (*Cinnamomum Burmanni*) afford 0.4% of essential oil containing 45–62% of cinnamaldehyde and about 10% of eugenol and resembling Chinese cassia oil in properties.—P. A. ROWAAN. *Chem. Weekblad*, 33 (1936), 698–699; through *J. Soc. Chem. Ind.*, 56 (1937), B., 187. (E. G. V.)

Sciadopitene. Uota distilled the leaves and twigs of *Sciadopitys verticillata*, and from the essential oil has separated a new diterpene to which he has assigned the name sciadopitene. This new diterpene melts at 95–96°; specific rotation, $+11.05^\circ$ in chloroform. It is isomerized by boiling with alcoholic solution of potassium acetate into isosciadopitene, melting point, 110–111°. Numerous derivatives are described and a constitutional formula is suggested.—UOTA. *J. Dept. Agr., University of Japan*, 5 (1937), 117; through *Chemist and Duggist*, 126 (1937), 655. (N. L.)

Thyme—Diversity of Composition of Essential Oils in Certain Species of the Trans-Caucasus. An analysis of the properties of various essential oils in different species of thyme; the data show the presence of specific but homologous oils in the various species.—N. L. GURVIC. *Compt. rend. acad. sci.* (U. R. S. S.), 3 (1936), 141–143; through *Physiol. Abstr.*, 22 (1937), 333. (F. J. S.)

Volatile Oils—Little Known. V. Bay Leaf Oil. A sample of the oil showed the following properties: d_{20} 0.905, $[\alpha]_D^{22} -18.1^\circ$, 1 part soluble in 2.5 parts 70% alcohol. The oil contains eucalyptol, the terpene alcohols, terpineol, linalool, geraniol (free and as esters of acetic and valeric acid), eugenol, its methyl ether and acetate. The applications of the oil as a soap perfume, in mouth washes, etc., are mentioned.—A. M. BURGER. *Riechstoff-Ind. Kosmetik*, 12 (1937), 99–100. (H. M. B.)

Glycosides, Ferments and Carbohydrates

Alcoholic Fermentation—Theory of. An account of some recent views according to which glyceric acid is the precursor of pyruvic acid, and the co-enzyme is adenosinetriphosphoric acid.—H. COLIN. *Bull. Assoc. Chim. Sucri.*, 53 (1936), 513–522; through *J. Soc. Chem. Ind.*, 56 (1937), B., 177. (E. G. V.)

Bile Acids—Glucosides of. Methyl desoxycholate-3-glucoside (m. p. 136°) was prepared; after hydrolysis with alcoholic potash this gave desoxycholic acid-3-glucoside (m. p. 217°).—E. DANE and T. BRADY. *Hoppe-Seyl. Z.*, 224 (1936), 241–244; through *Physiol. Abstr.*, 22 (1937), 345. (F. J. S.)

Digitalis—Glucosides of. No loss of potency was observed when solutions of *k*-strophanthin and strophanthidin were incubated 24 hours with ascorbic acid, methylene blue and catalysin. Injection of these oxidizing and reducing agents into cats before the injection of *g*-strophanthin did not alter the effects of the latter.—L. LENDLE and H. PRIMAVESI. *Klin. Wochschr.*, 16 (1937), 398; through *Squibb Abstr. Bull.*, 10 (1937), 1195. (F. J. S.)

Digitalis—Glucosides of. A discussion of the history and chemistry of *Digitalis purpurea* and *Digitalis lanata* and their glucosides. The advantages of the use of the isolated glucosides are claimed because of their uniformity of action and potency. The glucoside, digoxin, isolated from *Digitalis lanata* is a pure crystalline glucoside, composed of one molecule of digoxigenin and three of digotoxose. Pharmacologically, it exhibits all the characteristic digitalis effects. Thera-

peutically, the glucoside, orally and intravenously, gives all the characteristic effects of galenical digitalis preparations with the added advantage of more prompt action and the absolute uniformity of potency resulting from its independence from biological action.—W. H. STONER. *Am. Prof. Pharm.*, 11 (1936), 19–23, 26; through *Merrell Scientific Abstr.*, 8 (1937), 67. (F. J. S.)

Digitalis Substances—Colorimetric Determination and Molecular Weight Determination of. Most cardiac glucosides give with alkaline picric acid solution an orange-red color quite distinct from the red Jaffé reaction obtained with creatinine and certain substances containing active hydrogen. In the cardiac glucosides the reaction is due to the active hydrogen of a $\Delta^{\beta,\gamma}$ -lactone group. By comparing the color readings with a calibration curve obtained with *k*-strophanthidin, interposing a color filter S_{50} , the glucoside content can be determined. The method is applicable to most of these glucosides and their genins. Disturbances due to the sugar component have not been observed. The readings do not, however, predict the pharmacological action of a glucoside, since, *e. g.*, inert allocymarin and its genin give the same color reaction as the highly active cymarin and its genin. The method can be used also for determination of molecular weight of substances of this type. Since these substances often hold solvent of crystallization most tenaciously, the analytical results may be difficult of interpretation and a molecular-weight determination by cryoscopic methods is impossible. The colorimetric method requires only minute quantities of material. With suitable apparatus it should be possible to determine the molecular weight with 1 to 2% of digitoxigenin.—W. NUEMANN. *Hoppe-Seyler's Z. Physiol. Chem.*, 240 (1936), 241–248; through *Chimie & Industrie*, 37 (1937), 941. (A. P.-C.)

Enzymes—Action of, on Antibodies. The action of pepsin (I), trypsin (II) and activated papain (III) on the flagellar (*H*) and somatic (*O*) typhoid agglutinins was studied. All the enzymes rapidly destroyed the *O* agglutinins from the serum samples. The *H* agglutinins which were resistant to I and II were destroyed by III. The globulin fractions of serum taken after the first and subsequent immunizations were hydrolyzed to the same extent by the enzymes. Peptic digestion giving an increase in the amino N of less than 5% of the total N resulted in complete destruction of both antibodies of serum obtained after one immunization. Peptic digestion giving an increase of 17% did not reduce the *H* agglutinin titer of serum obtained after several immunizing courses. Tryptic digestion giving an increase of 36% reduced the *H* titer less than 50%. The antibodies produced by one immunization were not affected by yeast dipeptidase at pH 7.8 or yeast amino-polypeptidase at pH 7.0.—A. H. ROSENHEIM. *Biochem. J.*, 31 (1937), 54–71; through *Chem. Abstr.*, 31 (1937), 3949. (F. J. S.)

Galium—Anthraquinone Pigments of. Two glucosides were found in species of *Galium* and *Rubia* and were identified as a primveroside of purourin-3-carboxylic acid (galiosin) and a primveroside of rubiadin Purpurin-3-carboxylic acid was found in all 23 species (including five genera) examined of genus *Galium* of the Rubiaceae and may be typical of this genus. Convenient methods are described for the separation and isolation of the glucosides galiosin, ruberythric acid and rubiadin primveroside. Enzymes present in species of *Primula* rapidly hydrolyze hydroxy-anthraquinone glucosides from *Galium* and *Rubia*.—R. HILL. *Proc. Roy. Soc. B.*, 121 (1937), 547–560; through *Physiol. Abstr.*, 22 (1937), 444. (F. J. S.)

Lipase from Ricinus Communis Grain. X-rays and ultraviolet rays thrown on the dry powder had no effect on the enzyme action of lipase, but ozone caused a sharp drop in hydrolytic activity.—E. COUSIN. *Bull. soc. pharm. Bordeaux*, 75 (1937), 12–16. (S. W. G.)

Prunasin. Cyanogenetic Glycoside of Eucalyptus Cladocalyx. Although it has long been recognized that the leaves of *Eucalyptus cladocalyx* are a source of danger to stock, since they yield hydrocyanic acid, the branches are sometimes lopped for fodder in times of drought. A specimen of the fresh leaves examined in 1928 was found to yield 0.17% of hydrocyanic acid. The source of this poison is now proved to be the cyanogenetic glycoside, prunasin, which also furnishes benzaldehyde on hydrolysis. In 1929, the fresh loppings of young branches were found to yield 0.33% of hydrocyanic acid or 0.55% on the dried material. In 1935, further cases of sheep poisoning with the young sucker growth of this eucalypt being recorded, the material was examined, and found to yield from 0.41 to 0.50% of hydrocyanic acid. Seddon and King have established that if the amount of hydrocyanic acid available from a plant amounts to 50 mg. from 100 Gm. of material, it is potentially dangerous to stock. The sucker leaves of this eucalypt contain a fatal dose for sheep in 20 Gm. of material. The cyanogenetic glycoside extracted by means of acetone and purified by crystallization from ethyl acetate proved to be prunasin (*d*-mandelonitrile glycoside)

m. p. 148° C.; its tetracetyl derivative had the m. p. 136–137° C. Baker and Smith recorded the suspected presence of benzaldehyde in the oil distilled from *Eucalyptus viminalis*, but they failed to prepare benzoic acid from it. Specimens of *E. viminalis* from other sources have since been found to yield hydrocyanic acid. This species may, under some conditions, also contain a cyanogenetic glycoside furnishing benzaldehyde.—H. FINNEMORE, S. K. REICHARD and D. K. LARGE. *Proc. Roy. Soc., N. S. W.*, 69 (1936), 209; through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 722.

(S. W. G.)

Saponins—Their Use in Pharmacy. A review.—BENNO REICHERT. *Apoth. Ztg.*, 52 (1937), 621–623.

(H. M. B.)

Senna Leaf—Active Constituents of. Tests were made on white mice, the threshold aperient dose per 20 Gm. of mouse being called a mouse unit. *Folia Sennae*, Tinnivelly, D. A. B. VI has an activity of approximately 200 mouse units per Gm. of leaf. In a 10% infusion the activity of the leaves is completely extracted. The active constituents are anthranol glycosides, and when these are hydrolyzed by acid the anthranol is readily changed to quinone. A pure crystalline glycoside was obtained, which was very difficult to hydrolyze with acid. Another glycoside fraction, which could not be obtained pure, was hydrolyzed by quite weak acids, such as the vegetable acids in the leaf itself. The leaves contain about 1% of the latter glycoside, which is the principal active constituent.—W. STRAUB and H. GEBHARDT. *Arch. expl. Path. Pharmacol.*, 181 (1936), 399; through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 723.

(S. W. G.)

Shekanin—New Glucoside of *Pardanthus Chinensis*. Two hundred Gm. of the powdered root of *Pardanthus Chinensis* is extracted with ether and yields 2 Gm. of a glucoside melting at 257° C., to which is given the name shekanin. The glucoside contains pentose and of the four free hydroxyl groups one is phenolic. Its molecular weight corresponds to the formula $C_{16}H_{16}O_8$.—Y. H. WU. *J. Chinese Chem. Soc.*, 4 (1936), 89–92; through *Chimie & Industrie*, 37 (1937), 120.

(A. P.-C.)

Starch Polysaccharide—Isolation and Characterization of, from the Leaf Tissue of the Apple Tree (*Malus malus*). The starch polysaccharide was isolated from the leaf tissue of the apple tree (*Malus malus*). It is a polyglucosan similar, if not identical, in structure to the β -amylose component of common cereal and tuber starches and to the starch polysaccharide previously isolated from the woody tissue of the apple tree.—C. NIEMANN, A. B. ANDERSON and K. P. LINK. *J. Biol. Chem.*, 116 (1936), 447–455; through *Physiol. Abstr.*, 22 (1937), 341.

(F. J. S.)

Urease—Story of. An account of the difficulties, discussions and arguments in the course of investigation concerned with the isolation of urease from jack beans.—J. B. SUMNER. *J. Chem. Educ.*, 14 (1937), 255.

(E. G. V.)

Zieria Laevigata—Cyanogenetic Glycoside, Zierin, in. *Zieria laevigata* yields approximately 0.4% of hydrocyanic acid. This is derived from the hydrolysis of zierin, the cyanhydrin of *m*-hydroxybenzaldehyde, $C_{14}H_{17}O_7H$. It forms small flattened acicular crystals; m. p. 156° C.; $[\alpha]_D^{29}$ –29.5; very soluble in water, alcohol, acetone and methyl ethyl ketone; but almost insoluble in chloroform, ether, petroleum ether and benzene. The aqueous solution gives a faint purplish blue color with ferric chloride. It is distinguished from glycosides derived from benzaldehyde cyanhydrin by the absence of red color when treated with sulfuric acid.—H. FINNEMORE and J. M. COOPER. *J. Roy. Soc., N. S. W.*, 70 (1936), 175; through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 716.

(S. W. G.)

Other Plant Principles

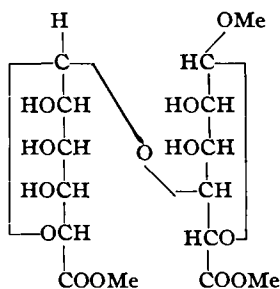
Alpinia Japonica—New Constituents of. A careful examination of the new compound obtained from *Alpinia japonica* revealed that it is composed of phloroglucin, acetic and benzoic acids. The compound was named Izalpinin (1). It appears that this compound is a derivative of a monomethylether of galangin. However, the 3-methylether compound is known but is different from the compound in (1). Because Izalpinin renders a distinct dark color with $FeCl_3$ and is hard to methylate, the second OH group must be located at fifth position. Chemically, Izalpinin could be either galangin-7-methylether or 5-oxy-7-methoxyflavanol. The true formula of this compound was ascertained by synthesis.—Y. KIMURA and M. HOSHI. *Chem. Zentralb.*, 107 (1936), 2568.

(G. B.)

Azulenes. Quantitative studies of the absorption of azulene, vetivazulene and S-guaiazulene in hexane solution have been made. Quantitative photographic measurements show that the bands for azulene in the visible region are little marked, those in the ultraviolet pronounced; in the visible region the difference between the frequencies of successive maxima for azulene is constant; while vetivazulene has a different spectrum, in general less detailed and less sharp. It has a violet color well differentiated from the blue of the other members of the group. In the ultraviolet the general trend of the absorption curves of these three compounds is the same, all tending to a maximum around 370 μ , with a minimum around 310 μ , followed by a sharp rise toward shorter wave-lengths. The study confirms that all three compounds possess the bicyclo-0,3,5-decapentane (1, 3, 5, 7, 9) group, and the differences observed in vetivazulene in the visible region will be studied later.—ANON. *Perfumery Essent. Oil Record*, 28 (1937), 210. (A. C. DeD.)

Derris Resin Related to Toxicarol—An Optically Active Constituent of. Properties of the yellow crystalline derivative, previously described as having been obtained from *Derris malaccensis* and the "Sumatra-type" derris, are discussed. The crystals obtained after potash treatment of the resin and those obtained directly from the resin have closely related properties. Evidence indicates that the compound, apparently an active precursor of toxicarol, occurs in the resin in the form in which it has been isolated.—F. TATTERSFIELD and J. T. MARTIN. *J. Soc. Chem. Ind.*, 56 (1937), 77T. (E. G. V.)

Glycyrrhizin. I. Glycyrrhizic acid (I), $[\alpha]_D = +58.5^\circ$ in absolute alcohol, obtained from commercial ammoniacal glycyrrhizin, was shown to have the formula $C_{42}H_{62}O_{16}$, arising from two moles of hexuronic acid (II), $C_6H_{10}O_7$, and one mole α -glycyrrhetic acid (III), $C_{20}H_{34}O_4$, m. p. 283° , $[\alpha]_D = +140^\circ$. When the monoammonium salt of I was treated with aqueous acids in the autoclave or at atmospheric pressure, II was split off, leaving III. Analytical data and chemical properties of III confirmed the above empiric formula, which, like that for I, differs from some previously postulated by other investigators. III contains only one hydroxyl and is saturated, it is probably $C_{20}H_{34}O(OH)(COOH)$. The methyl ester of III, on treatment with alcoholic potassium hydroxide, yields β -glycyrrhetic acid, m. p. 296° , $[\alpha]_D = +86^\circ$.—W. VOSS, P. KLEIN and H. SAUER. *Ber.*, 70 (1937), 122. II. **A New Type of Disaccharide from the Sugar Portion of Glycyrrhizin.** The hexuronic acid obtained from hydrolysis of glycyrrhizic acid (I) or ammonium glycyrrhizate is, unlike galacturonic or glucuronic acids, surprisingly easily decomposed by dilute acids. When I is treated with hydrochloric acid in methanol at 40° , a dimethyl ester of 1-methyldihexuronic acid is formed. This ester (II), m. p. 223° , $[\alpha]_D = +26.5^\circ$ in water, is isolated from the mother liquor after removal of the methyl α -glycyrrhetate also formed. II is a new disaccharide type, of the following postulated structural formula:



It is soluble in methanol, ethanol and water, difficultly soluble in acetone and insoluble in ether. It reacts with Fehling's solution only after warming with dilute acids. It is decomposed by barium hydroxide and by sulfuric acid. A monomeric hexuronic acid present in the mother liquor after removal of II gives a barium salt, $[\alpha]_D = -5.2^\circ$ and a brucine salt, $[\alpha]_D = -26.9^\circ$, m. p. 182° (decomposition).—W. VOSS and J. PRIRSCHKE. *Ibid.*, 70 (1937), 132; through *Squibb Abstr. Bull.*, 10 (1937), 970. (E. V. S.)

Rotenone. II. **Evaluation of Plants Containing Rotenone.** Eleven samples, consisting of six *Derris elliptica*, two *D. malaccensis*, one *D. polyantha* and two *Mundulea suberosa* have been examined chemically and biologically. No correlation could be found between toxicity and ether

extract or rotenone contents. When, however, the "dehydro-compounds," determined by an optical rotation method, were calculated as percentages of the ether extractive matter, instead of as percentages of the whole sample, then a direct correlation was found. A straight regression line was obtained for probits against log concentrations of the "optical dehydro-compounds" in the ether extract. The figure obtained by dividing the ether extract value of a sample by the percentage of "optical dehydro-compounds" has been called the "toxicity ratio."—R. R. LEG. WORSLEY. *J. Soc. Chem. Ind.*, 56 (1937), 15T. (E. G. V.)

Santonin in English and Welsh Artemisias. The author's findings are summarized as follows: (1) Santonin was found to be present in all of the 27 British populations of *A. maritima* and *A. gallica* examined. One sample yielded 1.24%. (2) *A. maritima* would appear to produce a slightly higher proportion of santonin than does *A. gallica* at the same stage of growth and growing in the same locality. (3) A seasonal variation in santonin content, similar to that reported of the Scottish plant, was found to exist in the two English populations examined for this purpose. (4) Evidence that the soil, alone, or in conjunction with other factors, affects the production of santonin, is incomplete, but it has been suggested that the salinity of the soil may, and it is probable that it does, have a more or less marked effect.—JAMES COUTTS. *Quart. J. Pharm. Pharmacol.*, 9 (1936), 357-365. (S. W. G.)

Fixed Oils, Fats and Waxes

Aspergillus Citromyces—Chemical Composition of Fat from. The fat contains 90% esters and 10% unsaponifiable matter. Glycerin, ceryl alcohol, caproic, palmitic, stearic, cerotic, oleic and linoleic acids, ergosterol, a nitrogenous substance m. p. 105°, traces of essential oils and a resinifying oil were isolated.—E. RUPPOL. *J. pharm. Belg.*, 19 (1937), 63-68. (S. W. G.)

Chaulmoogra Oils and Seeds. Hitherto, the chaulmoogra oil employed in the treatment of leprosy in Empire countries has been derived from India, but the cultivation of different trees has been undertaken in many tropical parts of the Empire during recent years, with a view to supplying the local needs. Seeds of *Hydnocarpus Wightiana* from Nigeria, Ceylon and Malaya have been examined at the Imperial Institute; also a sample of *H. anthelmintica* from Malaya. *H. Wightiana* seed from Nigeria contained a normal percentage of oil, which fulfilled the requirements of the B. P. 1932, except that it was not almost wholly soluble in hot alcohol (90%). This relative insolubility may be due to the extremely low free acid value 1.5, whereas the B. P. permits an acid value up to 25. The non-compliance of the oil in this respect with the B. P. requirements is not important. It contains both hydnocarpic and chaulmoogric acids, and a small amount of an optically active liquid acid, possibly gorlic acid. The oil is richer in hydnocarpic than chaulmoogric acid. *H. Wightiana* seed from Ceylon was normal in appearance, and yielded a cold pressed oil which complied with the requirements of the B. P. 1932. *H. Wightiana* seed from Malaya yielded a high percentage of oil, which conformed to the B. P. requirements, except the saponification value, which was slightly high, 205.1 (instead of 198 to 204). *H. anthelmintica* seed from Malaya was of good quality, yielded a normal amount of oil, and agreed in character with previously examined samples. Since the oil of this species is not recognized in the B. P. 1932, there is apparently no market for it in the United Kingdom; it might be used locally.—*Bull. Imp. Inst.*, 34 (1936), 145; through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 712. (S. W. G.)

Douglas Fir—Bark Oil of. Bark from young trees was used for this study. Experimental work is reported in detail. The yield of oil was 1.01 per cent of volatile oil of which approximately 75 per cent was terpenes and 16 per cent higher boiling constituents including an alcohol and probably sesquiterpenes. The oil contains 28 per cent levo alpha pinene; 24 per cent levo beta pinene; 7 per cent levo camphene; 8 per cent dipentene; 6 per cent geraniol partly as acetate; a small amount of azulenogenic sesquiterpene. There were traces of free acids, probably caproic and capric and acetic acid combined.—CARL H. JOHNSON and RUSSELL A. CAIN. *J. Am. Pharm. Assoc.*, 26 (1937), 495. (Z. M. C.)

Fats—Hydroxylated Acids of. An Improved Method of Determination. It has been shown that a number of the common animal and vegetable fats contain small but easily detectable amounts of hydroxylated acids. The determination by an improved technic of the acetyl values of fats and of their free insoluble acids is described.—P. G. HAFNER, R. H. SWINNEY and E. S. WEST. *J. Biol. Chem.*, 116 (1936), 691-697; through *Physiol. Abstr.*, 22 (1937), 344. (F. J. S.)

Fatty Acids—Volatility of Some, in Aqueous Solution. Volatility constants are given for normal fatty acids containing from 3 to 8 carbon atoms and of isobutyric and isovaleric acids in aqueous solution (cf. *C. A.*, 27, 1250, 3870, 4467). Measurements were made under both ordinary and reduced pressure. Ionization constants are calculated for some of the acids, and lower limits of azeotropism are given for mixtures of water with certain volatile fatty acids. The application of these constants to the analysis of fatty acid mixtures by the method of Duclaux is discussed.—P. JAULMES and H. MAZARS. *J. chim. phys.*, 34 (1937), 37–45; through *Chem. Abstr.*, 31 (1937), 4185. (F. J. S.)

Natural Fats—Studies on the Nature of Antioxygens Present in. III. The Occurrence of Antioxygenic Compounds in Extracted Soya-Bean Oilcake. Extracted soya-bean meal, after digestion with dilute solutions of organic acids (as 2% acetic acid in water or in acetone), yields about 10% of material when heated with methyl alcohol. The portion of the extract soluble in cold acetone (about 2% of the original meal) is a viscous gum which possesses marked antioxygenic properties. In 0.2% concentration in distilled unsaturated fatty esters, the concentrates exert marked retarding action on the oxidation of the esters by air at 97.5°. This antioxygenic concentrate is similar in physical and chemical properties to materials obtained from the unsaponifiable fractions of wheat-germ, cottonseed or palm oils, and from linseed oil or linseed oil "foots." The yield of the concentrate is many times greater from the extracted oilcake than from the fatty oils themselves; the antioxygenic compound removed from oilseeds with the oil appears to be not more than 2 or 3% of the total amount present in the seed cake. The latter, however, requires a gentle acid treatment of the type described before the antioxygenic materials can be removed; and methyl alcohol, or at least an alcoholic solvent, is necessary to affect their removal. The description of the properties of the antioxygenic concentrates given by previous authors is confirmed. Cellulose is not the original source of the antioxygenic compounds, and results so far obtained do not lend much support to the possibility that the latter are derived from organic phosphorous compounds.—T. G. GREEN and T. P. HILDITCH. *J. Soc. Chem. Ind.*, 56 (1937), 23T. (E. G. V.)

Olive Oil—Fluorescence of. Fluorescence varies with quality and the conditions of preservation and refining. Crude sulfur oils have blue fluorescence masked by chlorophyll and other products. Decolorizing unmasks the blue fluorescence; this is intensified by deodorization and concentrated by demargarination. Pure pressure oils treated with hydro-silicates show blue fluorescence at a much lower temperature than that of deodorization. Blue fluorescence can result from aging or from warming with hydrosilicates, as a result of the formation of sterols.—WALTER CIUSA. *Olii minerali olii e grassi, colori vernici*, 16 (1936), 97–103; cf. *C. A.*, 30, 3263; through *Chem. Abstr.*, 31 (1937), 4147. (F. J. S.)

Olive Oil—Hydrocarbons Present in. The following hydrocarbons were isolated: Oleatridecene, $C_{13}H_{24}$, olea-hexadecene, $C_{16}H_{30}$, olea-nonadecene, $C_{19}H_{36}$, olea-tricosene, $C_{23}H_{42}$, olea-octacosene, $C_{28}H_{50}$, olea-Hexatriacontene, $C_{36}H_{68}$, olea-tetracosane, $C_{24}H_{50}$ and olea-Hexacosane, $C_{26}H_{54}$.—M. MARCELET. *Bull. soc. chim. France* (June 1936); through *J. pharm. Belg.*, 19 (1937), 316. (S. W. G.)

Plum and Beechnut Kernel Oils—Composition of. Plum kernel oil contains glycerides of saturated acids 5.9%, glycerides of oleic acid 72.1%, glycerides of linoleic acid 22.0%; or calculated as free acids: saturated 5.7%, oleic 68.9%, linoleic 21.0%. Unsaponifiable matter 0.4% and glycerin 4.5%. Beechnut kernel oil contains saturated acids 11.5%, oleic acid 48.4%, linoleic acid 33.2%, linolenic acid 2.8%, unsaponifiable matter 0.27% and glycerin 4.5%.—E. DELVAUX. *J. pharm. Belg.*, 19 (1937), 115–118. (S. W. G.)

Rotenone—Presence of, in Tephrosia Macropoda. *Tephrosia macropoda* has been found to possess insecticidal properties due to the presence of a member of the rotenone group of fish poisons. Investigations now show that if an ethereal extract of the root is taken up in warm carbon disulfide, and allowed to stand over night, crystals are deposited which appear to be pure rotenone, and which exist to the extent of 0.3 to 0.4% in the root. Other members of the rotenone group are also present, and further work is being conducted on the roots; meanwhile it would appear that *T. macropoda*, which is generally distributed over South-East Africa, might be of considerable value in the control of local insect pests.—J. T. MARTIN. *Nature*, 137 (1936), 1075; through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 723. (S. W. G.)

Vegetable Oils—Method for Obtaining. The Skipin method is described in detail.—A. I. SKIPIN. *Vseso. Nauch.-Issledov. Inst. Shir.*, 1935, 40 pages; through *J. Soc. Chem. Ind.*, 56 (1937), B., 58. (E. G. V.)

Unclassified

Acridin—Derivatives of. Among the derivatives of acridin which have some antimalarial reaction, atebirin (acrichin) is by far the most important. The halogen atom is found to be located at the sixth position. The authors synthesized a compound which had the same radicals at second and ninth position similar to that of acrichin. They also obtained compounds in which the chlorine atom is located at the seventh position and not at the sixth. Furthermore a compound was obtained which had two chlorine atoms at the sixth and seventh position, respectively. The introduction of more than one molecule of chlorine into the acrichin molecule lowers the chemotherapeutical coefficient from 15 to 6.—J. C. FELDMAN and E. L. KOPELIOWITSCH. *Arch. Pharm. Ber. deut. Pharm. Ges.*, 273 (1935), 488; through *Chem. Zentr.*, 107 (1936), 2550.

(G. B.)

Agar-agar—Structure of. The hydrolysis of methylated agar-agar prepared from the acetate gives a trimethylgalactose, which appears to be 2,4,6-trimethylgalactose. It is probable that the main carbohydrate portion of agar-agar consists of B-galactopyranose units linked at positions 1 and 3.—E. G. V. PERCIVAL, J. MUNRO and J. C. SOMERVILLE. *Nature*, 139 (1937), 512-513; through *Chem. Abstr.*, 31 (1937), 4280.

(F. J. S.)

Alcohols—Purification of. For purifying alcohols such as ethanol containing organic impurities, they are brought into contact with the nitrate of an easily reducible metal, such as that of copper, iron or silver, in the absence of alkali (suitably with distillation and subsequent alkali treatment).—ALFRED E. JURIST and LOUIS W. GREEN, assignors to E. R. SQUIBB & SONS. U. S. pat. 2,075,205, March 30, 1937.

(A. P.-C.)

Alcohols—Tertiary Cyclopentanopolyhydrophenanthrene. Acetylene or substituted acetylene is made to react with compounds of the cyclopentanopolyhydrophenanthrene series containing a ketone group in the cyclopentane nucleus (follicular hormone). The ethynyl compounds thus formed are hydrogenated.—SCHERING-KAHLBAUM A. G. Belg. pat. 418,551, Dec. 31, 1936.

(A. P.-C.)

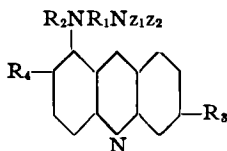
Aliphatic Polyamines IV. The high boiling amines, obtained by the interaction of 1:3-dibromopropane and 1:2-diamino-ethane hydrate, have been investigated. The lower terms contain straight chains of dimethylene and trimethylene groups separated by nitrogen atoms but in the higher boiling fractions cyclic amines are present.—J. VAN ALPHEN. *Rec. trav. chim.*, 56 (1937), 343.

(A. C. DeD.)

4-Alkyl Halo-phenols—Preparation of. Compounds having high phenol coefficients are produced by treating a 4-alkylphenol having more than 5 carbon atoms in the alkyl group, with a reagent capable of introducing a halogen substituent in place of one of the hydrogen atoms.—LINDLEY E. MILLS, assignor to THE DOW CHEMICAL CO. U. S. pat. 2,087,986, July 27, 1937.

(A. P.-C.)

Amino Acridine—Basically Substituted Derivatives of, Suitable for Combating Blood Parasites. Various details are given of the production of compounds of relatively low toxicity which have the general formula



where R_1 stands for an organic radical of the alkylene or phenylalkylene series including those which are substituted by hydroxyl, and the carbon chain of which contains as an interrupting member a nitrogen, oxygen or sulfur atom; R_2 stands for hydrogen, or alkyl, z_1 and z_2 stand for substituent hydrogen, alkyl, aminoalkyl, alkylaminoalkyl or alkylene groups, the alkylene group standing jointly for z_1 and z_2 , the group $-Nz_1z_2$ being attached to R_1 at least once; R_3 stands for

hydrogen or alkyl, and R_4 stands for an alkylmercapto group. They are light yellow substances, insoluble in water, soluble in dilute mineral acids, with which they form water-soluble salts. 2-Methylmercapto-6,9-dichloroacridine melts at 184° to 185° C., and mention or description of the production of numerous other related compounds is given.—FRITZ MIETZSCH and HANS MAUSS, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,082,171, June 1, 1937. (A. P.-C.)

2-Amino-4'-chlorodiphenyl—Inorganic Acid Addition Salts of. 2-Amino-4'-chlorodiphenyl, melting-point about 47° C., is prepared by reducing 2-nitro-4'-chlorodiphenyl with iron in the presence of a strong inorganic acid such as hydrochloric, followed by neutralization, crystallization on standing, vacuum distillation and recrystallization. The product yields an addition sulfate, nitrate and hydrochloride of needle-like crystalline form. The products may be used as intermediates for making pharmaceutical compounds.—MORTON HARRIS, assignor to MONSANTO CHEMICAL CO. U. S. pat. 2,079,450, May 4, 1937. (A. P.-C.)

C-Amino-Substituted Barbituric Acid—Derivatives of. For the manufacture of C-amino-substituted barbituric acid derivatives containing in the 5-position besides an alkyl group an amine group which is substituted, barbituric acids containing in the 5-position an alkyl group and halogen are treated with an amine containing at least one hydrogen atom at the trivalent nitrogen atom and which is an alkylamine, aniline, aminophenolalkyl ether or piperidine. Sedative and hypnotic products are obtained suitable for medicinal use. Details are given for the manufacture of: 5-ethyl-5-piperidinobarbituric acid (m. p. 215° C.), 5-ethyl-5-anilinobarbituric acid (m. p. 240° C.), 5-ethyl-5-*p*-phenetidobarbituric acid (m. p. 244° C.), 1-methyl-5-ethyl-5-piperidinobarbituric acid (m. p. 150° C.), 1,3,5-trimethyl-5-isoamylaminobarbituric acid hydrochloride, and 1,3,5-trimethyl-5-phenylethylaminobarbituric acid (m. p. 108° C.).—RUDOLF GEBAUER, assignor to CHEMISCHE FABRIK VON HEYDEN A. G. U. S. pat. 2,078,323, April 27, 1937. (A. P.-C.)

Analytical Reagents—Introduction to the Symposium on Organic. Organic reagents for inorganic analyses are grouped into solvents precipitating aids, indicators, volumetric standards and reactants.—W. E. WHITE. *J. Chem. Educ.*, 14 (1937), 169. (E. G. V.)

Arsenic and Antimony Compounds, Aromatic—Process for the Preparation of. Aromatic amines, phenols or aminophenols containing arsenic and (or) antimony are made to react with halogenated acyl amides in which the nitrogen atom is combined with one or more organic radicals and at least one hydroxyl group.—I. G. FARBENINDUSTRIE A. G. Belg. pat. 418,313, Dec. 31, 1936. (A. P.-C.)

Arseno Compounds, Asymmetric. In the preparation of asymmetrical arseno compounds by reducing phenoxyacetic acid-arsonic acid or arylarsonic acids containing a nitrogenous heterocyclic group, reduction is carried out in the presence of pyridine- or quinoline-arsonic acids. Thus, 4-acetylamino-2-phenoxyacetic acid-1-arsonic acid is mixed with 2-pyridonearsonic acid and reduced with phosphorous acid. The products have therapeutic uses.—KARL STREITWOLF, ALFRED FEHRLE and WALTER HERMANN, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,078,351, May 4, 1937. (A. P.-C.)

Calcium Creosote—Observations on Water-Soluble Constituents of. The U. S. P. XI states that calcium creosote is a mixture of the calcium compounds of creosote. Certain observations indicated that the calcium creosote phenols might not be entirely comparable chemically with creosote phenols. The present investigation of the water-soluble constituents of calcium creosote indicates that the water-soluble phenolic bodies obtained by aqueous extraction of calcium creosote powder may be in solution as calcium salts in equilibrium with an inorganic calcium compound. Evidence has also been obtained to show that a portion of the original creosote phenols have been altered in some manner in the preparation of calcium creosote powder so that they are no longer water soluble. In addition data are presented to show that the hydrolyzed water-soluble phenols of calcium creosote are not entirely representative of the original creosote phenols. This variation is due to a diminution in the methoxy compound content of the water-soluble calcium creosote phenols as compared with that of the original creosote phenols.—EDWIN J. FELLOWS. *J. Pharmacol.*, 60 (1937), 105. (H. B. H.)

Cetene—Completion of Kraft's Proof of Structure of. The proof given by Kraft for the terminal position of the double bond in cetene is not complete, as during the formation of cetyne-1 from cetene dibromide the possibility was not precluded of a rearrangement under the influence of powdered KOH. In the present paper it is demonstrated that: (1) This arrangement does not take place; (2) during the preparation of cetyne-2 from cetene dibromide under the influence

of alcoholic KOH cetyne-1 is the first reaction product. This shows that cetene is hexadecene-1.—S. L. LANGEDIJK and P. L. STREDEHOUDER. *Rec. trav. chim.*, 56 (1937), 526. (A. C. DeD.)

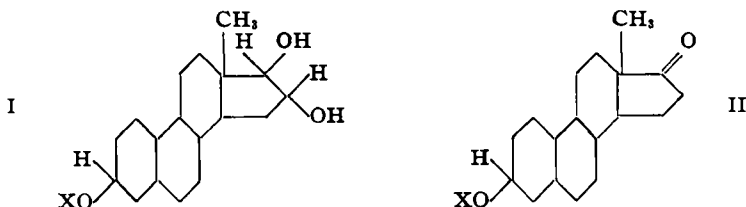
Copper Arsenite—Insecticidal and Fungicidal Double Salts of, with Copper Salts of Unsaturated Fatty Acids. A process of producing compounds of the general formula $3\text{CuAs}_2\text{O}_4 \cdot \text{CuOR}$, in which R is the anhydride of a monocarboxylic acid of the general formula $\text{C}_n\text{H}_{2n-2}\text{O}_2$ containing 3 to 22 carbon atoms in its molecule, comprises bringing together a solution of an alkali metal arsenite, a solution of a water-soluble inorganic cupric salt and a solution of an alkali metal salt of a monocarboxylic acid of the general formula $\text{H}_2\text{H}_{2n-2}\text{O}_2$ containing 3 to 22 carbon atoms in its molecule, obtained by saponifying one of a group consisting of vegetable, animal and fish oils, and fats of the same; heating and agitating the mixture until the reactions have been completed as shown by a color change; filtering, washing and drying in warm air.—FREDERICK E. DEARBORN dedicated to the Public for free use. U. S. pat. 2,080,004, May 11, 1937. (A. P.-C.)

Diazoamino Compounds—Method of Purification of. A method of purification of diazoaminobenzene and its methyl and dimethyl derivatives is described. By treatment, in aqueous methyl-alcoholic solution, with cadmium hydroxide these compounds may be obtained in such a state of purity that they yield no color with alcoholic alkali. A list of the melting points of pure diazoamino-compounds is given.—F. P. DWYER. *J. Soc. Chem. Ind.*, 56 (1937), 70T. (E. G. V.)

Ergot Alkaloid Type of Compounds—Process for the Preparation of. Azides of lysergic acid are combined with organic bases to form amido compounds.—FABRIQUE DE PRODUITS CHIMIQUES CI-DEVANT SANDOZ. Belg. pat. 418,468, Dec. 31, 1936. (A. P.-C.)

Ethyl alcohol—Production of, from Artichoke Tubers. A suitable yeast culture is successively incubated in a series of separate culture media containing unhydrolyzed artichoke polysaccharides, until the yeast strain under development becomes capable of fermenting in excess of 80% of the carbohydrate content of unhydrolyzed artichoke tuber diffusion liquor. The diffusion liquor is inoculated with the culture, whereby the unhydrolyzed polysaccharides are converted to alcohol.—LEO M. CHRISTENSEN and ELLIS I. FULMER, assignors to THE CHEMICAL FOUNDATION. U. S. pat. 2,085,003, June 29, 1937. (A. P.-C.)

Germinal Gland Hormone Derivatives of the Formula $\text{C}_{18}\text{H}_{26}\text{O}_2$ and Method of Making. Keto alcohols of the formula $\text{C}_{18}\text{H}_{26}\text{O}_2$ and their acyl derivatives are produced by subjecting reduction products of follicle hormones represented by formula I



in which the substituted groups on each of the end rings are most likely in the positions shown and in which X is hydrogen or an acyl group, to treatment with a dehydrating agent that splits off water from the two neighboring hydroxyl groups, giving compounds represented by formula II.—WALTER SCHOELLER, FRIEDRICH HILDEBRANDT and ERWIN SCHWENK, assignors to SCHERING-KAHLBAUM, A. G. U. S. pat. 2,075,868, April 6, 1937. (A. P.-C.)

Glucuronic Acid—Derivatives of. VII. **Synthesis of Aldobionic Acids.** The aldobionic acid, galactose-6- β -glucuronide, was synthesized and found to be identical with the acid obtained from gum acacia. A second aldobionic acid, gentiobiuronic acid, was also synthesized and obtained in the form of its heptaacetyl methyl ester.—R. D. HOTCHKISS and W. F. GOEBEL. *J. Biol. Chem.*, 115 (1936), 285-292; through *Physiol. Abstr.*, 22 (1937), 230. (F. J. S.)

Glycerol—Derivatives of Oxidation Products of. The oxidation of glycerol was examined with hydrogen peroxide and ferrous sulfate, with alkaline hypochlorite solution using cobalt acetate as catalyst, with bleaching powder and cobalt acetate and with bromine and soda. The latter method afforded crystallized dihydroxyacetone. Various hydrazones and osazones of this compound were prepared. Some of the osazones of dihydroxyacetone could only be obtained by

first oxidizing it to hydroxypyruvic aldehyde and reacting the latter with the appropriate substituted hydrazines. Various osazones of glyoxal were also prepared.—H. P. DEN OTTER. *Rec. trav. chim.*, 56 (1937), 474. (A. C. DeD.)

Lysergic Acid—Process for the Preparation of, Hydrazone of. Suitable derivatives of lysergic acid, or crude or purified rye ergot alkaloids are treated with hydrazone.—FABRIQUE DE PRODUITS CHIMIQUES CI-DEVANT SANDOZ. Belg. pat. 418,431, Dec. 31, 1936. (A. P.-C.)

Morpholine—Amide and Urethane Derivatives of. Morpholine is a strong nitrogenous base and reacts readily with acids and acyl chlorides. *Amides.*—*N*-Formyl-morpholine, HCON-(C₂H₄)₂O, is a colorless liquid with a slight odor, m. p. 17.5°, b. p. 234°. *N*-Acetyl-morpholine, CH₃CO—N(C₂H₄)₂O, is a colorless liquid, soluble in water, m. p. 14.5°, b. p. 242.6°. *N*-Propionyl-morpholine is a liquid, b. p. 249°, which can be congealed at -30°. *N*-Butyl-morpholine is a white solid with a slight butyric odor, m. p. 27°, b. p. 256°. Caproic amide, CH₃(CH₂)₄CON-(C₂H₄)₂O, is a colorless liquid with an odor suggestive of caproic acid, solidifies in a freezing mixture at -30°, m. p. -22°, b. p. 293°. The methyl urethane of morpholine is formed by the reaction of morpholine and acetyl chloride in aqueous medium in the presence of sodium carbonate. The product, O(C₂H₄)₂N.CO.CH₃, is a colorless liquid with a characteristic odor and is miscible with water and alcohol, m. p. 16°, b. p. 213.3°. Ethyl urethane of morpholine is a colorless liquid with a characteristic odor and is miscible with water and alcohol, m. p. 2.5°, b. p. 223°. *n*-Propyl urethane of morpholine is a colorless liquid with a slight odor, slightly soluble in water, miscible with alcohol, m. p. -18°, b. p. 238°. *n*-Butyl urethane of morpholine is a colorless liquid, very slightly soluble in water, miscible with alcohol and ether, m. p. -4°, b. p. 252.5°.—L. MEDARD. *Bull. soc. chim. France* (July 1936); through *J. pharm. Belg.*, 19 (1937), 336. (S. W. G.)

Nicotine—Derivatives of, Suitable for Use as Insecticides. Products soluble in ketonic solvents such as acetone are obtained (at reaction temperatures of 90° to 110° C. in examples given) by reaction of nicotine with 2-mercaptobenzothiazole, 2-mercapto-6-phenylbenzothiazole, 2-mercapto-6-methylbenzylthiazole, 2-mercapto-6-nitrobenzothiazole, mercaptoxylylthiazole, mercaptonaphthothiazole, and their corresponding disulfides as, for example, dibenzothiazyl disulfide, ditolythiazyl disulfide.—ROBERT L. SIBLEY, assignor to MONSANTO CHEMICAL CO. U. S. pat. 2,077,960, April 20, 1937. (A. P.-C.)

Para-Dichlorobenzene or Hexachloroethane—Preventing Caking of. About 1% or more of a polymer of formaldehyde is added to inhibit caking of material, such as that intended for molding and use as a deodorant, etc.—WILBIE S. HINEGARDNER, assignor to E. I. DU PONT DE NEMOURS AND CO. U. S. pat. 2,081,236, May 25, 1937. (A. P.-C.)

Phenol—Preparation of. Calcium hydroxide is made to react in an aqueous medium with chlorobenzene at a temperature above about 300° C., less than one molecule of calcium hydroxide being used per molecule of chlorobenzene.—ERNST HERDIECKERHOFF, assignor to I. G. FARBEN-INDUSTRIE A.-G. U. S. pat. 2,085,429, June 29, 1937. (A. P.-C.)

Phenols—Acyl Derivatives of, and Method of Producing. A carboxylic acid is condensed with a phenol in presence of heteropolyacid.—SIEGFRIED SKRAUP, assignor to SCHERING-KAHLBAUM A. G. U. S. pat. 2,087,213, July 13, 1937. (A. P.-C.)

2-Phenylquinoline-4-Carboxylic Acid—Derivatives of. Esters of 2-phenylquinoline-4-carboxylic acid, its homologs and substitution products, are prepared by esterifying the acids with glycerin or halohydrins. When the products contain halogen, they may be caused to react with further quantities of the acids or their salts. The products may be used therapeutically.—HANNES JOHN. U. S. pat. 2,079,318, May 4, 1937. (A. P.-C.)

Phosphotungstates and Silicotungstates—Studies on. Phosphotungstic and silicotungstic acids form well-defined compounds with nitrogenous organic compounds, primary, secondary and tertiary amines and quaternary ammonium compounds. The phosphotungstates or silicotungstates are prepared by simple addition of the reagent to the strongly acid solution of the organic base; the precipitation is rapid and complete in the cold, but heating favors agglomeration and facilitates washing and decantation. The precipitate, after washing with water or diluted hydrochloric acid, may be dried and ignited to constant weight as the phosphotungstic anhydride, 12-WO₃PO₃H, or silicotungstic anhydride, 12WO₃SiO₂. Some compounds have variable compositions depending upon the conditions under which the reagents are added.—E. KAHANE and M. KAHANE. *Bull. soc. chim. France* (April 1936); through *J. pharm. Belg.*, 19 (1937), 335. (S. W. G.)

5-Pyrazolone-4-Aminoethylsulfonic Acids—Therapeutic Salts of. Salts of 5-pyrazolone-4-aminomethylsulfonic acids with organic bases such as quinine, cinchonine, morphine, codeine, cocaine, atropine, strychnine, nicotine and various bases of the acridine series are described or mentioned.—MAX BOCKMÜHL and LEONHARD STEIN, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,078,440, April 27, 1937. (A. P.-C.)

Quaternary Acridinium Compounds. New therapeutic 9-aminoacridine compounds containing the nuclear nitrogen atom in its quaternary form and containing in the 9-amino group an aliphatic amine radical as substituent are obtainable by reacting upon 10-alkyl or 10-aralkyl-acridinium compounds containing in the 9-position a reactive substituent, for instance, halogen atoms, alkoxy, aryloxy and aralkoxy, mercapto and etherified mercapto or even sulfo groups with an aliphatic polyamine containing at least one amino group in the primary or secondary form. With use of bases in which one amino group is substituted by a radical capable of being readily split off, *e. g.*, an acyl group, the said radical is split off after the reaction is complete. The aliphatic amine radical may also be introduced into the 9-amino group in several stages, for instance, by first causing an amino alcohol or an aminoalkyl halide to react with a 10-alkyl- or 10-arylalkyl-acridinium compound which contains a reactive substituent in the 9-position. In this case the 9-hydroxy or haloalkylamino derivatives primarily formed are subsequently caused to react with a primary or secondary amine. It is preferred to transform the hydroxyalkylamino derivative into the haloalkylamino compounds by means of a hydrohalic acid prior to the reaction with the primary or secondary amine. Amides of *N*-alkyl- or *N*-aralkyl-diphenylamine-2-carboxylic acids which are substituted at the amide nitrogen atom by an aliphatic amine radical may be subjected in the manner usual for the synthesis of acridine compounds from diphenylamine-2-carboxylic acids to ring closure to form the quaternary acridinium compounds. The latter may be in the form of the base or of salts, for instance, salts with the hydrohalic acids, sulfuric acid, nitric acid or also organic acids such as formic, acetic, lactic, tartaric and citric acids, or even higher molecular weight organic acids, such as aromatic hydroxy carbonic acids, *e. g.*, methylenedisalicic acid or methylenedi-(hydroxynaphthoic acid). The aliphatic amine radical substituting the 9-amino group may contain one or more nitrogen atoms and may contain hydroxyl and alkoxy groups as substituents. Furthermore, ether-like bound oxygen or sulfur atoms may be members of the aliphatic chain.—HANS MAUSS and FRITZ MIETZSCH, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,079,023, May 4, 1937. (A. P.-C.)

Synthetic Local Anesthetics. Compounds such as the hydrochlorides of β -diethylaminoethenyl *p*-butoxybenzoate, β -diethylaminoethenyl *p*-isoamyloxybenzoate, γ -diethylaminopropenyl *p*-butoxybenzoate, etc. (various details of the manufacture of which are given) are of relative ease of manufacture, powerful anæsthetic effect and low toxicity as compared to various other known anæsthetics of similar chemical composition.—CARL ROHMANN. U. S. pat. 2,081,712, May 25, 1937. (A. P.-C.)

Tertiary Alkyl Phenols. From a tertiary alcohol such as *tert*-butyl alcohol and a mixture of commercial phenols derived from coal tar (suitably by heating in the presence of zinc chloride) nuclear condensation products are obtained which may be used as germicides.—FRITS E. E. STOCKELBACH, assignor to HAROLD H. FRIES. U. S. pat. 2,081,284, May 25, 1937. (A. P.-C.)

BIOCHEMISTRY

Amylase—Effect of Halogen Salts on Salivary and Pancreatic. In the order $Cl > Br > I > F$, the halogen salts of Li, Na, K, NH_4 , Mg, Ca and Ba accelerate the hydrolysis of starch by pancreatic and salivary amylases, with the exception that the fluorides of Na, K and NH_4 are ineffective in this respect; at higher concentrations the two latter salts inhibit. Li, NH_4 , Mg and Ca iodides also inhibit amylase activity at higher concentrations. The Ba halides are least potent in their action.—W. M. CLIFFORD. *Biochem. J.*, 30 (1936), 2049–2053; through *Physiol. Abstr.*, 22 (1937), 351. (F. J. S.)

Amyolytic Preparations—Inactivation of, in the Digestive Tract. Amylase given in the forms of powder, tablets, solutions or syrups is claimed to be inactive in the animal body unless protected from the gastric juice.—M. VAN HAUWAERT. *J. pharm. Belg.*, 19 (1937), 313–315. (S. W. G.)

Arsenic—Electrolytic Determination of, in Biological Fluids. After 24-hour electrolysis the arsenic accumulates at the anode and can be determined by spectral analysis.—J. VAN CALKER

and A. PITTONI. *Biochem. Z.*, 286 (1936), 296-300; through *Physiol. Abstr.*, 22 (1937), 228.

(F. J. S.)

Bile Acids—Relation of Certain, to Absorption of β -Carotene in the Rat. When β -carotene, together with taurocholic acid, glycocholic acid or decholin, was fed to bile fistula vitamin A deficient rats, the carotene was not utilized. When carotene, in the form of a suspension, was injected intravenously, it was less effective than when administered orally. A less marked difference was noted in the case of vitamin A.—JOSEPH D. GRAEVES and CARL L. A. SCHMIDT. *Proc. Soc. Exptl. Biol. Med.*, 36 (1937), 434.

(A. E. M.)

Blood Sugar—Effect of Saccharin and Galactose on. Oral administration of saccharin or galactose to normal subjects caused no appreciable increase in blood sugar.—T. L. ALTHAUSEN and G. K. WEYER. *Proc. Soc. Exptl. Biol.*, N. Y., 35 (1937), 517-519; through *Physiol. Abstr.*, 22 (1937), 292.

(F. J. S.)

Bromide Content of the Body. The authors have investigated the bromide content of the blood and nerve tissues in health and in mental disease. Zondek and Bier found that in manic-depressive states there was a reduction in the blood content whether the patient was in the manic or the depressive phase; they concluded that the hypophysis was concerned in the regulation of the bromide content of the body, more particularly the anterior part of this gland, for the posterior part was always found to be deficient in bromide. In sleeping animals they reported that there was an accumulation of bromide in the spinal cord, and they attributed this to its expulsion from the hypophysis by some hormonal stimulant. The present authors undertook researches to check these conclusions and they report that they cannot attach any more physiological importance to the bromide than to the chloride content. They add that the amount of bromide normally present is dependent upon alimentation and metabolism, and that there is no evidence of the postulated hormonal agent having any effect on its distribution in the body. They have confirmed the work of Ambard, which revealed the tardiness of the elimination of bromide from the body, and they are inclined to believe that metabolic changes in mental disorders can be held responsible for such alterations in the bromide content of the blood or of nervous tissues as have been reported; and that there is no need to look for any regulating mechanism in the hypophysis function. They suggest, however, that the influence of this gland on the retention or elimination of water may have some secondary effect on the amount of bromide in the blood, just as it would have in the case of the chloride content.—P. A. CHATAGNON and C. CHATAGNON. *Presse méd.* (Sept. 5, 1936), 1404; through *Brit. Med. J.*, No. 3960 (1936), 1124D.

(W. H. H.)

Calcium Creosotate—Studies on. III. The Elimination of Volatile Phenols in Rabbit Urine after the Administration of "Calcium Creosotate Solution" and after Creosote Solution. When 540 mg. of creosote in the form of "calcium creosotate solution" were given to rabbits, larger amounts of volatile phenols were detected in the urine than could be detected in the urine of the same animals after the administration of the same amount of creosote in solution. This would seem to indicate that the water-soluble calcium creosotate phenols were probably as readily absorbed as the creosote phenols.—EDWIN J. FELLOWS. *J. Pharmacol.*, 60 (1937), 183.

(H. B. H.)

Copper—Determination of, in Foods. Solutions of the ash of dried skim milk (I) and of the ash of dried spinach (II) were freed from Cu by H_2S precipitation, a known amount again added to I and II and to II also Zn, Pb, Sn, Hg, Sb, As and Cd. Collaborative experiments were carried out in the following way: to an aliquot of the solution containing 0.01-0.1 mg. of copper, 1 cc. of concentrated hydrochloric acid and 10 cc. of citric acid solution (150 Gm. of $C_6H_8O_7 + H_2O$ in 1 liter water) were added, ammonia water mixed dropwise until the solution was just alkaline and 0.2 cc. added in excess. Ten cc. of Na diethyldithiocarbamate (III) solution (1 Gm. of III in 1 liter of H_2O) were added and the volume was made up to 55 cc. The copper carbamate compound was extracted by shaking the solution with 5 or 10 cc. of carbon tetrachloride and the carbon tetrachloride layer was compared in a colorimeter with a standard copper solution prepared in exactly similar manner. The maximum error of the method in II in the presence of other metals was 14.6%; 79% of the values obtained were within 5.6% of the actual value. In I the maximum error was 19.5%. Further study is needed before this method can be applied to the analysis of milk. The use of smaller samples, an increased amount of citric acid and the substitution of isoamyl alcohol for CCl_4 may be advisable.—E. J. COULSON. *J. Assoc. Official Agr. Chem.*, 20 (1937), 178; through *Squibb Abstr. Bull.*, 10 (1937), 1147.

(F. J. S.)

Copper in Milk—Influence of Alimentation. Cow's milk contained between 0.31 and 0.40 mg. copper per liter. Exclusive feeding with alfalfa produced a copper value of 0.41–0.44; after feeding with corn and wheat, it was 0.34–0.36. Alfalfa contains 9.1 mg. copper per Kg., corn 7.1 mg.—DIONISIO ECHAVE. *Rev. farm. (Buenos Aires)*, 78 (1936), 337. (A. E. M.)

Cystine—Determination of, in Urine. Because of the buffering power of the urine, the presence of reducing material, and of substances combining with 1:2-naphthoquinone-4-sodium sulfonate, the original Sullivan cystine procedure, when applied to urine, must be modified by the use of an alkaline cyanide for reduction, with washing of the sediment occurring on the addition of alkaline cyanide, and by the use of more naphthoquinone for full color development. Normal urines contain a small amount of free cystine, together with cystine complexes which liberate cystine on standing and also on treatment with acid and alkali. The Lugg-Sullivan procedure is not delicate enough to be applied to normal urine. The Rossouw-Wilken-Jorden method gives cystine values slightly too low.—M. X. SULLIVAN and W. C. HESS. *J. Biol. Chem.*, 116 (1936), 219–232; through *Physiol. Abstr.*, 22 (1937), 399. (F. J. S.)

Diazoreaction—Study of, in Alkaline Medium. The following conclusions are given: 1. The phosphotungstomolybdic reaction and the diazoreaction in alkaline medium are not specific for phenols and should not be used to determine these substances in blood and wine. 2. The Millon reaction detects free non-volatile phenols in blood. 3. The major part of the value obtained with the diazoreaction on blood or urine is caused by imidazols. 4. When the diazoreaction is applied to the tungstic filtrate of blood or to diluted urine, only the term "diazo-value" is justified. 5. The classic conception of the total of free phenols in blood appears to be correct.—G. BARAC. *Rev. belg. sci. med.*, 9 (1935); through *J. pharm. Belg.*, 18 (1936), 534. (S. W. G.)

Estrogenic Potency Increased—after Hydrogenation of Human Urine. Boiling of the urine with 15% by volume of hydrochloric acid and 4% zinc dust under a reflux increases the potent material extractable with benzene beyond that obtained by simple hydrolysis.—GEORGE VAN S. SMITH and O. WATKINS SMITH. *Proc. Soc. Exptl. Biol. Med.*, 36 (1937), 460. (A. E. M.)

Female Sex Hormones—Establishment of Standard Units for the Dosage and Biological Control of. Units are proposed which have both clinical and experimental significance. For the follicular hormone, the unit proposed is 100 mg. of the hormone, melting at 250° to 251° C., and is equivalent to 200,000 to 300,000 mouse units determined by the Allen-Doisy test and to 1,000,000 international units. It corresponds to the dose which, in a normal woman, causes the modifications of the uterine mucosa characteristic of the follicular phase of the menstrual cycle. The unit proposed for the corpus luteum hormone is 40 mg. of the crystalline hormone melting at 128.5° or 121° C., or the equivalent of 25 rabbit units determined by the test of Gerner, Clauberg and Holweg. This amount is the physiological dose which, in a normal woman, causes the uterine changes characteristic of the luteal phase of the menstrual cycle.—I. REMESOFF. *Arch. Intern. Méd. Exp.*, 11 (1936), 89–92; through *Chimie & Industrie*, 37 (1937), 45. (A. P.-C.)

Germinal Glandular Hormones—Process for the Preparation of Alcohols from. Cyclopentanopolyhydrophenanthrene compounds containing ketone groups are reacted with unsaturated organo-metallic compounds.—SCHERING-KAHLBAUM A. G. Belg. pat. 418,314, Dec. 31, 1936. (A. P.-C.)

Glycocoll—Intravenous Injection of, as Hepatic Test. The author studied the possibility of utilizing the variations of the metabolism of amino-acids to detect hepatic lesions. The study was based on the principle that when the liver does not function properly there is a slowing of the resorption of amino-acids in the blood. Curves showing the disappearance of glycocoll and bilirubin after injection into rabbits were prepared. The following conclusions are given: 1. Injection of glycocoll may serve as a hepatic test. 2. There is no parallel between the results obtained with glycocoll and bilirubin. The test with glycocoll may show slight pathologic conditions in some cases that appear normal with bilirubin. 3. The results obtained with the two metabolic tests are compared with anatomo-pathologic examination.—R. MICHEL. *Rev. belg. sci. med.*, 3 (1936); through *J. pharm. Belg.*, 18 (1936), 978. (S. W. G.)

Gonadotropic Substances in Pregnancy. The excretion of gonadotropic substances has been followed in five pregnant women. The authors find that the normal curve of concentration differs from that generally accepted. There is a sharp rise in the concentration between the fortieth and fiftieth day after beginning of the last menstrual period. The maximum concentration occurs between the fiftieth and sixtieth day, often being maintained for only a few days.

There follows a rapid fall in concentration between the sixtieth and eighty-fifth day. Thereafter the decline is more gradual; a low level is reached at about the one hundred and twentieth day and is maintained throughout the rest of pregnancy in the cases studied. The possible significance of this type of curve in connection with the ovarian and placental phases of pregnancy is discussed. The concentration of prolactin has been found to be very low at this period (40-100 days) when the foetus (intra- or extra-uterine) is dying, although the qualitative Asheim-Zondek test may be positive. The use of a quantitative determination of prolactin, knowing the period of gestation, is suggested as a guide to therapy in cases of threatened abortion.—J. S. L. BROWN and E. M. VENNING. *Lancet*, 231 (1936), 1507. (W. H. H.)

Hematopoietic Substances—Chemical Nature of, in Liver. Chemical analysis suggests a nitrogenous base, probably a simple polypeptide. Tyrosine and purine derivatives are effective but only in combination. Work is still in experimental stage.—EDITORIAL. *J. Am. Med. Assoc.*, 105 (1935), 204. (M. R. T.)

Hormones in the Year 1936. A review including 43 references.—K. KOCH. *Apoth. Ztg.*, 52 (1937), 574-577. (H. M. B.)

Insulin—Action of Various Reagents on. Crystalline insulin appears to be a typical protein, and attempts to associate the physiological activity to a localized part of the molecule have failed. Inactivation occurred in the presence of alkali, benzaldehyde, *o*-chlorobenzaldehyde, isoamyl nitrite, acetic anhydride, diazomethane, methyl iodide, hydriodic acid, and iodine, and in all these cases changes in the cysteine or amino-nitrogen content occurred. In the presence of acid alcohol, insulin is inactivated without change of these constituents. It appears that the hypoglycemic property of insulin is associated with certain dithio ($-S-S-$) groupings present, in part at least, as combined cysteine, and also with certain free amino-groups.—H. JENSEN, E. A. EVANS, JR., W. D. PENNINGTON and E. D. SCHOCK. *J. Biol. Chem.*, 114 (1936), 199; through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 727. (S. W. G.)

Insulin Shock—Blood Sugar Level in. Rats which had fasted for 24 hours were injected with 10 units of insulin. One group was killed at the onset of the period of prostration, another at the onset of convulsions. The blood sugar was determined by the Schaffer-Hartmann method, allowing for the non-fermentable reducing substances by a second determination following fermentation. At the stage of shock the true blood sugar had fallen to a mean value of 16 mg. per 100 cc. from 71 mg. per 100 cc. for the controls. At the onset of convulsions the true blood sugar had fallen to zero.—L. B. DOTTI and M. C. HRUBETZ. *J. Biol. Chem.*, 113 (1936), 141; through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 727. (S. W. G.)

Lead—Determination of, in Blood. In order to determine very small amounts of lead in the blood in the presence of iron, 5-10 cc. of blood were boiled with concentrated sulfuric acid and nitric acid, the solution was evaporated, the residue dissolved in water and ammonium citrate, concentrated NH_3 , KCN, $Na_2S_2O_8$ and dithizone reagent added and shaken in a nitrogen atmosphere. The CCl_4 layer is shaken with NH_3 and the lead is determined colorimetrically. The average error to be expected is 3.8%. Lead can be estimated in a similar way in stools and organic tissues.—H. KRAFT-STRÖM, K. WÜLFERT and O. SYDNES. *Biochem. Z.*, 290 (1937), 382; through *Squibb Abstr. Bull.*, 10 (1937), 1160. (F. J. S.)

Lipase in Serum—Modification of the Rona Method for Determining. The method of Rona (*Biochem. Z.*, 152 (1924), 504-522) is modified by weighing consecutive drops of the serum-substratum mixture discharged from a stalagmometer in order to determine the change in surface tension produced by the action of the lipase on a neutral fat or oil.—E. BULLO and E. POLI. *Diagn. Tec. Labor.*, 7 (1936), 1-5; through *Chimie & Industrie*, 37 (1937), 44. (A. P.-C.)

Male Hormones—Comparative Activities of. The availability of most of the possible derivatives in the androsterone-testosterone series offers excellent scope for the study of the influence on biological activity of slight changes in molecular structure. The following compounds have been tested for comparative biological activities using both capons and rats: androsterone, androstanediol, *trans*-dehydroandrosterone, *trans*-androstenediol, testosterone, androstenedione, methylandrostanediol, methyl-*trans*-androstenediol, methyl-3-keto-androstanol, methyltestosterone, testosterone benzoate. Testosterone is the most active of the natural substances and is more active than the synthetic compounds, with the exception of methyl-3-keto-androstanol. The relative effects on capons, and on the prostate and seminal vesicles of castrated rats, differ in their magnitude. A *trans* configuration of the 3-hydroxyl group is unfavorable to activity on the

capon comb. Oxidation of the *cis*-3-hydroxyl to a keto group has little effect on activity toward rats or capons. Reduction of a 17-keto group to hydroxyl increases activity toward both species. The effect of unsaturation is variable. The introduction of a 17-methyl group enhances activity on rats, especially on the prostate. In two cases capon activity was slightly increased, but with testosterone methylation greatly decreased the capon activity. *trans*-Androstenediol and to a less extent testosterone produce abnormally large seminal vesicles. It is concluded that testosterone probably cannot account for the whole endocrine activity of the testis. Possibly an accessory substance or another hormone is involved.—R. DEANESLY and A. S. PARKES. *Biochem. J.*, 30 (1936), 291; through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 728. (S. W. G.)

Male Sex Hormones—Colorimetric Assay for, in Urine. The purified extract is dissolved to 5 cc. in 60% alcohol and 1 cc. of a 2% solution of meta-dinitro-benzene is added. After the addition of 1 cc. of a 15% potassium hydroxide solution, the mixture is shaken and kept in the dark for 30 minutes. Comparison is made with an empirical commercial standard. A blank test is performed with the reagents used.—RALPH B. OESTING. *Proc. Soc. Exptl. Biol. Med.*, 36 (1937), 524. (A. E. M.)

Paraldehyde—Determination of, Fixed by the Tissues and Fluids after Intravenous Injection. The tissue or tissue extract is boiled with dilute sulfuric acid to depolymerize the paraldehyde and the vapors are passed into a sodium bisulfite solution. The absorbed acetaldehyde is determined colorimetrically. Shortly after 0.2 Gm. per kilo had been injected into a rabbit, the following amounts of paraldehyde (in mg. per 100 Gm.) were found: blood 88, heart 25, liver 7.8, kidney 4.4, muscles 7.8, brain 4.4, nerve 10, lung 4.4 and urine 8.8.—I. I. NITZESCU, I. D. GEORGESCU and D. TIMUS. *Compt. rend. soc. biol.*, 121 (1936), 1657-1659; through *Chimie & Industrie*, 37 (1937), 245. (A. P.-C.)

Phosphatemia and Phosphatasemia—Method of Determination. Clinical Interpretation of Results. *Phosphatemia.*—At 8 or 9 A.M. take a 10-cc. sample of blood from the patient who must have been fasting for at least 12 hours, has been awake for at least 1 hour and has done no absorbing intellectual work. The usual anticoagulants cannot be used; instead use 0.02% heparin. Remove albumin by treating 2 cc. of blood, serum or plasma with 6 cc. of distilled water and 2 cc. of 20% trichloroacetic acid, mixing and filtering. In the case of whole blood, the determination must be carried out immediately on the filtrate; with plasma or serum, it may be allowed to stand several days. To 1 cc. of filtrate (= 0.2 cc. of blood) in a test-tube add 4.2 cc. of distilled water. In a set of 6 tubes place the standards consisting of 2 cc. of 20% trichloroacetic acid and from 0.5 to 3 cc. of a 10-mg. per liter solution of ammonium di-hydrogen phosphate; dilute the standards with distilled water to 5.2 cc.; add 4 drops of Dénigés' sulphomolybdic reagent, 2 drops of stannous chloride (prepared extemporaneously from 0.1 Gm. of tin and 2 cc. of concentrated hydrochloric acid) and 1 drop of 10% copper sulfate solution (diluted to 10 cc.). After solution, filter and compare after 5 minutes in a microcolorimeter. *Phosphatasemia.*—The blood sample is procured under the same conditions as above, and 1 to 2 drops of chloroform are added to prevent bacterial development. To 5 cc. of 1% sodium glycerophosphate solution in a test-tube add 1 cc. of the humor to be tested; to 2 cc. of the mixture add 3 cc. of distilled water, dealbuminize and determine mineral orthophosphates. Place the tube in which hydrolysis is carried out in a constant-temperature bath at 37° C. for 24 hours; treat 1 cc. of the hydrolyzed mixture as above and determine mineral orthophosphates. Estimate the diastatic activity by comparison.—CRISTOL and J. CAYLA. *Bull. Biol. Pharmaciens*, 33 (1936), 168-183; through *Chimie & Industrie*, 37 (1937), 454. (A. P.-C.)

Proteins—Molecular Weight of. A critical discussion of methods for determining the molecular weight of proteins, including osmotic pressure, ultra-centrifugation, diffusion and determination of dielectric constants.—G. VANZETTI. *Attivcongr. nazl. chim. pura applicata*, Rome 1935, Pt. I (1936), 578-598; through *Chem. Abstr.*, 31 (1937), 3945. (F. J. S.)

Sex Endocrine Factors in Blood and Urine in Health and Disease. Research of a century on content, both qualitative and quantitative of sex endocrine factors in blood stream and excretions, and variation under physiologic and pathologic conditions. In the female, are the bisexual gonadotropic hormone of the pituitary, the estrogenic factor, the corpus luteum hormone and the testis hormone, all recoverable in blood or urine. In the male are the testis hormone in the urine and an estrogenic substance in both blood and urine. Functional disease shown by blood and urinary studies, due to over or underfunction of ovaries in female. Little correlation between

male functional diseases and changes in humoral balance has yet been discovered.—ROBERT T. FRANK. *J. Am. Med. Assoc.*, 104 (1935), 1991. (M. R. T.)

Stomach—Remedy for Restoring Normal Acidity of. A mixture of compounds is used such as 3 to 17% of sodium bisulfate and 97 to 83% of dihydrogen sodium phosphate, of which one at least possesses a dissociation constant relative to free hydrogen ions of from $10^{-1.5}$ to 10^{-4} , while the other one has a smaller dissociation constant and is present in such a proportion that the mixture will yield an aqueous solution which when concentrated has a p_H value above 1.5 and when diluted as far as about 0.5% has a p_H value below 4.—FRANZ KÖRÖSY. U. S. pat. 2,079,512, May 4, 1937. (A. P.-C.)

Tannic Acid—Precipitation of, by Casein. The astringent taste of tea infusion is markedly reduced by the addition of a little milk, the difference being more than can be attributed to the slight dilution. The difference might be attributed to the stimulating effect of the milk, containing as it does a certain amount of fat, but some form of combination, probably with the casein, was suggested. Five experiments were tried. It is evident that casein, whether in the form of milk or cheese, has a marked effect in absorbing tannic acid in the acid conditions existing in the stomach, and must reduce the astringent effect.—D. B. DOTT. *Pharm. J.*, 138 (1937), 101. (W. B. B.)

Tea—Vitamin C in. Russian tea contains relatively a very high amount of *l*-ascorbic acid (iodine titration), much higher than that of other green plants (4 to 10 Gm. per Kg. in fresh leaves). It has been used successfully in the treatment of human scurvy in doses of 10–15 Gm. per day and has practical importance as such. The vitamin is stabilized by the presence of tannin. The influence of manufacturing processes on the destruction of the vitamin was investigated.—I. A. GOLJANICKIJ and K. A. BRJUSKOVA. *Compt. rend. acad. sci.*, U. R. S. S., 4 (1936), 381; through *Physiol. Abstr.*, 22 (1937), 388. (F. J. S.)

Trypsin—Effect of, on the Clotting of Blood in Hemophilia. Trypsin accelerates the coagulation of hemophilic blood *in vitro*. Its action is similar to that of thrombin.—T. LLOYD TYSON and R. WEST. *Proc. Soc. Exptl. Biol. Med.*, 36 (1937), 494. (A. E. M.)

Urea—Conductometric Method for the Micro-Determination of. The change in conductivity resulting from the hydrolysis of urea by urease is followed by means of the Kohlrausch bridge. The method is simple, reliable and accurate, and has been applied to the estimation of urea in blood, urine and milk; reliable values for quantities as low as 0.5×10^{-5} Gm. of urea are obtainable.—V. RANGANATHAN and B. N. SASTRI. *Biochem. J.*, 30 (1936), 2135–2139; through *Physiol. Abstr.*, 22 (1937), 344. (F. J. S.)

Urea—Determination of, in Urine. Two modifications of Marshall's method for determining urinary urea are presented. The first is the substitution of jack bean urease for the soy bean urease used in the original; the use of 1 cc. of the jack bean urease permits reading of results after one hour. Secondly, the difficulty in titrating the urease solutions and mixtures of these solutions and urea because of turbidity may be eliminated and the number of titrations necessary reduced from three to two by using as a blank a mixture of urease and urine in which the urease has been inactivated by exposure to a p_H of 2.8–3.0. Two procedures, one for determinations in a series of urines and the other for single determinations, are outlined and these modifications are included. Each of these procedures, checked against the accurate urease method of Van Slyke and Cullen, showed an error no greater than +1%.—ANDREW HUNTER. *Can. Med. Assoc. J.*, 36 (1937), 616; through *Squibb Abstr. Bull.*, 10 (1937), 1273. (F. J. S.)

Vitamin B₁—Action of Synthetic. Results obtained in animals indicate that the natural crystallized vitamin B₁ and the synthetic product are identical.—CHARLES R. ECKLER and K. K. CHEN. *Proc. Soc. Exptl. Biol. Med.*, 36 (1937), 458. (A. E. M.)

Vitamin B₄—Distribution of, in Some Plant and Animal Products. The chick was used for the assay of this vitamin. Dried grass, peanuts, wheat germ, pig's brain and kidney were found to be good sources. The cereals were poorer sources; white corn was superior to yellow corn.—O. L. KLINE, H. R. BIRD, C. A. ELVEHJEM and E. B. HART. *J. Nutrition*, 12 (1936), 455–460; through *Physiol. Abstr.*, 22 (1937), 277. (F. J. S.)

Vitamin C Requirements. The authors have attempted to determine the amount of vitamin C required by children of pre-school age. Three boys aged from three to five years were observed during successive periods, each consisting of five days for preliminary adjustment followed by two successive balance periods of five days each. The children lived under controlled

conditions and were given constant weighed diets which differed only in their content of vitamin C. Variations in the amount of vitamin C were obtained by giving varying amounts of orange juice and of a solution of commercial ascorbic acid. Retention of ascorbic acid was estimated as the difference between that contained in the food and the amount excreted in the urine, ascorbic acid being determined by titration with 2:6-dichlorophenolindophenol. Ascorbic acid ingestion ranged from 2.7 to 12.7 mg. per Kg. of body weight per day, and during the balance periods the amount excreted ran parallel to that ingested. Assuming that all ascorbic acid ingested in excess of the requirements was excreted in the urine, retention was calculated to be 1.7 to 4.3 mg. per Kg. of body weight per day, and was found to run parallel to the amount ingested up to ingestions of 7.5 mg. per Kg. of body weight, above which quantity retention was not increased. This suggests that a daily ingestion of 7.5 mg. per Kg. of body weight is the minimum for children of the ages studied. Depleted tissues will retain more until they become saturated. The highest retentions were obtained with the youngest child, suggesting that young tissues have a greater need of vitamin C than those more mature. This was confirmed by observations of creatinine excretion. The balance studies in which commercial ascorbic acid was used confirm that the synthetic substance can replace the natural vitamin. The authors discuss the finding that urinary excretion of ascorbic acid tends to run parallel to ingestion at all levels of intake and even when less than the optimum amounts are given, and suggest that urinary excretion may represent endogenous as well as exogenous ascorbic acid, so that until the tissues are completely exhausted the endogenous vitamin C will always appear in the urine. The slow adjustment of the organism to different levels of ingestion would account for the high urinary output under conditions of less than optimum ingestion.—G. J. EVERSON and A. L. DANIELS, *et al.* *J. Nutrition* (July 1936), 15; through *Brit. Med. J.*, No. 3959 (1936), 1066D. (W. H. H.)

Vitamin K.—Occurrence and Chemical Nature of. Deficiency of vitamin K leads to hemorrhages in the gizzard of chickens, to anemia and to a lengthening of the clotting time of the blood. Examination was made of green vegetables, carrot, alfalfa, potato, barley and the dried livers of hog, dog, chicken and cod, for their potency in this vitamin which is thermostable and fat-soluble. Spinach, after hot air drying, proved to be the richest source, with 540 units per Gm., figures for other substances being: dried cabbage 230, kale 270, alfalfa 250, carrot 190, and hog liver 100. The livers of normal cod and—unexpectedly—of chicken, were poor sources of the vitamin, averaging 11 units or less per Gm. The activity of hog liver was reduced to one-third by cold saponification and completely by hot saponification. The fatty acid fraction of hog liver, although itself inactive, appears to enhance the activity of the unsaponifiable fraction obtained by cold saponification. Organic solvents, such as alcohol and acetone, extract more vitamin K from alfalfa than is indicated by direct feeding of the vegetable, which is attributed to its more complete absorption from the intestine. During processes of concentration of the vitamin, impurities can be removed from a petroleum spirit extract by means of alcohol (90%). After adsorption upon alumina the vitamin resisted elution by organic solvents, but from calcium carbonate or sucrose was readily removed by a mixture of ethyl alcohol and benzene, the concentrates so obtained possessing an activity of 600,000 to 1,000,000 units per Gm.—H. DAM and F. SCHOENHEYDER. *Biochem. J.*, 30 (1936), 897; through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 732. (S. W. G.)

Xylulose and Ribulose—Improved Method for the Preparation of. On treating pentoses with pyridine and separating the products by means of their acetone derivatives, ketopentoses may be isolated. *d*-Xylulose was prepared from xylose, ribulose from arabinose.—P. A. LEVENE and R. S. TIPSON. *J. Biol. Chem.*, 115 (1936), 731-747; through *Physiol. Abstr.*, 22 (1937), 229. (F. J. S.)

ANALYTICAL

Acetic Acid—Observations in the Testing of. Specification tests for titration, melting point, residue on evaporation, iron, chlorides, sulfates, heavy metals, permanganate test and formic acid test are described.—E. C. CRAVEN and J. M. KERSHAW. *J. Soc. Chem. Ind.*, 56 (1937), 72T. (E. G. V.)

Acetone—Colorimetric Determination of, by the Salicyl-Aldehyde Method. 0.0025 mg. acetone in 5 cc. can be accurately determined by the method described, based on the methods of Csonka and Korenman. Variations due to different brands of salicyl-aldehyde are discussed, also possible sources of error in the method of Behre and Benedict.—A. RAVIN. *J. Biol. Chem.*, 115 (1936), 511-518; through *Physiol. Abstr.*, 22 (1937), 229. (F. J. S.)

Adenosinetriphosphoric Acid—Isolation of, from Yeast. From 200 Gm. of fresh yeast some 60 mg. of adenosinetriphosphoric acid were isolated as the silver salt and found to be identical in all respects with similar products obtained from rabbit muscle. Inorganic pyrophosphate was also obtained, and a barium salt from which two-thirds of the phosphoric acid was easily split off and which had a nitrogen:phosphorus ratio of 4:3; hence it was probably inosinepyrophosphoric acid.—TH. WAGNER-JAUREGG. *Hoppe-Seyler's Z. Physiol. Chem.*, 238 (1936), 129-310; through *Chimie & Industrie*, 37 (1937), 313. (A. P.-C.)

Aluminum—Test Paper for. The paper is prepared by soaking ashless filter paper in a 0.1% solution of aurintricarboxylic acid. The solution supposed to contain sodium aluminate is acidified with dilute hydrochloric acid. One drop of this solution is placed on a piece of the test paper; after about one minute the wetted place on the paper is held over the open mouth of an ammonia bottle for about ten seconds, and then allowed to dry. After about one hour the presence of aluminum is shown by a deep pink spot.—W. E. THRUN. *J. Chem. Educ.*, 14 (1937), 281. (E. G. V.)

Antithyroxine Substance—Occurrence of an Iodine-Containing, in the Thyroid Gland. A thyroxine-free iodine-containing peptone was isolated after hydrolysis of the dried thyroid gland with barium hydroxide. In the rat showing marked hyperthyroidic symptoms with daily thyroxine, the peptone either orally or subcutaneously greatly diminished the hyperthyroid effects. Experimental hyperthyroidism is uninfluenced or even increased by the use of Lugol's iodine or by diiodotyronine.—I. ABELIN. *Biochem. Z.*, 286 (1936), 160-181; through *Physiol. Abstr.*, 22 (1937), 306. (F. J. S.)

Arsenic—Detection of Small Quantities of, by Electrolytic Reduction. The purpose of the work described was to test the conclusion of Mai and Hurt (*Z. Untersuch. Nahr.-u. Genussm.*, 9 (1905), 193) with respect to the impossibility of certain detection of arsenic electrolytically without separating the cathode and anode areas. With an apparatus similar to that of Mai and Hurt, negative results were obtained, but by replacing the platinum cathode with mercury, to make use of the overvoltage of mercury, it was possible, with 12% sulfuric acid as electrolyte, to detect 0.25 mg. of arsenic oxide provided a little alcohol or dextrose was added to reduce the ozone formed. Better results were obtained, however, when the anode and cathode compartments were separated. As electrolyzing vessel, a wide-mouthed 150-cc. flask was used. At the bottom a platinum wire was fused into the glass through which electricity flowed into the mercury cathode which formed a ring around the raised part of the bottom of the flask. The stopper of the flask carried three holes: in one a dropping funnel was inserted which dipped below the surface of the electrolyte during the experiment, the middle hole carried an open glass tube which at the bottom was enlarged to form a bell in which the platinum plate electrode was suspended by a wire running through the open tube and the third opening in the stopper was for the escape of hydrogen and arsine into silver nitrate solution after passing through a plug of glass wool. With a current of 3 to 4 amperes, it was found possible to detect as little as 0.9 γ of arsenic in 3 hours.—M. KOSLOWSKY and A. J. PENNER. *Mikrochemie*, 19 (1936), 89-97; through *Chimie & Industrie*, 37 (1937), 664. (A. P.-C.)

Arsenic—Determination of. By the Gutzeit method the arsenic in organic combinations, such as shrimp (I), tobacco (II) and cod liver oil (III) is not completely converted to the inorganic form. By using the perchloric acid treatment it was found that it not only destroyed the organic material completely but also shortened the time of digestion. Thus 20 cc. of sulfuric acid, 35 cc. of nitric acid and 10 cc. of 60% perchloric acid were sufficient to digest 10 Gm. of I, II or III. After this treatment the digested solutions were analyzed by the Gutzeit method. Good results were obtained also after dry ashing with magnesium nitrate as ash-aid and subsequent application of the Gutzeit method. With cerium nitrate as an ash-aid, recovery of arsenic was only 14%. The wet digestion process, however, is to be preferred because of time saving. It is recommended to investigate other colorimetric methods to find a more sensitive and accurate method than the Gutzeit.—C. C. CASSIL. *J. Assoc. Official Agr. Chem.*, 20 (1937), 171; through *Squibb Abstr. Bull.*, 10 (1937), 1137. (F. J. S.)

Arsenic—Modification of the Bettendorf Test as a Confirmatory Test for, in Qualitative Analysis. To use this test, separate arsenic from antimony and tin by any usual method which leaves arsenic in the form of a sulfide precipitate. Transfer the precipitate to a beaker, add 10 cc. of 6 M-perchloric acid and heat until dense white fumes are copiously emitted. Then add 10 cc.

of 12 *M*-hydrochloric acid and 5 cc. of 0.5 *M*-stannous chloride, heat the mixture to boiling and allow to stand one minute without further heating. The formation of a dark brown solution indicates the presence of arsenic. The coloration is due to the presence of free arsenic. When no brown coloration appears in the solution after it has stood one minute proceed as follows: In a separate vessel thoroughly mix 1 cc. of 0.25 *M*-mercuric chloride with 9 cc. of water, add 1 cc. or less of this mixture to the solution being tested for arsenic, stir and allow the final mixture to stand for ten minutes. If the solution is colorless at the end of ten minutes, arsenic is absent. Although the test is very delicate and certain, the reactions are often very slow, and time is required for the formation of the brown coloration. Mercuric chloride catalyzes the reaction.—JACOB CORNOG. *J. Chem. Educ.*, 14 (1937), 130. (E. G. V.)

Arsenic Trisulfide—Influence of p_H in the Precipitation of. In a 1% solution of As_2O_3 there is obtained a maximum of precipitation at p_H 0.89, while increasing the true acidity increases the solubility of As_2S_3 . The optimum hydrochloric acid concentration in the cold is 3.38 cc. of 1:1 hydrochloric acid per 100 cc. In tests made with Fowler's solution there was obtained a maximum precipitation at p_H 1.13.—C. DI PASCAL. *Act. trab. V. Congr. nac. med.*, 7 (1934), 428; *Anales asoc. quim. argentina*, 24, 3B; through *Chem. Abstr.*, 31 (1937), 3818. (F. J. S.)

Boric Acid—Influence of, on Acetic Fermentation. From a study of the influence of boric acid on acetic fermentation it is concluded that (1) boric acid in small quantities enhances the fermentative activity, (2) in larger quantities it is toxic, but (3) this toxicity can be diminished if some substance which combines with boric acid—*e. g.*, glucose—is added to the culture medium.—M. NICULESCU. *Bull. soc. chim. biol.*, Paris, 18 (1936), 1831–1841; through *Physiol. Abstr.*, 22 (1937), 353. (F. J. S.)

Buffer Solutions—Note on the Preparation of, for Determination of p_H . A method of preparing a series of standard buffer solutions from two or three stock solutions of known p_H is described. It is especially suitable for preparing small amounts of solutions.—AGNES SHORE. *Biochem. J.*, 31 (1937), 219–222; through *Chem. Abstr.*, 31 (1937), 4184. (F. J. S.)

Caffeine—Determination of, in Coffee and in Decaffeinated Coffee. Gobert's method (*Ann. fals.*, 19 (1926), 586; 24 (1931), 288) is perfectly reliable and yields a product sufficiently pure to be weighed directly without having to make a nitrogen determination. It is simpler, quicker and more reliable than the commonly used method involving: boiling with water, adding aluminum acetate, copper sulfate and sodium bicarbonate, making to definite weight, evaporating an aliquot to dryness (with addition of calcined alumina and dry sand toward the end), extracting the dry residue with carbon tetrachloride, and determining nitrogen in the extract.—D. FLORENTIN. *Ann. fals.*, 30 (1937), 83–85. A. P.-C.)

Castor Beans—Refractometric Determination of Fat in. The refractometric method (*C. A.*, 29, 627; 30, 2781) has been extended to castor beans. A table is given for converting observed differences in n_D^{20} into percentage of fat in the sample. The average error does not exceed 0.2–0.4% and is ascribed mainly to difficulties in taking a representative sample. Although usually unnecessary, a correction can be made for errors caused by the oil in the beans having an abnormal n_D^{20} .—WOLFGANG LEITHE and HERBERT LAMEL. *Fette u. Seifen*, 44 (1937), 247–248; through *Chem. Abstr.*, 31 (1937), 4145. (F. J. S.)

Castor Oil—Benzene Point, New Constant for. Curves given of the solubility of castor oil in two types of benzene. The critical solution temperature is 37.2° and 40.2°, respectively, with "normal" benzene (d_{20} 0.691, n_D^{20} 1.3875, aniline point 57.7°) and benzene "for refractometric purposes" (d_{20} 0.706, n_D^{20} 1.3956, aniline point 62.9°). The benzene point can be used to detect as little as 2% of another oil added to castor oil.—WOLFGANG LEITHE and HANS J. HEINZ. *Fette u. Seifen*, 44 (1937), 33–34; through *Chem. Abstr.*, 31 (1937), 4147. (F. J. S.)

Cerium Oxalate, Colloidal—New Method for the Detection of, for the Apothecaries' Laboratory. H. proposes the following method: "Soak two tablets of Peremesin in 5 cc. water and allow to stand for 1/4 hour with shaking. Then centrifuge with a hand machine (to separate the insoluble tablet mass) until an apparently clear, slight brown-yellow opalescent solution is obtained. In order to remove any of the particles which are carried away in pouring the liquid from the tube, pass the liquid through a small filter. To the final liquid add 5 drops hydrogen peroxide (10%), 1 cc. ammonium nitrate solution (10%) and 1 cc. concentrated ammonia. If the colloidal cerium oxalate is present the solution becomes yellow due to the separated cerium hydroxide and upon boiling a lemon-yellow precipitate separates. In this way, the ordinary salt is

easily distinguished from the colloidal form.—ERICH HERRMANN. *Apoth. Ztg.*, 52 (1937), 331.

(H. M. B.)

Chloral—Determination of, in Biological Substances. Chloral in biological tissue is determined in amounts of 0.2–4.0 mg., with an error not exceeding 4%, by extraction with organic solvents (alcohol-acetone), removal of the chlorides from the extract with silver nitrate, saponification with sodium alcoholate, conversion of the resultant chlorine to silver chloride and titration of the latter (after solution in strong acids) with KSCN.—L. OLSZYCKA. *Bull. soc. chim. biol.*, 19 (1937), 731; through *Squibb Abstr. Bull.*, 10 (1937), 1239.

(F. J. S.)

Cocaine—Detection of, in Dragees of Menthol, Sodium Borate and Cocaine. Powder 6 dragees in a mortar and mix with 1.5 Gm. of sodium bicarbonate. Dissolve in 25 cc. of water, transfer to a separatory funnel, then add 50 cc. of ether and shake for 5 minutes. Filter the ether layer into a dish, add 2 cc. of 2% hydrochloric acid and evaporate the ether using gentle heat. Remove the last of the ether with a current of air, then filter. To 1 cc. of filtrate add exactly 0.1 cc. *N/2* sodium hydroxide and place 2, 3 and 4 drops of the liquid on different slides. Add to each slide 2 drops of saturated picric acid solution. Observe after 15 or 30 minutes.—P. DUMONT and A. DECLERCK. *J. pharm. Belg.*, 19 (1937), 41–32.

(S. W. G.)

Cod Liver Oil—Determination of, in Extract of Malt with Cod Liver Oil. *Method.*—Weigh accurately 5–10 Gm. in a beaker and mix thoroughly with distilled water (3 cc. for every Gm. taken). Add a quantity of absolute alcohol, in the ratio of 8 parts to 5 parts of the above dilution, and 0.4 Gm. of purified kaolin. Stir thoroughly and allow the precipitate to settle. Filter the clear liquid and add to the precipitate about 50 cc. of alcohol (70%), again stirring and allowing to settle. Filter the clear liquid through ordinary grade filter paper using a "rapid filtering funnel" (Schott and Gen., Jena), and collect the residue in the filter, washing out the beaker with alcohol (70%). When the precipitate has drained, release any liquid from the stem of the funnel and wash the residue with ether from a wash bottle, collecting the ether in a separating funnel. Any precipitate adhering to the paper should be separated with a rounded glass rod. Continue washing with ether until a drop shows no film of oil on evaporation, about 160 cc. being necessary. Wash the ether in the separating funnel with three portions of 30 cc. of distilled water and transfer to a distillation flask. Recover the ether and transfer the contents of the distillation flask to a weighed beaker, washing out the flask with small quantities of ether. Add a few cc. of absolute alcohol and evaporate. Cool and weigh. The oil is then tested by the process of the British Pharmacopœia. The method is claimed to be accurate and the assay, which can be carried out in 3 hours, does not affect the vitamin content of the oil.—C. GUNN and P. F. R. VENABLES. *Quart. J. Pharm. Pharmacol.*, 9 (1936), 430–433.

(S. W. G.)

Colorimetry—Organic Reagents in. A Proposed Microtechnic for the Search of New Organic Color Reactions. Solutions of known concentration of the ions of practically all elements (except the gases) are arranged according to their atomic numbers as in the periodic table. A concentration of 20 mg. per cc. is convenient for a standard solution. These should be prepared from salts of a high degree of purity. In most cases aqueous solutions are satisfactory, but in a few instances acid solutions are necessary to prevent hydrolysis. Each reagent bottle carries a calibrated dropper tipped with a rubber cap. A dropper which delivers about 20 cc. is convenient, since each drop will contain about one mg. of the solution to be tested. Single drops of each solution are placed in 0.5-cc. glass cells such as those used in the Brown drop method for the determination of *pH* colorimetrically. These cells may be arranged in vertical columns and the various periodic groups of the elements may then be investigated one by one. To each of the glass cells is added a drop of one of the ion solutions. A drop of the organic reagent solution is then placed in each cell and observation made as to the presence or absence of color formation. In this way it is possible to cover the entire periodic table in about thirty minutes, provided no color reaction is formed. In case one or more color reactions are obtained, then it is necessary to observe the various characteristics such as color intensity, shade or tint of color, rate of fading or increase in intensity, if any. If only a few ions yield color reactions and the color is rapidly formed and is reasonably stable, then the reaction offers a possible colorimetric method. It will then be necessary to carry out an extensive critical examination of the new reagent, its color reaction and sensitivity.—JOHN H. YOE. *J. Chem. Educ.*, 14 (1937), 170.

(E. G. V.)

Coumarin—Determination of, in Plants. A precise method for the determination of coumarin, melilotic acid and coumaric acid in plant tissue.—WILLARD L. ROBERTS and KARL P.

LINK. *J. Biol. Chem.*, 119 (1937), 269; through *Squibb Abstr. Bull.*, 10 (1937), 1240. (F. J. S.)

Crataegus oxyacantha and Prunus spinosa—Fluidextracts of. The fluidextract of the flowers of the hawthorn, *Crataegus oxyacantha* (I), is a tonic with cardio-vascular action. The flowers of *Prunus spinosa* (II) differ only from those of I in minute morphological details and the possibility of the chemical detection of the sophistication of I with II has been studied. The flowers of II have an odor of hydrocyanic acid and tests on five crops of fresh flowers showed a content of 0.02, 0.04, 0.063, 0.049 and 0.060%, respectively. Fluidextracts prepared from these crops were completely free from hydrocyanic acid. Fluidextracts of I and II (10 cc.) were diluted to 50 cc., treated with 10–20 drops of concentrated hydrochloric acid and boiled for 10 minutes. The hydrolyzed extract was detannified by boiling with leather powder and filtering. The clear yellow liquids gave the same color reactions with various acid and alkali reagents. Attempts to determine the NMe_3 content of I showed that the content varied with the mode of preparation and stabilization. The lack of any definite particular principle in II makes the detection of sophistication impossible.—CRISTOFORO MASINO and MICHELE ROGNONE. *Boll. chim.-farm.*, 76 (1937), 145–148, 151; through *Chem. Abstr.*, 31 (1937), 4447. (F. J. S.)

Epinephrine—Determination of. The error in excess previously observed in the Folin estimation of epinephrine by means of the reduction of the uric acid reagent to a blue derivative as compared with the more reliable oxidation method or pressor assay can be almost quantitatively accounted for by the ascorbic and uric acid present (chiefly the former). Folin's reagent has been demonstrated sensitive to ascorbic acid derivatives not detectable by indophenol or I_2 . Low values are probably due to low p_H 's. Color-concentration curves showing the effect of added ascorbic acid on the apparent epinephrine content (Folin estimate) of medullary and cortical adrenal extracts were linear. Apart from the previously observed but unidentified catechol compound, the claim that an epinephrine precursor exists is unconfirmed and must have arisen from doubtful methods of estimation.—JOHN DEVINE. *Biochem. J.*, 31 (1937), 545; through *Squibb Abstr. Bull.*, 10 (1937), 1151. (F. J. S.)

Filter—All Glass Bacteria-Proof. B is made of resistance glass and has a smooth flange at its lower end. S is a short thistle funnel of resistance glass with a flange at its upper end. F is a Seitz filter pad and is supported on D which is a perforated or porous glass disc. D is separated from the flange of the funnel by a rubber washer R.—F. WOKES. *Quart. J. Pharm. Pharmacol.*, 9 (1936), 460–461. (S. W. G.)

Fructose—Determination of, with Selenious Acid. Studies have been made to develop a method for the determination of sugars which contain the keto group, with H_2SeO_3 - H_2SO_4 reagent. The method depends on the reduction of the H_2SeO_3 to Se by the ketoses; the red amorphous precipitate of Se is then weighed. The results depend on the concentration of the sugar solution, and the content of H_2SeO_3 and concentrated H_2SO_4 in the reagent as well as on the degree, length and evenness of heating of the reaction mixture. Analytical data are given for the application of the method to the determination of definite amounts of fructose, sucrose, glucose, galactose, lactose and maltose, as well as for mixtures of two or three of these various types of sugars. These data show that the method can be used for the determination of fructose as well as sucrose even in the presence of aldose sugars, because aldose sugars in the presence of ketose sugars have little if any reaction with the H_2SeO_3 - H_2SO_4 reagent.—G. REIF. *Z. Untersuch. Lebensm.*, 73 (1937), 20–26; through *Chem. Abstr.*, 31 (1937), 3819. (F. J. S.)

Fumigants—Determination of. VIII. Sampling from Small Spaces. Different types of small spaces in ships and houses are described, together with their penetration by a fumigant

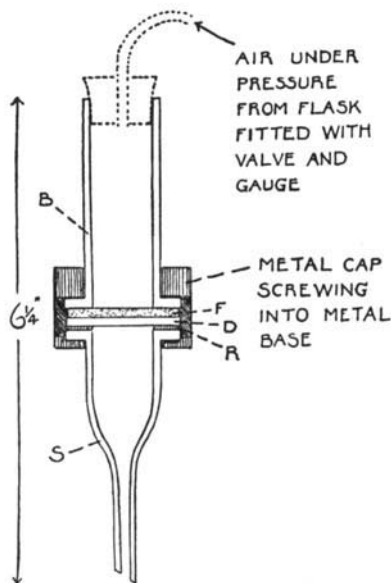


Fig. 1.

and methods of sampling. An expression giving the permissible volume of gas sample to be taken under certain conditions is developed and tested.—A. B. P. PAGE and O. F. LUBATTI. *J. Soc. Chem. Ind.*, 56 (1937), 54T. (E. G. V.)

Genus *Monarda*—Study of Several Species of. 3. **Summary of Ash Analyses.** This report continues previous reports on *M. pectinata*, *M. Menthaefolia* and *M. punctata* var. *leucantha* and makes some comparisons with *M. punctata* and *M. fistulosa*. Tables show sulfate, calcium, magnesium, iron and aluminum in the five species; and percentages of several of the constituents in flower heads, leaves, stems and roots for the three species. Calcium and sulfate determinations indicate possibilities of a correlation between ash analyses and the occurrence of characteristic phenolic constituents.—B. V. CHRISTENSEN and R. S. JUSTICE. *J. Am. Pharm. Assoc.*, 26 (1937), 468. (Z. M. C.)

Glucosamine—Method for the Isolation of. Glucosamine can be separated from mixtures containing simple sugars and amino acids by forming its carbobenzyloxy derivative. The mixture in NaHCO_3 solution is treated with $\text{PhCH}_2\text{OCOCI}$ and the glucosamine derivative precipitates in crystalline form from which the amino sugar may be regenerated by treatment with palladium and hydrogen. The carbobenzyloxy derivatives of the amino acids are obtained by acidifying the filtrate and the simple sugars are subsequently isolated as hydrazones or osazones in the usual manner. The application of the method to material of natural origin will be reported later.—ERWIN CHARGAFF and M. BOVARNICK. *J. Biol. Chem.*, 118 (1937), 421–426; through *Chem. Abstr.*, 31 (1937), 4278. (F. J. S.)

Hsiung-chang—Chemical Constituents of. The drug hsiung-chang (bear's paw) has been used in China as a tonic and to prevent colds. The dried material contains fat 43.90 and crude protein 55.23%. The protein fraction on hydrolysis yields a large amount of arginine + alanine.—TENG-HAN TANG and YU-HSIANG CHAO. *J. Chinese Chem. Soc.*, 5 (1937), 9–13; through *Chem. Abstr.*, 31 (1937), 4447. (F. J. S.)

Inexpensive Lamp for Analytical Balance. A diagram plan of the lamp is given. The reflector is of tin-plate, and a 25-watt tubular frosted bulb is used. The lamp is mounted above the balance case.—H. E. PHIPPS. *J. Chem. Educ.*, 14 (1937), 107. (E. G. V.)

Iodine—Determination of, in Food Chemistry. Various methods were investigated and T. concludes that the available methods are satisfactory for the determination of the amounts of iodine in question, if the specified concentrations and the p_{H} conditions are observed. The various methods are described.—E. THOMAE. *Angew. Chem.*, 50 (1937), 250–252; through *Chem. Abstr.*, 31 (1937), 3999. (F. J. S.)

Iodine—Determination of, in Organic Medicinals.—A detail study dealing with (1) methods for the determination of potassium iodide including (a) those involving the liberation of iodine and subsequent titration, (b) conversion of iodine into iodic acid by means of chlorine, bromine, an excess of bromine and by potassium permanganate and (c) different methods including Dénigé's, Andrews', Baubigny and Chavanne and Wahl's. The application of these methods for the determination of iodine in the following compounds: Iodoform, Diiodoform, Lipiodol, Aristol, Yatren, Vioform, Airol and Quinine Bismuth Iodide is discussed.—LEON LECLERQ. *Apoth. Ztg.*, 52 (1937), 604–607. (H. M. B.)

Iodine—Note Concerning the Determination of. Modifications and improvements in the method previously described for the determination of iodine are reported. The Fresenius flask may now be dispensed with and the necessity of twice transferring the distillate quantitatively from one vessel to another is avoided. Details for blood and for thyroid tissue are given; not more than 100 mg. or less than 5 mg. of fresh thyroid should be used.—B. F. STIMMEL and D. R. McCULLAGH. *J. Biol. Chem.*, 116 (1936), 21–24; through *Physiol. Abstr.*, 22 (1937), 339. (F. J. S.)

Iodotannic Syrup—Direct Potentiometric Titration of Concentrated. Dilute 5 Gm. of iodotannic syrup (tenfold) with 100 cc. of water and add 1 cc. of diluted sulfuric acid. Introduce the indicating and reference electrodes and attach to the modified wheatstone indicator, the indicating electrode being the plus pole. Stir continuously. Add $N/10$ silver nitrate until the needle of the millivoltmeter is inflected. The number of cc. added divided by 4 gives the per cent of iodine in the sample.—P. DUMONT and G. THOMAS. *J. pharm. Belg.*, 19 (1937), 1–4. (S. W. G.)

Iron—Photometric Microdetermination of, in Blood. Blood iron is oxidized with concentrated nitric acid. Then a mixture of 1 volume sulfuric and 3 volumes nitric acid is added,

the mixture is boiled and urea is added to remove the excess of nitric acid. Addition of ammonium thiocyanate produces a yellow-red color which is read in the Pulfrich photometer.—G. BUCCIARDI. *Boll. soc. ital. biol. sper.*, 11 (1936), 316–317; through *Chimie & Industrie*, 37 (1937), 873. (A. P.-C.)

Isotopes—Separation of, by Diffusion in Fast Streaming Mercury Vapor. A new diffuser has been developed for the study of diffusion in fast streaming mercury vapors. The diffuser has been used successfully for the concentration of the hydrogen isotopes. The theoretical expressions for the fractionation ratio and the output in terms of the mercury velocity and the dimensions of such diffusers have been tested.—D. MACGILLAVRY. *Rec. trav. chim.*, 56 (1937), 330. (A. C. DeD.)

Liver Oil from *Dasyatis Akije*. Vitamin Contents, Physical and Chemical Constants. The liver of the fan fish yields, when pressed, about 40% of oil (m. p. 7–8°; d_4^{20} 0.8914; n_D^{20} 1.477; iodine value 92.99; saponification value 194.6; free acid value 0.04; acetyl value 21.5; unsaponifiable matter 7.97) which affords 92.08% of acid (oleic 8–8.26; linoleic 17–18.92; linolenic and isolinolenic 1.6–2.46; clupanodonic 4.78; palmitic 18.61 and stearic 44.89) and contains 1,000 units of vitamin-A and 200 of vitamin-D per Gm.—T. H. WANG and C. H. KAN. *J. Chinese Chem. Soc.*, 4 (1936), 393; through *J. Soc. Chem. Ind.*, 56 (1937), B, 59. (E. G. V.)

Maize—Note on the Butyl Alcohol-Acetone Fermentation of. About one-half of the total protein of maize can be extracted by means of dilute alkali; the butyl alcohol-acetone fermentation of the residue gives approximately the normal yield of solvents, but fermentation is slower; the slow fermentation is not due so much to the removal of the protein as to the removal of some activating substance soluble in acids, alkali and water.—C. WEIZMANN and H. DAVIES. *J. Soc. Chem. Ind.*, 56 (1937), 8T. (E. G. V.)

Malic Acid—Detection of, by Means of Brucine. If a little solid brucine is added to a drop of an aqueous solution of either optical isomer of malic acid, a swarm of typical crystals can be seen under the microscope and the formation of these crystals can be used for the identification of malic acid. The crystals are described and photographs shown. The test is not disturbed by the presence of lactic acid, or sugars if at least 0.3% of malic acid is present in the solution tested. Mineral acids interfere unless neutralized by excess brucine but the alkali salts of malic acid must be decomposed by acetic acid.—C. J. NIEUWENBURG and L. M. BROBBEL. *Mikrochemie, Festschr. von Hans Molisch* (1936), 338–341; through *Chem. Abstr.*, 31 (1937), 4230. (F. J. S.)

Mercapto Group—Detection of. The mercapto group may be detected by triethylbismuth (I) and tetraethyl-lead (II). I and II do not react with the hydrogens in NH and C≡CH groups, nor do they react with simple OH groups. Some strong carboxylic acids, however, undergo generally limited reaction. There is no interference by azo or nitro groups. I and II may be useful to establish the existence of thioenolization in compounds like thioacetic acid.—HENRY GILMAN and JOSEPH F. NELSON. *J. Am. Chem. Soc.*, 59 (1937), 935; through *Squibb Abstr. Bull.*, 10 (1937), 1090. (F. J. S.)

Methanol—Determination of. A study and modification of the Dénigés method. First make the following qualitative test which gives an approximation of the amount of methanol: remove from the sample impurities which might produce a color with Schiff's reagent, to 5 cc. of the purified sample add 0.3 cc. of 85% phosphoric acid and 2 cc. of 3% potassium permanganate, shake, let stand 15 minutes, add 1 cc. of 10% oxalic acid solution, shake 2 to 3 minutes when a brown coloration appears, add 1 cc. of concentrated sulfuric acid and 5 cc. of Schiff's reagent; in presence of methanol a pink, violet-pink or violet color is produced after a certain time. The quantitative determination is carried out in the same way, except that oxidation is allowed to proceed 30 minutes, and the color is compared with that of a set of standards prepared by placing in test-tubes 1, 2, 3, etc., cc. of methanol, diluted as indicated from the preliminary test. To the sample and standards add 1 cc. of 4% ethanol, 1 cc. of 85% phosphoric acid and 2 cc. of 3% potassium permanganate, followed after 30 minutes by 1 cc. of 10% oxalic acid. Decolorize the brown solution by adding (with cooling) 1 cc. of concentrated sulfuric acid, add 5 cc. of Schiff's reagent, let stand for 1 to 2 hours to complete development of the color, dilute to definite volume and compare the colors. The method is sensitive to 0.008 mg. of methanol.—E. M. IOFINOVA-GOLDFEIN. *Guigiénia Trouda*, 14, No. 1 (1936), 82–84; through *Chimie & Industrie*, 37 (1937), 658. (A. P.-C.)

Nicotine and Nicotine Sulfate—Optical Rotation and Refractivity of, in Dilute Aqueous

Solution. The values for the following constants for pure nicotine have been obtained: d_{20}^{20} 1.0096, $[\alpha]_{5461}^{20}$ -204.1, $[\alpha]_D^{20}$ -169.4. The specific rotation, the rotation of mean yellow light measured in sugar (Ventzke) degrees, and the values of the refraction measured by the Zeiss immersion refractometer have been determined for nicotine solutions in pure water, from 0 to 10%. Similar values have been determined for nicotine sulfate solutions. The specific rotations of nicotine and nicotine sulfate solutions between 0 and 10% are constant. Zeiss readings of both nicotine and nicotine sulfate solutions become higher as the concentration is raised.—F. G. H. TATE and L. A. WARREN. *J. Soc. Chem. Ind.*, 56 (1937), 39T. (E. G. V.)

Nitrogen—Comparative Determination of, by Dumas and Kjeldahl Methods. In order to prove or disprove criticisms which have been made of the Kjeldahl method, an extensive study was made of its application to the determination of the nitrogen balance in agricultural and biological investigations, and numerous comparative determinations were made by the Dumas method. It was found that, with reasonable care in manipulation, the results by the two methods were in good agreement, but that the Dumas gave results from 0 to 5% higher than the Kjeldahl. By using special precautions and refinements, there was a slight increase by the Kjeldahl and decrease by the Dumas, results by the two methods tending to closer agreement. It is concluded that both methods are equally reliable, that the difference in the results between the two is no greater than the experimental error, that the Dumas is very delicate to use and time-consuming and that the Kjeldahl is much quicker and convenient and, as reliable if properly carried out. The method used in the investigation comprised the use of about 30 cc. of concentrated sulfuric acid per Gm. of sample, addition of 1.5 Gm. of copper sulfate, followed after the first hour's digestion by 3 to 4 drops of mercury, and continuing digestion for 2 hours after complete decolorization. Addition of a small quantity of phosphoric acid at the start, or preliminary hydrolysis or artificial digestion, accelerate ammonization and destruction of organic matter without affecting the results.—J. ALQUIER and M. SIROT. *Bull. soc. sci. hyg. aliment.*, 25 (1937), 48-69. (A. P.-C.)

Odors—Measurements of. A review of methods and apparatus with twenty references.—HERMANN BACH. *Gesundh. Ing.*, 60 (1937), 222-225; through *Chem. Abstr.*, 31 (1937), 4171. (F. J. S.)

Œstrin, Urinary—Colorimetric Determination of. The colorimetric determination of urinary œstrin was attempted with œstrone and œstriol fractions of human and rabbit urines by the use of color absorption methods. The phenolsulfonic acid test after the method of Cohen and Marrian apparently gives reliable determinations of œstriol content in human pregnancy urines of the 6th to 9th months of pregnancy. For earlier stages it gives an over-estimation owing to the presence of inactive materials that develop colored compounds absorbing at the wavelength of the typical hormone compounds. Œstrone fractions appear to contain such materials even in late pregnancy. The benzoyl chloride test distinguishes œstrone and œstradiol from œstriol. The David test for œstriol is specific for crystalline hormone but cannot be used for crude extracts because cloudy solutions invariably develop.—G. PINCUS, G. WHEELER, G. YOUNG and P. A. ZAHL. *J. Biol. Chem.*, 116 (1936), 253-266; through *Physiol. Abstr.*, 22 (1937), 419. (F. J. S.)

Oils and Phosphatides—Determination of, in Organic Raw Material. One solvent alone never extracts the total amount of organic phosphatides. It is best to extract first with a mixture of alcohol and benzol, and then to continue with pure alcohol. The second extract always contains, besides the phosphatides, a certain amount of oil which floats on top of the extract.—B. REWALD. *J. Soc. Chem. Ind.*, 56 (1937), 77T. (E. G. V.)

Opium Alkaloids—Reaction of, and Application to Determination of Oxidizing Substances. The following reaction gives positive results with alkaloids containing an oxyphenanthrene nucleus. Dissolve several mg. of the alkaloid in 0.5 cc. of 95% alcohol, add 1.5 cc. of concentrated sulfuric acid ($d = 1.83$), mix, heat the tube in a boiling water-bath for 2-3 minutes, cool and add 4 cc. of water. To a portion of this colorless solution add 1-2 drops of hypochlorite solution; a brownish red (lateral observation) or current red (longitudinal observation) forms. The color does not disappear on addition of stannous chloride and gives an absorption band in the violet-blue range of the spectrum. Addition of bromine water or nitrite gives similar color reactions as above. The reaction may be applied to the detection of oxidizing substances by using a reagent prepared with 1 cc. of a 1:20 solution of codeine, 2 cc. of concentrated sulfuric acid and 20 cc. of distilled water. One cc. of reagent is added to 5 cc. of bromine or chlorine water, hypochlorite or nitrite.

Negative results are observed with nitrates, chlorates, persulfates, metallic peroxides and hydrogen peroxide.—M. PÉSEZ. *Bull. soc. chim. France* (April 1936); through *J. pharm. Belg.*, 19 (1937), 316. (S. W. G.)

Opium, Tincture—Assay of. The morphine contents of 17 simple tinctures of opium from different pharmacies were determined by the method of the German Pharmacopœia VI and by Mannich's method (in which morphine is determined as its 2,4-dinitrophenyl ether) as modified by Handke. The results obtained by the German Pharmacopœia method showed that 4 of the 17 samples had morphine contents outside the limits of 0.98 to 1.02% specified in the German Pharmacopœia. The results by Mannich's method were consistently higher by 0.21–0.23%, representing a difference of not less than 20% between the two methods. The German Pharmacopœia VI method apparently does not determine all the morphine present in the tincture. Hence doctors wishing to prescribe 0.2 Gm. morphine and asking for 20 Gm. tincture, which they believe is 1%, will receive 0.24 Gm. morphine, since the tincture is actually 1.2%.—WALTER BIEL. *Pharm. Ztg.*, 82 (1937), 477; through *Squibb Abstr. Bull.*, 10 (1937), 1058. (F. J. S.)

Pepsin Preparations—Assay of, of the N. F. Six N. F. preparations were assayed. Some changes in the official assay seem to be improvements: 1. A more accurate dilution of elixir was made. 2. The solution of Reference Pepsin was prepared volumetrically. 3. Egg albumin sufficient for a day is prepared and kept in a stoppered container. 4. Granulated albumin after making a uniform suspension is quantitatively measured into a digestion bottle. 5. Period of standing is increased to over night. 6. A set-up of six standards graduated in steps of 0.5 cc. permits close comparison. The detailed assay procedure is given and also a sample calculation.—R. K. SNYDER, LOUIS GOLDBERG and E. N. GATHERCOAL. *J. Am. Pharm. Assoc.*, 26 (1937), 541. (Z. M. C.)

Phenols—Method for the Quantitative Determination of. The nitrosophenyl test has been so modified by the use of acetic acid as a solvent that it can be used for the quantitative determination of a wide variety of phenols. This is the first method to be reported that is generally applicable for the quantitative determination of *p*-substituted alkylphenols, which are only slightly soluble in water.—R. W. STOUGHTON. *J. Biol. Chem.*, 115 (1936), 293–298; through *Physiol. Abstr.*, 22 (1937), 231. (F. J. S.)

Phenol—Spectrographic Ultraviolet Determination of Free and Sulfoconjugated, in Pure Solution and in Blood. The author aims to elaborate a method for the specific determination of phenol in biologic media, based on the transformation of phenol to potassium phenyl sulfate. *Terminology.*—1. "Free phenol" is ordinary phenol as found in solution. 2. "Sulfoconjugated phenol" is phenol obtained by hydrolysis of potassium phenyl sulfate. 3. "Total phenol" is the sum of 1 and 2. The author determines each form of phenol first in pure aqueous solution; then in mixtures, either the tungstate filtrate of blood or whole blood. In all cases the solution was acidified with 20 drops of pure hydrochloric acid, extracted with optically inert ether, and the ethereal extract examined in a large quartz spectroscope (Jobin and Yvon).—G. BARAC. *Bull. soc. chim. Belg.*, 10 (1936); through *J. pharm. Belg.*, 19 (1937), 284. (S. W. G.)

Pimento Seed (Capsicum Annuum)—Chemical Study of. The average results of analyses were as follows: water 8.65%, ether extract 18.53%, boiling-water extract contains no reducing matter and is optically inactive, ash 7.65% (alkalinity corresponding to 22.47 cc. of decinormal sulfuric acid) phosphates (P₂O₅) 1.02 to 1.80%, starch none, pentoses 9.5 to 12.5%, capsanthine 0.125%, glutathion (by nitroprusside reaction after extraction with trichloroacetic acid) 0.5 mg. per 100 Gm.; vitamin C 56.2 to 60.5 mg. per 100 Gm.—L. BLAS. *Monitor Farm.*, 42 (1936), 97–98; through *Chimie & Industrie*, 37 (1937), 121. (A. P.-C.)

Potassium Permanganate—Use of Standard Sodium Hydroxide Solution for the Standardization of. Potassium permanganate was standardized against standard carbonate free sodium hydroxide solution, using oxalic acid as the "bridge" compound to pass from acid-base to oxidation-reduction standard solutions. A small amount, about 0.25 Gm. (not weighed), of oxalic acid was dissolved in 200 cc. of water, 5 cc. of aqueous phenolphthalein was added (an aqueous solution does not interfere with the permanganate titration), and the solution was titrated with the standard sodium hydroxide. This solution, to which had been added 10.0 cc. of (1:1) sulfuric acid, was heated to 85 degrees, and then titrated with permanganate. This gives a direct relationship between the standard sodium hydroxide and the permanganate.—D. L. SCOLES and J. ROTSTEIN. *J. Chem. Educ.*, 14 (1937), 326. (E. G. V.)

Radium Emanation—Process and Apparatus for the Extraction, Purification and Isolation of. The radon and accompanying impurities are subjected to a preliminary cooling to remove water vapor and organic vapors, and then to a stronger cooling which solidifies the radon and carbon dioxide thus separating them from the fixed gases. The radon is separated from the carbon dioxide in the gaseous state.—T. H. ODDIE. Belg. pat. 418,402, Dec. 31, 1936. (A. P.-C.)

Reducing Sugars—Determination of, by Means of Copper Salicylate. The salicylate solution, prepared by mixing 200 cc. of 5% $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ solution with 55.2 Gm. of salicylic acid dissolved in 100 cc. of 32% potassium hydroxide, was used for determining reducing sugars (in amounts down to 2 mg.) by the iodometric method.—V. M. PLATKOVSKAYA and T. I. VEKHOVKO. *J. Applied Chem.* (U. S. S. R.), 10 (1937), 212–214 (in English 214); cf. *C. A.*, 30, 5533; through *Chem. Abstr.*, 31 (1937), 4232. (F. J. S.)

Rose Centifolia from Morocco. The production of the oil is discussed and the physico-chemical properties for the oil from the 1933, 1935 and 1936 crops are given and compared with those for the oils from Grasse and Bulgaria. It is found that the Morocco product has a very small amount of stearoptene and is richer in highly odoriferous oxygenated bodies.—L. TRABAUD. *Drug and Cosmetic Ind.*, 40 (1937), 782–785, 816. (H. M. B.)

Santolina Chamaecyparissus—Oil of. An oil obtained by steam distillation of the whole plant in blossom had the following characteristics which differ notably from those published in Gildemeister and Hoffmann: specific gravity at 15° C. 0.9546, optical rotation $-6^\circ 26'$, refractive index at 20° C. 1.4908, acid value 9.12, ester value 22.41, ester value after acetylation 126.25, soluble in 0.1 volume of 95% alcohol with turbidity above 2 volumes.—ÉTABLISSEMENTS A. CHIRIS. *Parfums de France*, 15, (1937), 126. (A. P.-C.)

Sea Water—Detection of, in Goods Damaged by Sea Water or by Fresh Water. Moisture and chlorine are determined in damaged and undamaged samples of the same material. If the proportion of extraneous chlorine to extraneous water in the damaged sample is between 1800 and 2000 parts per 100,000 it is almost conclusive evidence that the sample has been damaged by sea water. Higher proportions indicate drying out of water before the sample was taken.—A. G. HOLBOROW. *Analyst*, 61 (1936), 837–838. (G. L. W.)

Silicon—Microdetermination of. Five cc. of a solution containing 0.001–0.01 mg. of silicon is mixed with 4 cc. of 2.5% ammonium molybdate in *N*/10 sulfuric acid and left standing for 10 minutes to develop the yellow silicomolybdate complex. Thirty cc. of silica-free water and 2 cc. of 0.05% *p*-hydroxyphenylglycine in 2.5% sodium sulfite solution are added. After 30 minutes the solution is made up to 50 cc. and the blue color measured in the authors' photoelectric colorimeter. The conditions of acidity, reducing agent, etc., were selected to give a clear solution with no turbidity or color in the blank. The instrument is calibrated with silicate solutions of known concentration. Arsenic above 1.4 parts per million and tungsten above 8 parts per million interfere, but such quantities are seldom found in tissues. Aluminum increases the color above 1 part per million, though less than 10 parts per million of iron does not interfere. Phosphates increase the color above 0.2 parts per million. Iron and phosphorus may be removed from animal tissues by the method of King and Stantial.—F. DEEDS and C. W. EDDY. *J. Biol. Chem.*, 114 (1936), 667; through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 709. (S. W. G.)

Silver Iodide—Assay of Colloidal. Identification: Add 1% sodium chloride and acetic acid to the solution and boil until a precipitate of silver iodide forms. The filtrate gives positive tests for albumoses. Moisture: 5% maximum when dried at 100°. Silver iodide: Heat 0.3–0.5 Gm. of sample with 30 cc. of concentrated sulfuric acid until iodine vapors are dispelled, heat for 10 minutes longer, cool, add about 200 cc. of water, 1 cc. of ferric alum solution and titrate the silver sulfate with *N*/10 thiocyanate. About 20% silver iodide. Iodine not combined with silver should not exceed 1%. Nitrogen: 12–13%.—CARL STAINIER and LEON LECLERCQ. *J. Pharm. Belg.*, 19 (1937), 81–87, 97–100. (S. W. G.)

Solanum Xanthocarpum—Chemical Examination of. I. Constituents of the Oil from the Seeds. *Solanum xanthocarpum*, also known as Bhatkatya and Kanta-Kari, is a plant of importance in Hindu medicine. The chloroform extract of the seeds gives a test for alkaloids. The seed oil, extracted with benzene yielded fatty acids as follows: oleic 42.93, linolic 36.18, palmitic 5.37, stearic 9.77, arachidic (?) 0.35 and unsaponifiable matter found to be a mixture of two sterols, 1.2%.—MAHADEO PRASAD GUPTA and SIKHIBHUSHAN DUTT. *J. Indian Chem. Soc.*, 13 (1936), 613–618; through *Chem. Abstr.*, 31 (1937), 4148. (F. J. S.)

Strychnine and Brucine—Microchemical Identification of, by Alkali Iodides and Chlorates.

Add a small crystal of potassium iodide or sodium chlorate or a droplet of a 10% solution of potassium iodide or sodium chlorate to a droplet of solution (if the sample is solid dissolve in acetic acid 1:10) to be tested, which should contain at least 1% of alkaloid. Examine under a microscope at a magnification of 130–150 × after 3 minutes. Crystallization may be induced by rubbing the slide with a fine glass rod.—GEORGES DENIGÈS. *Bull. soc. pharm. Bordeaux*, 75 (1937), 5–9. (S. W. G.)

Sulfites—Determination of, in Foodstuffs. Mix 75 Gm. of the sample with 250–300 cc. of water in a liter flask. Pass carbon dioxide through the mixture to remove most of the hydrogen sulfide, continue the passage of carbon dioxide, heat to boiling, cool, add 40–50 cc. of phosphoric acid, then distil in a current of carbon dioxide washing the sulfur dioxide through a flask containing 100 cc. of water and 50 cc. of phosphoric acid containing 3% silver phosphate. Collect the sulfur dioxide in an iodine solution and determine as sulfuric acid.—G. DESTREE. *J. pharm. Belg.*, 19 (1937), 23–26. (S. W. G.)

Theelin—Chemical Estimation of, with Diazobenzenesulfonic Acid. A colorimetric procedure for the estimation of theelin is described. The method is based on the coupling of theelin with *p*-diazobenzenesulfonic acid to give a red dye which is compared with a standard solution of *B*-naphthol coupled in the same manner. Certain observations concerning the stoichiometric nature of this reaction are made.—M. J. SCHMULOVITZ and H. B. WYLIE. *J. Biol. Chem.*, 116 (1936), 415–421; through *Physiol. Abstr.*, 22 (1937), 419. (F. J. S.)

Theophylline—Sensitive Reaction for the Detection and Estimation of. A fine blue-green precipitate is produced when a saturated solution of copper acetate in methyl alcohol is added to an equal volume of a solution of theophylline in methyl alcohol. A solution containing 0.2 mg. per cc. provides an abundant precipitate. The precipitate may be centrifuged, washed with methyl alcohol and dissolved in 0.2*N* H₂SO₄. The copper in this solution may be determined by titrating with sodium thiosulfate the iodine liberated from a solution of potassium iodide. The copper precipitated is a straight line function of theophylline present up to a concentration of 0.1 per cent theophylline. Above this value the copper determination is slightly lower than predicted but gives reproducible results which fall on a regular curve and may thus be accurately interpreted in terms of theophylline. Below a concentration of 0.1 per cent 1 mg. of theophylline is equivalent to 0.56 cc. of 0.02*N* sodium thiosulfate. Caffeine, theobromine or uric acid do not give any precipitate in this test.—A. J. PLUMMER and W. L. MENDENHALL. *J. Pharmacol.*, 60 (1937), 116. (H. B. H.)

Thioacetamide—Use of, in Toxicological Examinations. Molecular solutions of thioacetamide are stable; they may be used as sources of H₂S in analytical determinations of heavy metals, as well as in toxicological analyses. No odor if H₂S is apparent.—M. D. SHVAIKOVA. *Sudebn. Med.*, 1 (1934), 103–111; *Ber. ges. Physiol. expl. pharmakol.*, 84, 352; through *Chem. Abstr.*, 31 (1937), 3824. (F. J. S.)

Thiourea—Determination of. The reaction of thiourea with silver nitrate, and with various oxidizing agents, including potassium permanganate, chloramine T, ceric sulfate, potassium dichromate and iodine, have been studied, and several methods of determination have been worked out.—R. CUTHILL and C. ATKINS. *J. Soc. Chem. Ind.*, 56 (1937), 5T. (E. G. V.)

Tin—Use of Nitrophenylarsenic Acid as Reagent for. In acid medium (hydrochloric or sulfuric) nitrophenylarsenic acid C₆H₅(OH)(NO₂)(AsO₃H₂) gives a white flocculent precipitate with metastannic tin. *Method.*—Twenty cc. of the solution containing the tin as metastannic chloride (obtained by heating metallic tin with concentrated nitric acid, evaporating to dryness, warming with concentrated hydrochloric acid and diluting) and 15–20% of concentrated hydrochloric acid (by volume) plus 10 cc. of the reagent (aqueous 0.8% solution) are heated to boiling. With 0.1 mg. of tin a turbidity forms immediately; with 0.05 mg. only after standing. The reaction is not disturbed by mercuric, copper, cobalt, nickel, manganese, iron, chromium, zinc, barium, strontium, calcium or magnesium. Silver and lead are precipitated and filtered. Tin may be identified in the presence of 0.25 Gm. of bismuth or antimony. The white precipitate or turbidity does not disappear on addition of 5 cc. of concentrated hydrochloric acid.—B. TOUGARINOFF. *Bull. soc. chim. Belg.*, 8–9 (1936); through *J. pharm. Belg.*, 19 (1937), 101. (S. W. G.)

Uric Acid—Determination of Total. The method of Grigaut is modified by introducing a series of permanent color standards prepared from copper acetate, acetic acid, cobalt sulfate and

water in place of the extemporaneous standard which does not maintain its maximum intensity for more than 10 minutes. Applications are given for serum and plasma, total blood, erythrocytes and urine.—G. VERGEZ. *Bull. soc. pharm. Bordeaux*, 75 (1937), 83–86. (S. W. G.)

Uric Acid—Microcrystalline Identification of. The sample may be completely dissolved in *N* sodium hydroxide solution or mixed with a droplet of concentrated sulfuric acid on a glass slide. In the first case precipitate the acid by adding and quickly mixing $\frac{1}{10}$ the volume of concentrated sulfuric acid. The precipitate is amorphous but becomes crystalline in about 1 minute. In the second case gently warm the mixture until clear, cool, add a drop of water, let stand for several minutes then carefully wash with a fine stream of water. The crystals will adhere to the slide and should be examined without drying and without a coverglass. Uric acid will reduce a solution prepared by adding 3–4 drops of sodium hydroxide solution to 3 cc. of 2–3% silver nitrate and then ammonium hydroxide until the precipitate which first forms is dissolved.—GEORGES DENIGÈS. *Bull. soc. pharm. Bordeaux*, 75 (1937), 73–78. (S. W. G.)

Verbascum Seeds—Constituents of Oil of. Bohemian *V. thapsus* seeds yield to ether an oil, n_D 1.46975; saponification value 188.6; iodine value 132; thiocyanate value 78.9; acid value 93.2; and ester value 95.4. This oil contains 1.1% of unsaponifiable matter and yields 94.99% of acids (88.8% of saturated and the rest unsaturated), including linolenic 8%, oleic and linoleic 30 to 61.3%, and stearic acids.—E. VOTOCEK, F. VALENTIN and J. BULIR. *Coll. Czech. Chem. Comm.*, 8 (1936), 455; through *J. Soc. Chem. Ind.*, 56 (1937), B., 152. (E. G. V.)

Veronal—New Method for the Estimation of. A method for the estimation of veronal in urine is described, accurate to within 5%.—G. SACK. *Arch. expl. Path. Pharmacol.*, 183 (1936), 71–76; through *Physiol. Abstr.*, 22 (1937), 329. (F. J. S.)

Viscosimeter—Suitable for Materials of High Viscosity. The rotational viscosimeter described has a wide range (50 to 10^6 poises) and is suitable for normal fluids or substances of plastic or thixotropic character.—A. A. CLARK and H. J. HODSMAN. *J. Soc. Chem. Ind.*, 56 (1937), 67T. (E. G. V.)

Vitamin B₆—Preparation and Properties of. Vitamin B₆ is that part of the vitamin B₁₂ complex which cures the "acrodynia-like" dermatitis developing in rats fed on vitamin B-free diet supplemented with purified vitamin B₁ and lactoflavin. Fresh fish muscle is a good source of vitamin B₆, but extraction with water, alcohol or dilute acidified alcohol left at least 75% of the activity in the residue. Only hydrolysis with pepsin, which brought most of the solids into solution, was effective in extracting most of the vitamin B₆. Wheat germ proved an excellent source but only 40% of the activity could be extracted. Autolysis liberated most of the vitamin B₆ and this was adopted for the preparation of extracts. The vitamin is evidently combined with the tissues, possibly attached to the protein as a prosthetic group. The vitamin was not adsorbed by norite charcoal, but some samples of fuller's earth removed it from acid solutions, and the activity could be eluted with baryta. It was not precipitated by salts of the heavy metals nor by picric acid, but was precipitated by phosphotungstic acid. Benzoylation inactivated the vitamin, but nitrous acid did not. It could not be extracted with organic solvents from alkaline solutions, but an alkaline gummy residue yielded part of its activity to alcohol. The activity migrated to the cathode on electrodialysis. It is suggested that vitamin B₆ does not contain a primary amino group, but is of a basic nature and possibly contains a hydroxyl group. Adenine, adenylic acid, yeast nucleic acid, choline, betaine, have no vitamin B₆ activity. Fat has a sparing action, but it is doubtful whether vitamin B₆ is actually present in fats.—T. W. BIRCH and P. GYORGY. *Biochem. J.*, 30 (1936), 304; through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 730. (S. W. G.)

Vitamin D—Color Reaction for Detection and Determination of. The reaction depends on the appearance of a deep violet color on the addition of pyrogallol and aluminum chloride in alcoholic solution to specially prepared solutions of the vitamin, from which vitamin A and related substances have been removed. The solution of sterols is evaporated to about 0.25 cc. in a test-tube, 5 to 10 drops of a 0.1% solution of pyrogallol in absolute alcohol are added, the mixture is heated on a water-bath, 2 to 4 drops of freshly prepared 10% solution of purest dry aluminum chloride in absolute alcohol are added and the heating continued. If vitamin D is present, a deep violet color, reaching its maximum intensity in 4 minutes, appears at the bottom of the tube. For quantitative estimation, the color produced is dissolved in absolute alcohol, dry carbon dioxide is blown over the surface to prevent oxidation, the tube is closed with a rubber stopper and the color determined quantitatively in a colorimeter, within half an hour of mixing. The test will

detect 0.002 mg. of vitamin D, the optimum limits for quantitative estimations being 0.01 to 0.1 mg. Cholesterol, ergosterol and lumisterol do not affect the reagent, but suprasterol II reacts faintly. Fats, oils, moisture and impurities in the solvents, as well as prolonged heating, must be rigorously excluded.—W. HALDEN and H. TZONI. *Nature*, 137 (1936), 909; through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 731. (S. W. G.)

Vitamin E—Isolation of, from Wheat Germ Oil. A number of alcohol reagents yielded only oily products with a wheat germ oil concentrate. Cyanic acid yielded three solid allophanates. One of these, m. p. 158–160°, yielded on hydrolysis an oily alcohol, formula probably $C_{28}H_{60}O_2$. The analysis and activity agreed with that of the most potent preparation of Drummond, Singer and MacWalter. Single doses of 3 mg. regularly produced litters, but 1-mg. doses only sporadically. The name α -tocopherol is proposed for this substance. It shows strong absorption with a maximum at 298 $m\mu$ of $E_1^{1\%}$, 90 ± 10 and a slightly less intense maximum at 292 $m\mu$. A second allophanate, m. p. 138°, appears to be isomeric with α -tocopherol allophanate. It yields an alcohol with similar absorption to that of α -tocopherol but lower biological activity. α -Tocopherol allophanate appeared to be homogenous. Fractional crystallization and adsorption on a column of calcium carbonate failed to reveal heterogeneity. α -Tocopherol yielded a crystalline *p*-nitrophenylurethane with *p*-nitrophenylisocyanate, m. p. 129–131°. The alcohol regenerated from this compound was effective in doses of 2.5 mg. The allophanate prepared from it had the original melting point and the alcohol liberated from this showed the original absorption spectrum and biological activity. Alcott's experience, that a cottonseed oil concentrate showed strong absorption at 294 $m\mu$, but no biological activity, may be analogous to the present findings of a second alcohol of low activity. α -Tocopherol with methyl-alcoholic silver nitrate yielded a product which showed some biological activity, but the absorption bands had shifted to 271 and 262 $m\mu$. It is suggested that chemical change had occurred but the new product was also possessed of vitamin E activity. A third allophanate, m. p. 250°, probably the allophanate of β -amyirin, was also isolated from the concentrate.—H. M. EVANS, O. H. EMERSON and G. A. EMERSON. *J. Biol. Chem.*, 113 (1936), 319; through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 731. (S. W. G.)

Vitamin K—Determination of. A curative method is described for estimating the vitamin K potency of foods. The blood of young chicks rendered deficient in the vitamin by being fed for 3 weeks on a diet composed of caseinogen 10, ether-extracted pig liver 10, dried yeast 15, sucrose 62.3, cod liver oil 4, and salt mixture 2.7, shows a greatly delayed clotting time. This is restored to normal by 3 day's feeding with food containing vitamin K. The clotting time of blood plasma is defined in terms of the amount of clotting agent which, upon the addition of 1 to 5 drops of 50% plasma, will cause clotting to take place in 180 seconds at 40°. The relationship between the concentration of clotting agent required to cause plasma from a vitamin K-deficient bird to clot in 180 seconds and that required for normal plasma, is called the degree of sickness of the animal and ten times this value is called "S." A unit of vitamin K is defined as the smallest daily dose per Gm. of body weight of bird of a test substance, given in the form of a tablet, which reduces the value of S from 1,500 to 10. An aqueous extract of hen's lungs is used as the clotting agent. The technic for obtaining aseptic samples of arterial blood is described in detail, and a provisional standardization curve is given relating doses of dried pig liver to S values.—F. SCHOENHEYDER. *Biochem. J.*, 30 (1936), 890; through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 733. (S. W. G.)

Volatile Acids—Determination of, in Wine. A distillation process and factors influencing its results are described. The volatility of lactic acid depends upon the rate of distillation and the acetic acid present.—M. V. IONESCU, L. GAAL and O. POPESCU. *Ann. Inst. Rech. Roumanie*, 6 (1934), 3; through *J. Soc. Chem. Ind.*, 56 (1937), B., 176. (E. G. V.)

Waste Sulfite—Vanillin from. An invention is described relating to the manufacture of vanillin from waste sulfite pulp liquor and related substances containing lignin sulfonic acids by a process wherein the vanillin is initially formed by the action of hot alkali on the lignin sulfonic acids; is liberated from its alkaline solution by carbon dioxide; and is isolated by extraction with a suitable solvent. The vanillin thus obtained is easily separated from the solvent and purified by well-known methods. Due to the use of carbonic acid, the waste alkali contained in the mother liquor from which the vanillin has been extracted is recoverable in a form suitable for reuse. The initial formation of vanillin may be accomplished by evaporating the waste liquor to a suitable concentration and then heating it in the presence of an excess of sodium hydroxide. The mixture may be heated by boiling at atmospheric pressure or to around 125° to 160° C. under

super-atmospheric pressure. The vanillin is thus obtained in the form of its alkaline salt from which the vanillin is then liberated by treatment of the alkaline reaction liquor with an excess of carbon dioxide. The freed vanillin is then isolated by extraction with a suitable solvent such as benzene or ethylene chloride; it is then separated from the organic solvent and purified by steam distillation, crystallization, sublimation or other well-known methods. The mother liquor from which the vanillin has been extracted, now contains the waste alkali principally in the form of alkaline bicarbonate along with lignin and calcium salts, such as calcium sulfate and calcium sulfite. This residual liquor is treated to remove the insoluble calcium salts and then dried and incinerated to recover sodium carbonate which is causticized for re-use in the process.—ANON. *Perfumery Essent. Oil Record*, 28 (1937), 206. (A. C. DeD.)

Xanthine—Contribution to the Microchemistry of. Mix 2–3 mg. of powdered sample with a droplet of concentrated sulfuric acid. Undissolved particles must remain. Warm until clear, cool, then quickly mix with a droplet of distilled water. Observe the crystals under a microscope. Xanthine reduces only very slightly in the cold a solution prepared by adding 3–4 drops of sodium hydroxide solution to 3 cc. of 2–3% silver nitrate and then ammonium hydroxide until the precipitate which first forms is dissolved.—GEORGES DENIGÈS. *Bull. soc. pharm. Bordeaux*, 75 (1937), 79–80. (S. W. G.)

Zinc—Determination of, in Foods. A solution of the ash in hydrochloric acid is buffered to pH 4.5 with ammonium acetate and extracted with 0.15% diphenylthiocarbazon in chloroform and zinc, bismuth and cadmium removed from the extract with dilute hydrochloric. In the absence of cadmium and of more than 2 mg. of bismuth, 0.2–1.0 mg. of zinc may then be determined by microtitration with potassium ferrocyanide in acetic acid, using 0.05% diphenylbenzidine and fresh 1% potassium ferricyanide as internal indicators; organic matter should be removed previously using perchloric acid and hydrogen peroxide. A more specific method, for less than 0.3 mg. of zinc, is to add acetic acid, ammonium fluoride, hydrogen fluoride and potassium iodide-starch, any blue color being discharged with sodium thiosulfate; potassium ferricyanide is then added, and the mixture then titrated with 0.002 *N*-sodium thiosulfate, until the new blue color disappears. The latter is recommended for foodstuffs, and enables accurate recovery of 1 p. p. m. to be obtained on a 50-Gm. sample. The normal zinc contents of a number of varied foods are recorded; they range from 0 for white of new-laid egg to 145 p. p. m. for wheat bran.—N. D. SYLVESTER and E. B. HUGHES. *Analyst*, 61 (1936), 734; through *J. Soc. Chem. Ind.*, 56 (1937), B., 82. (E. G. V.)

PHARMACOGNOSY

VEGETABLE DRUGS

Black Pepper—New Microstatic Methods for the Detection of Adulterants of Powders, Illustrated by the Adulteration of Powdered, with Pepper Hulls. The method described is a counting method under the microscope. The so-called "comparison number" is obtained by comparing the number of particles of well-defined kind with another kind and the "normal number" is obtained by comparing the number of particles of a given kind with the weight of the sample. Many samples of commercial black pepper were examined and analyzed quantitatively. In general the sample was adulterated if the comparison number found was less than 2.75 as an average of five determinations or the normal number was over 10.7.—I. E. GRUNDSTEIDLAND and T. STOBIECKI. *Mikrochemie, Festschr. von Hans Molisch* (1936), 164–190; through *Chem. Abstr.*, 31 (1937), 4450. (F. J. S.)

Clove Tree and Cloves. A monograph.—EDM. FRANÇOIS. *Parfums de France*, 15 (1937), 24–32, 52–67, 97–104, 119–126. (A. P.-C.)

Cornus Sanguinea L.—Glucidal Variations of, during a Year's Growth. The initial reducing oses, saccharose and heterosides hydrolyzable by emulsin diminish, in proportion to the fresh weight, from germination to maturation of the fruit, and then increase until the leaves fall. The heterosides act as extra-reserves for the plant's needs. Variations of external factors seem to influence only the initial oses. The participation of tannins in the storage of hydrocarbon reserves remains to be demonstrated.—L. NIHOUL-GHENNE and G. CORTJENS. *J. pharm. Belg.*, 19 (1937), 331–335, 350–353, 367–370. (S. W. G.)

PHARMACY

GALENICAL

Galenical Pharmacy—Question in. Should Syrup of Marshmallow Be Poured Hot or Cold into the Storage Flask? Experiments show that the syrup after 13 months when poured cold into the container remains unchanged whereas those poured in hot after a few weeks showed molds, whose growth is limited to the upper zone and these must always be removed and at the same time give rise to undesirable odors to the syrup. It is also advisable to dip the stopper in alcohol before closing since this permits an alcoholic atmosphere in the neck of the container which preserves the syrup.—K. FEIST. *Apoth. Ztg.*, 52 (1937), 166. (H. M. B.)

Hog Stomach Preparations—Analytical Examination and Its Relation to Clinical Activity of Commercial Desiccated. Analytical figures for 13 samples, including 9 commercial brands of desiccated hog stomach preparations are given in the following table.

TABLE I

Brand	1 Sample			2 Sample		3 Sample		4	5	6	7	8	9
	A	B	C	A	B	A	B						
Moisture, per cent	1.7	1.14	0.98	3.48	3.80	6.14	8.9	9.0	8.27	4.54	4.96	7.92	3.06
Fat, per cent	14.26	14.35	12.21	10.0	12.84	0.45	1.61	3.98	1.08	10.97	2.33	19.05	1.13
Total ash, per cent	3.37	3.48	3.54	3.10	8.1	4.33	4.09	4.32	4.36	4.02	5.87	3.28	6.58
Insol. ash, per cent	0.65	0.60	0.61	0.44	0.80	0.54	0.62	0.84	0.65	0.24	0.96	0.60	0.91
Alkalinity of ash as K ₂ O per cent													
Phenolphthalein	0.07	0.047	0.057	0.07	0.19	0.06	0.10	0.16	0.12	0.09	0.11	0.028	0.14
Methyl orange	0.87	0.61	0.72	0.66	0.97	0.94	0.94	0.82	0.68	0.87	1.12	0.68	0.66
Chloride as NaCl per cent	0.36	0.33	0.43	0.12	4.88	0.46	0.41	0.65	0.54	0.33	0.49	0.16	3.04
Total N per cent	12.54	12.18	12.51	12.78	11.6	13.87	12.92	12.32	13.1	12.33	12.64	10.58	13.53
Total N per cent of fat-free substance	14.32	14.21	14.28	14.64	14.11	14.33	14.32	13.97	14.01	14.11	13.16	13.83	13.92
Non-coag. N per cent of fat-free dry substance	2.93	3.097	3.11	1.64	1.82	1.13	1.47	2.04	1.54	1.37	2.66	1.99	1.42
Non-coag. N as per cent of total N	20.46	21.8	21.8	11.20	12.9	7.89	10.25	14.60	10.1	9.7	20.23	14.43	10.19
Acidity, mils N/10 per Gm.	4.6	4.2	4.1	3.2	3.3	1.74	1.70	3.95	2.7	1.9	4.5	3.1	2.6
Peptic activity	285	285	285	285	500	77	1,000	125	500	143	500	666	25
Growth in MacConkey's medium	-	-	-	+	...	+	...	-	+	-	+	+	+
Mn mg. per 100 Gm.	0.4	0.4	0.4	0.25	0.3	0.4	0.4	0.2	...	0.35	0.3

Limits are suggested for moisture, fat and ash, and examination for coliform organisms with MacConkey's medium is recommended. Reasons are given for the use of analytical data in the control of the manufacture of the product.—KENNETH BULLOCK. *Quart. J. Pharm. Pharmacol.*, 9 (1936), 381-391. (S. W. G.)

Senna—Studies upon Precipitation in Fluidextract of. III. The Prevention of Precipitation in Fluidextract of Senna by the Addition of Borax and Other Agents. Since it had been noted that borax added to fluidextract of senna reduced the amount of precipitate, an effort was made to determine the optimum concentration of borax necessary to yield a minimum of precipitate. Relation to total solids, the use of borax as buffer in menstruum for fluidextract, and the possibility of other salts were studied. The following conclusions were reached: (a) It has been shown that treatment of fluidextract of senna with 2.0 per cent borax and filtration after 48 hours markedly reduces precipitation in this preparation. (b) There is apparently no direct relationship between total solids in the fluidextract of senna and the effectiveness of the borax. (c) It was indicated that borate-KH₂PO₄ buffers might be helpful in reducing precipitation, when combined with the menstruum, replacing 10 per cent of the water. The range of effectiveness was p_B 6.4 to 8.4. (d) Evidence has been presented which indicates that the sodium ion of the borax can be only partly, if at all, responsible for reducing precipitation in fluidextract of senna.—KARL L. KAUFMAN and C. O. LEE. *J. Am. Pharm. Assoc.*, 26 (1937), 505. (Z. M. C.)

Senna—Studies upon Precipitation in Fluidextract of. IV. The Nature and Properties of the Precipitate in Fluidextract of Senna. A composite sample of precipitate from many bottles

of fluidextract was subjected to qualitative test: solubility properties according to the Dragendorff solvents, ash analysis, inorganic qualitative analysis, constituents compared with those of crude drug. The following conclusions were reached: 1. The "borated" precipitates yielded about three per cent more alcohol-soluble extractive than the ordinary precipitates. 2. The "borated" precipitates yielded much more extraneous amorphous material than the regular precipitates. This made it hard to test for the constituents, but anthraquinone substances were in evidence. 3. Upon being subjected to steam distillation the "borated" precipitates were found to yield much less insoluble residue than the usual precipitates. The residue was not soluble in nitric acid and gave the hydroxyanthraquinone reaction.—KARL L. KAUFMAN and C. O. LEE. *J. Am. Pharm. Assoc.*, 26 (1937), 507. (Z. M. C.)

Tablets—Manufacture of. The author discusses the general procedure of tablet manufacture and gives a few practical hints.—H. WENTWORTH AVIS. *Manufacturing Chemist*, 7 (1936), 368-371; through *Merrell Scientific Abstr.*, 8 (1937), 77. (F. J. S.)

Thyroid Gland—Therapeutic Preparation of. The thyroid gland is subjected to autolysis which is discontinued when the filterable portion of the autolysate contains 15 to 25% of total iodine, and the solid residue is separated, dried and defatted.—HORACE A. HOLADAY and EDWARD D. PERRY, assigns to E. R. SQUIBB & SONS. U. S. pat. 2,080,132, May 11, 1937. (A. P.-C.)

PHARMACOPŒIAS AND FORMULARIES

1936 Supplement to the British Pharmacopœia 1932. New preparations, changes and additions are discussed.—HANNS WILL. *Apoth. Ztg.*, 52 (1937), 586-588. (H. M. B.)

NON-OFFICIAL FORMULÆ

Cold Cream. Ingredients are discussed and the following formulas are given for water-free and water-containing creams: (1) Spermaceti 10 parts, white beeswax 10, white almond oil 80. (2) Spermaceti 6 parts, white beeswax 3, sweet almond oil 24, glycerin 4. (3) Cetyl alcohol 10 parts, white petrolatum 40, liquid petrolatum 10, sweet almond, olive oils, etc., 25. (4) White wax 20 parts, stearin 10, spermaceti 10, petrolatum 20, sweet almond (olive, etc.) oil 20, liquid petrolatum 20. (5) Spermaceti 8 parts and white wax 7, are melted together and stirred with 25 parts water and perfumed with 0.1 part rose oil. (6) 15 parts white wax, 3 stearin, 30 liquid petrolatum, 20-25 sweet almond (olive, etc.) oil are melted together and at 60° C. mixed with a solution of 1 part borax and 25 parts water heated to 60°; stir until cool. (7) Solid paraffin (50/52°) 8 parts, stearin 4, white petrolatum 8, white wax 30, liquid petrolatum 100, sweet almond (olive, etc.) oil 20, borax 3, glycerin 4, water 80. (Prepare as in (6).) (8) Cetyl alcohol 10 parts, white wax 15, sweet almond (olive, etc.) oil 25, liquid petrolatum 25, borax 1, water 25. (Prepare as in (6).) (9) Protegin X 25 parts, white wax 5, liquid petrolatum 15, sweet almond (olive, etc.) oil 15 are melted together and at 40° mixed with water -50 parts—at the same temperature in a stirring machine. (10) Almecerin 25 parts, white petrolatum 15, liquid petrolatum 10, sweet almond (olive, etc.) oil 10 parts are warmed to about 35-40° and mixed with 40 parts of water somewhat warmer and stirred until cool. (11) Cefatin 10 parts, almecerin 30, liquid petrolatum 10, sweet almond (olive, etc.) oil 5 are stirred until homogenous after melting the cefatin at 60-70° C., adding the oils and when the temperature has fallen to 40° add the almecerin; then add 50 parts of water warmed to 45°. (12) Stearin 30 parts, anhydrous lanolin 10, white wax 10, sweet almond (olive, etc.) oil 15, liquid petrolatum 15 are melted together and warmed to 70° and add a solution (warmed to 70°) of triethanolamine 6 parts, carbitol 10, water 90 with stirring until cool. (13) Stearin 30 parts, lanolin anhydrous 12, sweet almond (olive, etc.) oil 25, paraffin 25, triethanolamine 7, glycerin 5, water 60. (Prepare as in (11).) (14) Stearin 30 parts, anhydrous lanolin 5, white wax 8, spermaceti 2, sweet almond (olive, etc.) oil 8, liquid petrolatum 16, triethanol amine 4, glycerin 15, water 95. (Prepare as in (12).)—J. DAVIDSOHN and A. DAVIDSOHN. *Riechstoff-Ind. Kosmetik.*, 12 (1937), 4-10. (H. M. B.)

Phosphorous Meal. Various formulas for phosphorous meal are discussed. Five ways of introducing the phosphorus are considered as to risk of handling. A formula is recommended as follows: Phosphorus, 30 Gm., carbon disulfide, 30 Gm., gum arabic mucilage, 100 Gm., glycerine, 120 Gm., syr. sacchar., 170 Gm., yellow dextrin, 500 Gm., water, 100 Gm., anethol, 2 Gm. The phosphorus is dissolved in carbon disulfide and this solution shaken with the mucilage

until emulsified. To the dextrin is added a mixture of the sugar syrup and glycerine, stirring till free from clumps. Half the water is added and after this is worked in, the emulsion with the phosphorus is added. The remaining water is used to wash out the vessel in which the emulsion was prepared, then the washings are incorporated, and lastly the anethol is incorporated. No noteworthy loss of phosphorus was observed in this mixture after two months' standing.—R. JOHANSSON and S. KJELLMARK. *Farm. Revy*, 36 (1937), 353, 373. (C. S. L.)

Shaving Creams. The soaps prepared by the 21 formulas listed in a preceding article are examined for lathering power and the observations tabulated on the basis of (1) speed of lathering, (2) density of the lather and (3) texture and bubble size. The following tested formulas are offered: (a) myristic acid 12.6, tallow fatty acid 18.9, potassium hydroxide 3.8, sodium hydroxide 2.2, glycerin 4.8, water 57.7; (b) myristic acid 6.3, olive oil fatty acids 12.6, stearic acid 12.6, potassium hydroxide 4.1, sodium hydroxide 1.7, glycerin 8.0, water 54.7; (c) coconut oil fatty acid 7.0, palm oil fatty acid 14.0, olive oil fatty acids 14.0, potassium hydroxide 5.6, sodium hydroxide 1.3, glycerin 5.0, water 53.1; (d) coconut oil fatty acids 3.9, palm oil fatty acids 11.8, myristic acid 7.9, stearic acid 7.9, triethanolamine 17.2, glycerin 4.5, water 46.8; (e) coconut oil fatty acids 3.2, myristic acid 6.3, tallow fatty acids 9.5, stearic acid 12.5, potassium hydroxide 3.4, sodium hydroxide 1.0, glycerin 5.5, water 53.9; and (f) myristic acid 10.5, palm oil fatty acids 7.0, tallow fatty acids 7.0, stearic acid 7.0, potassium hydroxide 2.8, sodium hydroxide 1.8, triethanolamine 3.5, glycerin 10.0, water 50.4. Dissolve the hydroxides in some of the water and pour the melted fatty acids in the hot alkaline liquor. Stir thoroughly, test with phenolphthalein and adjust the mixture until slightly on the acid side. Triethanolamine soaps do not generally require adjustment because of the mildness of the alkali.—JOSEPH KALISH. *Drug and Cosmetic Ind.*, 40 (1937), 804–806. (H. M. B.)

Sunburn Preparations—Recent Research in. Typical formulæ are given for the various sunburn preparations which fall into three groups, *i. e.*, preventive, simulatory and remedial.—S. P. JANNAWAY. *Perfumery Essent. Oil Record*, 28 (1937), 177. (A. C. DeD.)

DISPENSING

Enteric Coating Material—Use of Cetyl Alcohol as. Cetyl alcohol was chosen for this study because of its similarity to some other coating materials that have been used with some success. A tablet containing barium sulfate was chosen because it would be opaque to X-rays. Coating material was dissolved in acetone, sprayed on sides of a hopper in which tablets were rotated. Three different coating materials were tried: cetyl alcohol alone, equal quantities of cetyl alcohol and shellac and equal quantities of cetyl alcohol and mastic. Coated tablets were administered to students and the time and point of disintegration were determined by means of radiographs. Experimental data are given in a number of tables. The following conclusions were reached: (1) That cetyl alcohol as an enteric coating material was 81.11 per cent efficient. (2) That cetyl alcohol-shellac as an enteric material was 70.73 per cent efficient. (3) That cetyl alcohol-mastic as an enteric coating material was 97.87 per cent efficient. (4) That in the case of cetyl alcohol-mastic coating the highest percentage of the tablets disintegrated in the ascending, the transverse and descending colon. (5) That the efficiency of the cetyl alcohol-mastic coating can be increased by decreasing the amount of mastic used in the preparation of the coating mixtures.—LUCILLE M. MILLS. *J. Am. Pharm. Assoc.*, 26 (1937), 479. (Z. M. C.)

Liver Extracts—Methods of Preparation and Evaluation of. A review, citing preparation methods described by Cohn and coworkers, and by Castle and Bowie, also Castle's method for making injectable liver extract. Brief descriptions are given of methods of testing potency in the human patient, and also of evaluation in the dog made anæmic by loss of blood (Whipple), in the rabbit under Welch bacillus infection (Beard, Clark and Moses) and in normal guinea pigs (Jacobson).—B. RÖNNMARK. *Farm. Revy*, 36 (1937), 337. (C. S. L.)

Suppository Base, New. Following a brief historical introduction, theoretical considerations are discussed. Synthetic fats having free hydroxyl groups were investigated. Melting points of monoglyceryl and ethylene glycol stearates had too high melting points or were oily in character and admixture with compatible low melting point substances interfered with self emulsification and were otherwise unsatisfactory. Stearyl esters of *a*-propylene glycol had a lower melting point and other favorable properties. The monostearic ester of propylene glycol was prepared and the name "monolene" is given to it. Its properties have been determined and

its advantages as a suppository base are discussed. Some preliminary pharmacological tests have been made. It melts within body temperature range, is self emulsifying in water, forming soft, bulky, unguentous, hydrophilic and non-irritant emulsions particularly suitable for rectal treatment. Its properties allow of medicament diffusion and absorption of water-soluble drugs, irrespective of melting range, while insoluble substances are emulsified and kept in intimate local contact with mucosal tissue. It is free from grittiness and leakage in use, but firm, easily and quickly molded and keeps well.—JOHN C. BIRD. *J. Am. Pharm. Assoc.*, 26 (1937), 475.

(Z. M. C.)

Triethanoline—Emulsifying with. The properties and uses of triethanoline are discussed with interesting pointers on the compounding of ointments, lotions and creams.—GORDON A. BERG. *Am. Prof. Pharm.*, 11 (1936), 15–18, 36; through *Merrell Scientific Abstr.*, 8 (1937), 77.

(F. J. S.)

PHARMACEUTICAL HISTORY

An Apothecary Establishes the Dye City. Seventy-Five-Year-Old Leverkusen on the Rhine. Historical.—ANON. *Apoth. Ztg.*, 52 (1937), 471–472. (H. M. B.)

Pharmaceutical Historical Data—Collection of. A discussion.—OTTO ZEKERT. *Pharm. Monatsh.*, 18 (1937), 42. (H. M. B.)

PHARMACEUTICAL EDUCATION

Abyssinian Drug and Drug Names. A review.—KURT EWERT. *Apoth. Ztg.*, 52 (1937), 584–585. (H. M. B.)

Colloid Chemistry and Pharmacy. The importance of the degree of dispersion, surface activity and other physical properties of colloids used in pharmacy is discussed.—R. DIETZEL. *Kolloidztschr.*, 77 (1936), 220–229; through *Physiol. Abstr.*, 22 (1937), 237. (F. J. S.)

Hospital Pharmacy. Attention is directed to the growth of hospital pharmacy and to the demand for more and better trained pharmacists.—LOUIS C. ZOPF. *J. Am. Pharm. Assoc.*, 26 (1937), 563. (Z. M. C.)

Hospital Pharmacy—Graduate Course in. The rapid and extensive development of hospital pharmacy make it evident that more training must be made available than can be had in regular courses so a list of courses has been made available to those who would do graduate work.—LEROY D. EDWARDS. *J. Am. Pharm. Assoc.*, 26 (1937), 565. (Z. M. C.)

"Pharmakon"—Origin of. H. VALENTIN. *Apoth. Ztg.*, 52 (1937), 675–676. (H. M. B.)

Prescription Pricing—New Study of. A thorough discussion of the question and statement of some definite principles. The system is presented in outline only. The discussion of charges with rules therefor cover the following: cost-of-materials charge, the profit charge, the overhead charge, the labor charge, the insurer's charge. Advantages claimed are uniform pricing procedure for all prescriptions, inclusion of all expenses without duplication, explanation of each charge with reference to legal or economic principles, possibility of revision to meet changing economic conditions, accuracy of some charges unaffected by approximation of others, no variations because of personal variations of clerks.—JOSEPH H. GOODNESS. *J. Am. Pharm. Assoc.*, 26 (1937), 544. (Z. M. C.)

MISCELLANEOUS

Antagonistic Drugs—Quantitative Effects of. Discussion.—J. H. GADDUM. *J. Physiol.*, 89 (1937), 7–9P; through *Chem. Abstr.*, 31 (1937), 3996. (F. J. S.)

Dentifrice. A substantially water-insoluble hydrated trimagnesium phosphate or hexahydrated magnesium ammonium phosphate in finely divided form is used as a polishing and cleansing agent.—EMIL KLARMANN and LOUIS W. GATES, assignors to LEHN and FINK PRODUCTS CORP. U. S. pat. 2,078,498, April 27, 1937. (A. P.-C.)

Depilatory Compositions. A salt is used containing an alkali or alkaline-earth metal in combination with an acidic radical or an oxygenated acid containing quadrivalent titanium and yielding an alkaline end product on hydrolysis, such as calcium sodium titanate.—ALBERT B. PACINI, assignor to NEET, INC. U. S. pat. 2,081,279, May 25, 1937. (A. P.-C.)

Disinfectants—Process for the Preparation of. Compounds containing silver ions are made to react in an alkaline medium with polyvalent metal compounds in which the metal is

combined as cation at its lower valence. The process is suitable for the sterilization of liquids (fruit juices, waters, etc.), dressings, etc.—F. FEIGL. Belg. pat. 410,913, Sept. 30, 1936.

(A. P.-C.)

Emulsified Composition Suitable for Balms, Liniments, Inhalants, etc. A stable aqueous emulsion of a soft soap is prepared containing about 10% or less of a free fatty acid and from 10 to 60% of essential oils and stearoptens.—IRVINE W. GROTE, assignor to CHATTANOOGA MEDICINE Co. U. S. pat. 2,079,166, May 4, 1937.

(A. P.-C.)

Fermentation Industries—Evolution of the Theories in. A critical correlating review is given.—G. BATTÀ. *J. pharm. Belg.*, 19 (1937), 385-388, 401-403.

(S. W. G.)

Germicidal Preparation. The product consists of a mixture of *p*-tert-butylphenol (or its alkyl substituted derivatives) and a phenolic body having germicidal properties.—EMIL KLARMAN, assignor to LEHN & FINK PRODUCTS CORP. U. S. pat. 2,085,318, June 29, 1937. (A. P.-C.)

Insecticide—Method of Making. A pine oil solution of oleo-resin of pyrethrum and a substantially alkali-free vegetable oil soap constitute a stable and readily water-soluble insecticide.—CHAS. B. GNADINGER. U. S. pat. 2,087,028, July 13, 1937. (A. P.-C.)

Nicotinized Insecticide—Method of Using for Fumigating. Nicotine is incorporated into a paste of absorbent cellulosic or starchy materials. The product is particularly suitable for the destruction of insects in mills. It is used by heating in perforated containers.—S. BAUMANN. Belg. pat. 410,808, Sept. 30, 1936.

(A. P.-C.)

Pharmaceutical Preparations—Preservatives for. Para-chlor-meta-cresol is not superior to Nipasol or Nipa-Sterilisator in its properties either for preservation or for antiseptis, or for direct sterilization of pharmaceutical solutions. Against spores, para-chlor-meta-cresol in its destructive power proved to be inferior to Nipa-Sterilisator. The toxicity of para-chlor-meta-cresol is at least five times as great as Nipasol. The smell and taste of para-chlor-meta-cresol, even in low concentrations, make it impossible to use in solutions for internal administration. Para-chlor-meta-cresol is more irritant to the mucous membrane than Nipasol or Nipagin.—E. BOEHM. *Manufacturing Chemist*, 7 (1936), 372-373; through *Merrell Scientific Abstr.*, 8 (1937), 73. (F. J. S.)

Shaving Creams, Brushless. These creams are generally prepared with a stearic acid soap base, with the addition of a suitable wetting agent such as cetyl alcohol or a combination of that substance and a fat or oil. A desirable property of brushless creams is that they should be acid in reaction, since it has been shown that the p_H value of the normal epidermis is 3 to 5. The constant use of soaps which are generally alkaline has an undesirable neutralizing effect on the skin. Other advantages of brushless shaving creams, together with the formulas and procedures for the preparation of two creams are given.—*Chemist and Druggist*, 126 (1937), 702. (N. L.)

Toilet Preparations—Sorbitol in. *d*-Sorbitol, a hexahydric alcohol isomeric with mannitol, dulcitol, etc., is recommended as a substitute for glycerin in toilet preparations. It absorbs less moisture than glycerin in moist atmospheres, but holds moisture better in dry conditions, and produces a greater degree of softness in cosmetic creams than glycerin without producing a sticky surface on the skin. Formulas for a hand jelly, hair fixative, vanishing cream and a toothpaste base containing *d*-sorbitol in powder form are also given.—*Chemist and Druggist*, 126 (1937), 680.

(N. L.)

Urinary Antiseptic. Phenothiazine is the essential active ingredient.—FLOYD DE EDS, JOHN O. THOMAS and CLYDE W. EDDY, assignors to HENRY A. WALLACE as Secretary of Agriculture of the U. S. U. S. pat. 2,085,794, July 6, 1937. (A. P.-C.)

PHARMACOLOGY, TOXICOLOGY AND THERAPEUTICS

PHARMACOLOGY

Acetyl-Beta-Methylcholine. The authors have studied the effect of acetyl-beta-methylcholine (mecholyl) on the tone and motility of the colon. Tone and motility were both definitely increased in every case, though the effects were rapidly abolished by atropine. The authors suggest the possibility of using mecholyl in the treatment of atony of the colon.—A. MYERSON, P. G. SCHUBE and M. RITVO. *Radiology* (May 1937), 552; through *Brit. Med. J.*, 3994 (1937), 198B.

(W. H. H.)

Caffeine, Intravenous. The authors record their observations on the effects of the intravenous injection of caffeine sodium benzoate in twenty-six patients. There were fourteen cases

of hypertension, one of diabetes mellitus and one of diabetes insipidus, while ten were normal from the renal, circulatory and metabolic points of view. The doses ranged from 0.24 to 0.48 Gm., and the results were as follows: there was a rise of the systolic blood pressure, most marked in the cases of hypertension, immediately after injection, with a rapid return to the original level; there was immediate but transient tachycardia, most pronounced in the case of hypertension; in the cases with hypertension a slight degree of hyperglycemia was frequent; and there was an increase of diuresis with a greater elimination of urea and chlorides than usual.—R. MARTINETTI and A. FORCONI. *Policlínico, Sez. Med.* (June 1, 1937), 286; through *Brit. Med. J.*, 3994 (1937), 198B. (W. H. H.)

Ephedrine—Use of, as an Antidote for Acute Barbituric Acid Poisoning. The lethal dose of sodium barbital injected intravenously into rabbits was 500 mg. per Kg. Injection of 300 mg. per Kg. produced narcosis for some hours. Intravenous injection of less than 1 mg. of ephedrine per Kg. had no effect; 2–10 mg. per Kg. lengthened the barbital narcosis to 10–14 hours; 30–60 mg. per Kg. showed no greater effects; doses larger than 60 mg. per Kg. shortened the period of narcosis. Ephetonine behaved like ephedrine. The respiratory center was stimulated by ephedrine. After a fatal dose of barbital, ephedrine did not show significant antagonism.—BENEDETTO ABBATECOLA. *Riforma med.* (1934), 1643–1650; *Ber. ges. Physiol. exptl. Pharmacol.*, 84, 499; through *Chem. Abstr.*, 31 (1937), 3994. (F. J. S.)

Luminal and Prominal—A Comparative Study of, in Epilepsy. A comparison of the efficacy of prominal and luminal in the treatment of epilepsy is made by examining the routine records of all epileptic patients in a colony for mental defectives; each case has been observed during similar periods on the respective drugs. The principle by which cases were selected are described, and thirty-nine statistically admissible cases are recorded in tabular form. The results are considered collectively and individually with reference to both incidence of fits and behavior. The total number of fits under prominal treatment is shown to be approximately one-third of the number during a similar period under luminal therapy, and a beneficial effect on non-convulsive manifestations is formed in a large proportion of cases. Tolerance is discussed and a dose of three grains of prominal three times a day is shown to be satisfactory over long periods in adults.—C. G. MILLMAN. *Brit. Med. J.*, 3992 (1937), 63. (W. H. H.)

Novalgin in Biliary Colic. The author recommends intravenous injections of novalgin for the relief of biliary colic. He injects four to five cc. of a fifty per cent solution of novalgin even in debilitated patients. The pain disappears usually after about five minutes. Of the one hundred and twenty-four cases treated only seven per cent failed to respond to this medication. In very severe attacks the author recommends simultaneous injection of two cc. of novatropin. According to him this medication is preferable to morphine, as it does not daze the patient and there is no danger of drug addiction in chronic cases.—G. V. BEIN. *Münch. med. Wochschr.* (April 23, 1937), 651; through *Brit. Med. J.*, 3991 (1937), 48B. (W. H. H.)

Oestradiol Benzoate—Temporary Postponement of Menstruation by. Postponement of menstruation temporarily is occasionally justifiable. Inhibition of menstruation is simple by continuing therapy with 50,000 I. B. U. throughout the cycle at intervals of three to four days. It is possible to postpone menstruation when injections are started, after ovulation has probably occurred, at about the nineteenth day of the cycle, but dosage must be greater such as 100,000 I. B. U., and the intervals should be shorter. There are no harmful effects. The technic of injection is of great importance.—G. L. FOSS. *Brit. Med. J.*, 3991 (1937), 10. (W. H. H.)

Œstrin in the Urine. The author employing Siebke's technique, showed that the excretion of œstrin in the urine passed between the thirteenth and seventeenth day of the intermenstrual period by sixteen women, aged from eighteen to thirty-two, with a normal menstrual rhythm, varied from 116 to 164 mouse units in the twenty-four hours. In four cases of primary amenorrhea he found that the excretion of œstrin was lowered to less than 60 units; in each of thirty-eight cases of secondary amenorrhea, the duration of which had varied from a few months to a few years, the excretion of œstrin was lowered; and in twenty-three cases of oligomenorrhea the excretion was also diminished. In three specimens of urine from cases of excessive menstruation 460 units were found in the first, 612 in the second and 244 units in the third.—B. QUENTAL. *Ann. bras. Ginec.* (April 1937), 307; through *Brit. Med. J.*, 3992 (1937), 100D. (W. H. H.)

Suprarenal Extract—Use of, in Addison's Disease. The value of suprarenal cortical extracts in the treatment of Addison's disease has been investigated on behalf of the Therapeutic

Trials Committee of the Medical Research Council. Nine patients with typical uncomplicated Addison's disease and two standard commercial suprarenal cortical preparations (cortin and encortone) have been used for these tests. Four of the patients died despite intensive treatment—three from Addison's disease and one, in remission, from cardiac muscle failure following auricular fibrillation. Two of these showed tuberculosis and two complete atrophy of the suprarenal glands. Five patients have responded to treatment very well and are alive and in good health, the longest period of survival to date being three years, one month, and the shortest nineteen months. One was a chronic case of modern severity—not now taking treatment—and four were acute severely ill cases who responded to cortical extracts and are now on daily maintenance doses of sodium chloride. Large doses of cortical extract have often been required; they are safely given intramuscularly or intravenously and are free from unpleasant reactions. After satisfactory responses the dose can be reduced considerably, while combined with salt therapy even greater reductions in dosage can be made. The maximum total amount of cortical extract given to any one patient during treatment was three liters, while the minimum total amount required has been sixty-five cc. Using these cortical extracts symptoms of asthenia, muscular weakness, digestive disorders (particularly nausea and vomiting and diarrhoea) are promptly relieved; appetite returns, weight increases, mental outlook improves, pigmentation slowly fades. There is a slight improvement in the subnormal temperature after cortical extracts, but the occurrence of pyrexia is a bad prognostic sign and even very large doses of cortical hormone may be unavailing. The blood pressure may take two or three months to show any significant improvements, and then apparently only if cortical extracts are given with or followed by sodium chloride therapy. Changes in the chemistry of the blood and urine show rapid responses to adequate amounts of suprarenal cortical extracts. A high blood-urea returns quickly to normal, with a simultaneous disappearance of albumin, casts and cells from the urine; while sodium, chlorides and phosphates return to normal values in the blood. Suprarenal cortical extract has no effect on the slight hypochromic microcytic anemia frequently present, while the basal metabolic rate is also unaltered. Suprarenal cortical extracts are of a definite value in the treatment of Addison's disease if given in adequate dosage. It is the only treatment of any real value in acute crises. In the series reported here, five out of nine have had excellent remissions and are practically in normal health now as a result of this treatment. One case also lived eight months by its use but died from another cause during a period of steady remission. Two others were temporarily improved until sudden crises with pyrexia failed to respond to further treatment.—J. F. WILKINSON. *Lancet*, 233 (1937), 61. (W. H. H.)

Tubo-Curare and Genus Strychnos—Pharmacological Study of. Specimens of *Tubocurare* yielded pure *tubo-curarine* (King) and curine. *Tubo-curarine*, has a curarizing action which is somewhat weaker than curarine. It has no "lissive" action. Curarine has a weak curariform action. In the frog there are signs of depression of the central nervous system when small quantities are given. In mammals there is a marked fall of blood pressure, relaxation of the isolated mammalian uterus and antagonism to the action of adrenalin. Its isomer bebeerine has similar actions. The latter does not show a "lissive" action in canine tetany or in pathological rigidities in man. A collection of seven plants of Genus *Strychnos* and one of the natural order *Rubiaceæ* was examined. Of these six yielded extracts of pharmacological interest. From *S. toxifera*, curarine was obtained in quantity. From *S. diaboli*, and an unnamed *Strychnos* ("2482"), quaternary and non-quaternary alkaloids were separated. A pure secondary base Diaboline was separated as a non-quaternary from *S. diaboli*. Total (non-quaternary) alkaloidal extracts of *S. Erichsonii* and *Guettarda acreana* were examined. *S. Guianensis* was examined as a crude extract only. The actions of the above substances are described in detail.—R. WEST. *Arch. Inter. Pharmacol. et Therp.*, 56 (1937), 81. (W. H. H.)

TOXICOLOGY

Arsines, Stibines and Bismuthines—Toxicology of. Dichloromonophenyl-arsine, -stibine and -bismuthine were prepared and analyzed. The arsine derivative was most toxic; 0.05 Gm. per Kg. of rat being fatal. Decomposition is mainly due to hydrolysis.—H. LECOQ. *J. pharm. Belg.*, 19 (1937), 133-140, 155-160, 173-181, 191-196, 217-221, 239-243, 263-269. (S. W. G.)

Chlorinated Acetylene Solvents. Toxicology of Trichlorethylene and Tetrachlorethane. The toxicology and methods of determination are given.—M. GASQ. *Bull. soc. pharm. Bordeaux*, 75 (1937), 87-101. (S. W. G.)

Industrial Plumbism—Symptoms in Early Stages of. Observations were made on men employed in storage battery industry. Classified on basis of: (1) Abnormal lead absorption, (2) Incipient lead intoxication, (3) Definite lead poisoning. General observation and laboratory analysis necessary for complete picture. Increase in reticulocyte count significant in incipient plumbism for early diagnosis.—ROY R. JONES. *J. Am. Med. Assoc.*, 104 (1935), 195.

(M. R. T.)

Lead—Biochemical Behavior in the Body. Lead precipitated in bones as insoluble lead phosphate and carried in blood as more soluble di-lead phosphate. Small amounts regularly excreted, some never having been absorbed. Distributed to viscera, especially liver, spleen and kidneys, immediately; in few days collects in bones. Direction of lead stream similar to calcium stream. Therefore the use of calcium in reduction of lead stores in body. Vigorous deleading recommended in case of toxic lead poisoning, is followed by prompt return to normal health.—JOSEPH C. ANB. *J. Am. Med. Assoc.*, 104 (1935), 87.

(M. R. T.)

Lead Poisoning—Epidemiology of. Inhalation and ingestion, two routes by which lead gets into the system. First more important, especially in industry. Ingestion through lead water pipes and home distilling apparatus. Inhalation in mining, smelting, paint industries, typographic trades, chemical industries. Respiratory diseases greatly outnumber gastro-intestinal diseases in industry. When ratio is reversed, lead poisoning should be considered.—A. J. LANZA. *J. Am. Med. Assoc.*, 104 (1935), 85.

(M. R. T.)

Mercuric Sulfate—Fatal, Voluntary Poisoning by. A detailed description of the case which is of interest mainly on account of its rarity, mercury poisoning generally occurring with mercuric chloride.—DÉROBERT. *Ann. méd. légale criminol. police sci.*, 17 (1937), 219-221; through *Chem. Abstr.*, 31 (1937), 3995.

(F. J. S.)

Nickel—Retention of, in Psoriasis. Significant local retention of nickel in psoriasis, confirms statement that individuals unduly exposed to nickel appear to be peculiarly susceptible to skin diseases. Sources of nickel are plants, soils and foods; also water pipes, cooking utensils and catalytically hydrogenated fats.—CURRENT COMMENT. *J. Am. Med. Assoc.*, 104 (1935), 124.

(M. R. T.)

Plants—Toxic Colonial. The poisonous plants found in the French Africa colonies, oriental Africa, Madagascar, tropical Asia and South America are discussed.—J. GOLSE. *Bull. soc. pharm. Bordeaux*, 75 (1937), 35-60, 102-128.

(S. W. G.)

Procaine and Morphine—Toxicity of Some New Organic Acid Salts of. The minimum lethal dose of each procaine salt, given subcutaneously and intravenously, for white mice, was determined by 4 different methods; the results agreed fairly well. The toxicity of the phenylpropionate, phenylacetate and isobutyrate of procaine is about the same as that of the hydrochloride. The corresponding cocaine salts are from 3 to 5 times as toxic. Administered subcutaneously, morphine benzoate, cinnamate and citrate have about the same toxicity as morphine hydrochloride, while morphine phenylpropionate is considerably less toxic and the salicylate is about one and one-half times as toxic.—J. RÉGNIER, SUZANNE LAMBIN and E. SZOLLOSY. *Compt. rend. soc. biol.*, 122 (1936), 759-762; through *Chimie & Industrie*, 37 (1937), 944. (A. P.-C.)

Quinine-Toxic Reactions of. E. reports three cases of very poor vision of prolonged duration, dating from temporary total blindness as a sequel to quinine administration. In the one case in which dosage was known 300-400 gr. of quinine were given within a week to a child aged 2.5 years. In two of the cases retinitis pigmentosa was present.—E. C. ELLETT. *J. Tennes. M. A.*, 30 (1937), 174; through *Squibb Abstr. Bull.*, 10 (1937), 1215.

(F. J. S.)

THERAPEUTICS

Adrenal Cortex—Extract of. Function of adrenal cortex extract stated in four theories: (1) essential cellular agent used in all tissues, (2) used in carbohydrate metabolism, (3) cortical hormone maintains normal blood volume, (4) involved in metabolism of sodium chloride. Standardized by: (1) survival of adrenalectomized animal, (2) determination of amount necessary to maintenance, (3) capacity to perform work. Adrenal cortex extract will maintain dogs and patients if they also have a diet including slightly increased amounts of sodium chloride. This is called Extract A. Another extract, B., without salt affects blood urea and retention of sodium chloride. Combination of two gives best results. Experiments with dogs proved, however, that adrenal cortex extract is not directly concerned with metabolism of carbohydrates, protein or

fats, since normal condition is maintained in diet satisfactory with regard to mineral constituents. Close relation between adrenal cortex extract and thyroxin. Injections of adrenal cortex extract do not affect adrenals, contrary to usual experience with extracts of other ductless glands. Explained on basis that adrenal cortex is associated with mineral metabolism. Adrenal cortex extract was used successfully on patients with Addison's disease, enabling them to undergo operations. It has proved to be specific in this disease.—EDWARD C. KENDALL. *J. Am. Med. Assoc.*, 105 (1935), 1486. (M. R. T.)

p-Aminobenzenesulfonamide—Chronic Hemolytic Streptococcal Infection Treated with. A case of chronic wound infection due to the hemolytic streptococcus, following puerperal sepsis due to the same organism three years previously, is described. Various operative procedures and actinotherapy had failed to give any relief. Administration by mouth of p-aminobenzenesulfonamide, 94 Gm. in all, with local treatment with the same drug was followed by sterilization of the wounds within three weeks and complete healing in six weeks.—A. W. PURDIE and R. M. FRY. *Lancet*, 233 (1937), 18. (W. H. H.)

p-Aminobenzenesulfonamide—Use of, in Treatment of B. Coli Infections. Small oral doses of p-aminobenzenesulfonamide, effected the rapid disappearance of *B. coli* and pus cells from the urine and remission of symptoms in forty-six women with urinary tract infections. Failure to relieve infection and symptoms was not encountered in typical *B. coli* infections. In a single case atypical coliform organisms were unaffected by the drug, but *B. aerogenes* and proteus infections yielded to treatment in two instances. Return of bacteriuria was found to be fairly common in pregnant women, but relapse with clinical symptoms did not occur in a series of sixteen cases of pyelitis of pregnancy, and in the pre-operative treatment of gynecological patients. The cheapness of this drug, compared with other urinary disinfectants, is an additional reason for its employment. Toxic manifestations of sulfonilamide administrations, such as sulfæmoglobinæmia, methæmoglobinæmia, and headache, appeared in a few patients but were not taken as an indication to discontinue treatment. Sulfonilamide administered by mouth renders the urine bactericidal to certain members of the *B. coli* group. The bactericidal power of the urine is roughly proportional to the sulfonilamide content. Strains of *B. coli* are not all equally susceptible to this bactericidal action, some being almost completely resistant. Strains which are resistant to the bactericidal action of sulfonilamide *in vitro* are not necessarily so *in vivo*.—M. KENNY, F. D. JOHNSON and T. VON HAEBLER. *Lancet*, 233 (1937), 119. (W. H. H.)

Ammonium Mandelate in Urinary Infections. The author records his observations on twenty patients, fourteen of whom were suffering from simple pyelitis and six from pyelocystitis, treated by ammonium mandelate in doses of twelve grams daily. The best results were obtained in cases of chronic relapsing *B. coli* pyelitis, in which the temperature was below 102.2° F. The drug is contraindicated when the renal function is defective and the results were unsatisfactory in the presence of retention of urine.—C. L. DE JONGH. *Nederland. Tijdschr. Geneeskunde* (June 12, 1937), 2721; through *Brit. Med. J.*, 3994 (1937), 198B. (W. H. H.)

Anemic Individuals—Erythrocyte Count in, after Ephedrine. The occurrence of erythrocytosis in patients with a normal blood picture and the absence of a proportionate red cell increase in anemic individuals following ephedrine is consistent with the possibility that a splenic reserve of erythrocytes existing in normal individuals is reduced or lost in those with severe anemia.—ORVILLE WALTERS. *Folia Haematol.*, 56 (1936), 367-371; through *Chem. Abstr.*, 31 (1937), 3994. (F. J. S.)

Apiol Polyneuritis. Case of polyneuritis after doses of abortifacient containing apiol. Similar in course to cases of Jamaica ginger paralysis of 1930. Process limited to peripheral nerves, no involvement of central nervous system. Neuritis caused not by apiol or ginger, but by triorthocresol phosphate contained in each compound.—ROBERT DENISON and J. C. YASKIN. *J. Am. Med. Assoc.*, 104 (1935), 1814. (M. R. T.)

Barbital and Phenobarbital—Relation of, to Granulocytopenia. Evidence points to amidopyrine as an important factor in the production of granulocytopenia. Since barbituric acid derivatives are frequently combined with amidopyrine in proprietary preparations, a study has been made to see whether they might be contributing causes. The question whether a barbiturate influences the amidopyrine has not been investigated. Agranulocytosis or granulocytopenia is discussed briefly and experimental work is reported in detail. The authors summarize their findings as follows: 1. Granulocytopenia is a condition of a decreased number of circulating

granulocytes in the peripheral blood, probably affected by a chemical agent causing the bone marrow to fail to produce granulocytes. 2. Drugs similar to amidopyrine, having an amine group attached to a benzene group in their structural formula, are apparently the cause of this condition. 3. Barbitol and phenobarbitol do not cause a permanent decrease in the number of circulating granulocytes in the peripheral blood of normal rabbits.—J. C. KOPET and F. J. GOODRICH. *J. Am. Pharm. Assoc.*, 26 (1937), 483. (Z. M. C.)

Bismuth Hydroxide—Therapeutic Use of. Bismuth hydroxide in oil suspension (Casbis) proved an excellent parenteral therapeutic agent in the treatment of 60 cases of sore throat, especially in infections of the tonsils. Four cases are presented in detail. Contraindications of the use of bismuth are tuberculosis, severe heart insufficiency and kidney infection or localized nephritis.—OSKAR ISSELHARD. *Münch. med. Wochschr.*, 84 (1937), 737; through *Squibb Abstr. Bull.*, 10 (1937), 1145. (F. J. S.)

Cocci, etc.—Therapeutic Antiseptic for Combating. Compositions suitable for either external or internal medication comprise 2,6-diaminopyridine salts such as the acetate (melting point 116° to 117° C.), the benzoate (melting point 148° C.), the salicylate (melting point 161° to 163° C.), or the propionate, lactate, picrate, trichloroacetate, chlorobenzoate, aminosalicylate, etc.—EDMOND T. TISZA, assignor to PYRIDIUM CORP. U. S. pat. 2,080,517, May 18, 1937. (A. P.-C.)

Corpus Luteum—Therapy of. Hormone of Corpus Luteum extracted and called "progestin" and "corpin," is a crystalline hydrocarbon $C_{21}H_{30}O_2$. Administered subcutaneously in solution in vegetable oil. Cannot be given by mouth. Has property of bringing about premenstrual changes, and uterine conditions of early pregnancy. Therapeutic use still in experimental stage.—GEORGE W. CORNER. *J. Am. Med. Assoc.*, 104 (1935), 1899. (M. R. T.)

Cyanide—Antidotes and Medical Progress. Use of methylene blue and sodium nitrite in cyanide poisoning. Methylene blue logical because methemoglobin is a cyanide poisoning. Continued progress in investigation of use of oxidation-reduction dyes.—CURRENT COMMENT. *J. Am. Med. Assoc.*, 105 (1935), 1434. (M. R. T.)

Dinitrophenol—Evaluation of, as an Aid in Weight Reduction. Alpha dinitrophenol in weight reduction acts by increasing energy output. Advantage over thyroid extract in absence of side reactions of tachycardia and palpitation. Six patients studied, varying in age and overweight. Reduction diet maintained with alternating periods with dinitrophenol added. Careful record of basal metabolism and caloric intake. Result: Increase of oxygen consumption whether drug was added to maintenance or reduction diet. Sweating and dermatitis accompanied administration of drug. Loss of weight noted in preliminary maintenance diet. Practical value of dinitrophenol questionable, due to its known toxicity. Reduction can be obtained as satisfactorily by careful diet.—JAMES M. STRANG and FRANK A. EVANS. *J. Am. Med. Assoc.*, 104 (1935), 1957. (M. R. T.)

Dinitrophenol—Use of, in Treatment of Obesity. Report of 4 years' practice, 170 patients, 150 women, 20 men. Some had had previous glandular extract treatment. Patients kept on moderate diet and drug in form of sodium salt administered in capsules. Average duration of treatment 88 days. Increase of heat production noted, but no toxic symptoms appeared, though there were some skin reactions. However, dinitrophenol is not recommended as routine reducing agent. To be used only when other measures have failed.—M. L. TAINTER, *et al.* *J. Am. Med. Assoc.*, 105 (1935), 332. (M. R. T.)

Ergotamine Tartrate—Experience with, in Patients with Migraine. Literature reports satisfactory use orally or by subcutaneous injection. Present report of 3 years' experience on 120 migraine patients treated by injection or ingestion. Cases were chronic with other satellite symptoms, nausea, vomiting etc. Also history of migraine in other members of family. Relief immediate in 89% of cases. Value of ergotamine tartrate is that it is non-sedative, and is specific for headaches of the migraine type. But headaches aborted by ergotamine tend to recur at longer intervals, and patient experiences lassitude. No serious or permanent ill effects. Caution advised with patients with arterial disease. Daily injection of 0.5 mg. or ingestion of 10 to 15 mg. has not produced suspicious symptoms. Nor has it produced abortion in pregnant patients, but mechanism by which relief is obtained is yet unknown.—WILLIAM G. LENNOX and THEODORE J. C. VAN STORCH. *J. Am. Med. Assoc.*, 105 (1935), 169. (M. R. T.)

Estrogenic Substances—Therapeutic Use of. Estrogenic therapy of little value in endo-

crinopathic amenorrhea. Treatment of menopausal symptoms had real though variable value. Treatment of gonorrhoeal vulvovaginitis in children, and of hemophilia need further study.—EMIL NOVAK. *J. Am. Med. Assoc.*, 104 (1935), 1815. (M. R. T.)

d-Glucose—Therapeutic Use of, in Jaundice. Toxic hepatitis cases show a marked capacity for utilizing large amounts of glucose regardless of the mode of administration. These cases react in a fairly characteristic manner to the usual glucose tolerance test, the main feature being a return to the normal level at the end of the two-hour period. Intensive intravenous glucose therapy, by means of the continuous drip method, gives most marked and immediate beneficial results in cases of toxic hepatitis. Four case histories are given, in which this therapy is used. Recovery took place in two and death in the remaining two. Visualization of the gall bladder by means of tetraiodophenolphthalein was successful in 87.5% of these cases. The observations reported are based on a group of 25 cases of toxic jaundice of which 19 recovered and 6 died.—HARRY G. JACOBI. *Am. J. Digestive Diseases Nutrition*, 4 (1937), 162; through *Squibb Abstr. Bull.*, 10 (1937), 1108. (F. J. S.)

Gold Sodium Thiosulfate—Therapeutic Use of, in Arthritis. Twenty-two selected cases of active rheumatoid arthritis with high sedimentation rates were given 15 to 43 five-cc. intravenous injections of gold sodium thiosulfate, or from 0.75 to 2.15 Gm. of the dry gold salt. Twelve were markedly improved, five slightly improved, five not improved. Complications encountered included stomatitis, pruritis and urticaria, but treatment was resumed after the symptoms had subsided. The therapy is contraindicated in cardiorenal disease, hepatic disease and pregnancy.—DAVID SASHIN and JOSEPH SPANBOCK. *Med. Record*, 145 (1937), 429; through *Squibb Abstr. Bull.*, 10 (1937), 1199. (F. J. S.)

Gonococcus Filtrate—Experiences with. Used in intradermal therapy in treatment of gonorrhoea. It is a soluble toxin and can be standardized by skin test reactions for routine therapeutic use. Reaction of patients relative to general physical condition and to coloration-blends show more intense reaction. Has diagnostic value, and some virtue in amelioration of gonorrhoeal infection, as an adjunct to urethral medication.—ROBERT E. CUMMING and ROBERT A. BURHANS. *J. Am. Med. Assoc.*, 104 (1935), 181. (M. R. T.)

Hemorrhoids—Treatment of, with a New Therapeutic Product. A sterilized 15% solution in oil of an extract of *Microcolex dubius* relieved the symptoms.—H. E. MARCANTÉ and J. E. H. PIAZZA. *Rev. sud-americana endocrinol., immunol., quimioterap.*, 20 (1937), 61-62; through *Chem. Abstr.*, 31 (1937), 3993. (F. J. S.)

Hexylresorcinol—Idiosyncrasy to. Case of woman with family history of allergic sensitivity. Developed cutaneous sensitivity to hexylresorcinol by external application over a period of 5 months, 26 months later, severe dermatitis resulted from single brief contact with drug.—CARL W. WALTER. *J. Am. Med. Assoc.*, 104 (1935), 1897. (M. R. T.)

Insulin—Therapeutic Applications of. Injured pancreas never wholly loses ability to make insulin. This complicates therapeutics of insulin. Use of insulin plus diet plus exercise enables many patients to do without insulin eventually. Insulin lowers sugar in blood and favors its storage and utilization in liver, muscles and skin as glycogen. Most effectively administered subcutaneously. Patient trained to administer to self must be warned about careful measurements. Very old or very young patients require small and frequent doses. Use in coma has lowered incidence of mortality. Augmented by physiologic salt solution to offset dehydration and help protect blood pressure. Also records of benefit to persons with incompetent hearts. Also used in nondiabetic cases to increase weight.—ELLIOT P. JOSLIN, *et al.* *J. Am. Med. Assoc.*, 105 (1935), 359. (M. R. T.)

Insulin—Use of, in Treatment of Cirrhosis of Liver. Report of a patient unable to work because of swollen abdomen, he was tapped and given diuretics, but with no noticeable effect. Finally put on a high carbohydrate diet and given insulin. In six months tapping became unnecessary, and patient has returned to work.—JOHN E. WALKER and WILEY D. WOOD. *J. Am. Med. Assoc.*, 105 (1935), 196. (M. R. T.)

Iron Citrate—Therapeutic Compounds of. Compounds which are substantially non-irritating when administered either orally or hypodermically are prepared from ferricitric acid by partially or completely neutralizing it with compounds such as sodium or potassium hydroxide, sodium carbonate or bicarbonate, or sodium glycerophosphate, so as to form compounds such as the tetra-, penta- and hexa-sodium salts of ferricitric acid, the aqueous solutions of which have a pH

of about 4.10, 5.45 and 6.59, respectively.—ALBERT O. MATTHEUS, assignor to PARKE, DAVIS & Co. U. S. pat. 2,081,547, May 25, 1937. (A. P.-C.)

Lead—Normal Absorption and Excretion of. Lead ingested as constituent of food is not stored in tissues, but excreted, maintaining a lead balance. Investigations and analysis of excreta of various groups with negative occupational histories show low values. Chemical methods checked by spectrographic methods. Blood also examined. Mean daily lead intake found to be an amount slightly, but not significantly less than lead output in feces.—ROBERT A. KEHOE, *et al.* *J. Am. Med. Assoc.*, 104 (1935), 90. (M. R. T.)

Magnesium and Cancer. No difference exists between magnesium chloride and magnesium sulfate if the latter remains below the purgative dose. Magnesium chloride does not produce acid urine in animals. No evidence was found that the magnesium ion has an inhibiting effect on cancer.—J. VERNE and C. SANNIÉ. *Bull. acad. méd.*, 117 (1937), 70-73; through *Chem. Abstr.*, 31 (1937), 3992. (F. J. S.)

Mandelic Acid—Use of, in Urinary Infections. The authors have treated in the course of a year thirty cases of pyelitis and cystitis with mandelic acid. In all but four cases the diagnosis of pyelitis was verified by cystoscopy and catheterization of the ureters. The mandelic acid was given in the form of sodium amygdalate six times a day. In twenty-three cases the urine was rendered sterile in from three to thirty days. Among the seven failures in this respect were two patients who could not take the mandelic acid for more than a day, because it made one of them vomit and increased the dysuria of the other. In a third case the patient left the hospital for private reasons. During the treatment there was in most cases a rapid and striking clinical improvement. The author does not recommend this treatment until a few days in bed have reduced the toxic phenomena and lowered the temperature, for he believes that during the acute stage of pyelitis the renal parenchyma is involved, and might suffer if it had to excrete a highly acid urine. While several other observers have found casts and albumin in the urine under mandelic acid and ammonium chloride treatment, the author never has, and he traces the immunity to the precaution of keeping the patient in bed for a few days. He considers this treatment superior to all others in dealing with infections of the urinary tract, and in a postscript to his paper he states that in eight cases he has achieved the same therapeutic success with a new preparation of mandelic acid combined with a calcium salt, which is tasteless and gives rise only to insignificant digestive disturbances.—E. SCHNOHR and C. JOHANSEN. *Hospitalstedende* (April 27, 1937), 453; through *Brit. Med. J.*, 3991 (1937), 48B. (W. H. H.)

Mercurochrome and Other Drugs—Action on Normal Human Skin and Infected Wounds. No standard methods for determining bacteriostatic and bactericidal action of drugs on skin. Two solutions of mercurochrome used; aqueous 1 or 2% for use on mucous surfaces and wounds, and 2% solution in 35% water, 55% alcohol and 10% acetone, known as tincture of mercurochrome used as pre-operative skin disinfectant. Finger tip method: contact of treated finger tip with an inoculated agar plate. Bacteriostatic action transferred from coated finger to seeded agar plate *Staphylococcus Aureus* used in most tests because of significance in skin and wounds. Tincture of mercurochrome, tincture of iodine, aqueous mercurochrome, alcohol 55%, water 35% and acetone 10%, were the solutions used. Mercurochrome tincture proved strongest with tincture iodine next. Cultures also strapped to treated thigh for eighteen hours and areas found sterile by subsequent subcultures. Tests also made after treated fingers had been scrubbed with soap before exposure to cultures, upheld bacteriostatic action of drugs. Wound tests on guinea pigs—in-cisions inoculated, treated with the several drugs, demonstrated lack of complete antisepsis, but showed reduced bacterial count in comparison with untreated wounds.—JUSTINA H. HILL. *J. Am. Med. Assoc.*, 105 (1935), 100. (M. R. T.)

Mercurochrome—Toxic Reactions of. B. reports on acute reaction in a five-month-old infant to the disodium salt of 2,7-dibromo-4-hydroxymercurifluorescein (mercurochrome) ointment, applied to denuded areas resulting from severe burns, from which the tannic acid eschars had peeled. The symptoms were restlessness, fever, swelling of eyelids, fine macular rash all over the body together with several large hyperemic areas and a pink coloration of the stools and urine. The ointment helped, however, for the healing of the denuded areas was much more rapid following its use than previously.—R. JULIAN BROWN. *Can. Med. Assoc. J.*, 36 (1937), 620; through *Squibb Abstr. Bull.*, 10 (1937), 1205. (F. J. S.)

Morphine, Ethyl-Hydrochloride—Therapeutic Use of. Ethyl morphine hydrochloride

(Dionine), in combination with atropine, hot fomentations, rest, protection from light and treatment of the etiological factor, is recommended for therapy of painful lesions of the eye. The treatment of glaucoma and interstitial keratitis is discussed in detail.—RAYMOND F. PRICE. *J. South Carolina M. A.*, 33 (1937), 111; through *Squibb Abstr. Bull.*, 10 (1937), 1115. (F. J. S.)

Neoarsphenamine—Effect of Cystine on Toxicity and Trypanocidal Activity of. Since neoarsphenamine sometimes causes undesirable reactions attempts have been made to find something to be used with it to reduce the frequency and severity. Because sodium thiosulfate is effective in arsenic poisoning, attention has been given to sulfur compounds. More recently attention has been directed to cystine as an amino acid necessary to normal body growth and the fact that colloidal sulfur therapy raised the cystine content of the nails. It appeared possible to convert arsenic present in the skin to a less toxic form and so avert the dermatitis. The possibility has a chemical basis in the theory that arsphenamines are converted into 3-amino-4-hydroxyphenylarsenoxide. It has been shown that sulphydrile compounds cause a reduction in the trypanocidal action of "arsenoxide." So it is not unreasonable to hope that by elevating the cysteine content of the epidermis it might be possible to bind the arsenic in some stable compound and prevent dermatitis. Experimental work is reported in detail and the results show that the trypanocidal effectiveness of neoarsphenamine is materially reduced by the administration of cystine during the period of neoarsphenamine therapy.—A. E. JURIST and W. G. CHRISTIANSEN. *J. Am. Pharm. Assoc.*, 26 (1937), 497. (Z. M. C.)

Oil of Peppermint—Effect of Emptying Time of Stomach. Previous work showed that oil of peppermint reduces gastric acidity. Investigations on effect of carminatives and volatile oils on musculature of stomach differ. *In vitro*, small doses increase motility, larger doses inhibit. Tests made on patients by balloon method and on dogs by fistula, proved inconclusive, but peppermint candy and cordial given after heavy meal reduced emptying time of stomach.—H. I. SAPOGNIK, *et al.* *J. Am. Med. Assoc.*, 104 (1935), 1792. (M. R. T.)

Parathyroid Hormone—Therapy of. Clinical use of active principle of parathyroid depends on marked influence on calcium and phosphorous metabolism. Levels of calcium and phosphorus must be frequently and carefully checked. Repeated doses more effective than single large injection. Chief disadvantage in continued use is that patient establishes immunity. Vitamin D, viosterol, can be given by mouth and has more sustained effect. Disadvantage in the length of time to take effect, and not satisfactory for emergency. Of no use in removing calcium deposits from glands, but therapeutic value in cases of low calcium tetany. May also be used in edema of nephritis.—JOSEPH C. ANB. *J. Am. Med. Assoc.*, 105 (1935), 197. (M. R. T.)

Phenyl-Mercuric Nitrate—Use of, in Treatment of a Case of Chronic Vaginitis. Vaginal infection, with deep acne; only organism found was a *Staphylococcus Albus*. Douches of every common disinfectant and antiseptic used, with no effect; equally inefficacious were cauterization of cervical canal and implantations of *Bacillus acidophilus*. Autogenous vaccine of *Staphylococcus Albus* from acne pustules also tried. Douches twice daily of phenyl mercuric nitrate in glycerin solution of 1:1,500 diluted to 1:20,000 gave relief, and complete cure in three weeks, with no evidence of mercuric poisoning.—FREDERIC WADE HITCHINGS. *J. Am. Med. Assoc.*, 104 (1935), 212. (M. R. T.)

Pollen Extracts—Therapeutic Use of. In a series of 383 cases of hay fever and asthma caused by pollen over a period of three years, the oral administration of desensitizing doses of pollen extracts produced marked improvement in 37%, moderate improvement in 42%, better than 50% satisfactory relief in 79% and less than 50% satisfactory relief in 21%. The size of the dose is a very individual matter and must be determined for each patient. Indications seemed to be that results were better in co-seasonally treated patients than in pre-seasonally treated ones.—ROBERT F. E. STIER and GUY HOLLISTER. *Northwest Med.*, 36 (1937), 166; through *Squibb Abstr. Bull.*, 10 (1937), 1117. (F. J. S.)

Pulsatilla—Therapeutic Action of. The author is of the opinion that this is one of the most useful plant remedies known to the medical science. The following topics are discussed: constituents, physiological action, specific indications and general therapeutic indications. Anemone camphor is probably the active ingredient making it useful for general nervous and mental depression. It may be described as the "vegetable bromide."—A. M. LIEBSTEIN. *Eclectic M. J.*, 96 (1936), 517-519; through *Merrell Scientific Abstr.*, 8 (1937), 74. (F. J. S.)

Quinine—Therapeutic Use of, with Calcium. Infectious diseases, especially pneumococcic,

are successfully treated with the combined use of quinine, which is bactericidal and antitoxic, and calcium, which increases resistance and diminishes exudation. In febrile abortion, quinine has the added advantage of its uterus-contracting effect.—W. WERNER. *Fortschr. Therap.* (1937); through *Deut. med Wochschr.*, 63 (1937), 761; through *Squibb Abstr. Bull.*, 10 (1937), 1169. (F. J. S.)

Sputum Typing—Reliability of, and Its Relation to Serum Therapy. Advance in serum treatment of pneumonia by rapid determination of invading type. Method performed by mixing droplet of sputum with homologous rabbit serum containing standard alkaline methylene blue. With homologous serum capsule appears swollen, outlined by dye. With heterologous serum the capsule is unchanged. Neufeld method used on preserved sputums, not viable for inoculation of mice. Advantages of typing by microscope method are: (1) pneumococci are seen, (2) requires very small amount of exudate, (3) possible to make important differentiation of types. May also be used on chest-fluid or post mortem cultures. Has been confirmed by blood cultures, lung sections and metastatic foci. Serum used in pneumococcic therapy reduces death rate, and is a specific, not a general protein therapy.—JESSE G. M. BULLOWA. *J. Am. Med. Assoc.*, 105 (1935), 1512. (M. R. T.)

Strychnine—Therapeutic Use of, in Diphtheria. During a period of six months 108 cases of diphtheria were observed. Twenty-three of these were of the malignant or grave type. In the latter group, large amounts of strychnine, as much as 1 mg. per Kg. of body weight per day in equal divided doses, were administered. The initial dose should be small, and subsequent doses should be rapidly increased; the daily dose should be divided into six or eight equal amounts and these injected regularly every 3 or 4 hours. The patient should be watched carefully throughout the treatment, but if no untoward effects are observed within 15 minutes after an injection, none are to be expected. With a daily dose of 0.5 mg. per Kg. of body weight no reaction was observed, but with larger doses toxic manifestations, such as muscular contractures, were noted. The drug was used as long as the condition seemed critical, usually for about 50 days. It is concluded that this treatment should be reserved for severe and malignant diphtheria and should be given after the administration of anti-diphtheritic serum; in such cases it may improve the immediate as well as the ultimate prognosis.—G. PAISSEAU, J. BRAILLON and C. VAILLE. *Bull. Soc. de pédiat. de Paris*, 33 (1935), 101; through *Am. J. Diseases Children*, 53 (1937), 1319; through *Squibb Abstr. Bull.*, 10 (1937), 1218. (F. J. S.)

Therapeutic Substance—Process of Manufacture. A complex compound of nicotine, iodine, protein and tannic acid in the form of a granular powder is coated with a digestible wax. The product is used as a veterinary remedy.—FAW YAP CHUCK. U. S. pat. 2,086,766, July 13, 1937. (A. P.-C.)

Urea—Therapeutic Use of, in Wounds. Urea, as crystals or in a 2% or more concentrated solutions, when applied locally to infections of bone or other tissue promoted healing in 8 cases which are represented in detail. There were, in addition to the 8 reported cases, two failures.—LEON M. BOGART. *J. Michigan M. Soc.*, 36 (1937), 285; through *Squibb Abstr. Bull.*, 10 (1937), 1121. (F. J. S.)

BACTERIOLOGY

Butyl Micro-organisms—Method of Maintaining or Invigorating Cultures of. An inoculum of a culture of the organisms is placed on unsterilized soil, and after a period of a month a reisolation of the organisms is made from the inoculation.—CHARLES T. HANSON, assignor to U. S. Industrial Alcohol Co. U. S. pat. 2,085,428, June 29, 1937. (A. P.-C.)

Sodium Desoxycholate—Use of, for Identification of Pneumococci. Pneumococci more soluble in sodium desoxycholate than in bile. Found uniformly useful in cultures of pneumococci.—EINAR LEIFSON. *J. Am. Med. Assoc.*, 104 (1934), 213. (M. R. T.)

BOTANY

Cystoliths—Microchemical Detection of. Detection of Reduction Phenomena in Cystoliths Caused by Ultraviolet Light. Molish, C. A., 12, 2344, has recommended a method for the rapid orientation of the distribution of cystoliths in the leaves of a plant, which consists in embedding in a 1% solution of silver nitrate, placing a cover glass over the specimen and exposing

it to light from a window. In the present paper the microchemical detection of calcium carbonate by the Molisch test is discussed and the use of 0.1% silver nitrate is recommended, particularly for detecting the reductions brought about by ultraviolet rays, particularly those of less than 300 $m\mu$.—O. RICHTER. *Mikrochemie, Festschr. von Hans Molisch* (1936), 350–365; through *Chem. Abstr.*, 31 (1937), 4694. (F. J. S.)

Differences in Permeability in Different Tissues of a Plant and the Probable Chemical Causes. The plasma of the outer skin of the stalk cells and of the corolla cells show very different permeability in *Gentiana sturmiana*. The former belong to the amidophile type whereas the latter are of the glycerol type. These differences in permeability must be due to chemical differences in the composition of the plasma. Probably the amidophiles of the outer stalk cells have a more acid character than the amidophoben blood cells which have a more basic plasma. Analogous differences of the living plasma of histologically different kinds of cells are probably common in herbaceous plants. A bibliography of 30 titles of papers published recently is given.—KARL HÖFLER. *Mikrochemie, Festschr. von Hans Molisch* (1936), 224–242; through *Chem. Abstr.*, 31 (1937), 4694. (F. J. S.)

Follicular Hormone—Crystalline, Further Experiments on the Action of, on the Growth of Some Culture Plants. In experiments with sweet peas the use of 500 to 1500 mouse units of the hormone preparation gave entirely negative results. In experiments with soybeans an increased weight of the grain and straw was obtained, especially with 1000 mouse units of follicular hormone. Red clover yielded a greater crop but never after the third cutting and even after the second cutting only when 1500 mouse units were used. Similar results were obtained with other plants. Maize is little affected by the follicular hormone, a slight increase in yield resulting only with the largest dose. In peas the follicular hormone caused a decrease in the absolute amount of crude protein whereas in soybeans the crude protein content was raised. In maize also the protein content was decreased by the hormone. The effect on the oil content is not quite so definite. At the time of full blossoming the yield was somewhat decreased by the administration of 500 mouse units and only with 1500 mouse units was an appreciable increase secured. The percentage of crude protein, ash, potassium, phosphorus, calcium and magnesium decreased. After ripening an appreciable increase in weight was found in the seeds and straw where the large dose, 1500 mouse units, was used, otherwise there was no effect.—K. SCHARRER and W. SCHROPP. *Biochem. Z.*, 290 (1937), 1–23; through *Chem. Abstr.*, 31 (1937), 4367. (F. J. S.)

Fruits of Aleurites Triloba, Forst. (Aleurites Molucanna, Willd.) Euphorbiaceae. *A. triloba* is a large evergreen tree indigenous to the Malay Archipelago, with leaves somewhat resembling the maple. Its seeds are sold under the name of "candle nuts," "lumbang or bais nuts." The oil therefrom is superior to linseed, being a quicker drier. It is also employed medicinally as a mild purgative. The press cake serves as a cattle food. Seven references.—D. Y. HADDAD. *J. Egypt. Med. Assoc.*, 20 (1937), 117–124; through *Chem. Abstr.*, 31 (1937), 4840. (F. J. S.)

Genus Monarda—Study of Several Species of. 4. Histology of Monarda Menthaefolia var. Leucantha. Since there are questions as to the authenticity of classifying groups of *Monarda*s as independent species, their histology becomes important. Hence the histology of one species is presented. The examination substantiates the conclusions as to structures which were reached from macroscopical examination of external features. The report includes eight plates.—B. V. CHRISTENSEN and R. S. JUSTICE. *J. Am. Pharm. Assoc.*, 26 (1937), 469. (Z. M. C.)

Living Cell—Physical Properties of, and Microchemical Reactions. The micromanipulation technic for studying the properties of protoplasm is described, together with some interesting experiments.—R. CHAMBERS, M. J. KOPAC and C. G. GRAND. *Ind. Eng. Chem., Anal. Ed.*, 9 (1937), 143. (E. G. V.)

Nucleic Acids—Isolation and Identification of, of Plant Cell Nuclei. Embryos of rye are isolated, dried and ground in a special mill under benzene. The mill breaks up the cells and the protoplasmic constituents remain in suspension. The nuclei and the membranes precipitate and can be separated from each other by suspension in a mixture of 1 volume benzene and 2 volumes carbon tetrachloride. In centrifuging, the nuclei float and the membranes are precipitated. The nuclei are suspended in soda and digested with pancreatin. The initially gelatinous precipitate produced by ethyl alcohol and sodium hydroxide is depolymerized by further treatment with pancreatin at pH 6.8. The final preparation is typical β -thymonucleic acid from which guanine, adenine, cytosine and thymine are isolated. The separation of nucleic acids into plant and animal

is false. All nuclei contains "animal" nucleic acid. "Plant" nucleic acid is probably a protoplasmic rather than a nuclear constituent.—R. FEULGEN, M. BEHRENS, S. MAHDIHASSAN. *Z. physiol. Chem.*, 246 (1937), 203-211; through *Chem. Abstr.*, 31 (1937), 4696. (F. J. S.)

Plant Enzymes—Oxidation of 1-Ascorbic Acid by. The cabbage, cauliflower, cucumber and marrow contain an enzyme which oxidizes ascorbic acid (I) and *d*-gluco-ascorbic acid directly. The enzyme does not affect mono- or dihydric phenols. The expressed juices of these plants, however, also oxidize catechol (II). In the presence of I and II, the oxidation of II does not start until all the I has been oxidized. No enzyme capable of oxidizing I directly is present in the apple or potato. The phenolases present in these plants can oxidize I, however, when the juice or II is present. Peroxidase but not peroxide can be demonstrated in the fresh juices of cabbage, cauliflower, cucumber and marrow. The enzyme is precipitated from the fresh juices by saturating the juice with ammonium sulfate.—SIDNEY W. JOHNSON and SYLVESTER S. ZILVA. *Biochem. J.*, 31 (1937), 438-453; through *Chem. Abstr.*, 31 (1937), 4698. (F. J. S.)

Plants—Nitrogen Metabolism of. An address discussing the various theories which have been proposed to explain the synthesis of amino-acids, dealing in turn with the external aspect of the phenomena and considering only well-known physiological facts (sources of nitrogen, formation of asparagine and ammonium salts, and sources of carbon), with the various chemical theories, and finally in greater detail with the hypothesis according to which alanine is derived from the oxime of pyruvic acid. Bibliography of ninety references.—M. LEMOIGNE. *Chimie & Industrie*, 37 (1937), 636-645. (A. P.-C.)

Quercus Rubra—Acorns of. Attempts to utilize kernels for cattle food have failed probably because tannin is disagreeable. Since the fixed oil might be of value, an investigation has been made. Partial analysis of the kernels was made and a more thorough one of the fixed oil. It was found to consist largely of glycerides of oleic, linoleic, stearic and palmitic acids. It is somewhat similar to that from other species of oak and clearly related to other oils of the semi-drying and non-drying classes, such as olive and cottonseed. Taste is quite agreeable and appears that it might be employed as an emollient in medicine and in other ways where fats are applied.—C. J. MONARCA and E. V. LYNN. *J. Am. Pharm. Assoc.*, 26 (1937), 494. (Z. M. C.)

Scaly Bark—Preparation for Treating of. A dilute aqueous mixture of lye, lysol and potassium permanganate is used for treating psorosis in citrus trees.—ENGLE A. BOELE. U. S. pat. 2,085,210, June 29, 1937. (A. P.-C.)

Seeds—Microchemical Analysis of, without Loss of Their Germinable Ability. From the examples cited it is clear that the protein content of large seeds shows individual variations. Methods of microchemical analysis are described which enable one to establish the cause of these variations and to answer the question as to whether these factors that cause the changes are of genotypic nature and may possibly be inherited or whether a subsequent cleavage can be observed. With bibliography.—NICOLAI N. IVANOV. *Mikrochemie, Festschr. von Hans Molisch* (1936), 243-258; through *Chem. Abstr.*, 31 (1937), 4694. (F. J. S.)